

Noble Energy (Rockies)

Garfield County, CO

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

BM 27-44D - B 1

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

20 October, 2009

Well Coordinates: 579,197.92 N, 1,301,233.56 E (39° 23' 51.28" N, 107° 58' 22.51" W)

Ground Level: 8,846.00 ft

Local Coordinate Origin:

Centered on Well BM 27-44D - Slot B 1

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 27-44D - 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 27-44D 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	332.23	299.99	0.87	-0.46	0.98	2.00	2.00	0.00	332.23
400.00	3.50	332.23	399.89	4.73	-2.49	5.34	2.00	2.00	0.00	0.00
500.00	5.50	332.23	499.58	11.67	-6.14	13.18	2.00	2.00	0.00	0.00
600.00	7.50	332.23	598.93	21.69	-11.42	24.49	2.00	2.00	0.00	0.00
635.00	8.20	332.23	633.60	25.92	-13.65	29.27	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
700.00	9.50	332.23	697.83	34.76	-18.30	39.27	2.00	2.00	0.00	0.00
800.00	11.50	332.23	796.15	50.89	-26.79	57.48	2.00	2.00	0.00	0.00
900.00	13.50	332.23	893.77	70.04	-36.88	79.11	2.00	2.00	0.00	0.00
1,000.00	15.50	332.23	990.58	92.19	-48.54	104.13	2.00	2.00	0.00	0.00
1,051.29	16.53	332.23	1,039.88	104.71	-55.13	118.27	2.00	2.00	0.00	0.00
End Build at 1051.29ft										
1,100.00	16.53	332.23	1,086.58	116.97	-61.59	132.12	0.00	0.00	0.00	0.00
1,200.00	16.53	332.23	1,182.45	142.14	-74.84	160.55	0.00	0.00	0.00	0.00
1,300.00	16.53	332.23	1,278.32	167.31	-88.09	188.98	0.00	0.00	0.00	0.00
1,400.00	16.53	332.23	1,374.19	192.48	-101.35	217.40	0.00	0.00	0.00	0.00
1,500.00	16.53	332.23	1,470.06	217.65	-114.60	245.83	0.00	0.00	0.00	0.00
1,600.00	16.53	332.23	1,565.92	242.81	-127.85	274.26	0.00	0.00	0.00	0.00
1,700.00	16.53	332.23	1,661.79	267.98	-141.10	302.69	0.00	0.00	0.00	0.00
1,800.00	16.53	332.23	1,757.66	293.15	-154.36	331.12	0.00	0.00	0.00	0.00
1,900.00	16.53	332.23	1,853.53	318.32	-167.61	359.54	0.00	0.00	0.00	0.00
2,000.00	16.53	332.23	1,949.40	343.49	-180.86	387.97	0.00	0.00	0.00	0.00
2,100.00	16.53	332.23	2,045.27	368.66	-194.11	416.40	0.00	0.00	0.00	0.00
2,200.00	16.53	332.23	2,141.14	393.83	-207.37	444.83	0.00	0.00	0.00	0.00
2,300.00	16.53	332.23	2,237.01	419.00	-220.62	473.26	0.00	0.00	0.00	0.00
2,380.00	16.53	332.23	2,313.70	439.13	-231.22	496.00	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,400.00	16.53	332.23	2,332.88	444.16	-233.87	501.69	0.00	0.00	0.00	0.00
2,500.00	16.53	332.23	2,428.75	469.33	-247.12	530.11	0.00	0.00	0.00	0.00
2,600.00	16.53	332.23	2,524.62	494.50	-260.38	558.54	0.00	0.00	0.00	0.00
2,700.00	16.53	332.23	2,620.49	519.67	-273.63	586.97	0.00	0.00	0.00	0.00
2,800.00	16.53	332.23	2,716.36	544.84	-286.88	615.40	0.00	0.00	0.00	0.00
2,900.00	16.53	332.23	2,812.22	570.01	-300.13	643.83	0.00	0.00	0.00	0.00
3,000.00	16.53	332.23	2,908.09	595.18	-313.39	672.26	0.00	0.00	0.00	0.00
3,100.00	16.53	332.23	3,003.96	620.35	-326.64	700.68	0.00	0.00	0.00	0.00
3,200.00	16.53	332.23	3,099.83	645.51	-339.89	729.11	0.00	0.00	0.00	0.00
3,300.00	16.53	332.23	3,195.70	670.68	-353.14	757.54	0.00	0.00	0.00	0.00
3,400.00	16.53	332.23	3,291.57	695.85	-366.40	785.97	0.00	0.00	0.00	0.00
3,470.00	16.53	332.23	3,358.68	713.47	-375.67	805.87	0.00	0.00	0.00	0.00
16.53 Inclination										
3,500.00	16.53	332.23	3,387.44	721.02	-379.65	814.40	0.00	0.00	0.00	0.00
3,600.00	16.53	332.23	3,483.31	746.19	-392.90	842.82	0.00	0.00	0.00	0.00
3,700.00	16.53	332.23	3,579.18	771.36	-406.15	871.25	0.00	0.00	0.00	0.00
3,800.00	16.53	332.23	3,675.05	796.53	-419.41	899.68	0.00	0.00	0.00	0.00
3,900.00	16.53	332.23	3,770.92	821.70	-432.66	928.11	0.00	0.00	0.00	0.00
4,000.00	16.53	332.23	3,866.79	846.86	-445.91	956.54	0.00	0.00	0.00	0.00
4,100.00	16.53	332.23	3,962.66	872.03	-459.16	984.97	0.00	0.00	0.00	0.00
4,200.00	16.53	332.23	4,058.52	897.20	-472.42	1,013.39	0.00	0.00	0.00	0.00
4,300.00	16.53	332.23	4,154.39	922.37	-485.67	1,041.82	0.00	0.00	0.00	0.00
4,400.00	16.53	332.23	4,250.26	947.54	-498.92	1,070.25	0.00	0.00	0.00	0.00
4,500.00	16.53	332.23	4,346.13	972.71	-512.17	1,098.68	0.00	0.00	0.00	0.00
4,600.00	16.53	332.23	4,442.00	997.88	-525.43	1,127.11	0.00	0.00	0.00	0.00

Plan Report for BM 27-44D - 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	16.53	332.23	4,537.87	1,023.05	-538.68	1,155.53	0.00	0.00	0.00	0.00
4,800.00	16.53	332.23	4,633.74	1,048.21	-551.93	1,183.96	0.00	0.00	0.00	0.00
4,900.00	16.53	332.23	4,729.61	1,073.38	-565.18	1,212.39	0.00	0.00	0.00	0.00
5,000.00	16.53	332.23	4,825.48	1,098.55	-578.44	1,240.82	0.00	0.00	0.00	0.00
5,100.00	16.53	332.23	4,921.35	1,123.72	-591.69	1,269.25	0.00	0.00	0.00	0.00
5,200.00	16.53	332.23	5,017.22	1,148.89	-604.94	1,297.68	0.00	0.00	0.00	0.00
5,300.00	16.53	332.23	5,113.09	1,174.06	-618.19	1,326.10	0.00	0.00	0.00	0.00
5,400.00	16.53	332.23	5,208.95	1,199.23	-631.45	1,354.53	0.00	0.00	0.00	0.00
5,500.00	16.53	332.23	5,304.82	1,224.40	-644.70	1,382.96	0.00	0.00	0.00	0.00
5,600.00	16.53	332.23	5,400.69	1,249.56	-657.95	1,411.39	0.00	0.00	0.00	0.00
5,700.00	16.53	332.23	5,496.56	1,274.73	-671.20	1,439.82	0.00	0.00	0.00	0.00
5,800.00	16.53	332.23	5,592.43	1,299.90	-684.46	1,468.25	0.00	0.00	0.00	0.00
5,868.91	16.53	332.23	5,658.50	1,317.25	-693.59	1,487.84	0.00	0.00	0.00	0.00
Begin Drop at 5868.91ft										
5,900.00	16.06	332.23	5,688.34	1,324.96	-697.65	1,496.55	1.50	-1.50	0.00	180.00
6,000.00	14.56	332.23	5,784.79	1,348.33	-709.95	1,522.94	1.50	-1.50	0.00	180.00
6,100.00	13.06	332.23	5,881.89	1,369.45	-721.07	1,546.79	1.50	-1.50	0.00	180.00
6,200.00	11.56	332.23	5,979.59	1,388.31	-731.00	1,568.10	1.50	-1.50	0.00	180.00
6,300.00	10.06	332.23	6,077.81	1,404.90	-739.74	1,586.84	1.50	-1.50	0.00	180.00
6,400.00	8.56	332.23	6,176.49	1,419.22	-747.28	1,603.01	1.50	-1.50	0.00	180.00
6,440.00	7.96	332.23	6,216.08	1,424.30	-749.96	1,608.75	1.50	-1.50	0.00	-180.00
Drop Rate = 1.50°/100ft										
6,500.00	7.06	332.23	6,275.56	1,431.24	-753.61	1,616.59	1.50	-1.50	0.00	180.00
6,600.00	5.56	332.23	6,374.95	1,440.96	-758.73	1,627.57	1.50	-1.50	0.00	180.00
6,700.00	4.06	332.23	6,474.60	1,448.38	-762.64	1,635.95	1.50	-1.50	0.00	180.00
6,800.00	2.56	332.23	6,574.43	1,453.49	-765.32	1,641.72	1.50	-1.50	0.00	180.00
6,900.00	1.06	332.23	6,674.38	1,456.28	-766.80	1,644.88	1.50	-1.50	0.00	180.00
6,970.63	0.00	0.00	6,745.00	1,456.86	-767.10	1,645.53	1.50	-1.50	0.00	180.00
End Drop at 6970.63ft - Williams Fork - BM 27-44D Plan #1 Driller's Tgt										
6,970.64	0.00	243.43	6,745.01	1,456.86	-767.10	1,645.53	0.00	0.00	0.00	243.43
BM 27-44D Plan #1 Zone Tgt										
7,000.00	0.02	243.43	6,774.37	1,456.86	-767.11	1,645.53	0.08	0.08	0.00	243.43
7,100.00	0.10	243.43	6,874.37	1,456.81	-767.20	1,645.54	0.08	0.08	0.00	0.00
7,200.00	0.18	243.43	6,974.37	1,456.70	-767.43	1,645.55	0.08	0.08	0.00	0.00
7,300.00	0.26	243.43	7,074.37	1,456.52	-767.78	1,645.57	0.08	0.08	0.00	0.00
7,400.00	0.34	243.43	7,174.37	1,456.28	-768.25	1,645.60	0.08	0.08	0.00	0.00
7,500.00	0.42	243.43	7,274.37	1,455.98	-768.85	1,645.64	0.08	0.08	0.00	0.00
7,600.00	0.50	243.43	7,374.37	1,455.62	-769.57	1,645.68	0.08	0.08	0.00	0.00
7,700.00	0.58	243.43	7,474.36	1,455.20	-770.42	1,645.73	0.08	0.08	0.00	0.00
7,800.00	0.66	243.43	7,574.35	1,454.71	-771.39	1,645.79	0.08	0.08	0.00	0.00
7,900.00	0.74	243.43	7,674.35	1,454.16	-772.49	1,645.86	0.08	0.08	0.00	0.00
7,952.66	0.79	243.43	7,727.00	1,453.85	-773.12	1,645.90	0.08	0.08	0.00	0.00
Top of Gas										
8,000.00	0.82	243.43	7,774.34	1,453.55	-773.72	1,645.94	0.08	0.08	0.00	0.00
8,100.00	0.90	243.43	7,874.33	1,452.88	-775.06	1,646.02	0.08	0.08	0.00	0.00
8,200.00	0.98	243.43	7,974.31	1,452.14	-776.54	1,646.11	0.08	0.08	0.00	0.00
8,300.00	1.06	243.43	8,074.30	1,451.34	-778.13	1,646.21	0.08	0.08	0.00	0.00
8,400.00	1.14	243.43	8,174.28	1,450.48	-779.86	1,646.31	0.08	0.08	0.00	0.00
8,500.00	1.22	243.43	8,274.26	1,449.56	-781.70	1,646.42	0.08	0.08	0.00	0.00
8,600.00	1.30	243.43	8,374.23	1,448.57	-783.68	1,646.55	0.08	0.08	0.00	0.00
8,700.00	1.38	243.43	8,474.21	1,447.52	-785.77	1,646.67	0.08	0.08	0.00	0.00
8,800.00	1.46	243.43	8,574.17	1,446.41	-788.00	1,646.81	0.08	0.08	0.00	0.00
8,900.00	1.54	243.43	8,674.14	1,445.24	-790.34	1,646.95	0.08	0.08	0.00	0.00
8,946.75	1.58	243.43	8,720.87	1,444.67	-791.48	1,647.02	0.08	0.08	0.00	0.00
9,000.00	1.54	243.43	8,774.10	1,444.02	-792.78	1,647.10	0.08	-0.08	0.00	180.00
9,100.00	1.46	243.43	8,874.07	1,442.85	-795.12	1,647.25	0.08	-0.08	0.00	180.00
9,200.00	1.39	243.43	8,974.04	1,441.73	-797.35	1,647.38	0.08	-0.08	0.00	180.00
9,300.00	1.31	243.43	9,074.01	1,440.68	-799.46	1,647.51	0.08	-0.08	0.00	180.00
9,400.00	1.24	243.43	9,173.98	1,439.68	-801.45	1,647.63	0.08	-0.08	0.00	180.00

Plan Report for BM 27-44D - 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	1.16	243.43	9,273.96	1,438.75	-803.31	1,647.75	0.08	-0.08	0.00	180.00
9,514.04	1.15	243.43	9,288.00	1,438.62	-803.57	1,647.76	0.08	-0.08	0.00	180.00
Cameo										
9,600.00	1.08	243.43	9,373.94	1,437.87	-805.07	1,647.86	0.08	-0.08	0.00	-180.00
9,700.00	1.01	243.43	9,473.93	1,437.06	-806.70	1,647.96	0.08	-0.08	0.00	180.00
9,800.00	0.93	243.43	9,573.91	1,436.30	-808.21	1,648.05	0.08	-0.08	0.00	180.00
9,887.10	0.86	243.43	9,661.00	1,435.69	-809.43	1,648.12	0.08	-0.08	0.00	180.00
Rollins										
9,900.00	0.86	243.43	9,673.90	1,435.60	-809.60	1,648.13	0.08	-0.08	0.00	-180.00
10,000.00	0.78	243.43	9,773.89	1,434.97	-810.88	1,648.21	0.08	-0.08	0.00	180.00
10,100.00	0.70	243.43	9,873.88	1,434.39	-812.04	1,648.28	0.08	-0.08	0.00	180.00
10,200.00	0.63	243.43	9,973.88	1,433.87	-813.07	1,648.35	0.08	-0.08	0.00	180.00
10,235.13	0.60	243.43	10,009.00	1,433.70	-813.41	1,648.37	0.08	-0.08	0.00	-180.00
Cozzette										
10,300.00	0.55	243.43	10,073.87	1,433.41	-813.99	1,648.40	0.08	-0.08	0.00	180.00
10,400.00	0.47	243.43	10,173.87	1,433.01	-814.79	1,648.45	0.08	-0.08	0.00	180.00
10,500.00	0.40	243.43	10,273.86	1,432.67	-815.47	1,648.49	0.08	-0.08	0.00	180.00
10,532.14	0.37	243.43	10,306.00	1,432.57	-815.67	1,648.51	0.08	-0.08	0.00	-180.00
Corcora										
10,600.00	0.32	243.43	10,373.86	1,432.39	-816.04	1,648.53	0.08	-0.08	0.00	180.00
10,700.00	0.25	243.43	10,473.86	1,432.17	-816.48	1,648.56	0.08	-0.08	0.00	180.00
10,773.14	0.19	243.43	10,547.00	1,432.04	-816.73	1,648.57	0.08	-0.08	0.00	180.00
Mancos										
10,800.00	0.17	243.43	10,573.86	1,432.00	-816.80	1,648.58	0.08	-0.08	0.00	-180.00
10,900.00	0.09	243.43	10,673.86	1,431.90	-817.01	1,648.59	0.08	-0.08	0.00	180.00
11,000.00	0.02	243.43	10,773.86	1,431.86	-817.10	1,648.59	0.08	-0.08	0.00	180.00
11,023.14	0.00	0.00	10,797.00	1,431.86	-817.10	1,648.59	0.08	-0.08	503.76	180.00
Total Depth = 11023.14ft - BM 27-44D 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
635.00	633.60	25.92	-13.65	Build Rate = 2.00°/100ft
1,051.29	1,039.88	104.71	-55.13	End Build at 1051.29ft
3,470.00	3,358.68	713.47	-375.67	16.53 Inclination
5,868.91	5,658.50	1,317.25	-693.59	Begin Drop at 5868.91ft
6,440.00	6,216.08	1,424.30	-749.96	Drop Rate = 1.50°/100ft
6,970.63	6,745.00	1,456.86	-767.10	End Drop at 6970.63ft
11,023.14	10,797.00	1,431.86	-817.10	Total Depth = 11023.14ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	BM 27-44D Plan #1 BH Tgt	330.29	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,023.14	Plan #1 Proposal	MWD

Plan Report for BM 27-44D - Plan #1 Proposal

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,380.00	2,313.70	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,970.63	6,745.00	Williams Fork		0.00	
7,952.66	7,727.00	Top of Gas		0.00	
9,514.04	9,288.00	Cameo		0.00	
9,887.10	9,661.00	Rollins		0.00	
10,235.13	10,009.00	Cozzette		0.00	
10,532.14	10,306.00	Corcora		0.00	
10,773.14	10,547.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 27-44D Plan #1 Zone Tgt	6,745.00	1,431.86	-817.10	Rectangle
BM 27-44D 100' FSL Hardline Tgt	0.00	0.00	0.00	Polygon
BM 27-44D Plan #1 BH Tgt	10,797.00	1,431.86	-817.10	Point
BM 27-44D Plan #1 Driller's Tgt	6,745.00	1,456.86	-767.10	Rectangle

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35D2 PAD) - BM 27-44D - 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 27-44D - Slot B 1

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: 579,197.92 ft N, 1,301,233.56 ft E

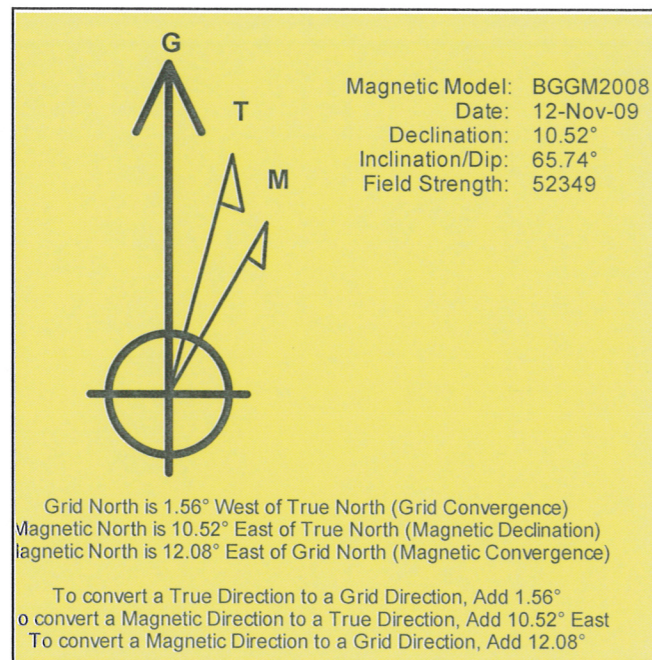
Geographical Coordinates of Well: 39° 23' 51.28" N, 107° 58' 22.51" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,023.14ft

the Bottom Hole Displacement is 1,648.59ft in the Direction of 330.29° (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 27-44D
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
1051.29	16.53	332.23	1039.88	104.71	-55.13	2.00	332.23	118.27
5868.91	16.53	332.23	5658.50	1317.25	-693.59	0.00	0.00	1487.84
6970.63	0.00	0.00	6745.00	1456.86	-767.10	1.50	180.00	1645.53
8946.75	1.58	243.43	8720.87	1444.67	-791.48	0.08	243.43	1647.02
11023.14	0.00	360.00	10797.00	1431.86	-817.10	0.08	180.00	1648.59

BM 27-44D Plan #1 Driller's Tgt
BM 27-44D Plan #1 BH Tgt

WELL DETAILS: BM 27-44D

Ground Level: 8846.00
Northing: 579197.92 Easting: 1301233.56 Latitude: 39° 23' 51.283 N Longitude: 107° 58' 22.507 W B 1

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 27-44D 100' FSL Hardline Tgt	0.00	0.00	0.00	Polygon
BM 27-44D Plan #1 Driller's Tgt	6745.00	1456.86	-767.10	Rectangle (Sides: L25.00 W25.00)
BM 27-44D Plan #1 Zone Tgt	6745.00	1431.86	-817.10	Rectangle (Sides: L100.00 W200.00)
BM 27-44D Plan #1 BH Tgt	10797.00	1431.86	-817.10	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
6745.00	6970.63	Williams Fork
7727.00	7952.66	Top of Gas
9288.00	9514.04	Cameo
9661.00	9887.10	Rollins
10009.00	10235.13	Cozzette
10306.00	10532.14	Corcora
10547.00	10773.14	Mancos

