

# Noble Energy (Rockies)

Garfield County, CO

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

Federal 7-23B - B 9

Wellbore #1

Plan: Plan #1 Proposal

## Sperry Drilling Services

### Proposal Report

10 August, 2009

Well Coordinates: 571,862.03 N, 1,282,889.56 E (39° 22' 33.80" N, 108° 02' 13.49" W)

Ground Level: 6,503.00 ft

Local Coordinate Origin:

Centered on Well Federal 7-23B - Slot B 9

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 7-23B - 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 7-23B S. 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	1.50	285.21	299.99	0.26	-0.95	0.98	2.00	2.00	0.00	285.21
400.00	3.50	285.21	399.89	1.40	-5.16	5.34	2.00	2.00	0.00	0.00
478.00	5.06	285.21	477.67	2.93	-10.77	11.15	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
500.00	5.50	285.21	499.58	3.46	-12.73	13.17	2.00	2.00	0.00	0.00
600.00	7.50	285.21	598.93	6.43	-23.65	24.48	2.00	2.00	0.00	0.00
700.00	9.50	285.21	697.83	10.31	-37.91	39.24	2.00	2.00	0.00	0.00
730.55	10.11	285.21	727.93	11.67	-42.93	44.44	2.00	2.00	0.00	0.00
<b>End Build at 730.55ft</b>										
800.00	10.11	285.21	796.30	14.87	-54.70	56.62	0.00	0.00	0.00	0.00
900.00	10.11	285.21	894.75	19.48	-71.64	74.15	0.00	0.00	0.00	0.00
1,000.00	10.11	285.21	993.20	24.09	-88.58	91.69	0.00	0.00	0.00	0.00
1,100.00	10.11	285.21	1,091.64	28.69	-105.52	109.22	0.00	0.00	0.00	0.00
1,200.00	10.11	285.21	1,190.09	33.30	-122.46	126.76	0.00	0.00	0.00	0.00
1,300.00	10.11	285.21	1,288.54	37.91	-139.40	144.29	0.00	0.00	0.00	0.00
1,400.00	10.11	285.21	1,386.98	42.51	-156.34	161.83	0.00	0.00	0.00	0.00
1,499.00	10.11	285.21	1,484.45	47.07	-173.11	179.19	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,500.00	10.11	285.21	1,485.43	47.12	-173.28	179.36	0.00	0.00	0.00	0.00
1,600.00	10.11	285.21	1,583.88	51.72	-190.22	196.90	0.00	0.00	0.00	0.00
1,700.00	10.11	285.21	1,682.32	56.33	-207.16	214.43	0.00	0.00	0.00	0.00
1,800.00	10.11	285.21	1,780.77	60.94	-224.10	231.97	0.00	0.00	0.00	0.00
1,900.00	10.11	285.21	1,879.22	65.54	-241.04	249.50	0.00	0.00	0.00	0.00
2,000.00	10.11	285.21	1,977.67	70.15	-257.98	267.04	0.00	0.00	0.00	0.00
2,100.00	10.11	285.21	2,076.11	74.76	-274.92	284.57	0.00	0.00	0.00	0.00
2,200.00	10.11	285.21	2,174.56	79.36	-291.86	302.11	0.00	0.00	0.00	0.00
2,300.00	10.11	285.21	2,273.01	83.97	-308.80	319.64	0.00	0.00	0.00	0.00
2,400.00	10.11	285.21	2,371.45	88.58	-325.74	337.18	0.00	0.00	0.00	0.00
2,500.00	10.11	285.21	2,469.90	93.18	-342.69	354.71	0.00	0.00	0.00	0.00
2,508.00	10.11	285.21	2,477.78	93.55	-344.04	356.12	0.00	0.00	0.00	0.00
<b>10.11 Inclination</b>										
2,600.00	10.11	285.21	2,568.35	97.79	-359.63	372.25	0.00	0.00	0.00	0.00
2,700.00	10.11	285.21	2,666.79	102.39	-376.57	389.78	0.00	0.00	0.00	0.00
2,800.00	10.11	285.21	2,765.24	107.00	-393.51	407.32	0.00	0.00	0.00	0.00
2,900.00	10.11	285.21	2,863.69	111.61	-410.45	424.85	0.00	0.00	0.00	0.00
3,000.00	10.11	285.21	2,962.13	116.21	-427.39	442.39	0.00	0.00	0.00	0.00
3,100.00	10.11	285.21	3,060.58	120.82	-444.33	459.92	0.00	0.00	0.00	0.00
3,200.00	10.11	285.21	3,159.03	125.43	-461.27	477.46	0.00	0.00	0.00	0.00
3,300.00	10.11	285.21	3,257.48	130.03	-478.21	494.99	0.00	0.00	0.00	0.00
3,400.00	10.11	285.21	3,355.92	134.64	-495.15	512.53	0.00	0.00	0.00	0.00
3,500.00	10.11	285.21	3,454.37	139.25	-512.09	530.06	0.00	0.00	0.00	0.00
3,600.00	10.11	285.21	3,552.82	143.85	-529.03	547.60	0.00	0.00	0.00	0.00
3,700.00	10.11	285.21	3,651.26	148.46	-545.97	565.13	0.00	0.00	0.00	0.00
3,713.95	10.11	285.21	3,665.00	149.10	-548.33	567.58	0.00	0.00	0.00	0.00
<b>Williams Fork</b>										
3,800.00	10.11	285.21	3,749.71	153.07	-562.91	582.67	0.00	0.00	0.00	0.00
3,900.00	10.11	285.21	3,848.16	157.67	-579.85	600.20	0.00	0.00	0.00	0.00
4,000.00	10.11	285.21	3,946.60	162.28	-596.79	617.74	0.00	0.00	0.00	0.00
4,100.00	10.11	285.21	4,045.05	166.88	-613.73	635.27	0.00	0.00	0.00	0.00
4,200.00	10.11	285.21	4,143.50	171.49	-630.67	652.81	0.00	0.00	0.00	0.00
4,286.27	10.11	285.21	4,228.43	175.46	-645.29	667.94	0.00	0.00	0.00	0.00
<b>Begin Drop at 4286.27ft</b>										

**Plan Report for Federal 7-23B - 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 (°)
4,300.00	9.91	285.21	4,241.95	176.09	-647.59	670.32	1.50	-1.50	0.00	180.00
4,400.00	8.41	285.21	4,340.67	180.27	-662.94	686.21	1.50	-1.50	0.00	180.00
4,500.00	6.91	285.21	4,439.78	183.76	-675.80	699.52	1.50	-1.50	0.00	180.00
4,600.00	5.41	285.21	4,539.20	186.57	-686.14	710.22	1.50	-1.50	0.00	180.00
4,623.00	5.06	285.21	4,562.10	187.12	-688.17	712.32	1.50	-1.50	0.00	-180.00
<b>Drop Rate = 1.50°/100ft</b>										
4,700.00	3.91	285.21	4,638.87	188.70	-693.97	718.33	1.50	-1.50	0.00	180.00
4,800.00	2.41	285.21	4,738.71	190.15	-699.28	723.83	1.50	-1.50	0.00	180.00
4,900.00	0.91	285.21	4,838.67	190.90	-702.07	726.71	1.50	-1.50	0.00	180.00
4,957.33	0.05	285.21	4,896.00	191.03	-702.53	727.19	1.50	-1.50	0.00	-180.00
<b>Top of Gas</b>										
4,960.33	0.00	285.21	4,899.00	191.03	-702.53	727.19	1.50	-1.50	0.00	180.00
<b>End Drop at 4960.33ft - Federal 7-23B Plan #1 Driller's Tgt</b>										
4,960.38	0.00	285.21	4,899.05	191.03	-702.53	727.19	0.00	0.00	0.00	0.00
<b>Federal 7-23B Plan #1 Zone Tgt</b>										
5,000.00	0.10	243.44	4,938.67	191.01	-702.56	727.22	0.25	0.25	-105.45	-41.80
5,100.00	0.35	243.44	5,038.66	190.84	-702.92	727.52	0.25	0.25	0.00	0.00
5,200.00	0.61	243.44	5,138.66	190.46	-703.67	728.18	0.25	0.25	0.00	0.00
5,300.00	0.86	243.44	5,238.65	189.89	-704.82	729.18	0.25	0.25	0.00	0.00
5,400.00	1.12	243.44	5,338.64	189.11	-706.36	730.52	0.25	0.25	0.00	0.00
5,500.00	1.37	243.44	5,438.61	188.14	-708.30	732.20	0.25	0.25	0.00	0.00
5,600.00	1.62	243.44	5,538.58	186.97	-710.64	734.24	0.25	0.25	0.00	0.00
5,700.00	1.88	243.44	5,638.53	185.61	-713.38	736.61	0.25	0.25	0.00	0.00
5,800.00	2.13	243.44	5,738.47	184.04	-716.51	739.33	0.25	0.25	0.00	0.00
5,900.00	2.39	243.44	5,838.39	182.28	-720.03	742.40	0.25	0.25	0.00	0.00
6,000.00	2.64	243.44	5,938.30	180.32	-723.96	745.80	0.25	0.25	0.00	0.00
6,080.90	2.85	243.44	6,019.10	178.59	-727.42	748.81	0.25	0.25	0.00	0.00
6,100.00	2.80	243.44	6,038.18	178.17	-728.26	749.54	0.25	-0.25	0.00	180.00
6,200.00	2.55	243.44	6,138.07	176.08	-732.43	753.17	0.25	-0.25	0.00	180.00
6,212.94	2.51	243.44	6,151.00	175.83	-732.94	753.61	0.25	-0.25	0.00	180.00
<b>Cameo</b>										
6,300.00	2.29	243.44	6,237.98	174.19	-736.21	756.45	0.25	-0.25	0.00	-180.00
6,400.00	2.04	243.44	6,337.91	172.50	-739.59	759.39	0.25	-0.25	0.00	180.00
6,500.00	1.79	243.44	6,437.86	171.00	-742.58	761.99	0.25	-0.25	0.00	180.00
6,545.17	1.68	243.44	6,483.00	170.39	-743.81	763.05	0.25	-0.25	0.00	180.00
<b>Rollins</b>										
6,600.00	1.54	243.44	6,537.81	169.71	-745.18	764.25	0.25	-0.25	0.00	-180.00
6,700.00	1.29	243.44	6,637.78	168.60	-747.39	766.16	0.25	-0.25	0.00	180.00
6,800.00	1.04	243.44	6,737.76	167.70	-749.20	767.74	0.25	-0.25	0.00	180.00
6,900.00	0.78	243.44	6,837.75	166.99	-750.62	768.97	0.25	-0.25	0.00	180.00
7,000.00	0.53	243.44	6,937.74	166.47	-751.65	769.86	0.25	-0.25	0.00	180.00
7,100.00	0.28	243.44	7,037.74	166.16	-752.28	770.41	0.25	-0.25	0.00	180.00
7,200.00	0.03	243.44	7,137.74	166.04	-752.52	770.62	0.25	-0.25	0.00	180.00
7,211.26	0.00	0.00	7,149.00	166.03	-752.53	770.63	0.25	-0.25	1,035.19	180.00
<b>Total Depth = 7211.26ft - Federal 7-23B Plan #1 BH Tgt</b>										

**Plan Report for Federal 7-23B - Plan #1 Proposal****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
478.00	477.67	2.93	-10.77	Build Rate = 2.00°/100ft
730.55	727.93	11.67	-42.93	End Build at 730.55ft
2,508.00	2,477.78	93.55	-344.04	10.11 Inclination
4,286.27	4,228.43	175.46	-645.29	Begin Drop at 4286.27ft
4,623.00	4,562.10	187.12	-688.17	Drop Rate = 1.50°/100ft
4,960.33	4,899.00	191.03	-702.53	End Drop at 4960.33ft
7,211.26	7,149.00	166.03	-752.53	Total Depth = 7211.26ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	Federal 7-23B Plan #1 BH Tgt	282.44	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,211.13	Plan #1 Proposal	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,499.00	1,484.45	8 5/8" Casing Pt.	8-5/8	11

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,713.95	3,665.00	Williams Fork		0.00	
4,957.33	4,896.00	Top of Gas		0.00	
6,212.94	6,151.00	Cameo		0.00	
6,545.17	6,483.00	Rollins		0.00	

**Targets associated with this wellbore**

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Federal 7-23B S. Hardline	0.00	7.68	-0.35	Polygon
Federal 7-23B Plan #1 Driller's Tgt	4,899.00	191.03	-702.53	Rectangle
Federal 7-23B Plan #1 Zone Tgt	4,899.00	166.03	-752.53	Rectangle
Federal 7-23B Plan #1 BH Tgt	7,149.00	166.03	-752.53	Point

**North Reference Sheet for Sec. 7-T8S-R95W (SGV 7K PAD) - Federal 7-23B - 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 7-23B - Slot B 9

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: 0.99994740

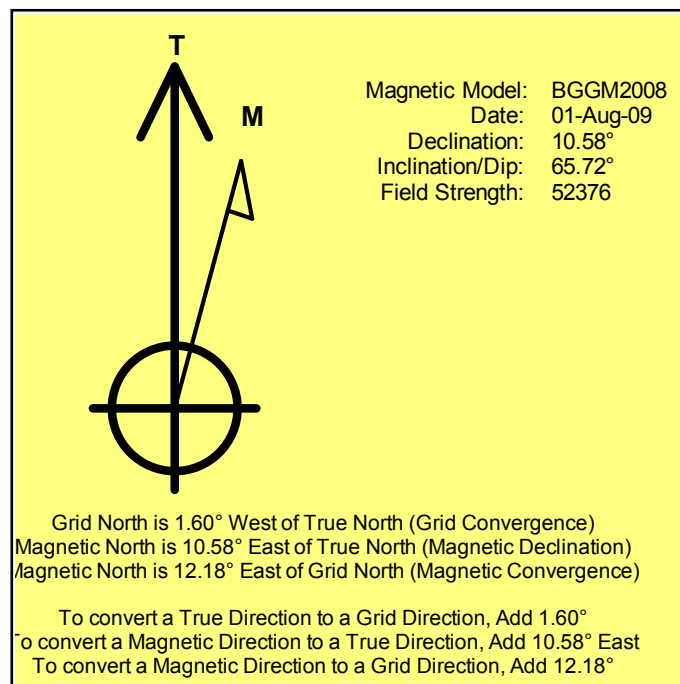
Grid Coordinates of Well: 571,862.03 ft N, 1,282,889.56 ft E

Geographical Coordinates of Well: 39° 22' 33.80" N, 108° 02' 13.49" W

Grid Convergence at Surface is: -1.60°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,211.26ft  
the Bottom Hole Displacement is 770.63ft in the Direction of 282.44° (True).

Magnetic Convergence at surface is: -12.18° ( 1 August 2009, , BGGM2008)



Project: Garfield County, CO  
Site: Sec. 7-T8S-R95W (SGV 7K PAD)  
Well: Federal 7-23B  
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	730.55	10.11	285.21	727.93	11.67	-42.93	2.00	285.21	44.44
4	4286.27	10.11	285.21	4228.43	175.46	-645.29	0.00	0.00	667.94
5	4960.33	0.00	0.00	4899.00	191.03	-702.53	1.50	180.00	727.19
6	6080.90	2.85	243.44	6019.10	178.59	-727.42	0.25	243.44	748.81
7	7211.26	0.00	0.00	7149.00	166.03	-752.53	0.25	180.00	770.63

Federal 7-23B Plan #1 Driller's Tgt

Federal 7-23B Plan #1 BH Tgt

## WELL DETAILS: Federal 7-23B

Northing	Easting	Ground Level:	6503.00	Latitude	Longitude
571862.03	1282889.56	39° 22' 33.80" N	107° 13.486' W	B 9	

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3665.00	3713.95	Williams Fork
4896.00	4957.33	Top of Gas
6151.00	6212.94	Cameo
6483.00	6545.17	Rollins

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Federal 7-23B S. Hardline	0.00	7.68	-0.35	Polygon
Federal 7-23B Plan #1 Driller's Tgt	4899.00	191.03	-702.53	Rectangle (Sides: L25.00 W25.00)
Federal 7-23B Plan #1 Zone Tgt	4899.00	166.03	-752.53	Rectangle (Sides: L54.50 W200.00)
Federal 7-23B Plan #1 BH Tgt	7149.00	166.03	-752.53	Point



Azimuths to True North  
Magnetic North: 10.58°  
Magnetic Field  
Strength: 52375.5nT  
Dip Angle: 65.72°  
Date: 8/1/2009  
Model: BGGM2008

