

# Noble Energy (Rockies)

Garfield County, CO

Sec. 7-T8S-R95W (SGV 7K PAD)

Federal 7-34A - A 2

Wellbore #1

Plan: Plan #1 Proposal

## Sperry Drilling Services

### Proposal Report

10 August, 2009

Well Coordinates: 571,809.69 N, 1,282,898.78 E (39° 22' 33.29" N, 108° 02' 13.35" W)

Ground Level: 6,503.00 ft

Local Coordinate Origin:

Centered on Well Federal 7-34A - Slot A 2

Viewing Datum:

RKB 24' @ 6527.00ft

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

**Plan Report for Federal 7-34A - 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
<b>Federal 7-34A N. Hardline</b>										
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	1.87	134.28	299.99	-0.86	0.88	1.23	2.50	2.50	0.00	134.28
400.00	4.37	134.28	399.83	-4.66	4.78	6.67	2.50	2.50	0.00	0.00
500.00	6.87	134.28	499.34	-11.50	11.80	16.46	2.50	2.50	0.00	0.00
600.00	9.37	134.28	598.33	-21.37	21.92	30.57	2.50	2.50	0.00	0.00
634.00	10.22	134.28	631.83	-25.41	26.06	36.35	2.50	2.50	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
700.00	11.87	134.28	696.61	-34.24	35.12	48.99	2.50	2.50	0.00	0.00
800.00	14.37	134.28	793.99	-50.09	51.37	71.66	2.50	2.50	0.00	0.00
818.83	14.85	134.28	812.21	-53.41	54.77	76.41	2.50	2.50	0.00	0.00
<b>End Build at 818.83ft</b>										
900.00	14.85	134.28	890.67	-67.93	69.66	97.18	0.00	0.00	0.00	0.00
1,000.00	14.85	134.28	987.33	-85.82	88.01	122.77	0.00	0.00	0.00	0.00
1,100.00	14.85	134.28	1,083.99	-103.70	106.35	148.36	0.00	0.00	0.00	0.00
1,200.00	14.85	134.28	1,180.65	-121.59	124.70	173.95	0.00	0.00	0.00	0.00
1,300.00	14.85	134.28	1,277.32	-139.48	143.04	199.54	0.00	0.00	0.00	0.00
1,400.00	14.85	134.28	1,373.98	-157.37	161.39	225.13	0.00	0.00	0.00	0.00
1,500.00	14.85	134.28	1,470.64	-175.25	179.73	250.72	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	14.85	134.28	1,567.30	-193.14	198.07	276.31	0.00	0.00	0.00	0.00
1,700.00	14.85	134.28	1,663.96	-211.03	216.42	301.90	0.00	0.00	0.00	0.00
1,800.00	14.85	134.28	1,760.63	-228.91	234.76	327.48	0.00	0.00	0.00	0.00
1,900.00	14.85	134.28	1,857.29	-246.80	253.11	353.07	0.00	0.00	0.00	0.00
2,000.00	14.85	134.28	1,953.95	-264.69	271.45	378.66	0.00	0.00	0.00	0.00
2,100.00	14.85	134.28	2,050.61	-282.58	289.80	404.25	0.00	0.00	0.00	0.00
2,200.00	14.85	134.28	2,147.27	-300.46	308.14	429.84	0.00	0.00	0.00	0.00
2,300.00	14.85	134.28	2,243.93	-318.35	326.49	455.43	0.00	0.00	0.00	0.00
2,400.00	14.85	134.28	2,340.60	-336.24	344.83	481.02	0.00	0.00	0.00	0.00
2,500.00	14.85	134.28	2,437.26	-354.13	363.17	506.61	0.00	0.00	0.00	0.00
2,573.00	14.85	134.28	2,507.82	-367.18	376.57	525.29	0.00	0.00	0.00	0.00
<b>14.85 Inclination</b>										
2,600.00	14.85	134.28	2,533.92	-372.01	381.52	532.20	0.00	0.00	0.00	0.00
2,700.00	14.85	134.28	2,630.58	-389.90	399.86	557.79	0.00	0.00	0.00	0.00
2,800.00	14.85	134.28	2,727.24	-407.79	418.21	583.38	0.00	0.00	0.00	0.00
2,900.00	14.85	134.28	2,823.91	-425.68	436.55	608.97	0.00	0.00	0.00	0.00
3,000.00	14.85	134.28	2,920.57	-443.56	454.90	634.56	0.00	0.00	0.00	0.00
3,100.00	14.85	134.28	3,017.23	-461.45	473.24	660.15	0.00	0.00	0.00	0.00
3,200.00	14.85	134.28	3,113.89	-479.34	491.58	685.74	0.00	0.00	0.00	0.00
3,300.00	14.85	134.28	3,210.55	-497.23	509.93	711.33	0.00	0.00	0.00	0.00
3,400.00	14.85	134.28	3,307.22	-515.11	528.27	736.92	0.00	0.00	0.00	0.00
3,500.00	14.85	134.28	3,403.88	-533.00	546.62	762.51	0.00	0.00	0.00	0.00
3,600.00	14.85	134.28	3,500.54	-550.89	564.96	788.10	0.00	0.00	0.00	0.00
3,700.00	14.85	134.28	3,597.20	-568.77	583.31	813.69	0.00	0.00	0.00	0.00
3,800.00	14.85	134.28	3,693.86	-586.66	601.65	839.28	0.00	0.00	0.00	0.00
3,814.62	14.85	134.28	3,708.00	-589.28	604.33	843.02	0.00	0.00	0.00	0.00
<b>Williams Fork</b>										
3,900.00	14.85	134.28	3,790.53	-604.55	620.00	864.87	0.00	0.00	0.00	0.00
4,000.00	14.85	134.28	3,887.19	-622.44	638.34	890.46	0.00	0.00	0.00	0.00
4,100.00	14.85	134.28	3,983.85	-640.32	656.68	916.05	0.00	0.00	0.00	0.00
4,200.00	14.85	134.28	4,080.51	-658.21	675.03	941.63	0.00	0.00	0.00	0.00
4,300.00	14.85	134.28	4,177.17	-676.10	693.37	967.22	0.00	0.00	0.00	0.00
4,328.78	14.85	134.28	4,204.99	-681.25	698.65	974.59	0.00	0.00	0.00	0.00
<b>Begin Drop at 4328.78ft</b>										

**Plan Report for Federal 7-34A - 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 (°)
4,400.00	13.42	134.28	4,274.06	-693.39	711.10	991.96	2.00	-2.00	0.00	180.00
4,500.00	11.42	134.28	4,371.71	-708.40	726.50	1,013.44	2.00	-2.00	0.00	180.00
4,600.00	9.42	134.28	4,470.05	-721.03	739.45	1,031.50	2.00	-2.00	0.00	180.00
4,700.00	7.42	134.28	4,568.97	-731.25	749.94	1,046.13	2.00	-2.00	0.00	-180.00
<b>Drop Rate = 1.50°/100ft</b>										
4,800.00	5.42	134.28	4,668.34	-739.06	757.94	1,057.30	2.00	-2.00	0.00	180.00
4,900.00	3.42	134.28	4,768.04	-744.44	763.46	1,065.00	2.00	-2.00	0.00	180.00
5,000.00	1.42	134.28	4,867.94	-747.39	766.49	1,069.22	2.00	-2.00	0.00	180.00
5,070.84	0.00	134.28	4,938.77	-748.01	767.12	1,070.10	2.00	-2.00	0.00	-180.00
<b>Federal 7-34A Plan #1 Zone Tgt</b>										
5,071.07	0.00	0.00	4,939.00	-748.01	767.12	1,070.10	2.00	-2.00	0.00	-180.00
<b>End Drop at 5071.07ft - Top of Gas - Federal 7-34A Plan #1 Driller's Tgt</b>										
5,100.00	0.07	243.43	4,967.93	-748.02	767.10	1,070.09	0.25	0.25	0.00	243.43
5,200.00	0.33	243.43	5,067.93	-748.17	766.79	1,069.99	0.25	0.25	0.00	0.00
5,300.00	0.58	243.43	5,167.93	-748.53	766.08	1,069.77	0.25	0.25	0.00	0.00
5,400.00	0.84	243.43	5,267.92	-749.08	764.97	1,069.43	0.25	0.25	0.00	0.00
5,500.00	1.09	243.43	5,367.91	-749.83	763.47	1,068.95	0.25	0.25	0.00	0.00
5,600.00	1.34	243.43	5,467.89	-750.78	761.57	1,068.36	0.25	0.25	0.00	0.00
5,700.00	1.60	243.43	5,567.85	-751.93	759.28	1,067.64	0.25	0.25	0.00	0.00
5,800.00	1.85	243.43	5,667.81	-753.27	756.59	1,066.80	0.25	0.25	0.00	0.00
5,900.00	2.11	243.43	5,767.75	-754.82	753.50	1,065.83	0.25	0.25	0.00	0.00
6,000.00	2.36	243.43	5,867.67	-756.56	750.01	1,064.73	0.25	0.25	0.00	0.00
6,100.00	2.61	243.43	5,967.58	-758.50	746.13	1,063.52	0.25	0.25	0.00	0.00
6,191.70	2.85	243.43	6,059.17	-760.45	742.23	1,062.29	0.25	0.25	0.00	0.00
6,200.00	2.83	243.43	6,067.46	-760.64	741.86	1,062.18	0.25	-0.25	0.00	180.00
6,300.00	2.57	243.43	6,167.35	-762.74	737.65	1,060.86	0.25	-0.25	0.00	180.00
6,326.67	2.51	243.43	6,194.00	-763.27	736.59	1,060.53	0.25	-0.25	0.00	180.00
<b>Cameo</b>										
6,400.00	2.32	243.43	6,267.26	-764.66	733.83	1,059.66	0.25	-0.25	0.00	-180.00
6,500.00	2.07	243.43	6,367.19	-766.37	730.40	1,058.59	0.25	-0.25	0.00	180.00
6,600.00	1.82	243.43	6,467.13	-767.89	727.37	1,057.63	0.25	-0.25	0.00	180.00
6,658.90	1.67	243.43	6,526.00	-768.69	725.76	1,057.13	0.25	-0.25	0.00	-180.00
<b>Rollins</b>										
6,700.00	1.57	243.43	6,567.09	-769.21	724.72	1,056.81	0.25	-0.25	0.00	180.00
6,800.00	1.31	243.43	6,667.05	-770.33	722.48	1,056.10	0.25	-0.25	0.00	180.00
6,900.00	1.06	243.43	6,767.03	-771.26	720.62	1,055.52	0.25	-0.25	0.00	180.00
7,000.00	0.81	243.43	6,867.02	-771.99	719.16	1,055.06	0.25	-0.25	0.00	180.00
7,100.00	0.56	243.43	6,967.01	-772.52	718.09	1,054.73	0.25	-0.25	0.00	180.00
7,200.00	0.31	243.43	7,067.01	-772.86	717.41	1,054.51	0.25	-0.25	0.00	180.00
7,300.00	0.06	243.43	7,167.01	-773.00	717.13	1,054.42	0.25	-0.25	0.00	180.00
7,321.99	0.00	0.00	7,189.00	-773.01	717.12	1,054.42	0.25	-0.25	530.09	180.00
<b>Total Depth = 7321.99ft - Federal 7-34A Plan #1 BH Tgt</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	Kickoff at 225.00ft
634.00	631.83	-25.41	26.06	Build Rate = 2.00°/100ft
818.83	812.21	-53.41	54.77	End Build at 818.83ft
2,573.00	2,507.82	-367.18	376.57	14.85 Inclination
4,328.78	4,204.99	-681.25	698.65	Begin Drop at 4328.78ft
4,700.00	4,568.97	-731.25	749.94	Drop Rate = 1.50°/100ft
5,071.07	4,939.00	-748.01	767.12	End Drop at 5071.07ft
7,321.99	7,189.00	-773.01	717.12	Total Depth = 7321.99ft

## Plan Report for Federal 7-34A - Plan #1 Proposal

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Federal 7-34A Plan #1 BH Tgt	137.15	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,321.99	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,470.64	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,814.62	3,708.00	Williams Fork		0.00	
5,071.07	4,939.00	Top of Gas		0.00	
6,326.67	6,194.00	Cameo		0.00	
6,658.90	6,526.00	Rollins		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Federal 7-34A Plan #1 BH Tgt	7,189.00	-773.01	717.12	Point
Federal 7-34A Plan #1 Zone Tgt	4,939.00	-773.01	717.12	Rectangle
Federal 7-34A N. Hardline	0.00	-7.50	0.19	Polygon
Federal 7-34A Plan #1 Driller's Tgt	4,939.00	-748.01	767.12	Rectangle

## North Reference Sheet for Sec. 7-T8S-R95W (SGV 7K PAD) - Federal 7-34A - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 24' @ 6527.00ft. Northing and Easting are relative to Federal 7-34A - Slot A 2

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: 0.99994739

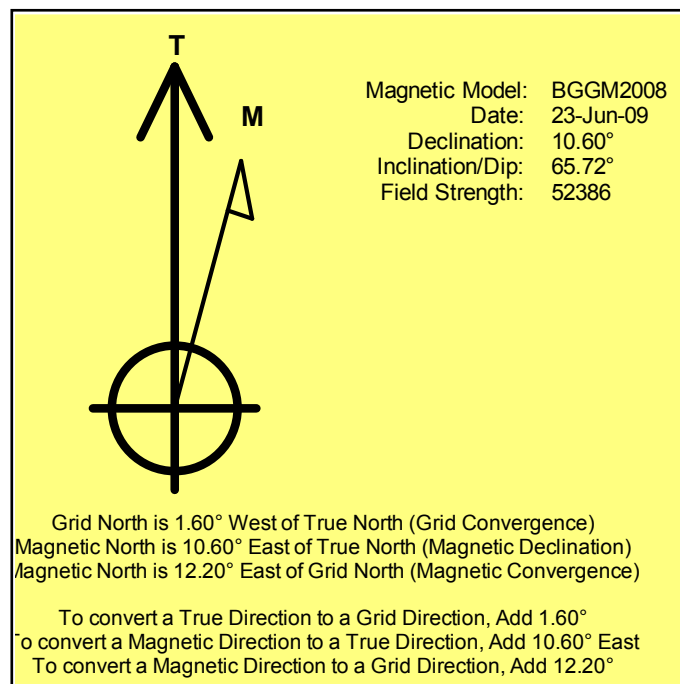
Grid Coordinates of Well: 571,809.69 ft N, 1,282,898.78 ft E

Geographical Coordinates of Well: 39° 22' 33.29" N, 108° 02' 13.35" W

Grid Convergence at Surface is: -1.60°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,321.99ft the Bottom Hole Displacement is 1,054.42ft in the Direction of 137.15° (True).

Magnetic Convergence at surface is: -12.20° (23 June 2009, , BGGM2008)



Project: Garfield County, CO  
Site: Sec. 7-T8S-R95W (SGV 7K PAD)

Well: Federal 7-34A

Wellbore: Wellbore #1

Plan: Plan #1 Proposal

# Noble Energy (Rockies)

HALLIBURTON

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSoc	
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	818.83	14.85	134.28	812.21	-53.41	54.77	2.50	134.28	76.41	
4	4328.78	14.85	134.28	4204.99	-681.25	698.65	0.00	0.00	974.59	
5	5071.07	0.00	0.00	4939.00	-748.01	767.12	2.00	180.00	1070.10	Federal 7-34A Plan #1 Driller's Tgt
6	6191.70	2.85	243.43	6059.17	-760.45	742.23	0.25	243.43	1062.29	
7	7321.99	0.00	0.00	7189.00	-773.01	717.12	0.25	180.00	1054.42	Federal 7-34A Plan #1 BH Tgt

## WELL DETAILS: Federal 7-34A

Ground Level:	6503.00			
Northing	Easting	Latitude	Longitude	A 2
	571809.69	1282898.78	39° 22' 33.28"N 107° 2' 13.350 W	

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3708.00	3814.62	Williams Fork
4939.00	5071.07	Top of Gas
6194.00	6326.67	Cameo
6526.00	6658.90	Rollins

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Federal 7-34A N. Hardline	0.00	-7.50	0.19	Polygon
Federal 7-34A Plan #1 Driller's Tgt	4939.00	-748.01	767.12	Rectangle (Sides: L25.00 W25.00)
Federal 7-34A Plan #1 Zone Tgt	4939.00	-773.01	717.12	Rectangle (Sides: L100.00 W200.00)
Federal 7-34A Plan #1 BH Tgt	7189.00	-773.01	717.12	Point



Azimuths to True North  
Magnetic North: 10.60°  
Magnetic Field  
Strength: 52386.1nT  
Dip Angle: 65.72°  
Date: 6/23/2009  
Model: BGGM2008

