

# Whiting Oil & Gas

Well Name: **HORSETAIL#16B-1610B**

Surface Location: HORSETAIL 16B PAD 16-10N-57W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4776.6

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1555534.17	3482913.23	40.845272	-103.754508	

CADE 21 KB 16.5' RKB @ 4793.1ft (CADE 21 KB 16.5')

HORSETAIL 16B PAD 16-10N-57W

HORSETAIL#16B-1610B

PLAN 1 (APRIL 18, 2013)

17:20, April 18 2013

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SHL 395'FNL & 2158'FEL	1.0	0.0	0.0	40.845272	-103.754508	Point
BHL 660'FSL & 2145'FEL	5863.0	-4257.4	58.4	40.833587	-103.754297	Point

South(-)/North(+) (1500 ft/in)

SHL 395'FNL & 2158'FEL

7"

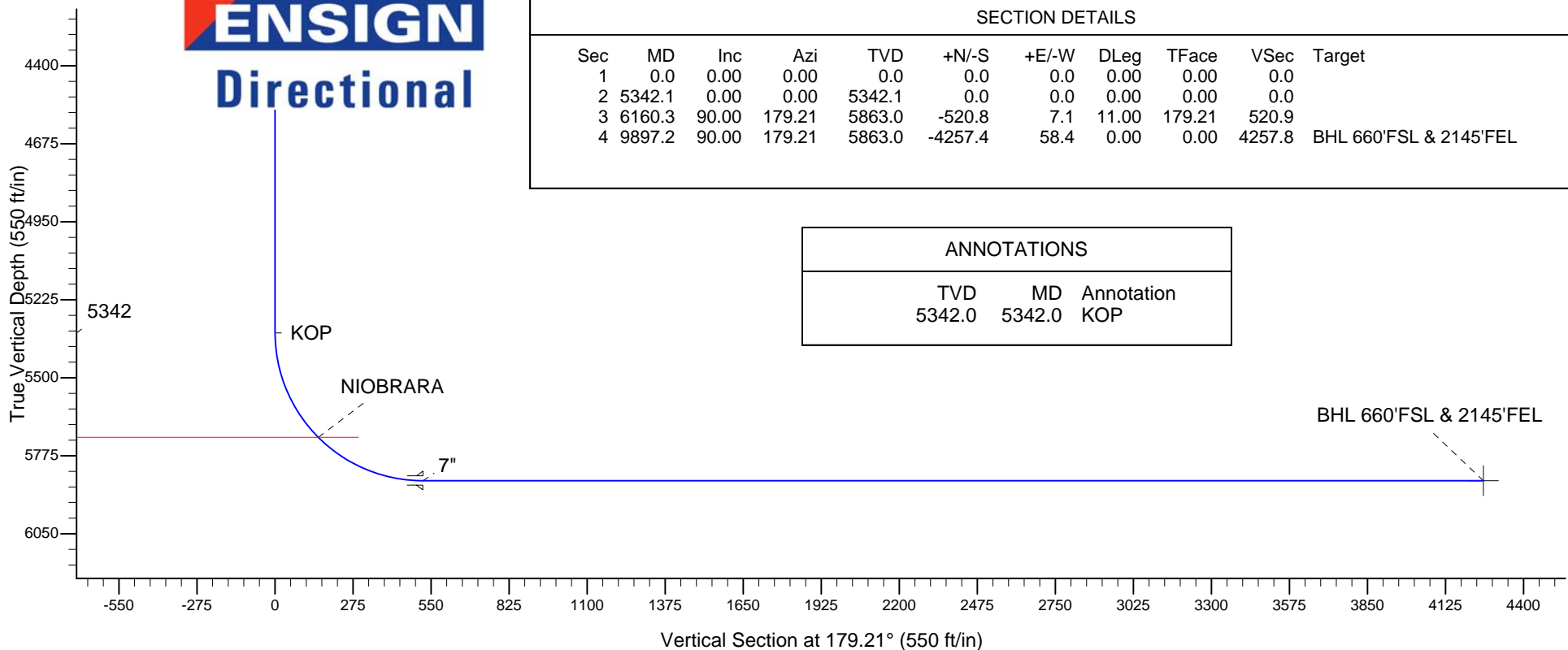
Azimuths to True North  
Magnetic North: 8.09°

Magnetic Field  
Strength: 53271.7snT  
Dip Angle: 67.51°  
Date: 4/18/2013  
Model: IGRF2010

BHL 660'FSL & 2145'FEL

HORSETAIL#16B-1610B

West(-)/East(+) (1500 ft/in)



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	5342.1	0.00	0.00	5342.1	0.0	0.0	0.00	0.00	0.0	
3	6160.3	90.00	179.21	5863.0	-520.8	7.1	11.00	179.21	520.9	
4	9897.2	90.00	179.21	5863.0	-4257.4	58.4	0.00	0.00	4257.8	BHL 660'FSL & 2145'FEL

## ANNOTATIONS

TVD	MD	Annotation
5342.0	5342.0	KOP



## **Directional**

### **Whiting Oil & Gas**

**SEC.16-T10N-R57W**

**HORSETAIL 16B PAD 16-10N-57W**

**HORSETAIL#16B-1610B**

**Wellbore #1**

**Plan: PLAN 1 (APRIL 18, 2013)**

### **Standard Planning Report**

**18 April, 2013**

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	
5,342.1	0.00	0.00	5,342.1	0.0	0.0	0.00	0.00	0.00	0.00	
6,160.3	90.00	179.21	5,863.0	-520.8	7.1	11.00	11.00	0.00	179.21	
9,897.2	90.00	179.21	5,863.0	-4,257.4	58.4	0.00	0.00	0.00	0.00	BHL 660'FSL & 214

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HORSETAIL#16B-1610B
<b>Company:</b>	Whiting Oil & Gas	<b>TVD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Project:</b>	SEC.16-T10N-R57W	<b>MD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Site:</b>	HORSETAIL 16B PAD 16-10N-57W	<b>North Reference:</b>	True
<b>Well:</b>	HORSETAIL#16B-1610B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	PLAN 1 (APRIL 18, 2013)		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 395'FNL &amp; 2158'FEL</b>									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
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
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HORSETAIL#16B-1610B
<b>Company:</b>	Whiting Oil & Gas	<b>TVD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Project:</b>	SEC.16-T10N-R57W	<b>MD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Site:</b>	HORSETAIL 16B PAD 16-10N-57W	<b>North Reference:</b>	True
<b>Well:</b>	HORSETAIL#16B-1610B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	PLAN 1 (APRIL 18, 2013)		

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)
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00
5,342.0	0.00	0.00	5,342.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP</b>									
5,342.1	0.00	0.00	5,342.1	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	6.37	179.21	5,399.9	-3.2	0.0	3.2	11.00	11.00	0.00
5,500.0	17.37	179.21	5,497.6	-23.7	0.3	23.7	11.00	11.00	0.00
5,600.0	28.37	179.21	5,589.6	-62.5	0.9	62.5	11.00	11.00	0.00
5,700.0	39.37	179.21	5,672.5	-118.2	1.6	118.2	11.00	11.00	0.00
5,750.6	44.93	179.21	5,710.0	-152.1	2.1	152.1	11.00	11.00	0.00
<b>NIOBRARA</b>									
5,800.0	50.37	179.21	5,743.3	-188.6	2.6	188.6	11.00	11.00	0.00
5,900.0	61.37	179.21	5,799.3	-271.2	3.7	271.3	11.00	11.00	0.00
6,000.0	72.37	179.21	5,838.5	-363.0	5.0	363.1	11.00	11.00	0.00
6,100.0	83.37	179.21	5,859.5	-460.7	6.3	460.7	11.00	11.00	0.00
6,160.0	89.97	179.21	5,863.0	-520.5	7.1	520.6	11.00	11.00	0.00
<b>7"</b>									
6,160.3	90.00	179.21	5,863.0	-520.8	7.1	520.9	11.00	11.00	0.00
6,200.0	90.00	179.21	5,863.0	-560.5	7.7	560.6	0.00	0.00	0.00
6,300.0	90.00	179.21	5,863.0	-660.5	9.1	660.6	0.00	0.00	0.00
6,400.0	90.00	179.21	5,863.0	-760.5	10.4	760.6	0.00	0.00	0.00
6,500.0	90.00	179.21	5,863.0	-860.5	11.8	860.6	0.00	0.00	0.00
6,600.0	90.00	179.21	5,863.0	-960.5	13.2	960.6	0.00	0.00	0.00
6,700.0	90.00	179.21	5,863.0	-1,060.5	14.5	1,060.6	0.00	0.00	0.00
6,800.0	90.00	179.21	5,863.0	-1,160.5	15.9	1,160.6	0.00	0.00	0.00
6,900.0	90.00	179.21	5,863.0	-1,260.4	17.3	1,260.6	0.00	0.00	0.00
7,000.0	90.00	179.21	5,863.0	-1,360.4	18.7	1,360.6	0.00	0.00	0.00
7,100.0	90.00	179.21	5,863.0	-1,460.4	20.0	1,460.6	0.00	0.00	0.00
7,200.0	90.00	179.21	5,863.0	-1,560.4	21.4	1,560.6	0.00	0.00	0.00
7,300.0	90.00	179.21	5,863.0	-1,660.4	22.8	1,660.6	0.00	0.00	0.00
7,400.0	90.00	179.21	5,863.0	-1,760.4	24.1	1,760.6	0.00	0.00	0.00
7,500.0	90.00	179.21	5,863.0	-1,860.4	25.5	1,860.6	0.00	0.00	0.00
7,600.0	90.00	179.21	5,863.0	-1,960.4	26.9	1,960.6	0.00	0.00	0.00
7,700.0	90.00	179.21	5,863.0	-2,060.4	28.3	2,060.6	0.00	0.00	0.00
7,800.0	90.00	179.21	5,863.0	-2,160.4	29.6	2,160.6	0.00	0.00	0.00
7,900.0	90.00	179.21	5,863.0	-2,260.3	31.0	2,260.6	0.00	0.00	0.00
8,000.0	90.00	179.21	5,863.0	-2,360.3	32.4	2,360.6	0.00	0.00	0.00
8,100.0	90.00	179.21	5,863.0	-2,460.3	33.7	2,460.6	0.00	0.00	0.00
8,200.0	90.00	179.21	5,863.0	-2,560.3	35.1	2,560.6	0.00	0.00	0.00
8,300.0	90.00	179.21	5,863.0	-2,660.3	36.5	2,660.6	0.00	0.00	0.00
8,400.0	90.00	179.21	5,863.0	-2,760.3	37.9	2,760.6	0.00	0.00	0.00
8,500.0	90.00	179.21	5,863.0	-2,860.3	39.2	2,860.6	0.00	0.00	0.00
8,600.0	90.00	179.21	5,863.0	-2,960.3	40.6	2,960.6	0.00	0.00	0.00
8,700.0	90.00	179.21	5,863.0	-3,060.3	42.0	3,060.6	0.00	0.00	0.00
8,800.0	90.00	179.21	5,863.0	-3,160.3	43.3	3,160.6	0.00	0.00	0.00
8,900.0	90.00	179.21	5,863.0	-3,260.3	44.7	3,260.6	0.00	0.00	0.00
9,000.0	90.00	179.21	5,863.0	-3,360.2	46.1	3,360.6	0.00	0.00	0.00
9,100.0	90.00	179.21	5,863.0	-3,460.2	47.5	3,460.6	0.00	0.00	0.00
9,200.0	90.00	179.21	5,863.0	-3,560.2	48.8	3,560.6	0.00	0.00	0.00
9,300.0	90.00	179.21	5,863.0	-3,660.2	50.2	3,660.6	0.00	0.00	0.00
9,400.0	90.00	179.21	5,863.0	-3,760.2	51.6	3,760.6	0.00	0.00	0.00
9,500.0	90.00	179.21	5,863.0	-3,860.2	52.9	3,860.6	0.00	0.00	0.00
9,600.0	90.00	179.21	5,863.0	-3,960.2	54.3	3,960.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well HORSETAIL#16B-1610B
<b>Company:</b>	Whiting Oil & Gas	<b>TVD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Project:</b>	SEC.16-T10N-R57W	<b>MD Reference:</b>	RKB @ 4793.1ft (CADE 21 KB 16.5')
<b>Site:</b>	HORSETAIL 16B PAD 16-10N-57W	<b>North Reference:</b>	True
<b>Well:</b>	HORSETAIL#16B-1610B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	PLAN 1 (APRIL 18, 2013)		

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)
9,700.0	90.00	179.21	5,863.0	-4,060.2	55.7	4,060.6	0.00	0.00	0.00
9,800.0	90.00	179.21	5,863.0	-4,160.2	57.1	4,160.6	0.00	0.00	0.00
9,897.2	90.00	179.21	5,863.0	-4,257.4	58.4	4,257.8	0.00	0.00	0.00
BHL 660'FSL & 2145'FEL									

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									
SHL 395'FNL & 2158'	0.00	0.00	1.0	0.0	0.0	1,555,534.17	3,482,913.23	40.845272	-103.754508
- plan hits target center									
- Point									
BHL 660'FSL & 2145'I	0.00	0.00	5,863.0	-4,257.4	58.4	1,551,278.70	3,483,055.41	40.833587	-103.754297
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
6,160.0	5,863.0	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,750.6	5,710.0	NIOBRARA		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
5,342.0	5,342.0	0.0	0.0	KOP	