

# Noble Energy (Rockies)

Garfield County, CO (NAD 83)

Sec. 35-T7S-R95W

Rulison Federal 35-24A

Plan A

Plan: Plan A rev0

## Sperry Drilling Services

### Proposal Report

26 January, 2011

Well Coordinates: 1,577,329.30 N, 2,301,474.10 E (39° 23' 32.77" N, 107° 58' 19.02" W)

Ground Level: 9,211.00 ft

Local Coordinate Origin:

Centered on Well Rulison Federal 35-24A

Viewing Datum:

RKB 24' @ 9235.00ft

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 35-24A - Plan A rev0

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>Kick Off Point at 225.00 ft</b>										
300.00	1.50	124.88	299.99	-0.56	0.81	0.98	2.00	2.00	0.00	124.88
400.00	3.50	124.88	399.89	-3.06	4.38	5.34	2.00	2.00	0.00	0.00
500.00	5.50	124.88	499.58	-7.54	10.82	13.18	2.00	2.00	0.00	0.00
600.00	7.50	124.88	598.93	-14.02	20.11	24.49	2.00	2.00	0.00	0.00
700.00	9.50	124.88	697.83	-22.47	32.23	39.25	2.00	2.00	0.00	0.00
775.00	11.00	124.88	771.63	-30.10	43.18	52.59	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100 ft</b>										
800.00	11.50	124.88	796.15	-32.89	47.18	57.46	2.00	2.00	0.00	0.00
900.00	13.50	124.88	893.77	-45.27	64.93	79.08	2.00	2.00	0.00	0.00
1,000.00	15.50	124.88	990.58	-59.58	85.47	104.10	2.00	2.00	0.00	0.00
1,100.00	17.50	124.88	1,086.46	-75.82	108.77	132.47	2.00	2.00	0.00	0.00
1,200.00	19.50	124.88	1,181.29	-93.97	134.80	164.17	2.00	2.00	0.00	0.00
1,300.00	21.50	124.88	1,274.95	-113.99	163.53	199.16	2.00	2.00	0.00	0.00
1,376.37	23.03	124.88	1,345.62	-130.54	187.26	228.07	2.00	2.00	0.00	0.00
<b>End Build at 1376.37 ft</b>										
1,400.00	23.03	124.88	1,367.37	-135.83	194.85	237.30	0.00	0.00	0.00	0.00
1,500.00	23.03	124.88	1,459.40	-158.20	226.94	276.39	0.00	0.00	0.00	0.00
1,600.00	23.03	124.88	1,551.43	-180.56	259.03	315.47	0.00	0.00	0.00	0.00
1,700.00	23.03	124.88	1,643.47	-202.93	291.12	354.55	0.00	0.00	0.00	0.00
1,800.00	23.03	124.88	1,735.50	-225.30	323.21	393.63	0.00	0.00	0.00	0.00
1,900.00	23.03	124.88	1,827.53	-247.67	355.30	432.72	0.00	0.00	0.00	0.00
2,000.00	23.03	124.88	1,919.56	-270.04	387.39	471.80	0.00	0.00	0.00	0.00
2,100.00	23.03	124.88	2,011.59	-292.41	419.48	510.88	0.00	0.00	0.00	0.00
2,200.00	23.03	124.88	2,103.62	-314.78	451.57	549.96	0.00	0.00	0.00	0.00
2,300.00	23.03	124.88	2,195.66	-337.15	483.66	589.05	0.00	0.00	0.00	0.00
2,400.00	23.03	124.88	2,287.69	-359.52	515.75	628.13	0.00	0.00	0.00	0.00
2,500.00	23.03	124.88	2,379.72	-381.89	547.84	667.21	0.00	0.00	0.00	0.00
2,600.00	23.03	124.88	2,471.75	-404.26	579.93	706.29	0.00	0.00	0.00	0.00
2,700.00	23.03	124.88	2,563.78	-426.63	612.01	745.38	0.00	0.00	0.00	0.00
2,800.00	23.03	124.88	2,655.81	-449.00	644.10	784.46	0.00	0.00	0.00	0.00
2,900.00	23.03	124.88	2,747.85	-471.37	676.19	823.54	0.00	0.00	0.00	0.00
3,000.00	23.03	124.88	2,839.88	-493.74	708.28	862.62	0.00	0.00	0.00	0.00
3,100.00	23.03	124.88	2,931.91	-516.11	740.37	901.71	0.00	0.00	0.00	0.00
3,200.00	23.03	124.88	3,023.94	-538.48	772.46	940.79	0.00	0.00	0.00	0.00
3,300.00	23.03	124.88	3,115.97	-560.85	804.55	979.87	0.00	0.00	0.00	0.00
<b>9 5/8" Casing</b>										
3,400.00	23.03	124.88	3,208.01	-583.22	836.64	1,018.95	0.00	0.00	0.00	0.00
3,500.00	23.03	124.88	3,300.04	-605.59	868.73	1,058.04	0.00	0.00	0.00	0.00
3,600.00	23.03	124.88	3,392.07	-627.96	900.82	1,097.12	0.00	0.00	0.00	0.00
3,700.00	23.03	124.88	3,484.10	-650.33	932.91	1,136.20	0.00	0.00	0.00	0.00
3,800.00	23.03	124.88	3,576.13	-672.69	965.00	1,175.28	0.00	0.00	0.00	0.00
3,900.00	23.03	124.88	3,668.16	-695.06	997.09	1,214.37	0.00	0.00	0.00	0.00
4,000.00	23.03	124.88	3,760.20	-717.43	1,029.18	1,253.45	0.00	0.00	0.00	0.00
4,100.00	23.03	124.88	3,852.23	-739.80	1,061.27	1,292.53	0.00	0.00	0.00	0.00
4,200.00	23.03	124.88	3,944.26	-762.17	1,093.36	1,331.61	0.00	0.00	0.00	0.00
4,265.82	23.03	124.88	4,004.83	-776.90	1,114.48	1,357.34	0.00	0.00	0.00	0.00
<b>Begin Drop at 4265.82 ft</b>										
4,300.00	22.51	124.88	4,036.35	-784.46	1,125.34	1,370.56	1.50	-1.50	0.00	180.00
4,400.00	21.01	124.88	4,129.22	-805.67	1,155.75	1,407.60	1.50	-1.50	0.00	180.00
4,500.00	19.51	124.88	4,223.03	-825.47	1,184.17	1,442.21	1.50	-1.50	0.00	180.00
4,600.00	18.01	124.88	4,317.71	-843.87	1,210.56	1,474.34	1.50	-1.50	0.00	180.00
4,700.00	16.51	124.88	4,413.20	-860.84	1,234.90	1,504.00	1.50	-1.50	0.00	180.00
4,800.00	15.01	124.88	4,509.44	-876.38	1,257.19	1,531.14	1.50	-1.50	0.00	180.00

## Plan Report for Rulison Federal 35-24A - Plan A rev0

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 (°)
4,900.00	13.51	124.88	4,606.35	-890.47	1,277.40	1,555.76	1.50	-1.50	0.00	180.00
5,000.00	12.01	124.88	4,703.88	-903.10	1,295.53	1,577.83	1.50	-1.50	0.00	180.00
5,030.00	11.56	124.88	4,733.24	-906.61	1,300.56	1,583.96	1.50	-1.50	0.00	180.00
<b>Drop Rate = 1.50°/100 ft</b>										
5,100.00	10.51	124.88	4,801.95	-914.27	1,311.55	1,597.35	1.50	-1.50	0.00	-180.00
5,200.00	9.01	124.88	4,900.50	-923.97	1,325.47	1,614.29	1.50	-1.50	0.00	180.00
5,300.00	7.51	124.88	4,999.45	-932.19	1,337.26	1,628.65	1.50	-1.50	0.00	180.00
5,400.00	6.01	124.88	5,098.75	-938.93	1,346.92	1,640.42	1.50	-1.50	0.00	180.00
5,500.00	4.51	124.88	5,198.33	-944.17	1,354.45	1,649.59	1.50	-1.50	0.00	180.00
5,600.00	3.01	124.88	5,298.11	-947.93	1,359.83	1,656.15	1.50	-1.50	0.00	180.00
5,700.00	1.51	124.88	5,398.03	-950.19	1,363.08	1,660.10	1.50	-1.50	0.00	180.00
5,800.00	0.01	124.88	5,498.02	-950.95	1,364.17	1,661.43	1.50	-1.50	0.00	180.00
5,800.98	0.00	0.00	5,499.00	-950.95	1,364.17	1,661.43	1.50	-1.50	-12,742.86	-179.94
<b>End Drop at 5800.98 ft</b>										
5,900.00	0.00	0.00	5,598.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	180.00
6,000.00	0.00	0.00	5,698.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,798.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	5,898.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	5,998.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,098.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,198.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,298.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,398.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,498.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,598.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,698.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	6,798.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	6,898.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	6,998.02	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
7,300.98	0.00	0.00	6,999.00	-950.95	1,364.17	1,661.43	0.00	0.00	0.00	0.00
<b>Williams Fork - Rulison Federal 35-24A Driller's Target</b>										
7,400.00	0.08	225.00	7,098.02	-951.00	1,364.12	1,661.42	0.09	0.09	0.00	225.00
7,500.00	0.17	225.00	7,198.02	-951.16	1,363.96	1,661.39	0.09	0.09	0.00	0.00
7,600.00	0.25	225.00	7,298.02	-951.42	1,363.70	1,661.34	0.09	0.09	0.00	0.00
7,700.00	0.34	225.00	7,398.02	-951.79	1,363.33	1,661.27	0.09	0.09	0.00	0.00
7,800.00	0.42	225.00	7,498.01	-952.26	1,362.86	1,661.18	0.09	0.09	0.00	0.00
7,900.00	0.51	225.00	7,598.01	-952.83	1,362.29	1,661.07	0.09	0.09	0.00	0.00
8,000.00	0.59	225.00	7,698.01	-953.51	1,361.61	1,660.95	0.09	0.09	0.00	0.00
8,100.00	0.68	225.00	7,798.00	-954.30	1,360.82	1,660.80	0.09	0.09	0.00	0.00
8,200.00	0.76	225.00	7,897.99	-955.19	1,359.93	1,660.63	0.09	0.09	0.00	0.00
8,300.00	0.85	225.00	7,997.98	-956.19	1,358.93	1,660.44	0.09	0.09	0.00	0.00
8,390.03	0.93	225.00	8,088.00	-957.17	1,357.95	1,660.25	0.09	0.09	0.00	0.00
<b>Top of Gas</b>										
8,400.00	0.93	225.00	8,097.97	-957.29	1,357.83	1,660.23	0.09	0.09	0.00	0.00
8,500.00	1.02	225.00	8,197.96	-958.49	1,356.63	1,660.00	0.09	0.09	0.00	0.00
8,600.00	1.10	225.00	8,297.94	-959.80	1,355.31	1,659.75	0.09	0.09	0.00	0.00
8,700.00	1.19	225.00	8,397.92	-961.22	1,353.90	1,659.48	0.09	0.09	0.00	0.00
8,800.00	1.27	225.00	8,497.90	-962.74	1,352.38	1,659.20	0.09	0.09	0.00	0.00
8,900.00	1.36	225.00	8,597.87	-964.37	1,350.75	1,658.89	0.09	0.09	0.00	0.00
9,000.00	1.44	225.00	8,697.84	-966.10	1,349.02	1,658.56	0.09	0.09	0.00	0.00
9,100.00	1.53	225.00	8,797.80	-967.93	1,347.19	1,658.21	0.09	0.09	0.00	0.00
9,200.00	1.61	225.00	8,897.77	-969.87	1,345.25	1,657.84	0.09	0.09	0.00	0.00
9,300.00	1.70	225.00	8,997.73	-971.92	1,343.20	1,657.46	0.09	0.09	0.00	0.00
9,400.00	1.79	225.00	9,097.68	-974.07	1,341.05	1,657.05	0.09	0.09	0.00	0.00
9,500.00	1.87	225.00	9,197.63	-976.32	1,338.80	1,656.62	0.09	0.09	0.00	0.00
9,600.00	1.96	225.00	9,297.57	-978.68	1,336.44	1,656.17	0.09	0.09	0.00	0.00
9,700.00	2.04	225.00	9,397.51	-981.15	1,333.97	1,655.71	0.09	0.09	0.00	0.00
9,706.49	2.05	225.00	9,404.00	-981.31	1,333.81	1,655.67	0.09	0.09	0.00	0.00
<b>Cameo</b>										

## Plan Report for Rulison Federal 35-24A - Plan A rev0

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 (°)
9,800.00	2.13	225.00	9,497.45	-983.72	1,331.40	1,655.22	0.09	0.09	0.00	0.00
9,900.00	2.21	225.00	9,597.37	-986.39	1,328.73	1,654.71	0.09	0.09	0.00	0.00
10,000.00	2.30	225.00	9,697.30	-989.17	1,325.95	1,654.18	0.09	0.09	0.00	0.00
10,100.00	2.38	225.00	9,797.21	-992.06	1,323.06	1,653.64	0.09	0.09	0.00	0.00
10,187.86	2.46	225.00	9,885.00	-994.68	1,320.44	1,653.14	0.09	0.09	0.00	0.00
<b>Iles-Rollins</b>										
10,200.00	2.47	225.00	9,897.12	-995.05	1,320.07	1,653.07	0.09	0.09	0.00	0.00
10,300.00	2.55	225.00	9,997.03	-998.14	1,316.98	1,652.48	0.09	0.09	0.00	0.00
10,388.06	2.63	225.00	10,085.00	-1,000.95	1,314.17	1,651.95	0.09	0.09	0.00	0.00
<b>Total Depth at 10388.06 ft - Rulison Federal 35-24A BHL</b>										

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	Kick Off Point at 225.00 ft
775.00	771.63	-30.10	43.18	Build Rate = 2.00°/100 ft
1,376.37	1,345.62	-130.54	187.26	End Build at 1376.37 ft
4,265.82	4,004.83	-776.90	1,114.48	Begin Drop at 4265.82 ft
5,030.00	4,733.24	-906.61	1,300.56	Drop Rate = 1.50°/100 ft
5,800.98	5,499.00	-950.95	1,364.17	End Drop at 5800.98 ft
10,388.06	10,085.00	-1,000.95	1,314.17	Total Depth at 10388.06 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
User	No Target (Freehand)	127.30	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,388.06	Plan A rev0	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
3,300.00	3,115.97	9 5/8" Casing	9-5/8	12-1/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,300.98	6,999.00	Williams Fork		0.00	
8,390.03	8,088.00	Top of Gas		0.00	
9,706.49	9,404.00	Cameo		0.00	
10,187.86	9,885.00	Iles-Rollins		0.00	

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Plan Report for Rulison Federal 35-24A - Plan A rev0

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*Targets associated with this wellbore*

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Rulison Federal 35-24A Driller's Target	6,999.00	-950.95	1,364.17	Rectangle
Rulison Federal 35-24A BHL	10,085.00	-1,000.95	1,314.17	Rectangle

**North Reference Sheet for Sec. 35-T7S-R95W - Rulison Federal 35-24A - Plan A**

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' @ 9235.00ft. Northing and Easting are relative to Rulison Federal 35-24A

Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0.00000°, Latitude Origin:39.75000°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99994881

Grid Coordinates of Well: 1,577,329.30 ft N, 2,301,474.10 ft E

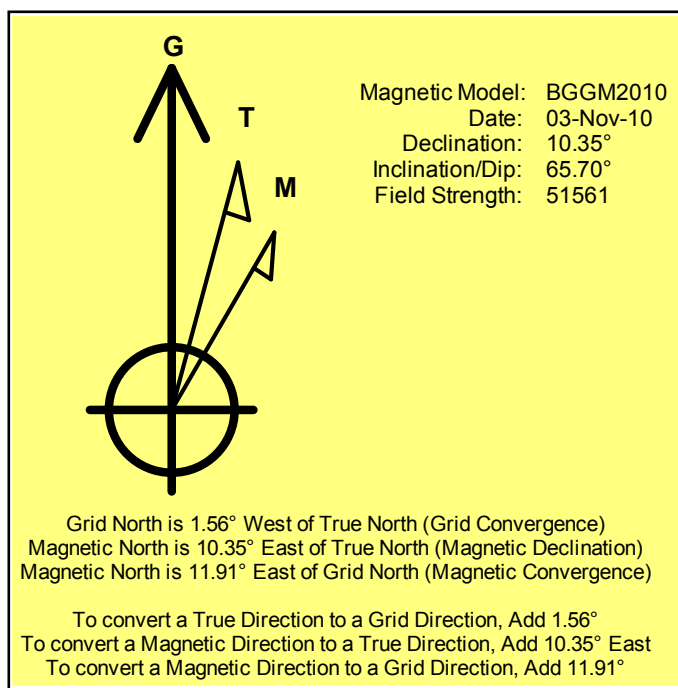
Geographical Coordinates of Well: 39° 23' 32.77" N, 107° 58' 19.02" W

Grid Convergence at Surface is: -1.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,388.06ft

the Bottom Hole Displacement is 1,651.95ft in the Direction of 127.30° (Grid).

Magnetic Convergence at surface is: -11.91° ( 3 November 2010, , BGGM2010)



Project: Garfield County, CO (NAD 83)

Site: Sec. 35-T7S-R95W

Well: Rulison Federal 35-24A

Wellbore: Plan A

Plan: Plan A rev0

# Noble Energy (Rockies)

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00
3	1376.37	23.03	124.88	1345.63	-130.54	187.26	2.00	124.88	228.07
4	4265.82	23.03	124.88	4004.83	-776.90	1114.48	0.00	0.00	1357.34
5	5800.98	0.00	0.00	5499.00	-950.95	1364.17	1.50	180.00	1661.43
6	7300.98	0.00	0.00	6999.00	-950.95	1364.17	0.00	0.00	1661.43
7	10388.06	2.63	225.00	10085.00	-1000.95	1314.17	0.09	225.00	1651.95

Rulison Federal 35-24A Driller's Target  
Rulison Federal 35-24A BHL

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Rulison Federal 35-24A Driller's Target	6999.00	-950.95	1364.17	Rectangle (Sides: L25.00 W25.00)
Rulison Federal 35-24A BHL	10085.00	-1000.95	1314.17	Rectangle (Sides: L200.00 W200.00)

## WELL DETAILS: Rulison Federal 35-24A

Ground Level:	9211.00
Latitude	39.39244
Longitude	-107.97195
Northing	1577329.30
Easting	2301474.10

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6999.00	7300.98	Williams Fork
8088.00	8390.03	Top of Gas
9404.00	9706.49	Cameo
9885.00	10187.86	Iles-Rollins

