

Noble Energy (Rockies)

Garfield County, CO

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

BM 34-43A - B 7

Wellbore #1

Plan: Plan #1

Sperry Drilling Services

Proposal Report

12 November, 2009

Well Coordinates: 577,325.60 N, 1,301,588.64 E (39° 23' 32.88" N, 107° 58' 17.34" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin:

Centered on Well BM 34-43A - Slot B 7

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 34-43A - 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	288.04	299.99	0.30	-0.93	0.98	2.00	2.00	0.00	288.04
400.00	3.50	288.04	399.89	1.65	-5.08	5.34	2.00	2.00	0.00	0.00
500.00	5.50	288.04	499.58	4.08	-12.54	13.18	2.00	2.00	0.00	0.00
525.00	6.00	288.04	524.45	4.86	-14.92	15.69	2.00	2.00	0.00	0.00
Build Rate = 2.00°/100ft										
600.00	7.50	288.04	598.93	7.59	-23.30	24.50	2.00	2.00	0.00	0.00
700.00	9.50	288.04	697.83	12.17	-37.36	39.27	2.00	2.00	0.00	0.00
800.00	11.50	288.04	796.15	17.81	-54.68	57.49	2.00	2.00	0.00	0.00
814.09	11.78	288.04	809.95	18.69	-57.39	60.33	2.00	2.00	0.00	0.00
End Build at 814.09ft										
900.00	11.78	288.04	894.05	24.13	-74.07	77.86	0.00	0.00	0.00	0.00
1,000.00	11.78	288.04	991.94	30.45	-93.48	98.27	0.00	0.00	0.00	0.00
1,100.00	11.78	288.04	1,089.83	36.77	-112.89	118.68	0.00	0.00	0.00	0.00
1,200.00	11.78	288.04	1,187.73	43.10	-132.31	139.09	0.00	0.00	0.00	0.00
1,300.00	11.78	288.04	1,285.62	49.42	-151.72	159.50	0.00	0.00	0.00	0.00
1,400.00	11.78	288.04	1,383.51	55.75	-171.14	179.91	0.00	0.00	0.00	0.00
1,500.00	11.78	288.04	1,481.41	62.07	-190.55	200.32	0.00	0.00	0.00	0.00
8 5/8" Casing Pt.										
1,600.00	11.78	288.04	1,579.30	68.39	-209.97	220.73	0.00	0.00	0.00	0.00
1,700.00	11.78	288.04	1,677.19	74.72	-229.38	241.13	0.00	0.00	0.00	0.00
1,800.00	11.78	288.04	1,775.09	81.04	-248.80	261.54	0.00	0.00	0.00	0.00
1,900.00	11.78	288.04	1,872.98	87.37	-268.21	281.95	0.00	0.00	0.00	0.00
2,000.00	11.78	288.04	1,970.87	93.69	-287.62	302.36	0.00	0.00	0.00	0.00
2,100.00	11.78	288.04	2,068.77	100.01	-307.04	322.77	0.00	0.00	0.00	0.00
2,200.00	11.78	288.04	2,166.66	106.34	-326.45	343.18	0.00	0.00	0.00	0.00
2,300.00	11.78	288.04	2,264.55	112.66	-345.87	363.59	0.00	0.00	0.00	0.00
2,400.00	11.78	288.04	2,362.45	118.98	-365.28	384.00	0.00	0.00	0.00	0.00
2,500.00	11.78	288.04	2,460.34	125.31	-384.70	404.41	0.00	0.00	0.00	0.00
2,600.00	11.78	288.04	2,558.23	131.63	-404.11	424.82	0.00	0.00	0.00	0.00
2,700.00	11.78	288.04	2,656.13	137.96	-423.53	445.23	0.00	0.00	0.00	0.00
2,800.00	11.78	288.04	2,754.02	144.28	-442.94	465.64	0.00	0.00	0.00	0.00
2,900.00	11.78	288.04	2,851.91	150.60	-462.36	486.04	0.00	0.00	0.00	0.00
3,000.00	11.78	288.04	2,949.81	156.93	-481.77	506.45	0.00	0.00	0.00	0.00
3,100.00	11.78	288.04	3,047.70	163.25	-501.18	526.86	0.00	0.00	0.00	0.00
3,200.00	11.78	288.04	3,145.59	169.58	-520.60	547.27	0.00	0.00	0.00	0.00
3,300.00	11.78	288.04	3,243.49	175.90	-540.01	567.68	0.00	0.00	0.00	0.00
3,400.00	11.78	288.04	3,341.38	182.22	-559.43	588.09	0.00	0.00	0.00	0.00
3,500.00	11.78	288.04	3,439.27	188.55	-578.84	608.50	0.00	0.00	0.00	0.00
11.78 Inclination										
3,600.00	11.78	288.04	3,537.16	194.87	-598.26	628.91	0.00	0.00	0.00	0.00
3,700.00	11.78	288.04	3,635.06	201.20	-617.67	649.32	0.00	0.00	0.00	0.00
3,800.00	11.78	288.04	3,732.95	207.52	-637.09	669.73	0.00	0.00	0.00	0.00
3,900.00	11.78	288.04	3,830.84	213.84	-656.50	690.14	0.00	0.00	0.00	0.00
4,000.00	11.78	288.04	3,928.74	220.17	-675.91	710.55	0.00	0.00	0.00	0.00
4,100.00	11.78	288.04	4,026.63	226.49	-695.33	730.95	0.00	0.00	0.00	0.00
4,200.00	11.78	288.04	4,124.52	232.82	-714.74	751.36	0.00	0.00	0.00	0.00
4,300.00	11.78	288.04	4,222.42	239.14	-734.16	771.77	0.00	0.00	0.00	0.00
4,400.00	11.78	288.04	4,320.31	245.46	-753.57	792.18	0.00	0.00	0.00	0.00
4,500.00	11.78	288.04	4,418.20	251.79	-772.99	812.59	0.00	0.00	0.00	0.00
4,600.00	11.78	288.04	4,516.10	258.11	-792.40	833.00	0.00	0.00	0.00	0.00
4,700.00	11.78	288.04	4,613.99	264.44	-811.82	853.41	0.00	0.00	0.00	0.00
4,800.00	11.78	288.04	4,711.88	270.76	-831.23	873.82	0.00	0.00	0.00	0.00
4,900.00	11.78	288.04	4,809.78	277.08	-850.64	894.23	0.00	0.00	0.00	0.00

Plan Report for BM 34-43A - 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	11.78	288.04	4,907.67	283.41	-870.06	914.64	0.00	0.00	0.00	0.00
5,100.00	11.78	288.04	5,005.56	289.73	-889.47	935.05	0.00	0.00	0.00	0.00
5,200.00	11.78	288.04	5,103.46	296.05	-908.89	955.46	0.00	0.00	0.00	0.00
5,300.00	11.78	288.04	5,201.35	302.38	-928.30	975.87	0.00	0.00	0.00	0.00
5,400.00	11.78	288.04	5,299.24	308.70	-947.72	996.27	0.00	0.00	0.00	0.00
5,500.00	11.78	288.04	5,397.14	315.03	-967.13	1,016.68	0.00	0.00	0.00	0.00
5,600.00	11.78	288.04	5,495.03	321.35	-986.55	1,037.09	0.00	0.00	0.00	0.00
5,700.00	11.78	288.04	5,592.92	327.67	-1,005.96	1,057.50	0.00	0.00	0.00	0.00
5,800.00	11.78	288.04	5,690.82	334.00	-1,025.37	1,077.91	0.00	0.00	0.00	0.00
5,900.00	11.78	288.04	5,788.71	340.32	-1,044.79	1,098.32	0.00	0.00	0.00	0.00
6,000.00	11.78	288.04	5,886.60	346.65	-1,064.20	1,118.73	0.00	0.00	0.00	0.00
6,100.00	11.78	288.04	5,984.50	352.97	-1,083.62	1,139.14	0.00	0.00	0.00	0.00
6,200.00	11.78	288.04	6,082.39	359.29	-1,103.03	1,159.55	0.00	0.00	0.00	0.00
6,300.00	11.78	288.04	6,180.28	365.62	-1,122.45	1,179.96	0.00	0.00	0.00	0.00
6,305.91	11.78	288.04	6,186.07	365.99	-1,123.59	1,181.16	0.00	0.00	0.00	0.00
Begin Drop at 6305.91ft										
6,400.00	10.37	288.04	6,278.40	371.59	-1,140.78	1,199.23	1.50	-1.50	0.00	180.00
6,500.00	8.87	288.04	6,376.99	376.77	-1,156.67	1,215.93	1.50	-1.50	0.00	180.00
6,600.00	7.37	288.04	6,475.99	381.14	-1,170.10	1,230.05	1.50	-1.50	0.00	180.00
6,700.00	5.87	288.04	6,575.32	384.71	-1,181.06	1,241.58	1.50	-1.50	0.00	-180.00
Drop Rate = 1.50°/100ft										
6,800.00	4.37	288.04	6,674.92	387.48	-1,189.55	1,250.50	1.50	-1.50	0.00	180.00
6,900.00	2.87	288.04	6,774.71	389.43	-1,195.55	1,256.81	1.50	-1.50	0.00	180.00
7,000.00	1.37	288.04	6,874.64	390.58	-1,199.07	1,260.51	1.50	-1.50	0.00	180.00
7,091.37	0.00	0.00	6,966.00	390.92	-1,200.11	1,261.60	1.50	-1.50	78.75	180.00
End Drop at 7091.37ft - Williams Fork - BM 34-43A Plan #1 Driller's Tgt - BM 34-43A Plan #1 Zone Tgt										
7,100.00	0.01	243.44	6,974.63	390.92	-1,200.11	1,261.60	0.09	0.09	-1,350.66	-116.58
7,200.00	0.10	243.44	7,074.63	390.87	-1,200.19	1,261.67	0.09	0.09	0.00	0.00
7,300.00	0.19	243.44	7,174.63	390.76	-1,200.42	1,261.85	0.09	0.09	0.00	0.00
7,400.00	0.28	243.44	7,274.63	390.58	-1,200.78	1,262.15	0.09	0.09	0.00	0.00
7,500.00	0.37	243.44	7,374.63	390.33	-1,201.28	1,262.56	0.09	0.09	0.00	0.00
7,600.00	0.46	243.44	7,474.63	390.01	-1,201.93	1,263.09	0.09	0.09	0.00	0.00
7,700.00	0.55	243.44	7,574.62	389.61	-1,202.71	1,263.73	0.09	0.09	0.00	0.00
7,800.00	0.64	243.44	7,674.62	389.15	-1,203.64	1,264.49	0.09	0.09	0.00	0.00
7,900.00	0.73	243.44	7,774.61	388.62	-1,204.70	1,265.36	0.09	0.09	0.00	0.00
8,000.00	0.82	243.44	7,874.60	388.02	-1,205.91	1,266.35	0.09	0.09	0.00	0.00
8,100.00	0.91	243.44	7,974.59	387.34	-1,207.26	1,267.46	0.09	0.09	0.00	0.00
8,180.42	0.98	243.44	8,055.00	386.75	-1,208.44	1,268.43	0.09	0.09	0.00	0.00
Top of Gas										
8,200.00	1.00	243.44	8,074.58	386.60	-1,208.74	1,268.67	0.09	0.09	0.00	0.00
8,300.00	1.09	243.44	8,174.56	385.79	-1,210.37	1,270.01	0.09	0.09	0.00	0.00
8,400.00	1.18	243.44	8,274.54	384.90	-1,212.14	1,271.46	0.09	0.09	0.00	0.00
8,500.00	1.27	243.44	8,374.52	383.95	-1,214.05	1,273.02	0.09	0.09	0.00	0.00
8,600.00	1.36	243.44	8,474.49	382.92	-1,216.10	1,274.70	0.09	0.09	0.00	0.00
8,700.00	1.45	243.44	8,574.46	381.83	-1,218.29	1,276.49	0.09	0.09	0.00	0.00
8,800.00	1.54	243.44	8,674.43	380.66	-1,220.62	1,278.40	0.09	0.09	0.00	0.00
8,900.00	1.63	243.44	8,774.39	379.43	-1,223.09	1,280.43	0.09	0.09	0.00	0.00
8,957.79	1.68	243.44	8,832.15	378.68	-1,224.58	1,281.65	0.09	0.09	0.00	0.00
9,000.00	1.64	243.44	8,874.35	378.13	-1,225.68	1,282.54	0.09	-0.09	0.00	180.00
9,100.00	1.56	243.44	8,974.31	376.89	-1,228.17	1,284.59	0.09	-0.09	0.00	180.00
9,200.00	1.47	243.44	9,074.27	375.70	-1,230.54	1,286.53	0.09	-0.09	0.00	180.00
9,300.00	1.38	243.44	9,174.24	374.59	-1,232.76	1,288.35	0.09	-0.09	0.00	180.00
9,400.00	1.30	243.44	9,274.22	373.54	-1,234.86	1,290.07	0.09	-0.09	0.00	180.00
9,496.81	1.21	243.44	9,371.00	372.59	-1,236.76	1,291.62	0.09	-0.09	0.00	-180.00
Cameo										
9,500.00	1.21	243.44	9,374.19	372.56	-1,236.82	1,291.67	0.09	-0.09	0.00	180.00
9,600.00	1.13	243.44	9,474.17	371.65	-1,238.64	1,293.17	0.09	-0.09	0.00	180.00
9,700.00	1.04	243.44	9,574.15	370.81	-1,240.33	1,294.55	0.09	-0.09	0.00	180.00
9,800.00	0.95	243.44	9,674.14	370.03	-1,241.89	1,295.83	0.09	-0.09	0.00	180.00

Plan Report for BM 34-43A - 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 (°)
9,900.00	0.87	243.44	9,774.13	369.32	-1,243.31	1,296.99	0.09	-0.09	0.00	180.00
9,977.88	0.80	243.44	9,852.00	368.81	-1,244.32	1,297.82	0.09	-0.09	0.00	-180.00
Rollins										
10,000.00	0.78	243.44	9,874.12	368.68	-1,244.59	1,298.04	0.09	-0.09	0.00	180.00
10,100.00	0.69	243.44	9,974.11	368.10	-1,245.75	1,298.99	0.09	-0.09	0.00	180.00
10,200.00	0.61	243.44	10,074.10	367.59	-1,246.76	1,299.82	0.09	-0.09	0.00	180.00
10,283.90	0.54	243.44	10,158.00	367.22	-1,247.51	1,300.43	0.09	-0.09	0.00	180.00
Cozzette										
10,300.00	0.52	243.44	10,174.10	367.15	-1,247.64	1,300.54	0.09	-0.09	0.00	-180.00
10,400.00	0.44	243.44	10,274.09	366.78	-1,248.39	1,301.16	0.09	-0.09	0.00	180.00
10,500.00	0.35	243.44	10,374.09	366.47	-1,249.00	1,301.66	0.09	-0.09	0.00	180.00
10,522.91	0.33	243.44	10,397.00	366.41	-1,249.13	1,301.76	0.09	-0.09	0.00	180.00
Corcora										
10,600.00	0.26	243.44	10,474.09	366.23	-1,249.48	1,302.05	0.09	-0.09	0.00	-180.00
10,654.91	0.22	243.44	10,529.00	366.13	-1,249.69	1,302.22	0.09	-0.09	0.00	-180.00
Mancos										
10,700.00	0.18	243.44	10,574.09	366.06	-1,249.83	1,302.33	0.09	-0.09	0.00	180.00
10,800.00	0.09	243.44	10,674.09	365.96	-1,250.03	1,302.50	0.09	-0.09	0.00	180.00
10,900.00	0.00	243.44	10,774.09	365.92	-1,250.11	1,302.56	0.09	-0.09	0.00	-180.00
10,904.91	0.00	0.00	10,779.00	365.92	-1,250.11	1,302.56	0.09	-0.09	2,374.00	179.97
Total Depth = 10904.91ft - BM 34-43A 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
525.00	524.45	4.86	-14.92	Build Rate = 2.00°/100ft
814.09	809.95	18.69	-57.39	End Build at 814.09ft
3,500.00	3,439.27	188.55	-578.84	11.78 Inclination
6,305.91	6,186.07	365.99	-1,123.59	Begin Drop at 6305.91ft
6,700.00	6,575.32	384.71	-1,181.06	Drop Rate = 1.50°/100ft
7,091.37	6,966.00	390.92	-1,200.11	End Drop at 7091.37ft
10,904.91	10,779.00	365.92	-1,250.11	Total Depth = 10904.91ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	286.32	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,904.91	Plan #1	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,481.41	8 5/8" Casing Pt.	8-5/8	11

Plan Report for BM 34-43A - Plan #1

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,091.37	6,966.00	Williams Fork		0.00	
8,180.42	8,055.00	Top of Gas		0.00	
9,496.81	9,371.00	Cameo		0.00	
9,977.88	9,852.00	Rollins		0.00	
10,283.90	10,158.00	Cozzette		0.00	
10,522.91	10,397.00	Corcora		0.00	
10,654.91	10,529.00	Mancos		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
BM 34-43A Plan #1 Driller's Tgt	6,966.00	390.92	-1,200.11	Rectangle
BM 34-43A Plan #1 BH Tgt	10,779.00	365.92	-1,250.11	Point
BM 34-43A Plan #1 Zone Tgt	6,966.00	365.92	-1,250.11	Rectangle

North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - BM 34-43A - 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 34-43A - Slot B 7

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: 0.99994881

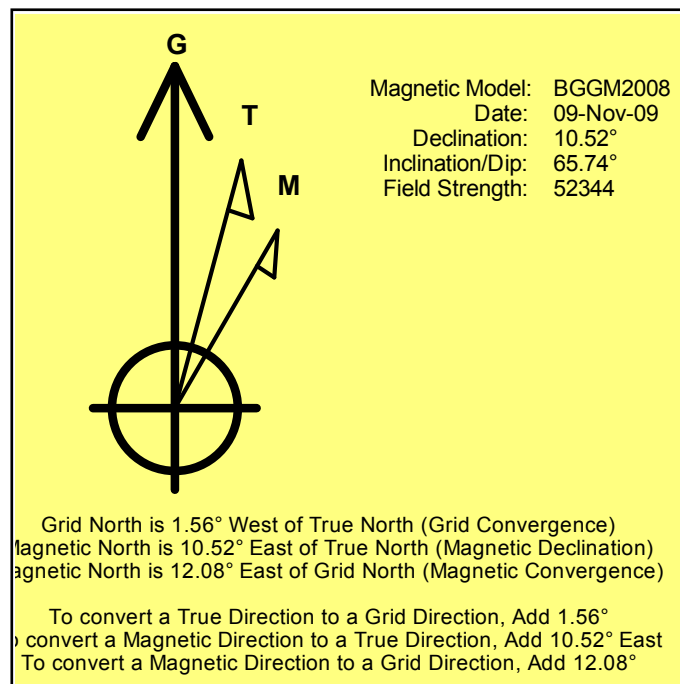
Grid Coordinates of Well: 577,325.60 ft N, 1,301,588.64 ft E

Geographical Coordinates of Well: 39° 23' 32.88" N, 107° 58' 17.34" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,904.91ft
the Bottom Hole Displacement is 1,302.56ft in the Direction of 286.32° (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 34-43A
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
814.09	11.78	288.04	809.95	18.69	-57.39	2.00	288.04	60.33
6305.91	11.78	288.04	6186.07	365.99	-1123.60	0.00	0.00	1181.16
7091.37	0.00	0.00	6966.00	390.92	-1200.11	1.50	180.00	1261.60
8957.79	1.68	243.44	8832.15	378.68	-1224.58	0.09	243.44	1281.65
10904.91	0.00	360.00	10779.00	365.92	-1250.11	0.09	180.00	1302.56

BM 34-43A Plan #1 Driller's Tgt

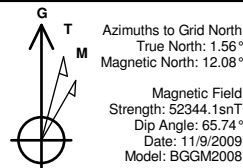
BM 34-43A Plan #1 BH Tgt

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 34-43A Plan #1 Driller's Tgt	6966.00	390.92	-1200.11	Rectangle (Sides: L25.00 W25.00)
BM 34-43A Plan #1 Zone Tgt	6966.00	365.92	-1250.11	Rectangle (Sides: L100.00 W200.00)
BM 34-43A Plan #1 BH Tgt	10779.00	365.92	-1250.11	Point

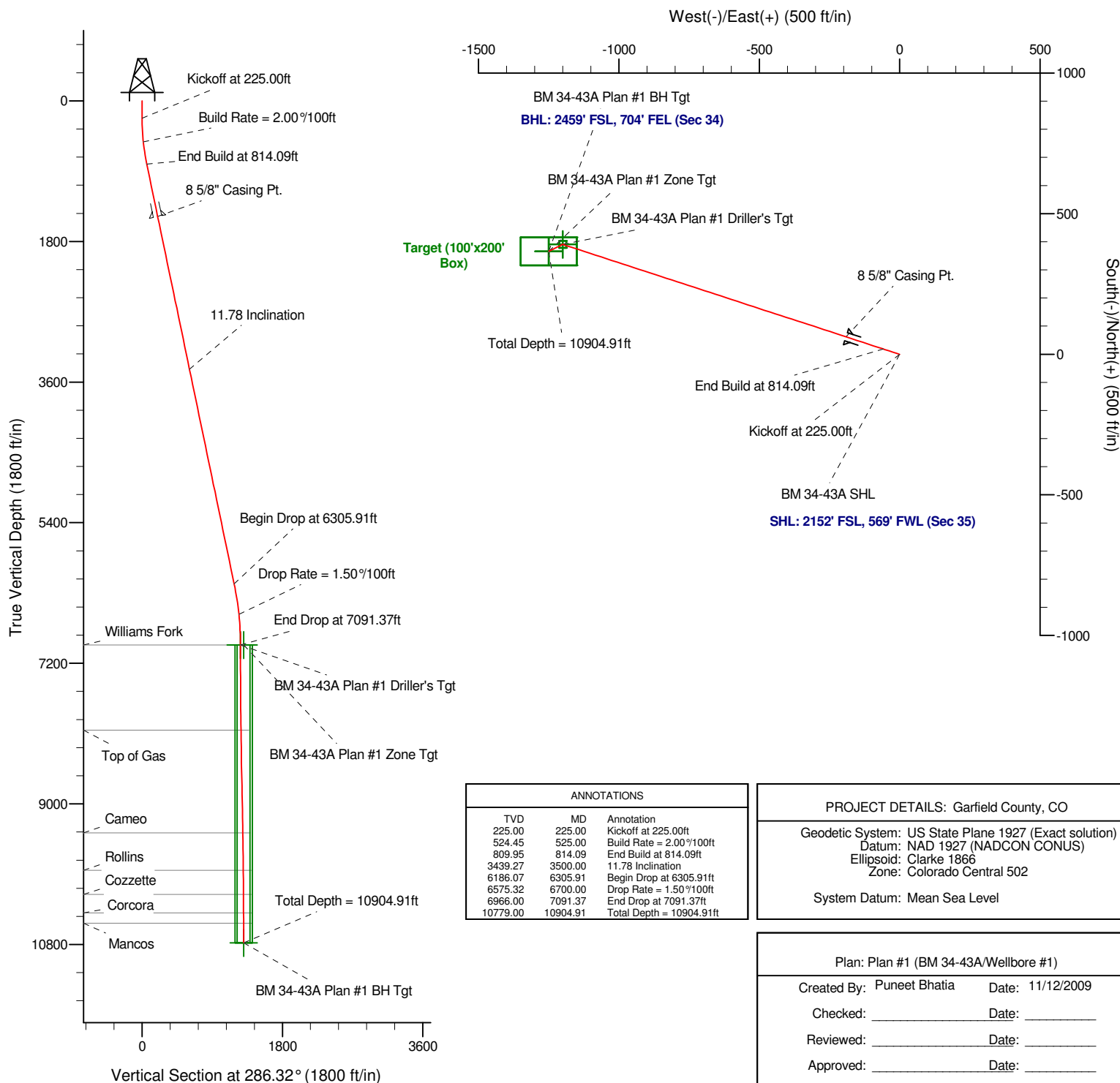
WELL DETAILS: BM 34-43A

North	Ground Level:	9203.00	Longitude
0.007325.60	Easting	1301588.64	107° 58' 17.337 W
	Latitude	39° 23' 32.880 N	B 7



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6966.00	7091.37	Williams Fork
8055.00	8180.42	Top of Gas
9371.00	9496.81	Cameo
9852.00	9977.88	Rollins
10158.00	10283.90	Cozzette
10397.00	10522.91	Corcora
10529.00	10654.91	Mancos



ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
524.45	525.00	Build Rate = 2.00%/100ft
809.95	814.09	End Build at 814.09ft
3439.27	3500.00	11.78 Inclination
6186.07	6305.91	Begin Drop at 6305.91ft
6575.32	6700.00	Drop Rate = 1.50%/100ft
6966.00	7091.37	End Drop at 7091.37ft
10779.00	10904.91	Total Depth = 10904.91ft

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 (BM 34-43A/Wellbore #1)

Created By: Puneet Bhatia Date: 11/12/2009

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____