

Noble Energy (Rockies)

Garfield County, CO

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

BM 35-23D - A 3

Wellbore #1

Plan: Plan #1

Sperry Drilling Services

Proposal Report

12 November, 2009

Well Coordinates: 577,344.00 N, 1,301,614.30 E (39° 23' 33.07" N, 107° 58' 17.02" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin:

Centered on Well BM 35-23D - Slot A 3

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 35-23D - 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										
300.00	1.50	115.31	299.99	-0.42	0.89	0.98	2.00	2.00	0.00	115.31
400.00	3.50	115.31	399.89	-2.28	4.83	5.34	2.00	2.00	0.00	0.00
500.00	5.50	115.31	499.58	-5.64	11.92	13.18	2.00	2.00	0.00	0.00
560.00	6.70	115.31	559.24	-8.36	17.69	19.56	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
600.00	7.50	115.31	598.93	-10.48	22.16	24.50	2.00	2.00	0.00	0.00
700.00	9.50	115.31	697.83	-16.79	35.52	39.27	2.00	2.00	0.00	0.00
800.00	11.50	115.31	796.15	-24.58	51.99	57.49	2.00	2.00	0.00	0.00
900.00	13.50	115.31	893.77	-33.83	71.56	79.12	2.00	2.00	0.00	0.00
957.14	14.64	115.31	949.20	-39.77	84.12	93.01	2.00	2.00	0.00	0.00
End Build at 957.14ft										
1,000.00	14.64	115.31	990.66	-44.40	93.91	103.84	0.00	0.00	0.00	0.00
1,100.00	14.64	115.31	1,087.42	-55.21	116.77	129.11	0.00	0.00	0.00	0.00
1,200.00	14.64	115.31	1,184.17	-66.01	139.62	154.37	0.00	0.00	0.00	0.00
1,300.00	14.64	115.31	1,280.92	-76.82	162.47	179.64	0.00	0.00	0.00	0.00
1,400.00	14.64	115.31	1,377.67	-87.63	185.33	204.91	0.00	0.00	0.00	0.00
1,500.00	14.64	115.31	1,474.42	-98.43	208.18	230.18	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
1,600.00	14.64	115.31	1,571.18	-109.24	231.03	255.45	0.00	0.00	0.00	0.00
1,700.00	14.64	115.31	1,667.93	-120.04	253.89	280.72	0.00	0.00	0.00	0.00
1,800.00	14.64	115.31	1,764.68	-130.85	276.74	305.99	0.00	0.00	0.00	0.00
1,900.00	14.64	115.31	1,861.43	-141.65	299.59	331.25	0.00	0.00	0.00	0.00
2,000.00	14.64	115.31	1,958.18	-152.46	322.45	356.52	0.00	0.00	0.00	0.00
2,100.00	14.64	115.31	2,054.94	-163.26	345.30	381.79	0.00	0.00	0.00	0.00
2,200.00	14.64	115.31	2,151.69	-174.07	368.15	407.06	0.00	0.00	0.00	0.00
2,300.00	14.64	115.31	2,248.44	-184.87	391.01	432.33	0.00	0.00	0.00	0.00
2,400.00	14.64	115.31	2,345.19	-195.68	413.86	457.60	0.00	0.00	0.00	0.00
2,500.00	14.64	115.31	2,441.95	-206.49	436.71	482.87	0.00	0.00	0.00	0.00
2,600.00	14.64	115.31	2,538.70	-217.29	459.57	508.13	0.00	0.00	0.00	0.00
2,700.00	14.64	115.31	2,635.45	-228.10	482.42	533.40	0.00	0.00	0.00	0.00
2,800.00	14.64	115.31	2,732.20	-238.90	505.28	558.67	0.00	0.00	0.00	0.00
2,900.00	14.64	115.31	2,828.95	-249.71	528.13	583.94	0.00	0.00	0.00	0.00
3,000.00	14.64	115.31	2,925.71	-260.51	550.98	609.21	0.00	0.00	0.00	0.00
3,100.00	14.64	115.31	3,022.46	-271.32	573.84	634.48	0.00	0.00	0.00	0.00
3,200.00	14.64	115.31	3,119.21	-282.12	596.69	659.74	0.00	0.00	0.00	0.00
3,300.00	14.64	115.31	3,215.96	-292.93	619.54	685.01	0.00	0.00	0.00	0.00
3,400.00	14.64	115.31	3,312.71	-303.73	642.40	710.28	0.00	0.00	0.00	0.00
3,500.00	14.64	115.31	3,409.47	-314.54	665.25	735.55	0.00	0.00	0.00	0.00
3,600.00	14.64	115.31	3,506.22	-325.35	688.10	760.82	0.00	0.00	0.00	0.00
14.64 Inclination										
3,700.00	14.64	115.31	3,602.97	-336.15	710.96	786.09	0.00	0.00	0.00	0.00
3,800.00	14.64	115.31	3,699.72	-346.96	733.81	811.36	0.00	0.00	0.00	0.00
3,900.00	14.64	115.31	3,796.47	-357.76	756.66	836.62	0.00	0.00	0.00	0.00
4,000.00	14.64	115.31	3,893.23	-368.57	779.52	861.89	0.00	0.00	0.00	0.00
4,100.00	14.64	115.31	3,989.98	-379.37	802.37	887.16	0.00	0.00	0.00	0.00
4,200.00	14.64	115.31	4,086.73	-390.18	825.22	912.43	0.00	0.00	0.00	0.00
4,300.00	14.64	115.31	4,183.48	-400.98	848.08	937.70	0.00	0.00	0.00	0.00
4,400.00	14.64	115.31	4,280.23	-411.79	870.93	962.97	0.00	0.00	0.00	0.00
4,500.00	14.64	115.31	4,376.99	-422.59	893.78	988.24	0.00	0.00	0.00	0.00
4,600.00	14.64	115.31	4,473.74	-433.40	916.64	1,013.50	0.00	0.00	0.00	0.00
4,700.00	14.64	115.31	4,570.49	-444.21	939.49	1,038.77	0.00	0.00	0.00	0.00
4,800.00	14.64	115.31	4,667.24	-455.01	962.34	1,064.04	0.00	0.00	0.00	0.00
4,900.00	14.64	115.31	4,763.99	-465.82	985.20	1,089.31	0.00	0.00	0.00	0.00

Plan Report for BM 35-23D - 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 (°)
5,000.00	14.64	115.31	4,860.75	-476.62	1,008.05	1,114.58	0.00	0.00	0.00	0.00
5,100.00	14.64	115.31	4,957.50	-487.43	1,030.90	1,139.85	0.00	0.00	0.00	0.00
5,200.00	14.64	115.31	5,054.25	-498.23	1,053.76	1,165.12	0.00	0.00	0.00	0.00
5,300.00	14.64	115.31	5,151.00	-509.04	1,076.61	1,190.38	0.00	0.00	0.00	0.00
5,400.00	14.64	115.31	5,247.75	-519.84	1,099.46	1,215.65	0.00	0.00	0.00	0.00
5,500.00	14.64	115.31	5,344.51	-530.65	1,122.32	1,240.92	0.00	0.00	0.00	0.00
5,600.00	14.64	115.31	5,441.26	-541.45	1,145.17	1,266.19	0.00	0.00	0.00	0.00
5,700.00	14.64	115.31	5,538.01	-552.26	1,168.03	1,291.46	0.00	0.00	0.00	0.00
5,800.00	14.64	115.31	5,634.76	-563.07	1,190.88	1,316.73	0.00	0.00	0.00	0.00
5,900.00	14.64	115.31	5,731.52	-573.87	1,213.73	1,341.99	0.00	0.00	0.00	0.00
6,000.00	14.64	115.31	5,828.27	-584.68	1,236.59	1,367.26	0.00	0.00	0.00	0.00
6,100.00	14.64	115.31	5,925.02	-595.48	1,259.44	1,392.53	0.00	0.00	0.00	0.00
6,200.00	14.64	115.31	6,021.77	-606.29	1,282.29	1,417.80	0.00	0.00	0.00	0.00
6,214.09	14.64	115.31	6,035.40	-607.81	1,285.51	1,421.36	0.00	0.00	0.00	0.00
Begin Drop at 6214.09ft										
6,300.00	13.35	115.31	6,118.76	-616.69	1,304.30	1,442.13	1.50	-1.50	0.00	180.00
6,400.00	11.85	115.31	6,216.35	-626.02	1,324.03	1,463.94	1.50	-1.50	0.00	180.00
6,500.00	10.35	115.31	6,314.47	-634.25	1,341.44	1,483.19	1.50	-1.50	0.00	180.00
6,600.00	8.85	115.31	6,413.07	-641.38	1,356.52	1,499.87	1.50	-1.50	0.00	180.00
6,700.00	7.35	115.31	6,512.07	-647.41	1,369.26	1,513.96	1.50	-1.50	0.00	180.00
6,800.00	5.85	115.31	6,611.40	-652.32	1,379.66	1,525.46	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,900.00	4.35	115.31	6,711.00	-656.13	1,387.70	1,534.35	1.50	-1.50	0.00	-180.00
7,000.00	2.85	115.31	6,810.80	-658.81	1,393.39	1,540.63	1.50	-1.50	0.00	180.00
7,100.00	1.35	115.31	6,910.73	-660.38	1,396.71	1,544.30	1.50	-1.50	0.00	180.00
7,189.87	0.01	115.31	7,000.59	-660.84	1,397.67	1,545.37	1.50	-1.50	0.00	-180.00
BM 35-23D Plan #1 Zone Tgt										
7,190.28	0.00	360.00	7,001.00	-660.84	1,397.67	1,545.37	1.50	-1.50	0.00	-180.00
End Drop at 7190.28ft - Williams Fork - BM 35-23D Plan #1 Driller's Tgt										
7,200.00	0.01	243.44	7,010.72	-660.84	1,397.67	1,545.37	0.09	0.09	0.00	243.44
7,300.00	0.10	243.44	7,110.72	-660.88	1,397.59	1,545.31	0.09	0.09	0.00	0.00
7,400.00	0.19	243.44	7,210.72	-660.99	1,397.36	1,545.17	0.09	0.09	0.00	0.00
7,500.00	0.28	243.44	7,310.72	-661.18	1,397.00	1,544.92	0.09	0.09	0.00	0.00
7,600.00	0.37	243.44	7,410.72	-661.43	1,396.49	1,544.59	0.09	0.09	0.00	0.00
7,700.00	0.46	243.44	7,510.72	-661.75	1,395.84	1,544.16	0.09	0.09	0.00	0.00
7,800.00	0.55	243.44	7,610.71	-662.15	1,395.06	1,543.64	0.09	0.09	0.00	0.00
7,900.00	0.64	243.44	7,710.71	-662.61	1,394.13	1,543.02	0.09	0.09	0.00	0.00
8,000.00	0.73	243.44	7,810.70	-663.14	1,393.06	1,542.31	0.09	0.09	0.00	0.00
8,100.00	0.82	243.44	7,910.69	-663.75	1,391.86	1,541.51	0.09	0.09	0.00	0.00
8,200.00	0.91	243.44	8,010.68	-664.42	1,390.51	1,540.61	0.09	0.09	0.00	0.00
8,279.33	0.98	243.44	8,090.00	-665.01	1,389.34	1,539.83	0.09	0.09	0.00	0.00
Top of Gas										
8,300.00	1.00	243.44	8,110.67	-665.16	1,389.02	1,539.62	0.09	0.09	0.00	0.00
8,400.00	1.09	243.44	8,210.65	-665.98	1,387.39	1,538.54	0.09	0.09	0.00	0.00
8,500.00	1.18	243.44	8,310.63	-666.86	1,385.62	1,537.36	0.09	0.09	0.00	0.00
8,600.00	1.27	243.44	8,410.61	-667.82	1,383.71	1,536.09	0.09	0.09	0.00	0.00
8,700.00	1.36	243.44	8,510.58	-668.84	1,381.66	1,534.73	0.09	0.09	0.00	0.00
8,800.00	1.45	243.44	8,610.55	-669.94	1,379.47	1,533.27	0.09	0.09	0.00	0.00
8,900.00	1.54	243.44	8,710.52	-671.10	1,377.14	1,531.73	0.09	0.09	0.00	0.00
9,000.00	1.63	243.44	8,810.48	-672.34	1,374.66	1,530.08	0.09	0.09	0.00	0.00
9,056.78	1.68	243.44	8,867.23	-673.07	1,373.20	1,529.11	0.09	0.09	0.00	0.00
9,100.00	1.64	243.44	8,910.44	-673.63	1,372.08	1,528.36	0.09	-0.09	0.00	180.00
9,200.00	1.56	243.44	9,010.40	-674.88	1,369.58	1,526.70	0.09	-0.09	0.00	180.00
9,300.00	1.47	243.44	9,110.36	-676.06	1,367.22	1,525.14	0.09	-0.09	0.00	180.00
9,400.00	1.38	243.44	9,210.33	-677.18	1,364.99	1,523.66	0.09	-0.09	0.00	180.00
9,500.00	1.30	243.44	9,310.30	-678.22	1,362.90	1,522.26	0.09	-0.09	0.00	180.00
9,595.72	1.21	243.44	9,406.00	-679.16	1,361.02	1,521.02	0.09	-0.09	0.00	180.00
Cameo										
9,600.00	1.21	243.44	9,410.28	-679.20	1,360.94	1,520.96	0.09	-0.09	0.00	-180.00

Plan Report for BM 35-23D - 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 (°)
9,700.00	1.12	243.44	9,510.26	-680.11	1,359.12	1,519.75	0.09	-0.09	0.00	180.00
9,800.00	1.04	243.44	9,610.24	-680.96	1,357.43	1,518.63	0.09	-0.09	0.00	180.00
9,900.00	0.95	243.44	9,710.23	-681.73	1,355.87	1,517.60	0.09	-0.09	0.00	180.00
10,000.00	0.87	243.44	9,810.21	-682.44	1,354.45	1,516.65	0.09	-0.09	0.00	180.00
10,076.79	0.80	243.44	9,887.00	-682.94	1,353.46	1,515.99	0.09	-0.09	0.00	-180.00
Rollins										
10,100.00	0.78	243.44	9,910.20	-683.09	1,353.17	1,515.80	0.09	-0.09	0.00	180.00
10,200.00	0.69	243.44	10,010.20	-683.66	1,352.02	1,515.04	0.09	-0.09	0.00	180.00
10,300.00	0.61	243.44	10,110.19	-684.17	1,351.00	1,514.36	0.09	-0.09	0.00	180.00
10,382.82	0.54	243.44	10,193.00	-684.54	1,350.27	1,513.87	0.09	-0.09	0.00	-180.00
Cozzette										
10,400.00	0.52	243.44	10,210.18	-684.61	1,350.12	1,513.78	0.09	-0.09	0.00	180.00
10,500.00	0.43	243.44	10,310.18	-684.98	1,349.38	1,513.28	0.09	-0.09	0.00	180.00
10,600.00	0.35	243.44	10,410.18	-685.29	1,348.77	1,512.87	0.09	-0.09	0.00	180.00
10,621.82	0.33	243.44	10,432.00	-685.34	1,348.65	1,512.80	0.09	-0.09	0.00	-180.00
Corcora										
10,700.00	0.26	243.44	10,510.18	-685.52	1,348.29	1,512.56	0.09	-0.09	0.00	180.00
10,753.82	0.22	243.44	10,564.00	-685.62	1,348.09	1,512.42	0.09	-0.09	0.00	180.00
Mancos										
10,800.00	0.18	243.44	10,610.18	-685.70	1,347.95	1,512.33	0.09	-0.09	0.00	-180.00
10,900.00	0.09	243.44	10,710.18	-685.80	1,347.74	1,512.19	0.09	-0.09	0.00	-180.00
11,000.00	0.00	243.44	10,810.18	-685.84	1,347.67	1,512.14	0.09	-0.09	0.00	180.00
11,003.82	0.00	0.00	10,814.00	-685.84	1,347.67	1,512.14	0.09	-0.09	3,051.31	179.94
Total Depth = 11003.82ft - BM 35-23D 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
560.00	559.24	-8.36	17.69	Build Rate = 2.00°/100ft
957.14	949.20	-39.77	84.12	End Build at 957.14ft
3,600.00	3,506.22	-325.35	688.10	14.64 Inclination
6,214.09	6,035.40	-607.81	1,285.51	Begin Drop at 6214.09ft
6,800.00	6,611.40	-652.32	1,379.66	Drop Rate = 1.50°/100ft
7,190.28	7,001.00	-660.84	1,397.67	End Drop at 7190.28ft
11,003.82	10,814.00	-685.84	1,347.67	Total Depth = 11003.82ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	BM 35-23D Plan #1 BH Tgt	116.97	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,003.82	Plan #1	MWD

Plan Report for BM 35-23D - Plan #1**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,474.42	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,190.28	7,001.00	Williams Fork		0.00	
8,279.33	8,090.00	Top of Gas		0.00	
9,595.72	9,406.00	Cameo		0.00	
10,076.79	9,887.00	Rollins		0.00	
10,382.82	10,193.00	Cozzette		0.00	
10,621.82	10,432.00	Corcora		0.00	
10,753.82	10,564.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 35-23D Plan #1 BH Tgt	10,814.00	-685.84	1,347.67	Point
BM 35-23D Plan #1 Driller's Tgt	7,001.00	-660.84	1,397.67	Rectangle
BM 35-23D Plan #1 Zone Tgt	7,001.00	-685.84	1,347.67	Rectangle

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - BM 35-23D - 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 35-23D - Slot A 3

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

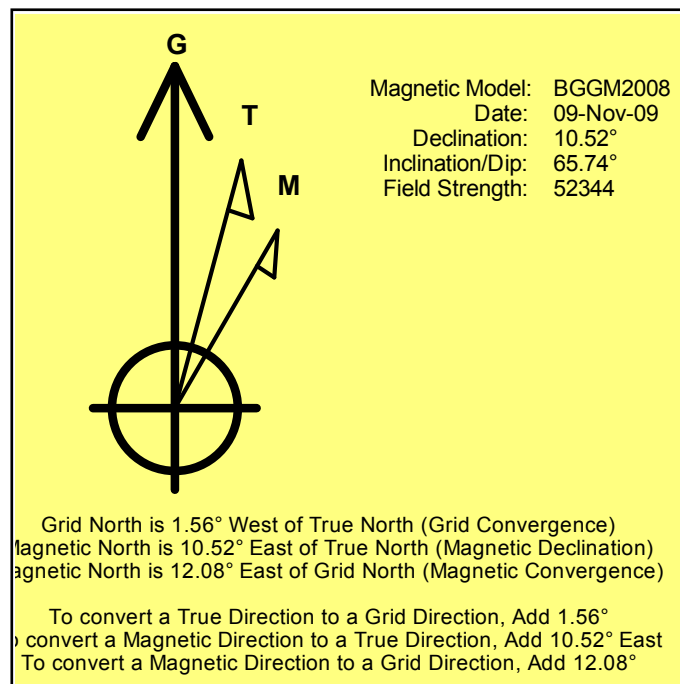
Grid Coordinates of Well: 577,344.00 ft N, 1,301,614.30 ft E

Geographical Coordinates of Well: 39° 23' 33.07" N, 107° 58' 17.02" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,003.82ft the Bottom Hole Displacement is 1,512.14ft in the Direction of 116.97° (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 35-23D
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	
957.14	14.64	115.31	949.20	-39.77	84.12	2.00	115.31	93.01	
6214.09	14.64	115.31	6035.41	-607.81	1285.51	0.00	0.00	1421.36	
7190.28	0.00	360.00	7001.00	-660.84	1397.67	1.50	180.00	1545.37	BM 35-23D Plan #1 Driller's Tgt
9056.78	1.68	243.44	8867.23	-673.07	1373.20	0.09	243.44	1529.11	
11003.82	0.00	360.00	10814.00	-685.84	1347.67	0.09	180.00	1512.14	BM 35-23D Plan #1 BH Tgt

WELL DETAILS: BM 35-23D

Ground Level: 9203.00
Northing: 0.0007394.00
Easting: 1301614.30
Latitude: 39° 23' 33.068 N
Longitude: 107° 58' 17.017 W
A 3

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 35-23D Plan #1 Driller's Tgt	7001.00	-660.84	1397.67	Rectangle (Sides: L25.00 W25.00)
BM 35-23D Plan #1 Zone Tgt	7001.00	-685.84	1347.67	Rectangle (Sides: L100.00 W200.00)
BM 35-23D Plan #1 BH Tgt	10814.00	-685.84	1347.67	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7001.00	7190.28	Williams Fork
8090.00	8279.33	Top of Gas
9406.00	9595.72	Cameo
9887.00	10076.79	Rollins
10193.00	10382.82	Cozzette
10432.00	10621.82	Corcora
10564.00	10753.82	Mancos

