

Noble Energy (Rockies)

Garfield County, CO (NAD 27)

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

BM 35-12B - A10

Wellbore #1

Plan: Plan #1 Proposal

Sperry Drilling Services Proposal Report

04 February, 2010

Well Coordinates: 579,129.77 N, 1,301,235.27 E (39° 23' 50.61" N, 107° 58' 22.46" W)

Ground Level: 8,846.00 ft

Local Coordinate Origin:

Centered on Well BM 35-12B - Slot A10

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 35-12B - 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	131.24	299.99	-0.65	0.74	0.98	2.00	2.00	0.00	131.24
345.00	2.40	131.24	344.96	-1.66	1.89	2.51	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
400.00	3.50	131.24	399.89	-3.52	4.02	5.33	2.00	2.00	0.00	0.00
471.97	4.94	131.24	471.66	-7.01	8.00	10.61	2.00	2.00	0.00	0.00
End Build at 470.32ft										
500.00	5.50	131.24	499.58	-8.69	9.92	13.15	2.00	2.00	0.00	0.00
541.31	6.33	131.24	540.67	-11.50	13.12	17.39	2.00	2.00	0.00	0.00
600.00	6.33	131.24	599.00	-15.76	17.98	23.84	0.00	0.00	0.00	0.00
700.00	6.33	131.24	698.39	-23.03	26.27	34.82	0.00	0.00	0.00	0.00
800.00	6.33	131.24	797.78	-30.29	34.55	45.80	0.00	0.00	0.00	0.00
900.00	6.33	131.24	897.17	-37.55	42.84	56.79	0.00	0.00	0.00	0.00
1,000.00	6.33	131.24	996.56	-44.82	51.12	67.77	0.00	0.00	0.00	0.00
1,100.00	6.33	131.24	1,095.96	-52.08	59.41	78.76	0.00	0.00	0.00	0.00
1,200.00	6.33	131.24	1,195.35	-59.35	67.69	89.74	0.00	0.00	0.00	0.00
1,300.00	6.33	131.24	1,294.74	-66.61	75.98	100.73	0.00	0.00	0.00	0.00
1,400.00	6.33	131.24	1,394.13	-73.87	84.27	111.71	0.00	0.00	0.00	0.00
1,500.00	6.33	131.24	1,493.52	-81.14	92.55	122.69	0.00	0.00	0.00	0.00
1,600.00	6.33	131.24	1,592.91	-88.40	100.84	133.68	0.00	0.00	0.00	0.00
1,700.00	6.33	131.24	1,692.30	-95.67	109.12	144.66	0.00	0.00	0.00	0.00
1,800.00	6.33	131.24	1,791.69	-102.93	117.41	155.65	0.00	0.00	0.00	0.00
1,900.00	6.33	131.24	1,891.08	-110.19	125.69	166.63	0.00	0.00	0.00	0.00
2,000.00	6.33	131.24	1,990.48	-117.46	133.98	177.62	0.00	0.00	0.00	0.00
2,100.00	6.33	131.24	2,089.87	-124.72	142.26	188.60	0.00	0.00	0.00	0.00
2,200.00	6.33	131.24	2,189.26	-131.99	150.55	199.58	0.00	0.00	0.00	0.00
2,300.00	6.33	131.24	2,288.65	-139.25	158.84	210.57	0.00	0.00	0.00	0.00
2,380.00	6.33	131.24	2,368.16	-145.06	165.46	219.36	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
2,400.00	6.33	131.24	2,388.04	-146.51	167.12	221.55	0.00	0.00	0.00	0.00
2,500.00	6.33	131.24	2,487.43	-153.78	175.41	232.54	0.00	0.00	0.00	0.00
2,600.00	6.33	131.24	2,586.82	-161.04	183.69	243.52	0.00	0.00	0.00	0.00
2,700.00	6.33	131.24	2,686.21	-168.31	191.98	254.51	0.00	0.00	0.00	0.00
2,800.00	6.33	131.24	2,785.60	-175.57	200.26	265.49	0.00	0.00	0.00	0.00
2,900.00	6.33	131.24	2,884.99	-182.83	208.55	276.47	0.00	0.00	0.00	0.00
3,000.00	6.33	131.24	2,984.39	-190.10	216.83	287.46	0.00	0.00	0.00	0.00
3,100.00	6.33	131.24	3,083.78	-197.36	225.12	298.44	0.00	0.00	0.00	0.00
3,200.00	6.33	131.24	3,183.17	-204.63	233.41	309.43	0.00	0.00	0.00	0.00
3,300.00	6.33	131.24	3,282.56	-211.89	241.69	320.41	0.00	0.00	0.00	0.00
3,400.00	6.33	131.24	3,381.95	-219.15	249.98	331.40	0.00	0.00	0.00	0.00
3,470.00	6.33	131.24	3,451.52	-224.24	255.78	339.08	0.00	0.00	0.00	0.00
4.94 Inclination										
3,500.00	6.33	131.24	3,481.34	-226.42	258.26	342.38	0.00	0.00	0.00	0.00
3,600.00	6.33	131.24	3,580.73	-233.68	266.55	353.36	0.00	0.00	0.00	0.00
3,700.00	6.33	131.24	3,680.12	-240.94	274.83	364.35	0.00	0.00	0.00	0.00
3,800.00	6.33	131.24	3,779.51	-248.21	283.12	375.33	0.00	0.00	0.00	0.00
3,900.00	6.33	131.24	3,878.91	-255.47	291.40	386.32	0.00	0.00	0.00	0.00
4,000.00	6.33	131.24	3,978.30	-262.74	299.69	397.30	0.00	0.00	0.00	0.00
4,100.00	6.33	131.24	4,077.69	-270.00	307.98	408.29	0.00	0.00	0.00	0.00
4,200.00	6.33	131.24	4,177.08	-277.26	316.26	419.27	0.00	0.00	0.00	0.00
4,300.00	6.33	131.24	4,276.47	-284.53	324.55	430.25	0.00	0.00	0.00	0.00
4,400.00	6.33	131.24	4,375.86	-291.79	332.83	441.24	0.00	0.00	0.00	0.00
4,500.00	6.33	131.24	4,475.25	-299.06	341.12	452.22	0.00	0.00	0.00	0.00
4,600.00	6.33	131.24	4,574.64	-306.32	349.40	463.21	0.00	0.00	0.00	0.00

Plan Report for BM 35-12B - 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	6.33	131.24	4,674.03	-313.58	357.69	474.19	0.00	0.00	0.00	0.00
4,800.00	6.33	131.24	4,773.43	-320.85	365.98	485.18	0.00	0.00	0.00	0.00
4,900.00	6.33	131.24	4,872.82	-328.11	374.26	496.16	0.00	0.00	0.00	0.00
5,000.00	6.33	131.24	4,972.21	-335.38	382.55	507.14	0.00	0.00	0.00	0.00
5,100.00	6.33	131.24	5,071.60	-342.64	390.83	518.13	0.00	0.00	0.00	0.00
5,200.00	6.33	131.24	5,170.99	-349.90	399.12	529.11	0.00	0.00	0.00	0.00
5,300.00	6.33	131.24	5,270.38	-357.17	407.40	540.10	0.00	0.00	0.00	0.00
5,400.00	6.33	131.24	5,369.77	-364.43	415.69	551.08	0.00	0.00	0.00	0.00
5,500.00	6.33	131.24	5,469.16	-371.70	423.97	562.07	0.00	0.00	0.00	0.00
5,600.00	6.33	131.24	5,568.55	-378.96	432.26	573.05	0.00	0.00	0.00	0.00
5,700.00	6.33	131.24	5,667.94	-386.22	440.55	584.03	0.00	0.00	0.00	0.00
5,800.00	6.33	131.24	5,767.34	-393.49	448.83	595.02	0.00	0.00	0.00	0.00
5,900.00	6.33	131.24	5,866.73	-400.75	457.12	606.00	0.00	0.00	0.00	0.00
6,000.00	6.33	131.24	5,966.12	-408.02	465.40	616.99	0.00	0.00	0.00	0.00
6,100.00	6.33	131.24	6,065.51	-415.28	473.69	627.97	0.00	0.00	0.00	0.00
6,200.00	6.33	131.24	6,164.90	-422.54	481.97	638.95	0.00	0.00	0.00	0.00
6,274.66	6.33	131.24	6,239.11	-427.97	488.16	647.16	0.00	0.00	0.00	0.00
6,300.00	5.95	131.24	6,264.30	-429.75	490.20	649.86	1.50	-1.50	0.00	180.00
6,363.30	5.00	131.24	6,327.31	-433.73	494.73	655.87	1.50	-1.50	0.00	180.00
Begin Drop at 6363.30ft										
6,400.00	4.45	131.24	6,363.89	-435.72	497.01	658.88	1.50	-1.50	0.00	-180.00
6,440.00	3.85	131.24	6,403.78	-437.63	499.18	661.77	1.50	-1.50	0.00	180.00
Drop Rate = 1.50°/100ft										
6,500.00	2.95	131.24	6,463.68	-439.97	501.85	665.31	1.50	-1.50	0.00	-180.00
6,600.00	1.45	131.24	6,563.60	-442.50	504.74	669.13	1.50	-1.50	0.00	180.00
6,692.59	0.06	131.24	6,656.18	-443.30	505.65	670.34	1.50	-1.50	0.00	180.00
End Drop at 6692.59ft										
6,696.40	0.00	130.91	6,659.99	-443.30	505.65	670.34	1.50	-1.50	-8.64	-180.00
BM 35-12B Plan #1 Zone Tgt										
6,696.41	0.00	0.00	6,660.00	-443.30	505.65	670.34	1.50	-1.48	-1,239,664.0	-179.67
Williams Fork - BM 35-12B Plan #1 Driller's Tgt										
6,700.00	0.00	243.43	6,663.59	-443.30	505.65	670.34	0.08	0.08	-3,247.90	-116.59
6,800.00	0.08	243.43	6,763.59	-443.33	505.58	670.32	0.08	0.08	0.00	0.00
6,900.00	0.16	243.43	6,863.59	-443.43	505.39	670.25	0.08	0.08	0.00	0.00
7,000.00	0.24	243.43	6,963.59	-443.59	505.07	670.15	0.08	0.08	0.00	0.00
7,100.00	0.32	243.43	7,063.59	-443.81	504.63	670.00	0.08	0.08	0.00	0.00
7,200.00	0.40	243.43	7,163.58	-444.09	504.07	669.81	0.08	0.08	0.00	0.00
7,300.00	0.48	243.43	7,263.58	-444.44	503.38	669.57	0.08	0.08	0.00	0.00
7,400.00	0.56	243.43	7,363.58	-444.85	502.56	669.29	0.08	0.08	0.00	0.00
7,500.00	0.64	243.43	7,463.57	-445.32	501.62	668.98	0.08	0.08	0.00	0.00
7,600.00	0.72	243.43	7,563.57	-445.85	500.55	668.61	0.08	0.08	0.00	0.00
7,678.44	0.79	243.43	7,642.00	-446.31	499.63	668.30	0.08	0.08	0.00	0.00
Top of Gas										
7,700.00	0.80	243.43	7,663.56	-446.44	499.36	668.21	0.08	0.08	0.00	0.00
7,800.00	0.88	243.43	7,763.55	-447.10	498.05	667.76	0.08	0.08	0.00	0.00
7,900.00	0.96	243.43	7,863.53	-447.82	496.60	667.28	0.08	0.08	0.00	0.00
8,000.00	1.04	243.43	7,963.52	-448.61	495.04	666.75	0.08	0.08	0.00	0.00
8,100.00	1.12	243.43	8,063.50	-449.45	493.35	666.17	0.08	0.08	0.00	0.00
8,200.00	1.20	243.43	8,163.48	-450.36	491.53	665.56	0.08	0.08	0.00	0.00
8,300.00	1.28	243.43	8,263.46	-451.33	489.59	664.90	0.08	0.08	0.00	0.00
8,400.00	1.36	243.43	8,363.43	-452.36	487.53	664.20	0.08	0.08	0.00	0.00
8,500.00	1.44	243.43	8,463.40	-453.46	485.34	663.46	0.08	0.08	0.00	0.00
8,600.00	1.52	243.43	8,563.36	-454.61	483.02	662.67	0.08	0.08	0.00	0.00
8,672.36	1.58	243.43	8,635.70	-455.49	481.27	662.08	0.08	0.08	0.00	0.00
8,700.00	1.56	243.43	8,663.33	-455.83	480.59	661.85	0.08	-0.08	0.00	180.00
8,800.00	1.48	243.43	8,763.29	-457.02	478.22	661.04	0.08	-0.08	0.00	180.00
8,900.00	1.41	243.43	8,863.26	-458.15	475.96	660.28	0.08	-0.08	0.00	180.00
9,000.00	1.33	243.43	8,963.23	-459.21	473.83	659.56	0.08	-0.08	0.00	180.00
9,100.00	1.26	243.43	9,063.21	-460.22	471.81	658.87	0.08	-0.08	0.00	180.00

Plan Report for BM 35-12B - 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 (°)
9,200.00	1.18	243.43	9,163.18	-461.17	469.91	658.23	0.08	-0.08	0.00	180.00
9,239.82	1.15	243.43	9,203.00	-461.54	469.18	657.98	0.08	-0.08	0.00	-180.00
Cameo										
9,300.00	1.10	243.43	9,263.16	-462.06	468.13	657.62	0.08	-0.08	0.00	180.00
9,400.00	1.03	243.43	9,363.15	-462.90	466.46	657.06	0.08	-0.08	0.00	180.00
9,500.00	0.95	243.43	9,463.13	-463.67	464.92	656.54	0.08	-0.08	0.00	180.00
9,600.00	0.87	243.43	9,563.12	-464.38	463.50	656.05	0.08	-0.08	0.00	180.00
9,612.88	0.86	243.43	9,576.00	-464.47	463.32	655.99	0.08	-0.08	0.00	-180.00
Rollins										
9,700.00	0.80	243.43	9,663.11	-465.03	462.19	655.61	0.08	-0.08	0.00	180.00
9,800.00	0.72	243.43	9,763.10	-465.63	461.00	655.21	0.08	-0.08	0.00	180.00
9,900.00	0.65	243.43	9,863.09	-466.16	459.93	654.85	0.08	-0.08	0.00	180.00
9,960.91	0.60	243.43	9,924.00	-466.46	459.34	654.65	0.08	-0.08	0.00	180.00
Cozzette										
10,000.00	0.57	243.43	9,963.09	-466.63	458.99	654.53	0.08	-0.08	0.00	-180.00
10,100.00	0.49	243.43	10,063.08	-467.05	458.15	654.24	0.08	-0.08	0.00	180.00
10,200.00	0.42	243.43	10,163.08	-467.41	457.44	654.00	0.08	-0.08	0.00	180.00
10,257.92	0.37	243.43	10,221.00	-467.59	457.09	653.88	0.08	-0.08	0.00	-180.00
Corcora										
10,300.00	0.34	243.43	10,263.08	-467.70	456.85	653.80	0.08	-0.08	0.00	180.00
10,400.00	0.27	243.43	10,363.08	-467.94	456.38	653.64	0.08	-0.08	0.00	180.00
10,498.92	0.19	243.43	10,462.00	-468.12	456.02	653.52	0.08	-0.08	0.00	180.00
Mancos										
10,500.00	0.19	243.43	10,463.08	-468.12	456.02	653.52	0.08	-0.08	0.00	-180.00
10,600.00	0.11	243.43	10,563.08	-468.24	455.78	653.44	0.08	-0.08	0.00	180.00
10,700.00	0.04	243.43	10,663.07	-468.29	455.67	653.40	0.08	-0.08	0.00	180.00
10,745.03	0.00	243.43	10,708.10	-468.30	455.65	653.40	0.08	-0.08	0.00	180.00
Total Depth = 10745.03ft										
10,748.93	0.00	360.00	10,712.00	-468.30	455.65	653.40	0.08	-0.08	0.00	180.00
BM 35-12B 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
345.00	344.96	-1.66	1.89	Build Rate = 2.00°/100ft
471.97	471.66	-7.01	8.00	End Build at 470.32ft
3,470.00	3,451.52	-224.24	255.78	4.94 Inclination
6,363.30	6,327.31	-433.73	494.73	Begin Drop at 6363.30ft
6,440.00	6,403.78	-437.63	499.18	Drop Rate = 1.50°/100ft
6,692.59	6,656.18	-443.30	505.65	End Drop at 6692.59ft
10,745.03	10,708.10	-468.30	455.65	Total Depth = 10745.03ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	BM 35-12B Plan #1 BH Tgt	135.78	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,748.93	Plan #1 Proposal	MWD

Plan Report for BM 35-12B - Plan #1 Proposal

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,380.00	2,368.16	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,696.41	6,660.00	Williams Fork		0.00	
7,678.44	7,642.00	Top of Gas		0.00	
9,239.82	9,203.00	Cameo		0.00	
9,612.88	9,576.00	Rollins		0.00	
9,960.91	9,924.00	Cozzette		0.00	
10,257.92	10,221.00	Corcora		0.00	
10,498.92	10,462.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 35-12B Plan #1 Zone Tgt	6,660.00	-468.30	455.65	Rectangle
BM 35-12B Plan #1 BH Tgt	10,712.00	-468.30	455.65	Point
BM 35-12B Plan #1 Driller's Tgt	6,660.00	-443.30	505.65	Rectangle

**North Reference Sheet for Sec. 35-T7S-R95W (SGV 35D2 PAD) - BM 35-12B -
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 35-12B - Slot A10

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: 0.99994925

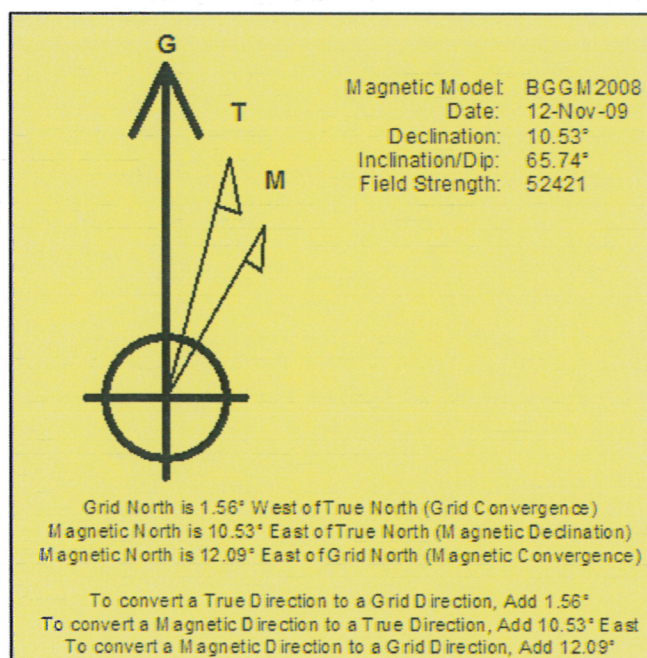
Grid Coordinates of Well: 579,129.77 ft N, 1,301,235.27 ft E

Geographical Coordinates of Well: 39° 23' 50.61" N, 107° 58' 22.46" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,748.93ft
the Bottom Hole Displacement is 653.40ft in the Direction of 135.78° (Grid).

Magnetic Convergence at surface is: -12.09° (12 November 2009, , BGGM2008)



Project: Garfield County, CO
Site: Sec. 35-T7S-R95W (SGV 35D2 PAD)
Well: BM 35-12B
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
541.31	6.33	131.24	540.67	-11.50	13.12	2.00	131.24	17.39
6274.66	6.33	131.24	6239.11	-427.97	488.16	0.00	0.00	647.16
6696.41	0.00	0.00	6660.00	-443.30	505.65	1.50	180.00	670.34
8672.36	1.58	243.43	8635.70	-455.49	481.27	0.08	243.43	662.08
10748.93	0.00	360.00	10712.00	-468.30	455.65	0.08	180.00	653.40

WELL DETAILS: BM 35-12B

Ground Level:	8846.00	Latitude	39°23' 50.611 N	Longitude	107°58' 22.462 W	A10
Northing	579129.78	Easting	1301235.27			

WELLBORE TARGET DETAILS

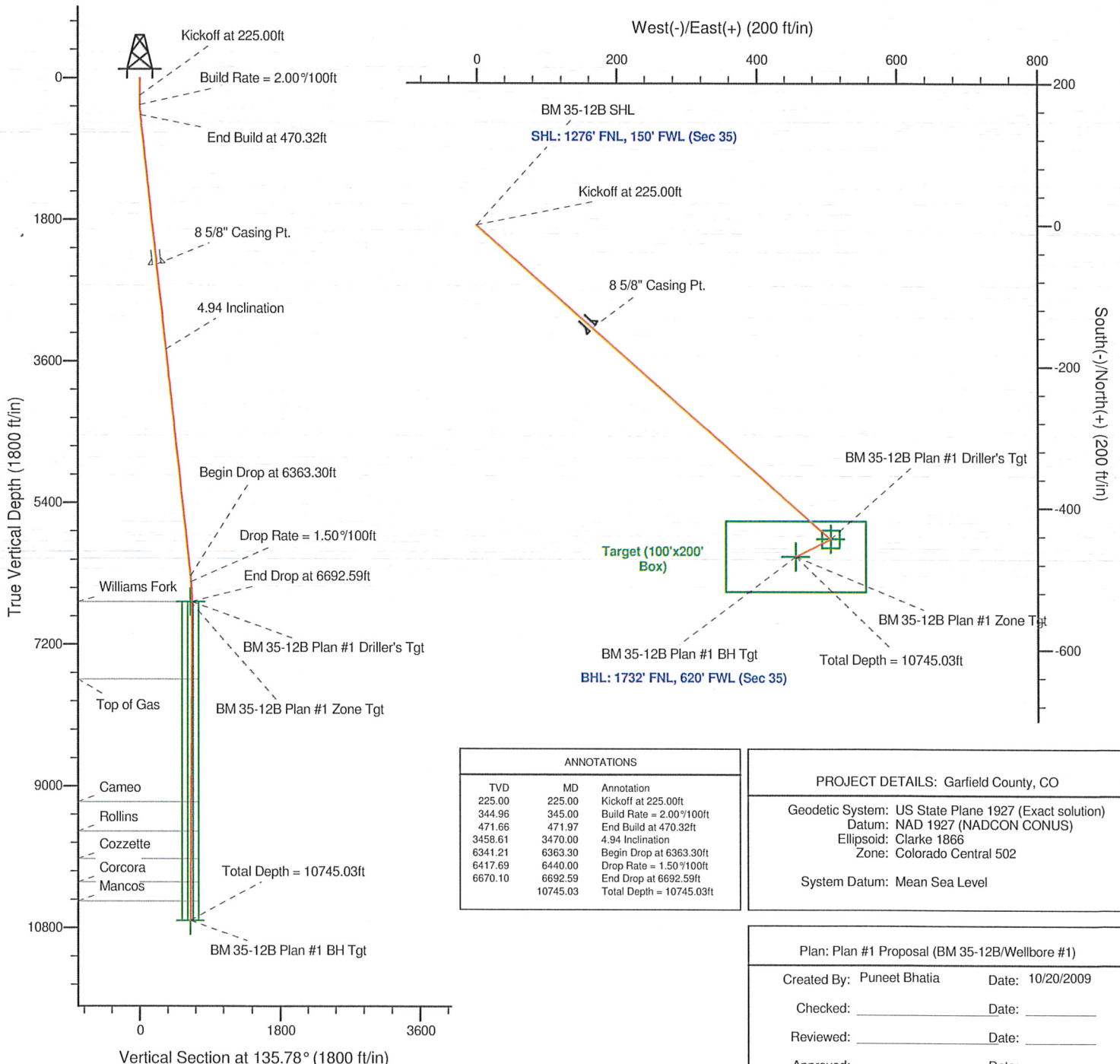
Name	TVD	+N/-S	+E/-W	Shape
BM 35-12B Plan #1 Driller's Tgt	6660.00	-443.30	505.65	Rectangle (Sides: L25.00 W25.00)
BM 35-12B Plan #1 Zone Tgt	6660.00	-468.30	455.65	Rectangle (Sides: L100.00 W200.00)
BM 35-12B Plan #1 BH Tgt	10712.00	-468.30	455.65	Point



Azimuths to Grid North
True North: 1.56°
Magnetic North: 12.08°
Magnetic Field
Strength: 52348.75nT
Dip Angle: 65.74°
Date: 11/12/2009
Model: BGGM2008

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6660.00	6696.41	Williams Fork
7642.00	7678.44	Top of Gas
9203.00	9239.82	Cameo
9576.00	9612.88	Rollins
9924.00	9960.91	Cozzette
10221.00	10257.92	Corcora
10462.00	10498.92	Mancos



ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
344.96	345.00	Build Rate = 2.00°/100ft
471.66	471.97	End Build at 470.32ft
3458.61	3470.00	4.94 Inclination
6341.21	6363.30	Begin Drop at 6363.30ft
6417.69	6440.00	Drop Rate = 1.50°/100ft
6670.10	6692.59	End Drop at 6692.59ft
	10745.03	Total Depth = 10745.03ft

PROJECT DETAILS: Garfield County, CO

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Colorado Central 502

System Datum: Mean Sea Level

Plan: Plan #1 Proposal (BM 35-12B/Wellbore #1)

Created By: Puneet Bhatia Date: 10/20/2009

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____