

# Noble Energy (Rockies)

Garfield County, CO

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

Rulison Federal 35-14A - A10

Wellbore #1

Plan: Plan #1

## Sperry Drilling Services

### Proposal Report

12 November, 2009

Well Coordinates: 577,302.00 N, 1,301,582.80 E (39° 23' 32.64" N, 107° 58' 17.40" W)

Ground Level: 9,203.00 ft

Local Coordinate Origin: Centered on Well Rulison Federal 35-14A - Slot A10

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 Rulison Federal 35-14A - 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
<b>Kickoff at 225.00ft</b>										
300.00	1.50	173.98	299.99	-0.98	0.10	0.98	2.00	2.00	0.00	173.98
400.00	3.50	173.98	399.89	-5.31	0.56	5.33	2.00	2.00	0.00	0.00
425.00	4.00	173.98	424.84	-6.94	0.73	6.97	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
500.00	5.50	173.98	499.58	-13.12	1.38	13.17	2.00	2.00	0.00	0.00
600.00	7.50	173.98	598.93	-24.37	2.57	24.47	2.00	2.00	0.00	0.00
634.01	8.18	173.98	632.62	-28.99	3.06	29.10	2.00	2.00	0.00	0.00
<b>End Build at 634.01ft</b>										
700.00	8.18	173.98	697.94	-38.33	4.04	38.48	0.00	0.00	0.00	0.00
800.00	8.18	173.98	796.92	-52.48	5.53	52.68	0.00	0.00	0.00	0.00
900.00	8.18	173.98	895.91	-66.63	7.02	66.89	0.00	0.00	0.00	0.00
1,000.00	8.18	173.98	994.89	-80.78	8.52	81.09	0.00	0.00	0.00	0.00
1,100.00	8.18	173.98	1,093.87	-94.93	10.01	95.30	0.00	0.00	0.00	0.00
1,200.00	8.18	173.98	1,192.85	-109.08	11.50	109.50	0.00	0.00	0.00	0.00
1,300.00	8.18	173.98	1,291.84	-123.23	12.99	123.71	0.00	0.00	0.00	0.00
1,400.00	8.18	173.98	1,390.82	-137.38	14.48	137.92	0.00	0.00	0.00	0.00
1,500.00	8.18	173.98	1,489.80	-151.53	15.98	152.12	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	8.18	173.98	1,588.78	-165.68	17.47	166.33	0.00	0.00	0.00	0.00
1,700.00	8.18	173.98	1,687.77	-179.83	18.96	180.53	0.00	0.00	0.00	0.00
1,800.00	8.18	173.98	1,786.75	-193.98	20.45	194.74	0.00	0.00	0.00	0.00
1,900.00	8.18	173.98	1,885.73	-208.13	21.94	208.95	0.00	0.00	0.00	0.00
2,000.00	8.18	173.98	1,984.71	-222.28	23.44	223.15	0.00	0.00	0.00	0.00
2,100.00	8.18	173.98	2,083.70	-236.43	24.93	237.36	0.00	0.00	0.00	0.00
2,200.00	8.18	173.98	2,182.68	-250.58	26.42	251.56	0.00	0.00	0.00	0.00
2,300.00	8.18	173.98	2,281.66	-264.73	27.91	265.77	0.00	0.00	0.00	0.00
2,400.00	8.18	173.98	2,380.64	-278.88	29.40	279.97	0.00	0.00	0.00	0.00
2,500.00	8.18	173.98	2,479.63	-293.03	30.90	294.18	0.00	0.00	0.00	0.00
2,600.00	8.18	173.98	2,578.61	-307.18	32.39	308.39	0.00	0.00	0.00	0.00
2,700.00	8.18	173.98	2,677.59	-321.33	33.88	322.59	0.00	0.00	0.00	0.00
2,800.00	8.18	173.98	2,776.57	-335.48	35.37	336.80	0.00	0.00	0.00	0.00
2,900.00	8.18	173.98	2,875.56	-349.63	36.86	351.00	0.00	0.00	0.00	0.00
3,000.00	8.18	173.98	2,974.54	-363.78	38.36	365.21	0.00	0.00	0.00	0.00
3,100.00	8.18	173.98	3,073.52	-377.93	39.85	379.42	0.00	0.00	0.00	0.00
3,200.00	8.18	173.98	3,172.50	-392.08	41.34	393.62	0.00	0.00	0.00	0.00
3,300.00	8.18	173.98	3,271.49	-406.24	42.83	407.83	0.00	0.00	0.00	0.00
3,400.00	8.18	173.98	3,370.47	-420.39	44.32	422.03	0.00	0.00	0.00	0.00
3,500.00	8.18	173.98	3,469.45	-434.54	45.81	436.24	0.00	0.00	0.00	0.00
3,600.00	8.18	173.98	3,568.43	-448.69	47.31	450.44	0.00	0.00	0.00	0.00
<b>8.18 Inclination</b>										
3,700.00	8.18	173.98	3,667.42	-462.84	48.80	464.65	0.00	0.00	0.00	0.00
3,800.00	8.18	173.98	3,766.40	-476.99	50.29	478.86	0.00	0.00	0.00	0.00
3,900.00	8.18	173.98	3,865.38	-491.14	51.78	493.06	0.00	0.00	0.00	0.00
4,000.00	8.18	173.98	3,964.36	-505.29	53.27	507.27	0.00	0.00	0.00	0.00
4,100.00	8.18	173.98	4,063.35	-519.44	54.77	521.47	0.00	0.00	0.00	0.00
4,200.00	8.18	173.98	4,162.33	-533.59	56.26	535.68	0.00	0.00	0.00	0.00
4,300.00	8.18	173.98	4,261.31	-547.74	57.75	549.89	0.00	0.00	0.00	0.00
4,400.00	8.18	173.98	4,360.29	-561.89	59.24	564.09	0.00	0.00	0.00	0.00
4,500.00	8.18	173.98	4,459.28	-576.04	60.73	578.30	0.00	0.00	0.00	0.00
4,600.00	8.18	173.98	4,558.26	-590.19	62.23	592.50	0.00	0.00	0.00	0.00
4,700.00	8.18	173.98	4,657.24	-604.34	63.72	606.71	0.00	0.00	0.00	0.00
4,800.00	8.18	173.98	4,756.22	-618.49	65.21	620.91	0.00	0.00	0.00	0.00
4,900.00	8.18	173.98	4,855.21	-632.64	66.70	635.12	0.00	0.00	0.00	0.00

## Plan Report for Rulison Federal 35-14A - 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	8.18	173.98	4,954.19	-646.79	68.19	649.33	0.00	0.00	0.00	0.00
5,100.00	8.18	173.98	5,053.17	-660.94	69.69	663.53	0.00	0.00	0.00	0.00
5,200.00	8.18	173.98	5,152.15	-675.09	71.18	677.74	0.00	0.00	0.00	0.00
5,300.00	8.18	173.98	5,251.14	-689.24	72.67	691.94	0.00	0.00	0.00	0.00
5,400.00	8.18	173.98	5,350.12	-703.39	74.16	706.15	0.00	0.00	0.00	0.00
5,500.00	8.18	173.98	5,449.10	-717.54	75.65	720.36	0.00	0.00	0.00	0.00
5,600.00	8.18	173.98	5,548.08	-731.69	77.15	734.56	0.00	0.00	0.00	0.00
5,700.00	8.18	173.98	5,647.07	-745.84	78.64	748.77	0.00	0.00	0.00	0.00
5,800.00	8.18	173.98	5,746.05	-759.99	80.13	762.97	0.00	0.00	0.00	0.00
5,900.00	8.18	173.98	5,845.03	-774.14	81.62	777.18	0.00	0.00	0.00	0.00
6,000.00	8.18	173.98	5,944.01	-788.30	83.11	791.38	0.00	0.00	0.00	0.00
6,100.00	8.18	173.98	6,043.00	-802.45	84.60	805.59	0.00	0.00	0.00	0.00
6,200.00	8.18	173.98	6,141.98	-816.60	86.10	819.80	0.00	0.00	0.00	0.00
6,300.00	8.18	173.98	6,240.96	-830.75	87.59	834.00	0.00	0.00	0.00	0.00
6,400.00	8.18	173.98	6,339.94	-844.90	89.08	848.21	0.00	0.00	0.00	0.00
6,483.40	8.18	173.98	6,422.50	-856.70	90.32	860.06	0.00	0.00	0.00	0.00
<b>Begin Drop at 6483.40ft</b>										
6,500.00	7.93	173.98	6,438.93	-859.01	90.57	862.38	1.50	-1.50	0.00	180.00
6,600.00	6.43	173.98	6,538.14	-871.44	91.88	874.86	1.50	-1.50	0.00	180.00
6,700.00	4.93	173.98	6,637.65	-881.29	92.92	884.74	1.50	-1.50	0.00	180.00
6,800.00	3.43	173.98	6,737.38	-888.54	93.68	892.02	1.50	-1.50	0.00	-180.00
<b>Drop Rate = 1.50°/100ft</b>										
6,900.00	1.93	173.98	6,837.27	-893.19	94.17	896.69	1.50	-1.50	0.00	180.00
7,000.00	0.43	173.98	6,937.25	-895.24	94.39	898.75	1.50	-1.50	0.00	180.00
7,028.75	0.00	360.00	6,966.00	-895.35	94.40	898.86	1.50	-1.50	0.00	-180.00
<b>End Drop at 7028.75ft - Williams Fork - Rulison Federal 35-14A Plan #1 Driller's Tgt</b>										
7,028.79	0.00	243.44	6,966.03	-895.35	94.40	898.86	0.00	0.00	0.00	243.44
<b>Rulison Federal 35-14A Plan #1 Zone Tgt</b>										
7,100.00	0.06	243.44	7,037.25	-895.37	94.36	898.87	0.09	0.09	0.00	243.44
7,200.00	0.15	243.44	7,137.24	-895.45	94.19	898.95	0.09	0.09	0.00	0.00
7,300.00	0.24	243.44	7,237.24	-895.61	93.88	899.09	0.09	0.09	0.00	0.00
7,400.00	0.33	243.44	7,337.24	-895.83	93.43	899.29	0.09	0.09	0.00	0.00
7,500.00	0.42	243.44	7,437.24	-896.13	92.84	899.56	0.09	0.09	0.00	0.00
7,600.00	0.51	243.44	7,537.24	-896.50	92.11	899.89	0.09	0.09	0.00	0.00
7,700.00	0.60	243.44	7,637.23	-896.93	91.23	900.29	0.09	0.09	0.00	0.00
7,800.00	0.69	243.44	7,737.23	-897.44	90.22	900.74	0.09	0.09	0.00	0.00
7,900.00	0.78	243.44	7,837.22	-898.02	89.07	901.26	0.09	0.09	0.00	0.00
8,000.00	0.87	243.44	7,937.21	-898.66	87.77	901.85	0.09	0.09	0.00	0.00
8,100.00	0.96	243.44	8,037.19	-899.38	86.34	902.50	0.09	0.09	0.00	0.00
8,117.81	0.98	243.44	8,055.00	-899.51	86.07	902.62	0.09	0.09	0.00	0.00
<b>Top of Gas</b>										
8,200.00	1.05	243.44	8,137.18	-900.17	84.76	903.21	0.09	0.09	0.00	0.00
8,300.00	1.14	243.44	8,237.16	-901.03	83.05	903.98	0.09	0.09	0.00	0.00
8,400.00	1.23	243.44	8,337.14	-901.95	81.19	904.82	0.09	0.09	0.00	0.00
8,500.00	1.32	243.44	8,437.11	-902.95	79.19	905.72	0.09	0.09	0.00	0.00
8,600.00	1.41	243.44	8,537.09	-904.02	77.06	906.68	0.09	0.09	0.00	0.00
8,700.00	1.50	243.44	8,637.05	-905.16	74.78	907.71	0.09	0.09	0.00	0.00
8,800.00	1.59	243.44	8,737.02	-906.37	72.36	908.80	0.09	0.09	0.00	0.00
8,895.20	1.68	243.44	8,832.18	-907.58	69.93	909.90	0.09	0.09	0.00	0.00
8,900.00	1.68	243.44	8,836.98	-907.65	69.80	909.96	0.09	-0.09	0.00	180.00
9,000.00	1.59	243.44	8,936.93	-908.92	67.26	911.11	0.09	-0.09	0.00	180.00
9,100.00	1.50	243.44	9,036.90	-910.13	64.84	912.19	0.09	-0.09	0.00	180.00
9,200.00	1.42	243.44	9,136.87	-911.27	62.56	913.22	0.09	-0.09	0.00	180.00
9,300.00	1.33	243.44	9,236.84	-912.34	60.42	914.19	0.09	-0.09	0.00	180.00
9,400.00	1.24	243.44	9,336.81	-913.34	58.41	915.10	0.09	-0.09	0.00	180.00
9,434.20	1.21	243.44	9,371.00	-913.67	57.75	915.39	0.09	-0.09	0.00	-180.00
<b>Cameo</b>										
9,500.00	1.16	243.44	9,436.79	-914.28	56.53	915.94	0.09	-0.09	0.00	180.00
9,600.00	1.07	243.44	9,536.77	-915.15	54.79	916.73	0.09	-0.09	0.00	180.00

**Plan Report for Rulison Federal 35-14A - 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	0.99	243.44	9,636.76	-915.95	53.19	917.45	0.09	-0.09	0.00	180.00
9,800.00	0.90	243.44	9,736.74	-916.69	51.72	918.12	0.09	-0.09	0.00	180.00
9,900.00	0.81	243.44	9,836.73	-917.36	50.38	918.72	0.09	-0.09	0.00	180.00
9,915.27	0.80	243.44	9,852.00	-917.45	50.19	918.81	0.09	-0.09	0.00	180.00
<b>Rollins</b>										
10,000.00	0.73	243.44	9,936.72	-917.96	49.18	919.26	0.09	-0.09	0.00	-180.00
10,100.00	0.64	243.44	10,036.71	-918.49	48.11	919.74	0.09	-0.09	0.00	180.00
10,200.00	0.55	243.44	10,136.71	-918.96	47.18	920.16	0.09	-0.09	0.00	180.00
10,221.29	0.54	243.44	10,158.00	-919.05	47.00	920.25	0.09	-0.09	0.00	180.00
<b>Cozzette</b>										
10,300.00	0.47	243.44	10,236.70	-919.36	46.38	920.52	0.09	-0.09	0.00	-180.00
10,400.00	0.38	243.44	10,336.70	-919.69	45.72	920.82	0.09	-0.09	0.00	180.00
10,460.30	0.33	243.44	10,397.00	-919.86	45.38	920.97	0.09	-0.09	0.00	180.00
<b>Corcora</b>										
10,500.00	0.30	243.44	10,436.70	-919.95	45.19	921.06	0.09	-0.09	0.00	-180.00
10,592.30	0.22	243.44	10,529.00	-920.14	44.82	921.23	0.09	-0.09	0.00	180.00
<b>Mancos</b>										
10,600.00	0.21	243.44	10,536.70	-920.15	44.80	921.24	0.09	-0.09	0.00	-180.00
10,700.00	0.12	243.44	10,636.70	-920.28	44.54	921.36	0.09	-0.09	0.00	180.00
10,800.00	0.04	243.44	10,736.70	-920.34	44.41	921.41	0.09	-0.09	0.00	-180.00
10,842.30	0.00	0.00	10,779.00	-920.35	44.40	921.42	0.09	-0.09	0.00	180.00
<b>Total Depth = 10842.30ft - Rulison Federal 35-14A Plan #1 BH Tgt</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
425.00	424.84	-6.94	0.73	Build Rate = 2.00°/100ft
634.01	632.62	-28.99	3.06	End Build at 634.01ft
3,600.00	3,568.43	-448.69	47.31	8.18 Inclination
6,483.40	6,422.50	-856.70	90.32	Begin Drop at 6483.40ft
6,800.00	6,737.38	-888.54	93.68	Drop Rate = 1.50°/100ft
7,028.75	6,966.00	-895.35	94.40	End Drop at 7028.75ft
10,842.30	10,779.00	-920.35	44.40	Total Depth = 10842.30ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Rulison Federal 35-14A Plan #1 BH Tgt	177.24	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,842.30	Plan #1	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,489.80	8 5/8" Casing Pt.	8-5/8	11

## Plan Report for Rulison Federal 35-14A - Plan #1

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,028.75	6,966.00	Williams Fork		0.00	
8,117.81	8,055.00	Top of Gas		0.00	
9,434.20	9,371.00	Cameo		0.00	
9,915.27	9,852.00	Rollins		0.00	
10,221.29	10,158.00	Cozzette		0.00	
10,460.30	10,397.00	Corcora		0.00	
10,592.30	10,529.00	Mancos		0.00	

***Targets associated with this wellbore***

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Rulison Federal 35-14A Plan #1 Zone Tgt	6,966.00	-920.35	44.40	Rectangle
Rulison Federal 35-14A Plan #1 Driller's Tgt	6,966.00	-895.35	94.40	Rectangle
Rulison Federal 35-14A Plan #1 BH Tgt	10,779.00	-920.35	44.40	Point

## North Reference Sheet for Sec. 35-T7S-R95W (SGV 35L PAD) - Rulison Federal 35-14A - 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 Rulison Federal 35-14A - 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: 0.99994881

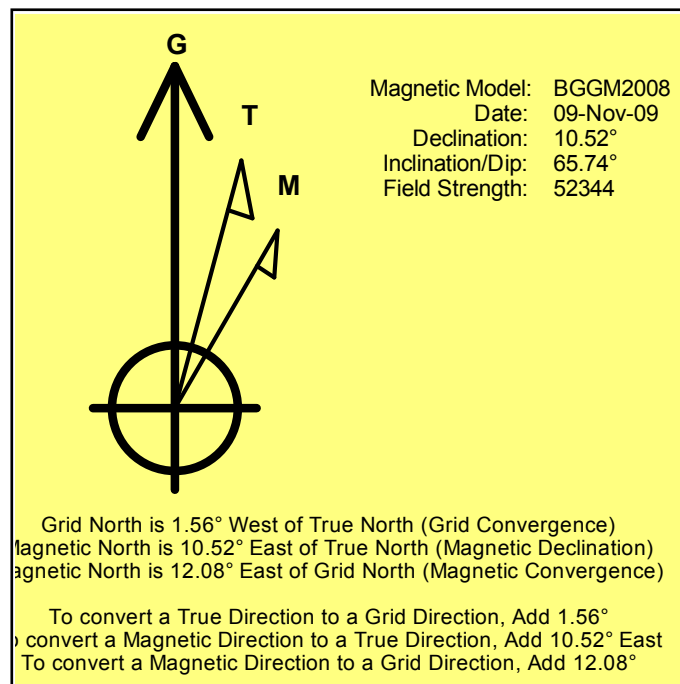
Grid Coordinates of Well: 577,302.00 ft N, 1,301,582.80 ft E

Geographical Coordinates of Well: 39° 23' 32.64" N, 107° 58' 17.40" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,842.30ft  
the Bottom Hole Displacement is 921.42ft in the Direction of 177.24° (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: Rulison Federal 35-14A  
Wellbore: Wellbore #1  
Plan: Plan #1

# Noble Energy (Rockies)

HALLIBURTON

## SECTION DETAILS

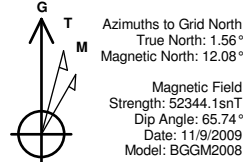
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	
634.01	8.18	173.98	632.63	-28.99	3.06	2.00	173.98	29.10	
6483.40	8.18	173.98	6422.50	-856.70	90.33	0.00	0.00	860.06	
7028.75	0.00	360.00	6966.00	-895.35	94.40	1.50	180.00	898.86	Rulison Federal 35-14A Plan #1 Driller's Tgt
8895.20	1.68	243.44	8832.18	-907.58	69.93	0.09	243.44	909.90	
10842.30	0.00	360.00	10779.00	-920.35	44.40	0.09	180.00	921.42	Rulison Federal 35-14A Plan #1 BH Tgt

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Rulison Federal 35-14A Plan #1 Driller's Tgt	6966.00	-895.35	94.40	Rectangle (Sides: L25.00 W25.00)
Rulison Federal 35-14A Plan #1 Zone Tgt	6966.00	-920.35	44.40	Rectangle (Sides: L100.00 W200.00)
Rulison Federal 35-14A Plan #1 BH Tgt	10779.00	-920.35	44.40	Point

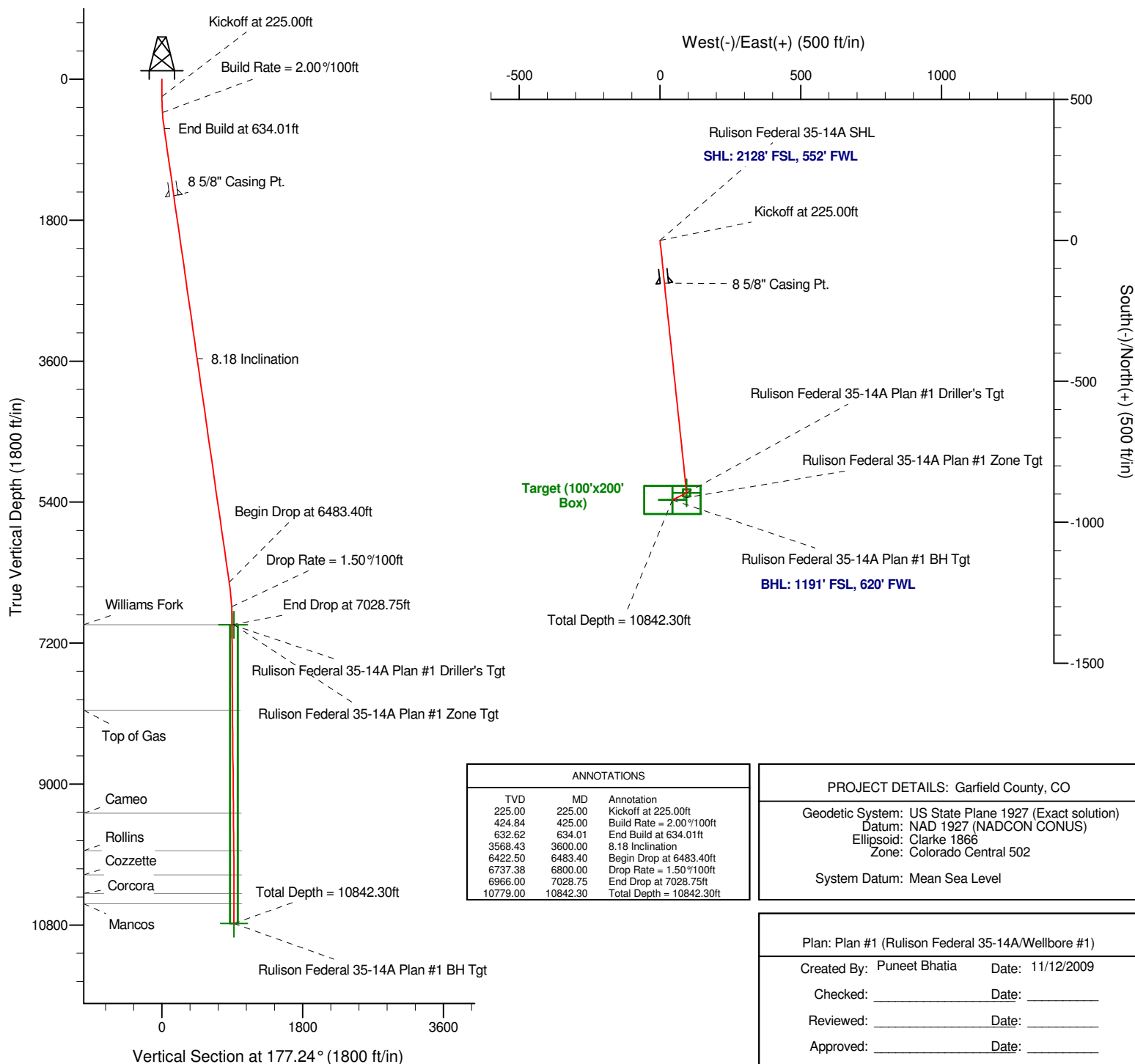
## WELL DETAILS: Rulison Federal 35-14A

North	Ground Level:	9203.00	Longitude	
0.007202.00	Easting	1301582.80	39° 23' 32.645 N	107° 58' 17.403 W
	Latitude			A10



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6966.00	7028.75	Williams Fork
8055.00	8117.81	Top of Gas
9371.00	9434.20	Cameo
9852.00	9915.27	Rollins
10158.00	10221.29	Cozzette
10397.00	10460.30	Corcora
10529.00	10592.30	Mancos



## ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
424.84	425.00	Build Rate = 2.00°/100ft
632.62	634.01	End Build at 634.01ft
3568.43	3600.00	8.18 Incline
6422.50	6483.40	Begin Drop at 6483.40ft
6737.38	6800.00	Drop Rate = 1.50°/100ft
6966.00	7028.75	End Drop at 7028.75ft
10779.00	10842.30	Total Depth = 10842.30ft

## 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 (Rulison Federal 35-14A/Wellbore #1)

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

Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Approved: \_\_\_\_\_ Date: \_\_\_\_\_