

# **Noble Energy (Rockies)**

**Garfield County, CO (NAD 83)**

**Sec. 35-T7S-R95W (BM 35C PAD)**

**BM 35-21C**

**BM 35-21C**

**Plan: BM 35-21C Proposal 2.0**

## **Standard Proposal Report**

**13 February, 2010**



**HALLIBURTON**

**Sperry Drilling Services**

Project: Garfield County, CO (NAD 83)  
Site: Sec. 35-T7S-R95W (BM 35C PAD)  
Well: BM 35-21C  
Wellbore: BM 35-21C  
Plan: BM 35-21C Proposal 2.0

# Noble Energy (Rockies)

## 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
200.00	0.00	360.00	200.00	0.00	0.00	0.00	360.00	0.00
466.67	4.00	270.00	466.45	0.00	-9.30	1.50	270.00	0.00
647.87	1.75	236.57	647.43	-1.52	-17.93	1.50	-159.27	-1.52
6949.96	1.75	236.57	6946.58	-107.33	-178.23	0.00	0.00	-107.33
7066.39	0.00	2.43	7063.00	-108.31	-179.71	1.50	180.00	-108.31
71166.39	0.00	2.43	1163.00	-108.31	-179.71	0.00	0.00	-108.31

BM 35-21C

## WELL DETAILS: BM 35-21C

Ground Level:	9233.00
Latitude	39° 23' 55.913 N
Longitude	107° 57' 59.799 W
Northing	1579629.00
Easting	2303046.30

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
7111.00	7114.39	Williams Fork
8093.00	8096.39	Top of Gas
9654.00	9657.39	Cameo
10027.00	10030.39	Rollins
10375.00	10378.39	Cozzette
10672.00	10675.39	Corcoran
10913.00	10916.39	Mancos

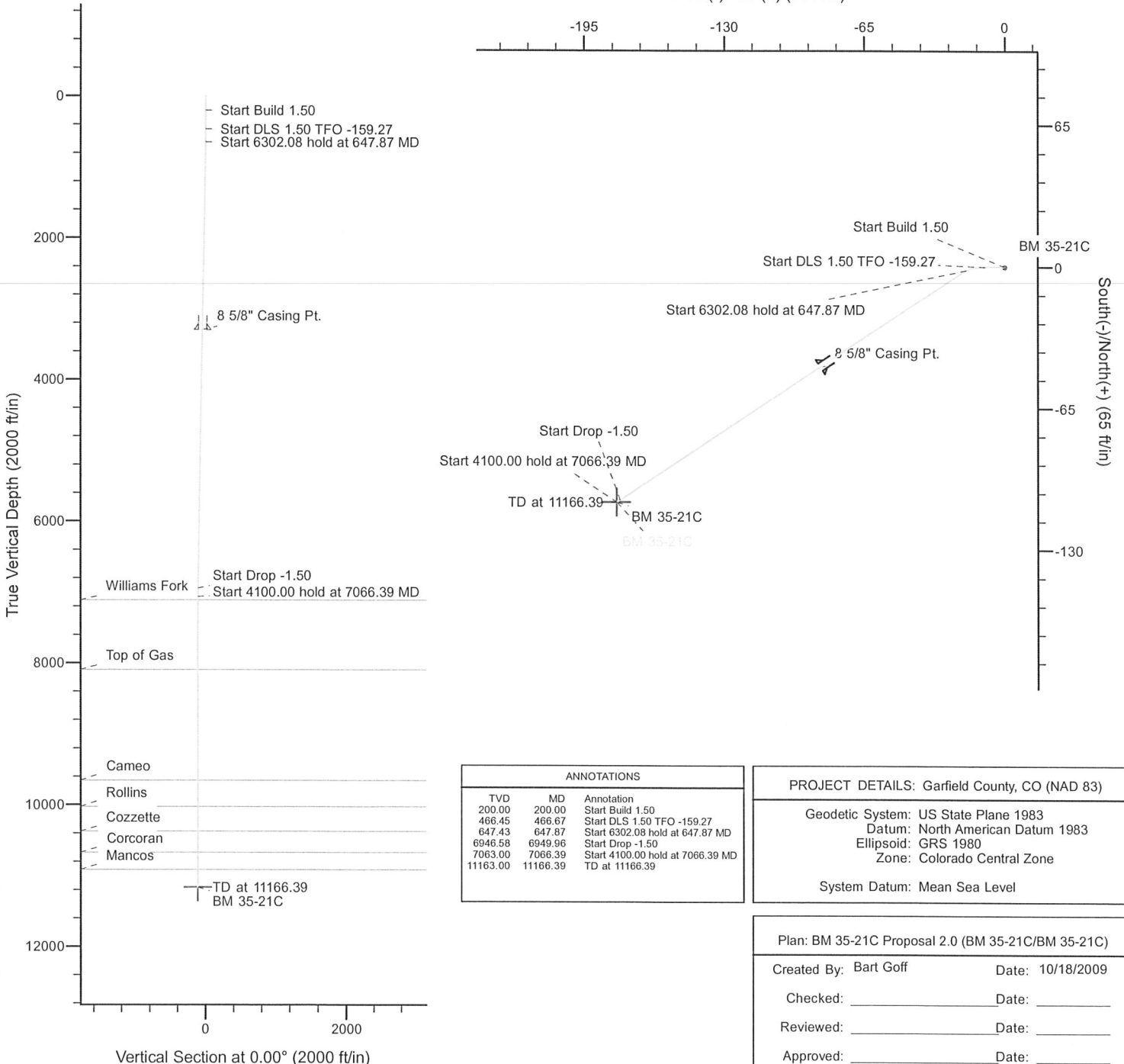
## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BM 35-21C	11163.00	-108.31	-179.71	Point



Azimuths to Grid North  
True North: 1.56°  
Magnetic North: 12.11°  
Magnetic Field  
Strength: 52369.8nT  
Dip Angle: 65.74°  
Date: 8/25/2009  
Model: BGGM2009

West(-)/East(+) (65 ft/in)



## ANNOTATIONS

TVD	MD	Annotation
200.00	200.00	Start Build 1.50
466.45	466.67	Start DLS 1.50 TFO -159.27
647.43	647.87	Start 6302.08 hold at 647.87 MD
6946.58	6949.96	Start Drop -1.50
7063.00	7066.39	Start 4100.00 hold at 7066.39 MD
11163.00	11166.39	TD at 11166.39

## PROJECT DETAILS: Garfield County, CO (NAD 83)

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: BM 35-21C Proposal 2.0 (BM 35-21C/BM 35-21C)

Created By: Bart Goff Date: 10/18/2009

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

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

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

Database: .Sperry EDM .16 PRD  
Company: Noble Energy (Rockies)  
Project: Garfield County, CO (NAD 83)  
Site: Sec. 35-T7S-R95W (BM 35C PAD)  
Well: BM 35-21C  
Wellbore: BM 35-21C  
Design: BM 35-21C Proposal 2.0

Local Co-ordinate Reference: Well BM 35-21C  
TVD Reference: RKB - 24' @ 9257.00ft  
MD Reference: RKB - 24' @ 9257.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

Project	Garfield County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site		Sec. 35-T7S-R95W (BM 35C PAD)			
Site Position:		Northing:	1,579,611.24 ft	Latitude:	39° 23' 55.737 N
From:	Map	Easting:	2,303,047.45 ft	Longitude:	107° 57' 59.778 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	-1.56 °

Well	BM 35-21C					
Well Position	+N/-S	0.00 ft	Northing:	1,579,629.00 ft	Latitude:	39° 23' 55.913 N
	+E/-W	0.00 ft	Easting:	2,303,046.30 ft	Longitude:	107° 57' 59.799 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	9,233.00 ft

Wellbore	BM 35-21C				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2009	8/25/2009	10.56	65.74	52,370

Design	BM 35-21C Proposal 2.0				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	0.00	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	TVD System ft	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Tool Face (°)
0.00	0.00	0.00	0.00	-9,257.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	360.00	200.00	-9,057.00	0.00	0.00	0.00	0.00	0.00	360.00
466.67	4.00	270.00	466.45	-8,790.55	0.00	-9.30	1.50	1.50	0.00	270.00
647.87	1.75	236.57	647.43	-8,609.57	-1.52	-17.93	1.50	-1.24	-18.45	-159.27
6,949.96	1.75	236.57	6,946.58	-2,310.42	-107.33	-178.23	0.00	0.00	0.00	0.00
7,066.39	0.00	2.43	7,063.00	-2,194.00	-108.31	-179.71	1.50	-1.50	0.00	180.00
11,166.39	0.00	2.43	11,163.00	1,906.00	-108.31	-179.71	0.00	0.00	0.00	0.00

Database: .Sperry EDM .16 PRD  
Company: Noble Energy (Rockies)  
Project: Garfield County, CO (NAD 83)  
Site: Sec. 35-T7S-R95W (BM 35C PAD)  
Well: BM 35-21C  
Wellbore: BM 35-21C  
Design: BM 35-21C Proposal 2.0

Local Co-ordinate Reference: Well BM 35-21C  
TVD Reference: RKB - 24' @ 9257.00ft  
MD Reference: RKB - 24' @ 9257.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	TVDss ft	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS -9,257.00	Vert Section
0.00	0.00	0.00	0.00	-9,257.00	0.00	0.00	1,579,629.00	2,303,046.30	0.00	0.00
100.00	0.00	360.00	100.00	-9,157.00	0.00	0.00	1,579,629.00	2,303,046.30	0.00	0.00
200.00	0.00	360.00	200.00	-9,057.00	0.00	0.00	1,579,629.00	2,303,046.30	0.00	0.00
<b>Start Build 1.50</b>										
300.00	1.50	270.00	299.99	-8,957.01	0.00	-1.31	1,579,629.00	2,303,044.99	1.50	0.00
400.00	3.00	270.00	399.91	-8,857.09	0.00	-5.23	1,579,629.00	2,303,041.07	1.50	0.00
466.67	4.00	270.00	466.45	-8,790.55	0.00	-9.30	1,579,629.00	2,303,037.00	1.50	0.00
<b>Start DLS 1.50 TFO -159.27</b>										
500.00	3.54	267.13	499.71	-8,757.29	-0.05	-11.49	1,579,628.95	2,303,034.81	1.50	-0.05
600.00	2.24	251.61	599.58	-8,657.42	-0.82	-16.43	1,579,628.18	2,303,029.87	1.50	-0.82
647.87	1.75	236.57	647.43	-8,609.57	-1.52	-17.93	1,579,627.48	2,303,028.37	1.50	-1.52
<b>Start 6302.08 hold at 647.87 MD</b>										
700.00	1.75	236.57	699.53	-8,557.47	-2.40	-19.26	1,579,626.60	2,303,027.04	0.00	-2.40
800.00	1.75	236.57	799.48	-8,457.52	-4.08	-21.80	1,579,624.92	2,303,024.50	0.00	-4.08
900.00	1.75	236.57	899.44	-8,357.56	-5.75	-24.34	1,579,623.25	2,303,021.96	0.00	-5.75
1,000.00	1.75	236.57	999.39	-8,257.61	-7.43	-26.89	1,579,621.57	2,303,019.41	0.00	-7.43
1,100.00	1.75	236.57	1,099.34	-8,157.66	-9.11	-29.43	1,579,619.89	2,303,016.87	0.00	-9.11
1,200.00	1.75	236.57	1,199.30	-8,057.70	-10.79	-31.97	1,579,618.21	2,303,014.33	0.00	-10.79
1,300.00	1.75	236.57	1,299.25	-7,957.75	-12.47	-34.52	1,579,616.53	2,303,011.78	0.00	-12.47
1,400.00	1.75	236.57	1,399.21	-7,857.79	-14.15	-37.06	1,579,614.85	2,303,009.24	0.00	-14.15
1,500.00	1.75	236.57	1,499.16	-7,757.84	-15.83	-39.61	1,579,613.17	2,303,006.70	0.00	-15.83
1,600.00	1.75	236.57	1,599.11	-7,657.89	-17.51	-42.15	1,579,611.49	2,303,004.15	0.00	-17.51
1,700.00	1.75	236.57	1,699.07	-7,557.93	-19.19	-44.69	1,579,609.82	2,303,001.61	0.00	-19.19
1,800.00	1.75	236.57	1,799.02	-7,457.98	-20.86	-47.24	1,579,608.14	2,302,999.07	0.00	-20.86
1,900.00	1.75	236.57	1,898.97	-7,358.03	-22.54	-49.78	1,579,606.46	2,302,996.52	0.00	-22.54
2,000.00	1.75	236.57	1,998.93	-7,258.07	-24.22	-52.32	1,579,604.78	2,302,993.98	0.00	-24.22
2,100.00	1.75	236.57	2,098.88	-7,158.12	-25.90	-54.87	1,579,603.10	2,302,991.44	0.00	-25.90
2,200.00	1.75	236.57	2,198.83	-7,058.17	-27.58	-57.41	1,579,601.42	2,302,988.89	0.00	-27.58
2,300.00	1.75	236.57	2,298.79	-6,958.21	-29.26	-59.95	1,579,599.74	2,302,986.35	0.00	-29.26
2,400.00	1.75	236.57	2,398.74	-6,858.26	-30.94	-62.50	1,579,598.06	2,302,983.81	0.00	-30.94
2,500.00	1.75	236.57	2,498.69	-6,758.31	-32.62	-65.04	1,579,596.38	2,302,981.26	0.00	-32.62
2,600.00	1.75	236.57	2,598.65	-6,658.35	-34.30	-67.58	1,579,594.71	2,302,978.72	0.00	-34.30
2,700.00	1.75	236.57	2,698.60	-6,558.40	-35.97	-70.13	1,579,593.03	2,302,976.18	0.00	-35.97
2,800.00	1.75	236.57	2,798.55	-6,458.45	-37.65	-72.67	1,579,591.35	2,302,973.63	0.00	-37.65
2,900.00	1.75	236.57	2,898.51	-6,358.49	-39.33	-75.22	1,579,589.67	2,302,971.09	0.00	-39.33
3,000.00	1.75	236.57	2,998.46	-6,258.54	-41.01	-77.76	1,579,587.99	2,302,968.55	0.00	-41.01
3,100.00	1.75	236.57	3,098.42	-6,158.58	-42.69	-80.30	1,579,586.31	2,302,966.00	0.00	-42.69
3,200.00	1.75	236.57	3,198.37	-6,058.63	-44.37	-82.85	1,579,584.63	2,302,963.46	0.00	-44.37
3,300.00	1.75	236.57	3,298.32	-5,958.68	-46.05	-85.39	1,579,582.95	2,302,960.91	0.00	-46.05
<b>8 5/8" Casing Pt.</b>										
3,400.00	1.75	236.57	3,398.28	-5,858.72	-47.73	-87.93	1,579,581.28	2,302,958.37	0.00	-47.73
3,500.00	1.75	236.57	3,498.23	-5,758.77	-49.41	-90.48	1,579,579.60	2,302,955.83	0.00	-49.41
3,600.00	1.75	236.57	3,598.18	-5,658.82	-51.09	-93.02	1,579,577.92	2,302,953.28	0.00	-51.09
3,700.00	1.75	236.57	3,698.14	-5,558.86	-52.76	-95.56	1,579,576.24	2,302,950.74	0.00	-52.76
3,800.00	1.75	236.57	3,798.09	-5,458.91	-54.44	-98.11	1,579,574.56	2,302,948.20	0.00	-54.44



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North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	TVDss ft	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS -5,358.96	Vert Section
3,900.00	1.75	236.57	3,898.04	-5,358.96	-56.12	-100.65	1,579,572.88	2,302,945.65	0.00	-56.12
4,000.00	1.75	236.57	3,998.00	-5,259.00	-57.80	-103.19	1,579,571.20	2,302,943.11	0.00	-57.80
4,100.00	1.75	236.57	4,097.95	-5,159.05	-59.48	-105.74	1,579,569.52	2,302,940.57	0.00	-59.48
4,200.00	1.75	236.57	4,197.90	-5,059.10	-61.16	-108.28	1,579,567.84	2,302,938.02	0.00	-61.16
4,300.00	1.75	236.57	4,297.86	-4,959.14	-62.84	-110.82	1,579,566.17	2,302,935.48	0.00	-62.84
4,400.00	1.75	236.57	4,397.81	-4,859.19	-64.52	-113.37	1,579,564.49	2,302,932.94	0.00	-64.52
4,500.00	1.75	236.57	4,497.77	-4,759.23	-66.20	-115.91	1,579,562.81	2,302,930.39	0.00	-66.20
4,600.00	1.75	236.57	4,597.72	-4,659.28	-67.87	-118.46	1,579,561.13	2,302,927.85	0.00	-67.87
4,700.00	1.75	236.57	4,697.67	-4,559.33	-69.55	-121.00	1,579,559.45	2,302,925.31	0.00	-69.55
4,800.00	1.75	236.57	4,797.63	-4,459.37	-71.23	-123.54	1,579,557.77	2,302,922.76	0.00	-71.23
4,900.00	1.75	236.57	4,897.58	-4,359.42	-72.91	-126.09	1,579,556.09	2,302,920.22	0.00	-72.91
5,000.00	1.75	236.57	4,997.53	-4,259.47	-74.59	-128.63	1,579,554.41	2,302,917.68	0.00	-74.59
5,100.00	1.75	236.57	5,097.49	-4,159.51	-76.27	-131.17	1,579,552.74	2,302,915.13	0.00	-76.27
5,200.00	1.75	236.57	5,197.44	-4,059.56	-77.95	-133.72	1,579,551.06	2,302,912.59	0.00	-77.95
5,300.00	1.75	236.57	5,297.39	-3,959.61	-79.63	-136.26	1,579,549.38	2,302,910.05	0.00	-79.63
5,400.00	1.75	236.57	5,397.35	-3,859.65	-81.31	-138.80	1,579,547.70	2,302,907.50	0.00	-81.31
5,500.00	1.75	236.57	5,497.30	-3,759.70	-82.98	-141.35	1,579,546.02	2,302,904.96	0.00	-82.98
5,600.00	1.75	236.57	5,597.25	-3,659.75	-84.66	-143.89	1,579,544.34	2,302,902.42	0.00	-84.66
5,700.00	1.75	236.57	5,697.21	-3,559.79	-86.34	-146.43	1,579,542.66	2,302,899.87	0.00	-86.34
5,800.00	1.75	236.57	5,797.16	-3,459.84	-88.02	-148.98	1,579,540.98	2,302,897.33	0.00	-88.02
5,900.00	1.75	236.57	5,897.11	-3,359.89	-89.70	-151.52	1,579,539.30	2,302,894.79	0.00	-89.70
6,000.00	1.75	236.57	5,997.07	-3,259.93	-91.38	-154.07	1,579,537.63	2,302,892.24	0.00	-91.38
6,100.00	1.75	236.57	6,097.02	-3,159.98	-93.06	-156.61	1,579,535.95	2,302,889.70	0.00	-93.06
6,200.00	1.75	236.57	6,196.98	-3,060.02	-94.74	-159.15	1,579,534.27	2,302,887.16	0.00	-94.74
6,300.00	1.75	236.57	6,296.93	-2,960.07	-96.42	-161.70	1,579,532.59	2,302,884.61	0.00	-96.42
6,400.00	1.75	236.57	6,396.88	-2,860.12	-98.09	-164.24	1,579,530.91	2,302,882.07	0.00	-98.09
6,500.00	1.75	236.57	6,496.84	-2,760.16	-99.77	-166.78	1,579,529.23	2,302,879.53	0.00	-99.77
6,600.00	1.75	236.57	6,596.79	-2,660.21	-101.45	-169.33	1,579,527.55	2,302,876.98	0.00	-101.45
6,700.00	1.75	236.57	6,696.74	-2,560.26	-103.13	-171.87	1,579,525.87	2,302,874.44	0.00	-103.13
6,800.00	1.75	236.57	6,796.70	-2,460.30	-104.81	-174.41	1,579,524.19	2,302,871.89	0.00	-104.81
6,900.00	1.75	236.57	6,896.65	-2,360.35	-106.49	-176.96	1,579,522.52	2,302,869.35	0.00	-106.49
6,949.96	1.75	236.57	6,946.58	-2,310.42	-107.33	-178.23	1,579,521.68	2,302,868.08	0.00	-107.33
<b>Start Drop -1.50</b>										
7,000.00	1.00	236.57	6,996.61	-2,260.39	-107.99	-179.23	1,579,521.02	2,302,867.08	1.50	-107.99
7,066.39	0.00	2.43	7,063.00	-2,194.00	-108.31	-179.71	1,579,520.70	2,302,866.60	1.50	-108.31
<b>Start 4100.00 hold at 7066.39 MD</b>										
7,100.00	0.00	2.43	7,096.61	-2,160.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,114.39	0.00	2.43	7,111.00	-2,146.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Williams Fork</b>										
7,200.00	0.00	2.43	7,196.61	-2,060.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,300.00	0.00	2.43	7,296.61	-1,960.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,400.00	0.00	2.43	7,396.61	-1,860.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,500.00	0.00	2.43	7,496.61	-1,760.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,600.00	0.00	2.43	7,596.61	-1,660.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,700.00	0.00	2.43	7,696.61	-1,560.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31

Database: .Sperry EDM .16 PRD  
Company: Noble Energy (Rockies)  
Project: Garfield County, CO (NAD 83)  
Site: Sec. 35-T7S-R95W (BM 35C PAD)  
Well: BM 35-21C  
Wellbore: BM 35-21C  
Design: BM 35-21C Proposal 2.0

Local Co-ordinate Reference: Well BM 35-21C  
TVD Reference: RKB - 24' @ 9257.00ft  
MD Reference: RKB - 24' @ 9257.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	TVDss ft	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS -1,460.39	Vert Section
7,800.00	0.00	2.43	7,796.61	-1,460.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
7,900.00	0.00	2.43	7,896.61	-1,360.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,000.00	0.00	2.43	7,996.61	-1,260.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,096.39	0.00	2.43	8,093.00	-1,164.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Top of Gas</b>										
8,100.00	0.00	2.43	8,096.61	-1,160.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,200.00	0.00	2.43	8,196.61	-1,060.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,300.00	0.00	2.43	8,296.61	-960.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,400.00	0.00	2.43	8,396.61	-860.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,500.00	0.00	2.43	8,496.61	-760.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,600.00	0.00	2.43	8,596.61	-660.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,700.00	0.00	2.43	8,696.61	-560.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,800.00	0.00	2.43	8,796.61	-460.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
8,900.00	0.00	2.43	8,896.61	-360.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,000.00	0.00	2.43	8,996.61	-260.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,100.00	0.00	2.43	9,096.61	-160.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,200.00	0.00	2.43	9,196.61	-60.39	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,300.00	0.00	2.43	9,296.61	39.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,400.00	0.00	2.43	9,396.61	139.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,500.00	0.00	2.43	9,496.61	239.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,600.00	0.00	2.43	9,596.61	339.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,657.39	0.00	2.43	9,654.00	397.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Cameo</b>										
9,700.00	0.00	2.43	9,696.61	439.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,800.00	0.00	2.43	9,796.61	539.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
9,900.00	0.00	2.43	9,896.61	639.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,000.00	0.00	2.43	9,996.61	739.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,030.39	0.00	2.43	10,027.00	770.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Rollins</b>										
10,100.00	0.00	2.43	10,096.61	839.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,200.00	0.00	2.43	10,196.61	939.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,300.00	0.00	2.43	10,296.61	1,039.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,378.39	0.00	2.43	10,375.00	1,118.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Cozzette</b>										
10,400.00	0.00	2.43	10,396.61	1,139.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,500.00	0.00	2.43	10,496.61	1,239.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,600.00	0.00	2.43	10,596.61	1,339.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,675.39	0.00	2.43	10,672.00	1,415.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Corcoran</b>										
10,700.00	0.00	2.43	10,696.61	1,439.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,800.00	0.00	2.43	10,796.61	1,539.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,900.00	0.00	2.43	10,896.61	1,639.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
10,916.39	0.00	2.43	10,913.00	1,656.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
<b>Mancos</b>										
11,000.00	0.00	2.43	10,996.61	1,739.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31



Database: .Sperry EDM .16 PRD  
Company: Noble Energy (Rockies)  
Project: Garfield County, CO (NAD 83)  
Site: Sec. 35-T7S-R95W (BM 35C PAD)  
Well: BM 35-21C  
Wellbore: BM 35-21C  
Design: BM 35-21C Proposal 2.0

Local Co-ordinate Reference: Well BM 35-21C  
TVD Reference: RKB - 24' @ 9257.00ft  
MD Reference: RKB - 24' @ 9257.00ft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	TVDss ft	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS 1,839.61	Vert Section
11,100.00	0.00	2.43	11,096.61	1,839.61	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31
11,166.39	0.00	2.43	11,163.00	1,906.00	-108.31	-179.71	1,579,520.70	2,302,866.60	0.00	-108.31

TD at 11166.39 - BM 35-21C

## Targets

### Target Name

- hit/miss target
- Shape

Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)
0.00	2.43	11,163.00	-108.31	-179.71	1,579,520.70	2,302,866.60

### BM 35-21C

- plan hits target center
- Point

## Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
3,300.00	3,298.32	8 5/8" Casing Pt.	8-5/8	11

## Formations

Measured Depth (ft)	Vertical Depth (ft)	Vertical Depth SS ft	Name	Lithology	Dip (°)	Dip Direction (°)
10,378.39	10,375.00		Cozzette			
9,657.39	9,654.00		Cameo			
10,030.39	10,027.00		Rollins			
7,114.39	7,111.00		Williams Fork			
10,916.39	10,913.00		Mancos			
10,675.39	10,672.00		Corcoran			
8,096.39	8,093.00		Top of Gas			

## Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	Start Build 1.50
466.67	466.45	0.00	-9.30	Start DLS 1.50 TFO -159.27
647.87	647.43	-1.52	-17.93	Start 6302.08 hold at 647.87 MD
6,949.96	6,946.58	-107.33	-178.23	Start Drop -1.50
7,066.39	7,063.00	-108.31	-179.71	Start 4100.00 hold at 7066.39 MD
11,166.39	11,163.00	-108.31	-179.71	TD at 11166.39

# Sperry Drilling

## Anticollision Summary Report

Company:	Noble Energy (Rockies)	Local Co-ordinate Reference:	Well BM 35-21C
Project:	Garfield County, CO (NAD 83)	TVD Reference:	RKB - 24' @ 9257.00ft
Reference Site:	Sec. 35-T7S-R95W (BM 35C PAD)	MD Reference:	RKB - 24' @ 9257.00ft
Site Error:	0.00ft	North Reference:	Grid
Reference Well:	BM 35-21C	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	BM 35-21C	Database:	.Sperry EDM .16 PRD
Reference Design:	BM 35-21C Proposal 2.0	Offset TVD Reference:	Offset Datum

Reference	BM 35-21C Proposal 2.0		
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,316.64ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	2/13/2010	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
0.00	11,166.39	BM 35-21C Proposal 2.0 (BM 35-21C)	MWD
			Description
			MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec. 35-T7S-R95W (BM 35C PAD)						
BM 35-12 (Existing Well) - BM 35-12 - Plan #1 Proposal	200.00	203.00	12.11	11.48	19.306 CC, ES	
BM 35-12 (Existing Well) - BM 35-12 - Plan #1 Proposal	10,000.00	9,999.61	221.12	177.50	5.069 SF	
BM 35-21A - BM 35-21A - BM 35-21A Proposal 2.0	200.00	200.00	30.07	29.45	48.478 CC, ES	
BM 35-21A - BM 35-21A - BM 35-21A Proposal 2.0	11,166.39	11,189.22	702.56	653.37	14.284 SF	
BM 35-21B - BM 35-21B - BM 35-21B Proposal 2.0	200.00	200.00	15.04	14.42	24.239 CC, ES	
BM 35-21B - BM 35-21B - BM 35-21B Proposal 2.0	11,166.39	11,170.75	398.41	349.43	8.133 SF	
BM 35-21D (Existing Well) - BM 35-21D - BM 35-21D	119.27	122.28	16.79	16.49	56.210 CC, ES	
BM 35-21D (Existing Well) - BM 35-21D - BM 35-21D	9,800.00	9,813.00	315.97	274.02	7.533 SF	
BM 35-22A - BM 35-22A - BM 35-22A Proposal 2.0	200.00	200.00	38.64	38.02	62.286 CC, ES	
BM 35-22A - BM 35-22A - BM 35-22A Proposal 2.0	11,166.39	11,178.85	595.99	548.13	12.453 SF	
BM 35-22B - BM 35-22B - BM 35-22B Proposal 2.0	200.00	200.00	31.40	30.78	50.616 CC, ES	
BM 35-22B - BM 35-22B - BM 35-22B Proposal 2.0	11,166.39	11,205.65	908.39	860.07	18.802 SF	
BM 35-22C - BM 35-22C - BM 35-22C Proposal 2.0	252.09	252.08	24.40	23.55	28.753 CC, ES	
BM 35-22C - BM 35-22C - BM 35-22C Proposal 2.0	500.00	497.68	33.96	32.06	17.843 SF	
BM 35-31A - BM 35-31A - BM 35-31A Proposal 2.0	200.00	200.00	37.50	36.88	60.456 CC, ES	
BM 35-31A - BM 35-31A - BM 35-31A Proposal 2.0	500.00	496.12	53.97	52.01	27.535 SF	
BM 35-31B - BM 35-31B - BM 35-31B Proposal 2.0	200.00	200.00	22.56	21.01	14.592 CC, ES	
BM 35-31B - BM 35-31B - BM 35-31B Proposal 2.0	400.00	398.68	29.76	26.36	8.760 SF	
BM 35-31C - BM 35-31C - BM 35-31C Proposal 2.0	200.00	200.00	38.71	38.09	62.399 CC, ES	
BM 35-31C - BM 35-31C - BM 35-31C Proposal 2.0	600.00	594.88	65.14	62.79	27.716 SF	
BM 35-31D - BM 35-31D - BM 35-31D Proposal 2.0	200.00	200.00	31.47	30.85	50.736 CC, ES	
BM 35-31D - BM 35-31D - BM 35-31D Proposal 2.0	500.00	497.03	49.04	47.10	25.307 SF	
BM 35-32A (Existing Well) - BM 35-32A - BM 35-32A	241.09	244.33	24.97	24.17	31.136 CC, ES	
BM 35-32A (Existing Well) - BM 35-32A - BM 35-32A	500.00	501.63	37.88	35.91	19.187 SF	
BM 35-32B - BM 35-32B - BM 35-32B Proposal 2.0	200.00	200.00	9.44	8.82	15.220 CC, ES	
BM 35-32B - BM 35-32B - BM 35-32B Proposal 2.0	400.00	399.91	14.26	12.76	9.466 SF	
BM 35-32C - BM 35-32C - BM 35-32C Proposal 2.0	200.00	200.00	12.05	11.43	19.432 CC, ES	
BM 35-32C - BM 35-32C - BM 35-32C Proposal 2.0	300.00	299.65	13.58	12.53	12.982 SF	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation