

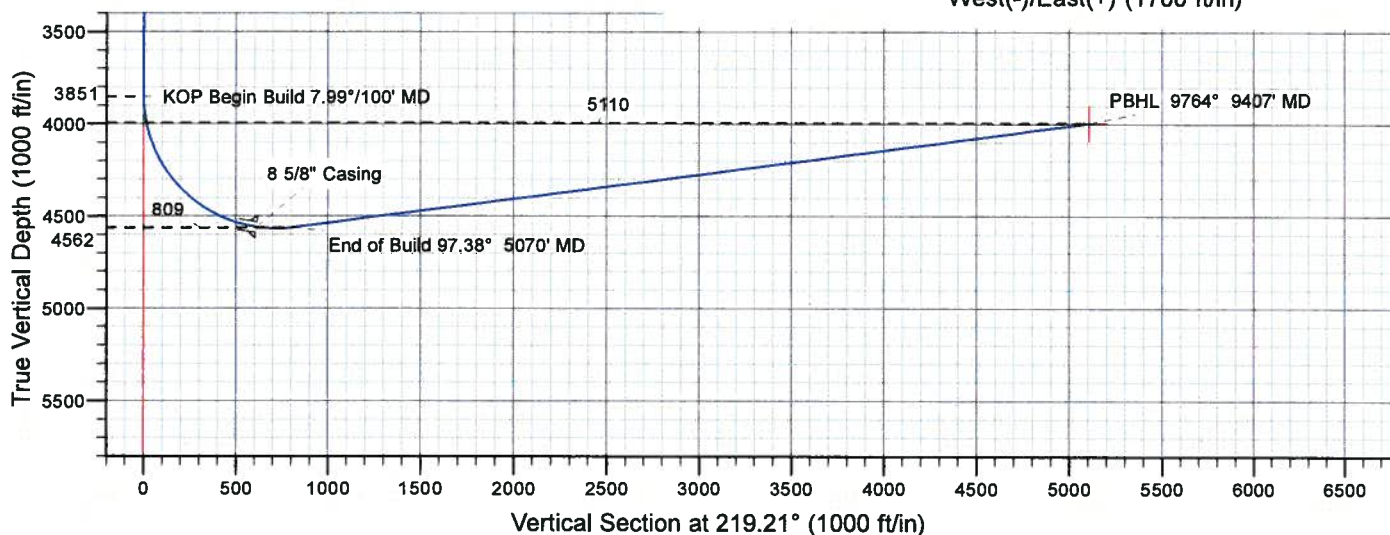
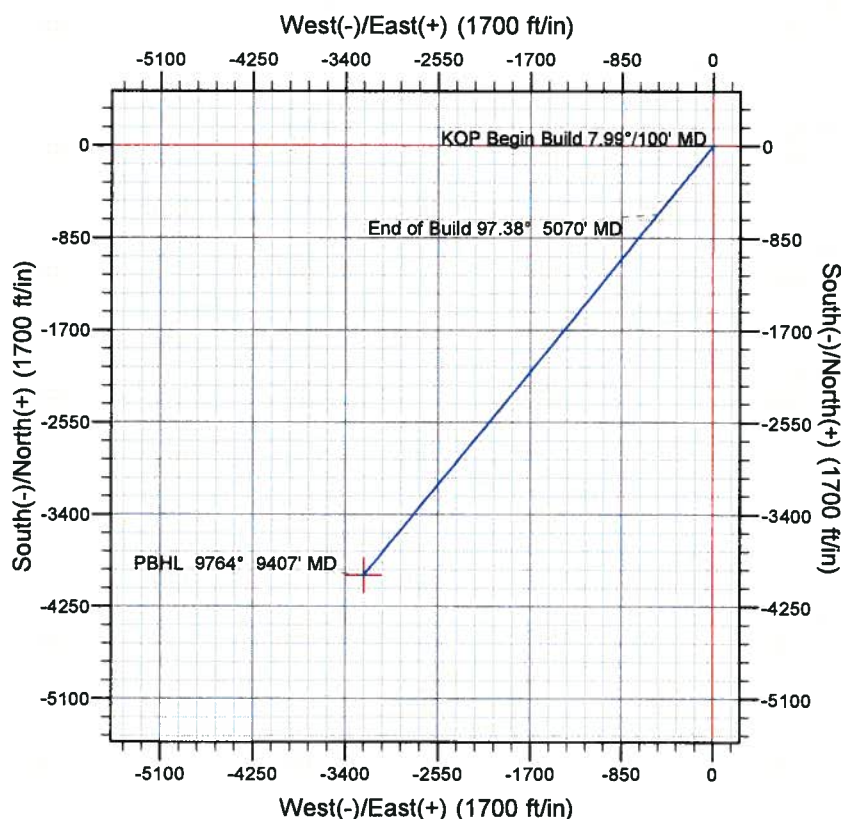
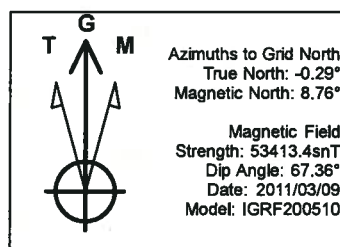
Marathon Oil Company

Rawhide Flats 10-68-19-1B

Larimer County, Colorado



gyrodata



Design #1

Surface Location

Northing 1543711.37
 Easting 3126427.89
 Latitude 40° 48' 29.906 N
 Longitude 105° 2' 35.488 W

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0			0.0	0.0	0.0	0.00	0.00	0.0	
2	3851.0	0.00	0.00	3851.0	0.0	0.0	0.00	0.00	0.0	
3	5069.5	97.38	219.21	4562.0	-626.9	-511.4	7.99	219.21	809.0	
4	9407.4	97.64	219.20	3995.0	-3959.4	-3229.9	0.01	-1.77	5109.7	PBHL.

To convert a Magnetic Direction to a Grid Direction, Add 8.75°



Marathon Oil Company

Niobrara Horizontals

Larimer County, Colorado

Rawhide Flats 10-68-19-1B

Rawhide Flats 10-68-19-1B

Plan: Design #1

Standard Planning Report

14 March, 2011

Gyrodatta

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Larimer County, Colorado
Company:	Marathon Oil Company	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Project:	Niobrara Horizontals	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Larimer County, Colorado	North Reference:	Grid
Well:	Rawhide Flats 10-68-19-1B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rawhide Flats 10-68-19-1B		
Design:	Design #1		

Project	Niobrara Horizontals		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Larimer County, Colorado		
Site Position:		Northing:	1,543,711.37 ft
From:	Lat/Long	Easting:	3,126,427.89 ft
Position Uncertainty:	0.0 ft	Slot Radius:	0 "
		Latitude:	40° 49' 29.906 N
		Longitude:	105° 2' 35.488 W
		Grid Convergence:	0.30 °

Well	Rawhide Flats 10-68-19-1B		
Well Position	+N/-S	0.0 ft	Northing: 1,543,711.37 ft
	+E/-W	0.0 ft	Easting: 3,126,427.89 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	Latitude: 40° 49' 29.906 N
			Longitude: 105° 2' 35.488 W
			Ground Level: 0.0 ft

Wellbore	Rawhide Flats 10-68-19-1B		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF200510	2011/03/09	9.05
			Dip Angle (°) 67.36
			Field Strength (nT) 53,413

Design	Design #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction (°) 219.21

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,851.0	0.00	0.00	3,851.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,069.5	97.38	219.21	4,562.0	-626.9	-511.4	7.99	7.99	0.00	219.21	
9,407.4	97.64	219.20	3,995.0	-3,959.4	-3,229.9	0.01	0.01	0.00	-1.77 PBHL	

Gyrodatta Planning Report

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Project:	Niobrara Horizontals	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Larimer County, Colorado	North Reference:	Grid
Well:	Rawhide Flats 10-68-19-1B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rawhide Flats 10-68-19-1B		
Design:	Design #1		

Planned Survey

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)
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,851.0	0.00	0.00	3,851.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP Begin Build 7.99°/100' MD									
3,900.0	3.92	219.21	3,900.0	-1.3	-1.1	1.7	7.99	7.99	0.00
4,000.0	11.91	219.21	3,998.9	-12.0	-9.8	15.4	7.99	7.99	0.00
4,100.0	19.90	219.21	4,095.0	-33.2	-27.1	42.8	7.99	7.99	0.00
4,200.0	27.89	219.21	4,186.4	-64.5	-52.6	83.3	7.99	7.99	0.00
4,300.0	35.88	219.21	4,271.2	-105.4	-86.0	136.1	7.99	7.99	0.00
4,400.0	43.87	219.21	4,347.9	-155.1	-126.5	200.1	7.99	7.99	0.00
4,500.0	51.87	219.21	4,414.9	-212.5	-173.4	274.2	7.99	7.99	0.00
4,600.0	59.86	219.21	4,471.0	-276.6	-225.6	356.9	7.99	7.99	0.00
4,700.0	67.85	219.21	4,515.0	-346.1	-282.3	446.6	7.99	7.99	0.00
4,800.0	75.84	219.21	4,546.2	-419.6	-342.4	541.6	7.99	7.99	0.00
4,900.0	83.83	219.21	4,563.8	-495.8	-404.5	639.9	7.99	7.99	0.00
5,000.0	91.82	219.21	4,567.6	-573.2	-467.7	739.8	7.99	7.99	0.00
5,069.5	97.38	219.21	4,562.0	-626.9	-511.4	809.0	7.99	7.99	0.00
End of Build 97.38° 5070' MD									
5,100.0	97.38	219.21	4,558.1	-650.3	-530.6	839.3	0.01	0.01	0.00
5,200.0	97.39	219.21	4,545.2	-727.1	-593.2	938.4	0.01	0.01	0.00
5,300.0	97.39	219.21	4,532.4	-804.0	-655.9	1,037.6	0.01	0.01	0.00
5,400.0	97.40	219.21	4,519.5	-880.8	-718.6	1,136.8	0.01	0.01	0.00
5,500.0	97.41	219.21	4,506.6	-957.7	-781.3	1,235.9	0.01	0.01	0.00
5,600.0	97.41	219.21	4,493.7	-1,034.5	-844.0	1,335.1	0.01	0.01	0.00
5,700.0	97.42	219.21	4,480.8	-1,111.3	-906.7	1,434.3	0.01	0.01	0.00
5,800.0	97.42	219.21	4,467.9	-1,188.2	-969.4	1,533.4	0.01	0.01	0.00
5,900.0	97.43	219.21	4,455.0	-1,265.0	-1,032.1	1,632.6	0.01	0.01	0.00
6,000.0	97.44	219.21	4,442.0	-1,341.8	-1,094.7	1,731.8	0.01	0.01	0.00
6,100.0	97.44	219.21	4,429.1	-1,418.7	-1,157.4	1,830.9	0.01	0.01	0.00
6,200.0	97.45	219.21	4,416.1	-1,495.5	-1,220.1	1,930.1	0.01	0.01	0.00
6,300.0	97.45	219.21	4,403.2	-1,572.3	-1,282.8	2,029.2	0.01	0.01	0.00
6,400.0	97.46	219.21	4,390.2	-1,649.2	-1,345.5	2,128.4	0.01	0.01	0.00
6,500.0	97.47	219.21	4,377.2	-1,726.0	-1,408.1	2,227.5	0.01	0.01	0.00
6,600.0	97.47	219.21	4,364.2	-1,802.8	-1,470.8	2,326.7	0.01	0.01	0.00
6,700.0	97.48	219.21	4,351.2	-1,879.6	-1,533.5	2,425.8	0.01	0.01	0.00
6,800.0	97.48	219.21	4,338.2	-1,956.5	-1,596.2	2,525.0	0.01	0.01	0.00
6,900.0	97.49	219.21	4,325.1	-2,033.3	-1,658.8	2,624.1	0.01	0.01	0.00
7,000.0	97.50	219.21	4,312.1	-2,110.1	-1,721.5	2,723.3	0.01	0.01	0.00
7,100.0	97.50	219.21	4,299.0	-2,186.9	-1,784.2	2,822.4	0.01	0.01	0.00
7,200.0	97.51	219.21	4,286.0	-2,263.8	-1,846.9	2,921.6	0.01	0.01	0.00
7,300.0	97.51	219.21	4,272.9	-2,340.6	-1,909.5	3,020.7	0.01	0.01	0.00
7,400.0	97.52	219.21	4,259.8	-2,417.4	-1,972.2	3,119.8	0.01	0.01	0.00
7,500.0	97.53	219.21	4,246.7	-2,494.2	-2,034.9	3,219.0	0.01	0.01	0.00
7,600.0	97.53	219.21	4,233.6	-2,571.1	-2,097.5	3,318.1	0.01	0.01	0.00
7,700.0	97.54	219.21	4,220.5	-2,647.9	-2,160.2	3,417.3	0.01	0.01	0.00
7,800.0	97.54	219.20	4,207.4	-2,724.7	-2,222.8	3,516.4	0.01	0.01	0.00
7,900.0	97.55	219.20	4,194.3	-2,801.5	-2,285.5	3,615.5	0.01	0.01	0.00
8,000.0	97.56	219.20	4,181.1	-2,878.3	-2,348.2	3,714.7	0.01	0.01	0.00
8,100.0	97.56	219.20	4,168.0	-2,955.1	-2,410.8	3,813.8	0.01	0.01	0.00
8,200.0	97.57	219.20	4,154.8	-3,032.0	-2,473.5	3,912.9	0.01	0.01	0.00
8,300.0	97.57	219.20	4,141.6	-3,108.8	-2,536.1	4,012.0	0.01	0.01	0.00
8,400.0	97.58	219.20	4,128.4	-3,185.6	-2,598.8	4,111.2	0.01	0.01	0.00

Gyrodatta

Planning Report

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Project:	Niobrara Horizontals	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Larimer County, Colorado	North Reference:	Grid
Well:	Rawhide Flats 10-68-19-1B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Rawhide Flats 10-68-19-1B		
Design:	Design #1		

Planned Survey

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)
8,500.0	97.59	219.20	4,115.2	-3,262.4	-2,661.5	4,210.3	0.01	0.01	0.00
8,600.0	97.59	219.20	4,102.0	-3,339.2	-2,724.1	4,309.4	0.01	0.01	0.00
8,700.0	97.60	219.20	4,088.8	-3,416.0	-2,786.8	4,408.5	0.01	0.01	0.00
8,800.0	97.60	219.20	4,075.6	-3,492.8	-2,849.4	4,507.7	0.01	0.01	0.00
8,900.0	97.61	219.20	4,062.3	-3,569.6	-2,912.1	4,606.8	0.01	0.01	0.00
9,000.0	97.62	219.20	4,049.1	-3,646.5	-2,974.7	4,705.9	0.01	0.01	0.00
9,100.0	97.62	219.20	4,035.8	-3,723.3	-3,037.4	4,805.0	0.01	0.01	0.00
9,200.0	97.63	219.20	4,022.6	-3,800.1	-3,100.0	4,904.1	0.01	0.01	0.00
9,300.0	97.63	219.20	4,009.3	-3,876.9	-3,162.7	5,003.3	0.01	0.01	0.00
9,400.0	97.64	219.20	3,996.0	-3,953.7	-3,225.3	5,102.4	0.01	0.01	0.00
9,407.4	97.64	219.20	3,995.0	-3,959.4	-3,229.9	5,109.7	0.01	0.01	0.00
PBHL 9764° 9407' MD									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL	0.00	0.00	3,995.0	-3,959.4	-3,229.9	1,539,752.01	3,123,197.96	40° 48' 50.947 N	105° 3' 17.759 W
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
	4,560.0	8 5/8" Casing	8-5/8	8-5/8
650.0	650.0	13 3/8" Casing	13-3/8	13-3/8

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
3,851.0	3,851.0	0.0	0.0	KOP Begin Build 7.99°/100' MD
5,069.5	4,562.0	-626.9	-511.4	End of Build 97.38° 5070' MD
9,407.4	3,995.0	-3,959.4	-3,229.9	PBHL 9764° 9407' MD