

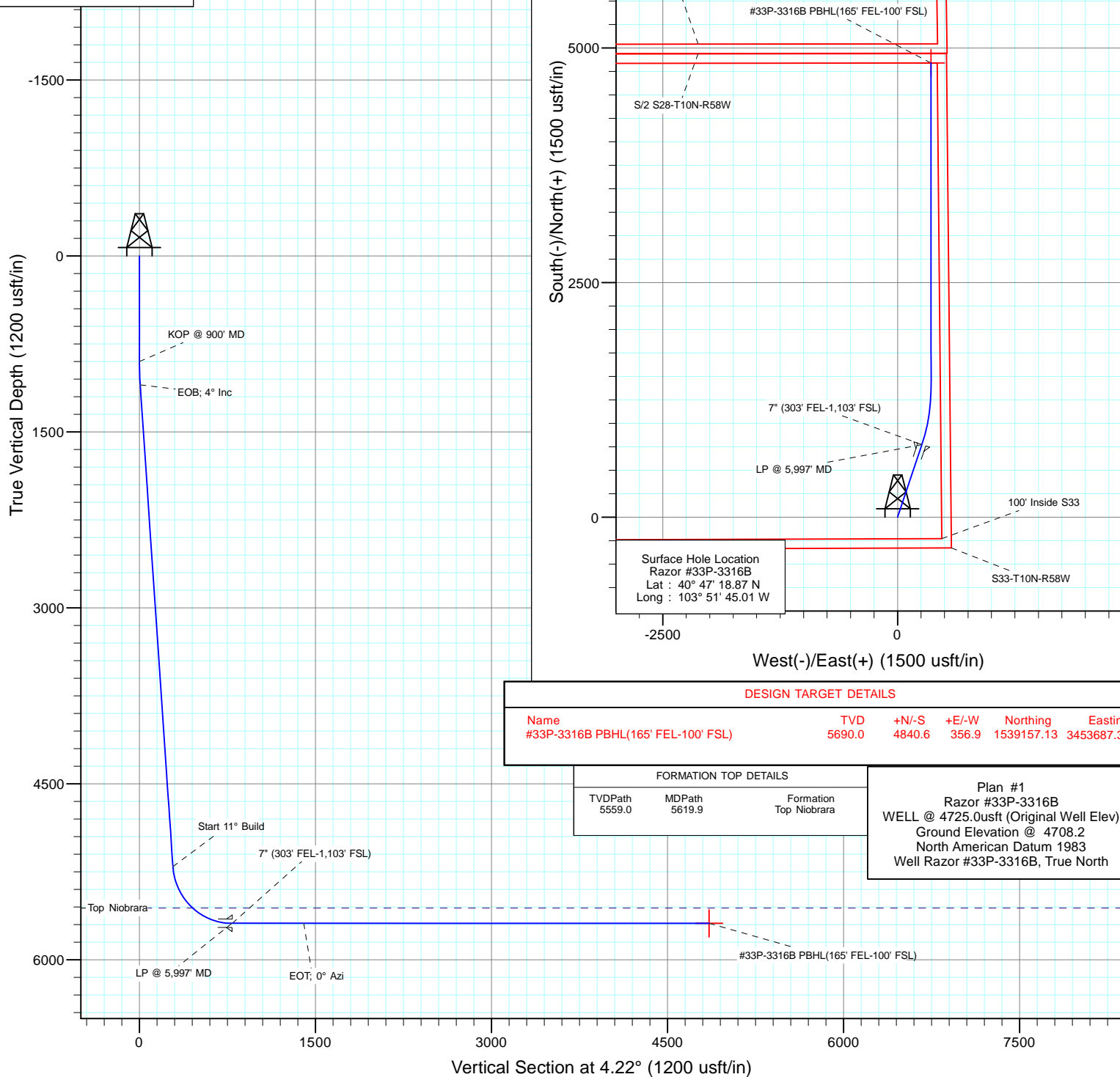
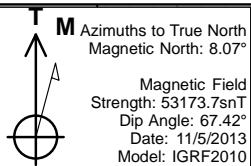


Project: Weld County, CO  
Site: S33-T10N-R58W  
Well: Razor #33P-3316B  
Wellbore: HZ  
Design: Plan #1



#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0	KOP @ 900' MD
3	1100.0	4.00	18.49	1099.8	6.6	2.2	2.00	18.49	6.8	EOB; 4° Inc
4	5215.5	4.00	18.49	5205.3	278.9	93.3	0.00	0.00	285.0	Start 11° Build
5	5997.3	90.00	18.49	5689.8	771.7	258.0	11.00	0.00	788.5	LP @ 5,997' MD
6	6613.5	90.00	0.00	5689.9	1377.2	356.6	3.00	-90.01	1399.7	EOT; 0° Azi
7	10076.9	90.00	0.00	5690.0	4840.6	356.9	0.00	0.00	4853.7	PBHL @ 10,076' MD



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
#33P-3316B PBHL(165' FEL-100' FSL)	5690.0	4840.6	356.9	1539157.13	3453687.37

#### FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION TOP
5559.0	5619.9	Top Niobrara

Plan #1  
Razor #33P-3316B  
WELL @ 4725.0usft (Original Well Elev)  
Ground Elevation @ 4708.2  
North American Datum 1983  
Well Razor #33P-3316B, True North

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		S33-T10N-R58W			
Site Position:		Northing:	1,534,460.86 usft	Latitude:	40° 47' 21.07 N
From:	Lat/Long	Easting:	3,449,473.56 usft	Longitude:	103° 52' 36.27 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.05 °

Well	Razor #33P-3316B					
Well Position	+N/-S	0.0 usft	Northing:	1,534,310.75 usft	Latitude:	40° 47' 18.87 N
	+E/-W	0.0 usft	Easting:	3,453,419.94 usft	Longitude:	103° 51' 45.01 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,708.2 usft

<b>Wellbore</b>	HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	11/5/2013	8.07	67.42	53,174

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	4.22	

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	4.00	18.49	1,099.8	6.6	2.2	2.00	2.00	0.00	18.49	
5,215.5	4.00	18.49	5,205.3	278.9	93.3	0.00	0.00	0.00	0.00	
5,997.3	90.00	18.49	5,689.8	771.7	258.0	11.00	11.00	0.00	0.00	
6,613.5	90.00	0.00	5,689.9	1,377.2	356.6	3.00	0.00	-3.00	-90.01	
10,076.9	90.00	0.00	5,690.0	4,840.6	356.9	0.00	0.00	0.00	0.00	#33P-3316B PBHL(16

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	KOP @ 900' MD
1,000.0	2.00	18.49	1,000.0	1.7	0.6	1.7	2.00	2.00	
1,100.0	4.00	18.49	1,099.8	6.6	2.2	6.8	2.00	2.00	EOB; 4° Inc
1,200.0	4.00	18.49	1,199.6	13.2	4.4	13.5	0.00	0.00	
1,300.0	4.00	18.49	1,299.4	19.8	6.6	20.3	0.00	0.00	
1,400.0	4.00	18.49	1,399.1	26.5	8.8	27.0	0.00	0.00	
1,500.0	4.00	18.49	1,498.9	33.1	11.1	33.8	0.00	0.00	
1,600.0	4.00	18.49	1,598.6	39.7	13.3	40.6	0.00	0.00	
1,700.0	4.00	18.49	1,698.4	46.3	15.5	47.3	0.00	0.00	
1,800.0	4.00	18.49	1,798.1	52.9	17.7	54.1	0.00	0.00	
1,900.0	4.00	18.49	1,897.9	59.5	19.9	60.8	0.00	0.00	
2,000.0	4.00	18.49	1,997.6	66.2	22.1	67.6	0.00	0.00	
2,100.0	4.00	18.49	2,097.4	72.8	24.3	74.4	0.00	0.00	
2,200.0	4.00	18.49	2,197.2	79.4	26.5	81.1	0.00	0.00	
2,300.0	4.00	18.49	2,296.9	86.0	28.8	87.9	0.00	0.00	
2,400.0	4.00	18.49	2,396.7	92.6	31.0	94.6	0.00	0.00	
2,500.0	4.00	18.49	2,496.4	99.2	33.2	101.4	0.00	0.00	
2,600.0	4.00	18.49	2,596.2	105.9	35.4	108.2	0.00	0.00	
2,700.0	4.00	18.49	2,695.9	112.5	37.6	114.9	0.00	0.00	
2,800.0	4.00	18.49	2,795.7	119.1	39.8	121.7	0.00	0.00	
2,900.0	4.00	18.49	2,895.5	125.7	42.0	128.4	0.00	0.00	
3,000.0	4.00	18.49	2,995.2	132.3	44.2	135.2	0.00	0.00	
3,100.0	4.00	18.49	3,095.0	138.9	46.5	142.0	0.00	0.00	
3,200.0	4.00	18.49	3,194.7	145.5	48.7	148.7	0.00	0.00	
3,300.0	4.00	18.49	3,294.5	152.2	50.9	155.5	0.00	0.00	
3,400.0	4.00	18.49	3,394.2	158.8	53.1	162.2	0.00	0.00	
3,500.0	4.00	18.49	3,494.0	165.4	55.3	169.0	0.00	0.00	
3,600.0	4.00	18.49	3,593.7	172.0	57.5	175.8	0.00	0.00	
3,700.0	4.00	18.49	3,693.5	178.6	59.7	182.5	0.00	0.00	
3,800.0	4.00	18.49	3,793.3	185.2	61.9	189.3	0.00	0.00	
3,900.0	4.00	18.49	3,893.0	191.9	64.2	196.1	0.00	0.00	
4,000.0	4.00	18.49	3,992.8	198.5	66.4	202.8	0.00	0.00	
4,100.0	4.00	18.49	4,092.5	205.1	68.6	209.6	0.00	0.00	
4,200.0	4.00	18.49	4,192.3	211.7	70.8	216.3	0.00	0.00	
4,300.0	4.00	18.49	4,292.0	218.3	73.0	223.1	0.00	0.00	
4,400.0	4.00	18.49	4,391.8	224.9	75.2	229.9	0.00	0.00	
4,500.0	4.00	18.49	4,491.6	231.5	77.4	236.6	0.00	0.00	
4,600.0	4.00	18.49	4,591.3	238.2	79.6	243.4	0.00	0.00	
4,700.0	4.00	18.49	4,691.1	244.8	81.9	250.1	0.00	0.00	
4,800.0	4.00	18.49	4,790.8	251.4	84.1	256.9	0.00	0.00	
4,900.0	4.00	18.49	4,890.6	258.0	86.3	263.7	0.00	0.00	
5,000.0	4.00	18.49	4,990.3	264.6	88.5	270.4	0.00	0.00	
5,100.0	4.00	18.49	5,090.1	271.2	90.7	277.2	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,200.0	4.00	18.49	5,189.9	277.9	92.9	283.9	0.00	0.00	
5,215.5	4.00	18.49	5,205.3	278.9	93.3	285.0	0.00	0.00	Start 11° Build
5,250.0	7.80	18.49	5,239.6	282.2	94.4	288.4	11.00	11.00	
5,300.0	13.30	18.49	5,288.8	290.9	97.3	297.3	11.00	11.00	
5,350.0	18.80	18.49	5,336.8	304.0	101.7	310.7	11.00	11.00	
5,400.0	24.30	18.49	5,383.3	321.4	107.5	328.5	11.00	11.00	
5,450.0	29.80	18.49	5,427.8	343.0	114.7	350.5	11.00	11.00	
5,500.0	35.30	18.49	5,469.9	368.5	123.2	376.5	11.00	11.00	
5,550.0	40.80	18.49	5,509.3	397.7	133.0	406.4	11.00	11.00	
5,600.0	46.30	18.49	5,545.5	430.4	143.9	439.8	11.00	11.00	
5,619.9	48.49	18.49	5,559.0	444.3	148.6	454.0	11.00	11.00	Top Niobrara
5,650.0	51.80	18.49	5,578.3	466.2	155.9	476.4	11.00	11.00	
5,700.0	57.30	18.49	5,607.3	504.8	168.8	515.8	11.00	11.00	
5,750.0	62.80	18.49	5,632.2	545.8	182.5	557.8	11.00	11.00	
5,800.0	68.30	18.49	5,652.9	589.0	197.0	601.9	11.00	11.00	
5,850.0	73.80	18.49	5,669.1	633.8	211.9	647.7	11.00	11.00	
5,900.0	79.30	18.49	5,680.8	679.9	227.4	694.8	11.00	11.00	
5,950.0	84.80	18.49	5,687.7	726.9	243.1	742.8	11.00	11.00	
5,997.3	90.00	18.49	5,689.8	771.7	258.0	788.5	11.00	11.00	LP @ 5,997' MD
6,000.0	90.00	18.41	5,689.8	774.2	258.9	791.2	3.00	0.00	7" (303' FEL-1,103' FSL)
6,100.0	90.00	15.41	5,689.8	869.9	288.0	888.7	3.00	0.00	
6,200.0	90.00	12.41	5,689.8	966.9	312.0	987.3	3.00	0.00	
6,300.0	90.00	9.41	5,689.8	1,065.1	330.9	1,086.6	3.00	0.00	
6,400.0	90.00	6.41	5,689.8	1,164.2	344.7	1,186.3	3.00	0.00	
6,500.0	90.00	3.41	5,689.8	1,263.8	353.3	1,286.3	3.00	0.00	
6,600.0	90.00	0.41	5,689.8	1,363.7	356.6	1,386.2	3.00	0.00	
6,613.5	90.00	0.00	5,689.9	1,377.2	356.6	1,399.7	3.00	0.00	EOT; 0° Azi
6,700.0	90.00	0.00	5,689.9	1,463.7	356.6	1,486.0	0.00	0.00	
6,800.0	90.00	0.00	5,689.9	1,563.7	356.6	1,585.7	0.00	0.00	
6,900.0	90.00	0.00	5,689.9	1,663.7	356.7	1,685.4	0.00	0.00	
7,000.0	90.00	0.00	5,689.9	1,763.7	356.7	1,785.2	0.00	0.00	
7,100.0	90.00	0.00	5,689.9	1,863.7	356.7	1,884.9	0.00	0.00	
7,200.0	90.00	0.00	5,689.9	1,963.7	356.7	1,984.6	0.00	0.00	
7,300.0	90.00	0.00	5,689.9	2,063.7	356.7	2,084.3	0.00	0.00	
7,400.0	90.00	0.00	5,689.9	2,163.7	356.7	2,184.1	0.00	0.00	
7,500.0	90.00	0.00	5,689.9	2,263.7	356.7	2,283.8	0.00	0.00	
7,600.0	90.00	0.00	5,689.9	2,363.7	356.7	2,383.5	0.00	0.00	
7,700.0	90.00	0.00	5,689.9	2,463.7	356.7	2,483.3	0.00	0.00	
7,800.0	90.00	0.00	5,689.9	2,563.7	356.7	2,583.0	0.00	0.00	
7,900.0	90.00	0.00	5,689.9	2,663.7	356.7	2,682.7	0.00	0.00	
8,000.0	90.00	0.00	5,689.9	2,763.7	356.7	2,782.5	0.00	0.00	
8,100.0	90.00	0.00	5,689.9	2,863.7	356.7	2,882.2	0.00	0.00	
8,200.0	90.00	0.00	5,689.9	2,963.7	356.7	2,981.9	0.00	0.00	
8,300.0	90.00	0.00	5,689.9	3,063.7	356.7	3,081.6	0.00	0.00	
8,400.0	90.00	0.00	5,689.9	3,163.7	356.8	3,181.4	0.00	0.00	
8,500.0	90.00	0.00	5,689.9	3,263.7	356.8	3,281.1	0.00	0.00	
8,600.0	90.00	0.00	5,689.9	3,363.7	356.8	3,380.8	0.00	0.00	
8,700.0	90.00	0.00	5,689.9	3,463.7	356.8	3,480.6	0.00	0.00	
8,800.0	90.00	0.00	5,689.9	3,563.7	356.8	3,580.3	0.00	0.00	
8,900.0	90.00	0.00	5,689.9	3,663.7	356.8	3,680.0	0.00	0.00	
9,000.0	90.00	0.00	5,689.9	3,763.7	356.8	3,779.8	0.00	0.00	
9,100.0	90.00	0.00	5,689.9	3,863.7	356.8	3,879.5	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,200.0	90.00	0.00	5,690.0	3,963.7	356.8	3,979.2	0.00	0.00	
9,300.0	90.00	0.00	5,690.0	4,063.7	356.8	4,078.9	0.00	0.00	
9,400.0	90.00	0.00	5,690.0	4,163.7	356.8	4,178.7	0.00	0.00	
9,500.0	90.00	0.00	5,690.0	4,263.7	356.8	4,278.4	0.00	0.00	
9,600.0	90.00	0.00	5,690.0	4,363.7	356.8	4,378.1	0.00	0.00	
9,700.0	90.00	0.00	5,690.0	4,463.7	356.8	4,477.9	0.00	0.00	
9,800.0	90.00	0.00	5,690.0	4,563.7	356.9	4,577.6	0.00	0.00	
9,900.0	90.00	0.00	5,690.0	4,663.7	356.9	4,677.3	0.00	0.00	
10,000.0	90.00	0.00	5,690.0	4,763.7	356.9	4,777.1	0.00	0.00	
10,076.9	90.00	0.00	5,690.0	4,840.6	356.9	4,853.7	0.00	0.00	PBHL @ 10,076' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
#33P-3316B PBHL(165' - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	5,690.0	4,840.6	356.9	1,539,157.13	3,453,687.37	40° 48' 6.70 N	103° 51' 40.37 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,000.0	5,689.8	7" (303' FEL-1,103' FSL)	7	7-1/2	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,619.9	5,559.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment	
900.0	900.0	0.0	0.0	KOP @ 900' MD	
1,100.0	1,099.8	6.6	2.2	EOB; 4° Inc	
5,215.5	5,205.3	278.9	93.3	Start 11° Build	
5,997.3	5,689.8	771.7	258.0	LP @ 5,997' MD	
6,613.5	5,689.9	1,377.2	356.6	EOT; 0° Azi	
10,076.9	5,690.0	4,840.6	356.9	PBHL @ 10,076' MD	

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S33-T10N-R58W**

**Razor #33P-3316B**

**HZ**

**Plan #1**

## **Anticollision Report**

**06 November, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,356.1usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/5/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	10,076.4	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S33-T10N-R58W						
Razor #33P-3313A - HZ - Plan #1	900.0	900.0	90.0	86.2	23.788	CC, ES
Razor #33P-3313A - HZ - Plan #1	10,077.4	10,078.1	993.2	810.6	5.439	SF
Razor #33P-3314B - HZ - Plan #1	900.0	900.0	59.8	56.0	15.810	CC, ES
Razor #33P-3314B - HZ - Plan #1	10,077.4	10,063.6	659.8	476.3	3.595	SF
Razor #33P-3315A - HZ - Plan #1	900.0	900.0	29.9	26.1	7.905	CC, ES
Razor #33P-3315A - HZ - Plan #1	10,077.4	9,956.1	340.1	161.0	1.899	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3313A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-90.0	90.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-90.0	90.0	89.8	0.19	481.172		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-90.0	90.0	89.4	0.64	141.378		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-90.0	90.0	88.9	1.09	82.863		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-90.0	90.0	88.5	1.54	58.606		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-90.0	90.0	88.0	1.99	45.335		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-90.0	90.0	87.6	2.43	36.964		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-90.0	90.0	87.1	2.88	31.203		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-90.0	90.0	86.7	3.33	26.996		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-90.0	90.0	86.2	3.78	23.788	CC, ES	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-109.52	0.0	-90.0	90.6	86.3	4.23	21.405		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-112.54	0.0	-90.0	92.4	87.8	4.68	19.762		
1,200.0	1,199.6	1,199.6	1,199.6	2.6	2.6	-116.40	0.0	-90.0	95.3	90.2	5.13	18.589		
1,300.0	1,299.3	1,298.5	1,298.4	2.8	2.8	-119.05	1.5	-90.7	99.1	93.5	5.58	17.760		
1,400.0	1,399.1	1,397.4	1,397.3	3.0	3.0	-119.67	6.1	-93.0	103.9	97.8	6.03	17.218		
1,500.0	1,498.9	1,497.3	1,496.9	3.3	3.2	-119.31	12.4	-96.1	109.1	102.6	6.49	16.803		
1,600.0	1,598.6	1,597.1	1,596.5	3.5	3.5	-118.98	18.6	-99.1	114.4	107.4	6.96	16.430		
1,700.0	1,698.4	1,697.0	1,696.1	3.8	3.7	-118.69	24.9	-102.2	119.7	112.2	7.43	16.095		
1,800.0	1,798.1	1,796.8	1,795.7	4.0	3.9	-118.42	31.1	-105.3	124.9	117.0	7.91	15.791		
1,900.0	1,897.9	1,896.7	1,895.3	4.3	4.2	-118.17	37.4	-108.4	130.2	121.8	8.39	15.517		
2,000.0	1,997.6	1,996.6	1,994.9	4.5	4.4	-117.94	43.6	-111.4	135.5	126.6	8.87	15.267		
2,100.0	2,097.4	2,096.4	2,094.6	4.8	4.7	-117.73	49.9	-114.5	140.7	131.4	9.36	15.040		
2,200.0	2,197.2	2,196.3	2,194.2	5.0	4.9	-117.53	56.1	-117.6	146.0	136.2	9.85	14.832		
2,300.0	2,296.9	2,296.1	2,293.8	5.3	5.2	-117.35	62.4	-120.7	151.3	141.0	10.33	14.641		
2,400.0	2,396.7	2,396.0	2,393.4	5.5	5.4	-117.17	68.6	-123.7	156.6	145.8	10.82	14.466		
2,500.0	2,496.4	2,495.9	2,493.0	5.8	5.6	-117.01	74.9	-126.8	161.9	150.5	11.32	14.305		
2,600.0	2,596.2	2,595.7	2,592.6	6.0	5.9	-116.86	81.1	-129.9	167.1	155.3	11.81	14.155		
2,700.0	2,695.9	2,695.6	2,692.3	6.3	6.1	-116.72	87.4	-132.9	172.4	160.1	12.30	14.017		
2,800.0	2,795.7	2,795.4	2,791.9	6.5	6.4	-116.59	93.6	-136.0	177.7	164.9	12.80	13.888		
2,900.0	2,895.4	2,895.3	2,891.5	6.8	6.6	-116.47	99.9	-139.1	183.0	169.7	13.29	13.768		
3,000.0	2,995.2	2,995.2	2,991.1	7.0	6.9	-116.35	106.1	-142.2	188.3	174.5	13.79	13.657		
3,100.0	3,095.0	3,095.0	3,090.7	7.3	7.1	-116.24	112.4	-145.2	193.6	179.3	14.28	13.552		
3,200.0	3,194.7	3,194.9	3,190.3	7.5	7.4	-116.13	118.6	-148.3	198.9	184.1	14.78	13.454		
3,300.0	3,294.5	3,294.7	3,290.0	7.8	7.7	-116.03	124.9	-151.4	204.2	188.9	15.28	13.362		
3,400.0	3,394.2	3,394.6	3,389.6	8.0	7.9	-115.94	131.1	-154.5	209.4	193.7	15.78	13.275		
3,500.0	3,494.0	3,494.4	3,489.2	8.3	8.2	-115.85	137.4	-157.5	214.7	198.5	16.28	13.194		
3,600.0	3,593.7	3,594.3	3,588.8	8.5	8.4	-115.76	143.6	-160.6	220.0	203.2	16.77	13.117		
3,700.0	3,693.5	3,694.2	3,688.4	8.8	8.7	-115.68	149.9	-163.7	225.3	208.0	17.27	13.044		
3,800.0	3,793.3	3,794.0	3,788.0	9.1	8.9	-115.60	156.1	-166.8	230.6	212.8	17.77	12.975		
3,900.0	3,893.0	3,893.9	3,887.6	9.3	9.2	-115.53	162.4	-169.8	235.9	217.6	18.27	12.910		
4,000.0	3,992.8	3,993.7	3,987.3	9.6	9.4	-115.46	168.6	-172.9	241.2	222.4	18.77	12.848		
4,100.0	4,092.5	4,093.6	4,086.9	9.8	9.7	-115.39	174.9	-176.0	246.5	227.2	19.27	12.789		
4,200.0	4,192.3	4,193.5	4,186.5	10.1	9.9	-115.32	181.2	-179.0	251.8	232.0	19.77	12.733		
4,300.0	4,292.0	4,293.3	4,286.1	10.3	10.2	-115.26	187.4	-182.1	257.1	236.8	20.27	12.679		
4,400.0	4,391.8	4,393.2	4,385.7	10.6	10.4	-115.20	193.7	-185.2	262.4	241.6	20.78	12.628		
4,500.0	4,491.5	4,493.0	4,485.3	10.8	10.7	-115.14	199.9	-188.3	267.6	246.4	21.28	12.580		
4,600.0	4,591.3	4,592.9	4,585.0	11.1	11.0	-115.09	206.2	-191.3	272.9	251.2	21.78	12.533		
4,700.0	4,691.1	4,692.8	4,684.6	11.3	11.2	-115.03	212.4	-194.4	278.2	256.0	22.28	12.489		
4,800.0	4,790.8	4,792.6	4,784.2	11.6	11.5	-114.98	218.7	-197.5	283.5	260.7	22.78	12.446		
4,900.0	4,890.6	4,892.5	4,883.8	11.9	11.7	-114.93	224.9	-200.6	288.8	265.5	23.28	12.405		
5,000.0	4,990.3	4,992.3	4,983.4	12.1	12.0	-114.89	231.2	-203.6	294.1	270.3	23.78	12.366		
5,100.0	5,090.1	5,092.2	5,083.0	12.4	12.2	-114.84	237.4	-206.7	299.4	275.1	24.29	12.328		

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3313A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,200.0	5,189.8	5,182.1	5,172.5	12.6	12.5	-114.39	245.1	-210.5	305.7	280.9	24.78	12.334		
5,300.0	5,288.7	5,263.1	5,251.0	12.9	12.8	-111.60	262.5	-219.0	319.8	294.5	25.30	12.643		
5,400.0	5,383.3	5,340.3	5,322.3	13.4	13.2	-107.96	289.0	-232.1	346.5	320.6	25.94	13.359		
5,500.0	5,469.9	5,413.0	5,384.7	14.0	13.6	-103.74	322.4	-248.5	384.1	357.3	26.82	14.324		
5,600.0	5,545.5	5,480.9	5,437.8	14.8	14.1	-98.97	360.4	-267.2	430.7	402.7	27.98	15.393		
5,700.0	5,607.3	5,550.0	5,485.6	15.8	14.8	-93.87	405.0	-289.1	484.1	454.7	29.42	16.459		
5,800.0	5,652.9	5,600.0	5,516.0	17.0	15.3	-87.85	440.6	-306.6	542.5	511.6	30.88	17.568		
5,900.0	5,680.8	5,659.3	5,546.9	18.3	16.0	-82.10	486.1	-329.0	604.1	571.7	32.41	18.643		
6,000.0	5,689.8	5,712.8	5,569.6	19.7	16.6	-76.49	529.5	-350.3	667.4	633.6	33.81	19.743		
6,100.0	5,689.8	5,769.1	5,588.0	21.1	17.4	-79.70	577.2	-373.7	730.7	694.6	36.12	20.231		
6,200.0	5,689.8	5,832.0	5,601.7	22.5	18.4	-81.96	632.2	-400.8	792.4	753.9	38.51	20.577		
6,300.0	5,689.8	5,900.0	5,608.1	23.9	19.4	-83.25	693.0	-430.7	851.6	810.6	40.99	20.774		
6,400.0	5,689.8	6,039.8	5,608.3	25.4	21.6	-84.10	820.2	-488.6	905.2	860.8	44.44	20.367		
6,500.0	5,689.8	6,215.6	5,608.3	27.0	24.4	-84.72	985.5	-548.1	946.9	898.3	48.64	19.468		
6,600.0	5,689.8	6,408.2	5,608.3	28.5	27.5	-85.10	1,172.1	-595.6	974.7	921.3	53.40	18.252		
6,700.0	5,689.9	6,611.2	5,608.3	30.1	30.8	-85.25	1,372.8	-625.0	989.2	930.8	58.38	16.943		
6,800.0	5,689.9	6,802.4	5,608.2	31.7	33.9	-85.29	1,563.8	-633.1	993.1	929.9	63.23	15.707		
6,900.0	5,689.9	6,902.4	5,608.2	33.4	35.5	-85.28	1,663.8	-633.1	993.1	926.6	66.58	14.916		
7,000.0	5,689.9	7,002.4	5,608.2	35.1	37.1	-85.28	1,763.8	-633.1	993.1	923.1	69.99	14.190		
7,100.0	5,689.9	7,102.4	5,608.2	36.8	38.8	-85.28	1,863.8	-633.1	993.1	919.7	73.43	13.525		
7,200.0	5,689.9	7,202.4	5,608.2	38.5	40.5	-85.28	1,963.8	-633.1	993.1	916.2	76.91	12.912		
7,300.0	5,689.9	7,302.4	5,608.2	40.2	42.2	-85.28	2,063.8	-633.1	993.1	912.7	80.43	12.348		
7,400.0	5,689.9	7,402.4	5,608.2	42.0	43.9	-85.28	2,163.8	-633.1	993.1	909.2	83.97	11.828		
7,500.0	5,689.9	7,502.4	5,608.2	43.8	45.6	-85.28	2,263.8	-633.1	993.1	905.6	87.53	11.346		
7,600.0	5,689.9	7,602.4	5,608.2	45.6	47.4	-85.28	2,363.8	-633.1	993.1	902.0	91.12	10.899		
7,700.0	5,689.9	7,702.4	5,608.2	47.4	49.1	-85.28	2,463.8	-633.1	993.1	898.4	94.73	10.484		
7,800.0	5,689.9	7,802.4	5,608.2	49.2	50.9	-85.28	2,563.8	-633.1	993.1	894.8	98.35	10.098		
7,900.0	5,689.9	7,902.4	5,608.2	51.0	52.7	-85.28	2,663.8	-633.1	993.1	891.2	101.99	9.738		
8,000.0	5,689.9	8,002.4	5,608.2	52.8	54.5	-85.28	2,763.8	-633.0	993.1	887.5	105.64	9.401		
8,100.0	5,689.9	8,102.4	5,608.1	54.6	56.3	-85.28	2,863.8	-633.0	993.1	883.8	109.30	9.086		
8,200.0	5,689.9	8,202.4	5,608.1	56.5	58.1	-85.28	2,963.8	-633.0	993.1	880.2	112.98	8.791		
8,300.0	5,689.9	8,302.4	5,608.1	58.3	59.9	-85.28	3,063.8	-633.0	993.1	876.5	116.66	8.513		
8,400.0	5,689.9	8,402.4	5,608.1	60.1	61.7	-85.28	3,163.8	-633.0	993.1	872.8	120.35	8.252		
8,500.0	5,689.9	8,502.4	5,608.1	62.0	63.6	-85.27	3,263.8	-633.0	993.1	869.1	124.06	8.006		
8,600.0	5,689.9	8,602.4	5,608.1	63.8	65.4	-85.27	3,363.8	-633.0	993.1	865.4	127.77	7.773		
8,700.0	5,689.9	8,702.4	5,608.1	65.7	67.2	-85.27	3,463.8	-633.0	993.2	861.7	131.48	7.554		
8,800.0	5,689.9	8,802.4	5,608.1	67.6	69.1	-85.27	3,563.8	-633.0	993.2	857.9	135.20	7.346		
8,900.0	5,689.9	8,902.4	5,608.1	69.4	70.9	-85.27	3,663.8	-633.0	993.2	854.2	138.93	7.148		
9,000.0	5,689.9	9,002.4	5,608.1	71.3	72.8	-85.27	3,763.8	-633.0	993.2	850.5	142.67	6.961		
9,100.0	5,689.9	9,102.4	5,608.1	73.2	74.6	-85.27	3,863.8	-633.0	993.2	846.7	146.41	6.784		
9,200.0	5,690.0	9,202.4	5,608.1	75.0	76.5	-85.27	3,963.8	-633.0	993.2	843.0	150.15	6.614		
9,300.0	5,690.0	9,302.4	5,608.1	76.9	78.4	-85.27	4,063.8	-633.0	993.2	839.3	153.90	6.453		
9,400.0	5,690.0	9,402.4	5,608.0	78.8	80.2	-85.27	4,163.8	-632.9	993.2	835.5	157.65	6.300		
9,500.0	5,690.0	9,502.4	5,608.0	80.7	82.1	-85.27	4,263.8	-632.9	993.2	831.8	161.40	6.153		
9,600.0	5,690.0	9,602.4	5,608.0	82.5	84.0	-85.27	4,363.8	-632.9	993.2	828.0	165.16	6.013		
9,700.0	5,690.0	9,702.4	5,608.0	84.4	85.8	-85.27	4,463.8	-632.9	993.2	824.2	168.92	5.879		
9,800.0	5,690.0	9,802.4	5,608.0	86.3	87.7	-85.27	4,563.8	-632.9	993.2	820.5	172.69	5.751		
9,900.0	5,690.0	9,902.4	5,608.0	88.2	89.6	-85.27	4,663.8	-632.9	993.2	816.7	176.45	5.628		
10,000.0	5,690.0	10,002.4	5,608.0	90.1	91.4	-85.26	4,763.8	-632.9	993.2	812.9	180.22	5.511		
10,045.3	5,690.0	10,047.6	5,608.0	90.8	92.1	-85.26	4,809.0	-632.9	993.2	811.5	181.62	5.468		
10,077.4	5,690.0	10,078.1	5,608.0	91.3	92.6	-85.26	4,839.5	-632.9	993.2	810.6	182.59	5.439 SF		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3314B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-59.8	59.8					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-59.8	59.8	59.6	0.19	319.813		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-59.8	59.8	59.2	0.64	93.964		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-59.8	59.8	58.7	1.09	55.072		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-59.8	59.8	58.3	1.54	38.951		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-59.8	59.8	57.8	1.99	30.130		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-59.8	59.8	57.4	2.43	24.567		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-59.8	59.8	56.9	2.88	20.738		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-59.8	59.8	56.5	3.33	17.942		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-59.8	59.8	56.0	3.78	15.810 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-110.04	0.0	-59.8	60.4	56.2	4.23	14.273		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-114.52	0.0	-59.8	62.4	57.7	4.68	13.335		
1,200.0	1,199.6	1,199.5	1,199.5	2.6	2.6	-118.55	1.7	-60.2	65.7	60.5	5.13	12.809		
1,300.0	1,299.3	1,299.3	1,299.1	2.8	2.8	-119.32	6.7	-61.5	69.3	63.8	5.58	12.425		
1,400.0	1,399.1	1,399.2	1,398.8	3.0	3.0	-118.62	13.5	-63.1	73.1	67.1	6.04	12.099		
1,500.0	1,498.9	1,499.1	1,498.5	3.3	3.2	-117.99	20.3	-64.7	76.9	70.4	6.51	11.809		
1,600.0	1,598.6	1,599.0	1,598.2	3.5	3.5	-117.43	27.1	-66.4	80.7	73.7	6.98	11.549		
1,700.0	1,698.4	1,699.0	1,697.8	3.8	3.7	-116.91	33.8	-68.0	84.5	77.0	7.46	11.317		
1,800.0	1,798.1	1,798.9	1,797.5	4.0	4.0	-116.44	40.6	-69.7	88.3	80.3	7.95	11.108		
1,900.0	1,897.9	1,898.8	1,897.2	4.3	4.2	-116.00	47.4	-71.3	92.1	83.6	8.43	10.920		
2,000.0	1,997.6	1,998.7	1,996.9	4.5	4.4	-115.60	54.1	-73.0	95.9	87.0	8.92	10.749		
2,100.0	2,097.4	2,098.7	2,096.6	4.8	4.7	-115.23	60.9	-74.6	99.7	90.3	9.41	10.595		
2,200.0	2,197.2	2,198.6	2,196.2	5.0	4.9	-114.89	67.7	-76.3	103.5	93.6	9.90	10.454		
2,300.0	2,296.9	2,298.5	2,295.9	5.3	5.2	-114.58	74.5	-77.9	107.3	96.9	10.39	10.325		
2,400.0	2,396.7	2,398.4	2,395.6	5.5	5.4	-114.28	81.2	-79.6	111.1	100.3	10.89	10.207		
2,500.0	2,496.4	2,498.4	2,495.3	5.8	5.7	-114.00	88.0	-81.2	115.0	103.6	11.39	10.098		
2,600.0	2,596.2	2,598.3	2,595.0	6.0	5.9	-113.75	94.8	-82.9	118.8	106.9	11.88	9.998		
2,700.0	2,695.9	2,698.2	2,694.7	6.3	6.2	-113.50	101.6	-84.5	122.6	110.3	12.38	9.905		
2,800.0	2,795.7	2,798.1	2,794.3	6.5	6.4	-113.28	108.3	-86.2	126.5	113.6	12.88	9.819		
2,900.0	2,895.4	2,898.1	2,894.0	6.8	6.7	-113.06	115.1	-87.8	130.3	116.9	13.38	9.739		
3,000.0	2,995.2	2,998.0	2,993.7	7.0	6.9	-112.86	121.9	-89.5	134.1	120.3	13.88	9.664		
3,100.0	3,095.0	3,097.9	3,093.4	7.3	7.2	-112.67	128.6	-91.1	138.0	123.6	14.38	9.594		
3,200.0	3,194.7	3,197.8	3,193.1	7.5	7.4	-112.49	135.4	-92.8	141.8	126.9	14.88	9.529		
3,300.0	3,294.5	3,297.8	3,292.7	7.8	7.7	-112.32	142.2	-94.4	145.7	130.3	15.38	9.468		
3,400.0	3,394.2	3,397.7	3,392.4	8.0	7.9	-112.16	149.0	-96.1	149.5	133.6	15.89	9.410		
3,500.0	3,494.0	3,497.6	3,492.1	8.3	8.2	-112.01	155.7	-97.7	153.3	137.0	16.39	9.356		
3,600.0	3,593.7	3,597.6	3,591.8	8.5	8.5	-111.86	162.5	-99.4	157.2	140.3	16.89	9.305		
3,700.0	3,693.5	3,697.5	3,691.5	8.8	8.7	-111.72	169.3	-101.0	161.0	143.6	17.40	9.257		
3,800.0	3,793.3	3,797.4	3,791.2	9.1	9.0	-111.59	176.1	-102.7	164.9	147.0	17.90	9.211		
3,900.0	3,893.0	3,897.3	3,890.8	9.3	9.2	-111.46	182.8	-104.3	168.7	150.3	18.40	9.168		
4,000.0	3,992.8	3,997.3	3,990.5	9.6	9.5	-111.34	189.6	-106.0	172.6	153.7	18.91	9.127		
4,100.0	4,092.5	4,097.2	4,090.2	9.8	9.7	-111.22	196.4	-107.6	176.4	157.0	19.41	9.088		
4,200.0	4,192.3	4,197.1	4,189.9	10.1	10.0	-111.11	203.1	-109.3	180.3	160.4	19.92	9.051		
4,300.0	4,292.0	4,297.0	4,289.6	10.3	10.2	-111.01	209.9	-110.9	184.1	163.7	20.42	9.016		
4,400.0	4,391.8	4,397.0	4,389.2	10.6	10.5	-110.90	216.7	-112.6	188.0	167.0	20.93	8.982		
4,500.0	4,491.5	4,496.9	4,488.9	10.8	10.7	-110.81	223.5	-114.2	191.8	170.4	21.43	8.950		
4,600.0	4,591.3	4,596.8	4,588.6	11.1	11.0	-110.71	230.2	-115.9	195.7	173.7	21.94	8.920		
4,700.0	4,691.1	4,696.7	4,688.3	11.3	11.3	-110.62	237.0	-117.5	199.5	177.1	22.44	8.890		
4,800.0	4,790.8	4,796.7	4,788.0	11.6	11.5	-110.54	243.8	-119.1	203.4	180.4	22.95	8.862		
4,900.0	4,890.6	4,896.6	4,887.7	11.9	11.8	-110.45	250.6	-120.8	207.2	183.8	23.45	8.836		
5,000.0	4,990.3	4,996.5	4,987.3	12.1	12.0	-110.37	257.3	-122.4	211.1	187.1	23.96	8.810		
5,100.0	5,090.1	5,096.4	5,087.0	12.4	12.3	-110.29	264.1	-124.1	214.9	190.5	24.47	8.785		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3314B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,189.8	5,196.4	5,186.7	12.6	12.5	-110.22	270.9	-125.7	218.8	193.8	24.97	8.762	
5,300.0	5,288.7	5,289.5	5,279.0	12.9	12.8	-109.62	282.3	-128.5	226.2	200.7	25.49	8.873	
5,400.0	5,383.3	5,379.8	5,365.2	13.4	13.2	-108.17	308.2	-134.8	243.3	217.2	26.17	9.297	
5,500.0	5,469.9	5,467.9	5,443.6	14.0	13.7	-105.98	347.0	-144.3	269.6	242.5	27.10	9.948	
5,600.0	5,545.5	5,553.4	5,512.2	14.8	14.3	-103.15	396.4	-156.3	303.9	275.6	28.36	10.717	
5,700.0	5,607.3	5,636.3	5,570.0	15.8	15.0	-99.79	454.0	-170.3	344.9	314.9	29.98	11.506	
5,800.0	5,652.9	5,717.1	5,616.5	17.0	15.9	-96.02	518.1	-185.9	391.1	359.2	31.91	12.256	
5,900.0	5,680.8	5,796.6	5,651.8	18.3	16.8	-92.00	587.3	-202.8	440.9	406.9	34.06	12.944	
6,000.0	5,689.8	5,876.2	5,675.9	19.7	17.9	-88.10	660.9	-220.7	493.0	456.6	36.36	13.556	
6,100.0	5,689.8	5,960.1	5,688.5	21.1	19.1	-89.84	741.4	-240.3	543.6	504.8	38.88	13.984	
6,200.0	5,689.8	6,071.8	5,689.8	22.5	20.7	-90.00	850.2	-265.2	588.9	547.1	41.84	14.075	
6,300.0	5,689.8	6,209.3	5,689.8	23.9	22.7	-90.00	985.8	-287.6	623.6	578.3	45.31	13.763	
6,400.0	5,689.8	6,355.2	5,689.8	25.4	24.9	-90.00	1,131.1	-300.6	646.2	597.0	49.12	13.155	
6,500.0	5,689.8	6,487.9	5,689.8	27.0	26.9	-90.00	1,263.8	-303.1	656.4	603.5	52.83	12.424	
6,600.0	5,689.8	6,587.9	5,689.8	28.5	28.6	-90.00	1,363.7	-303.1	659.7	603.6	56.06	11.767	
6,700.0	5,689.8	6,687.9	5,689.8	30.1	30.2	-90.00	1,463.7	-303.1	659.7	600.4	59.37	11.112	
6,800.0	5,689.8	6,787.9	5,689.8	31.7	31.9	-90.00	1,563.7	-303.1	659.7	597.0	62.75	10.514	
6,900.0	5,689.8	6,887.9	5,689.8	33.4	33.7	-90.00	1,663.7	-303.1	659.7	593.6	66.17	9.970	
7,000.0	5,689.8	6,987.9	5,689.8	35.1	35.4	-90.00	1,763.7	-303.1	659.7	590.1	69.64	9.473	
7,100.0	5,689.8	7,087.9	5,689.8	36.8	37.2	-90.00	1,863.7	-303.1	659.7	586.6	73.15	9.019	
7,200.0	5,689.8	7,187.9	5,689.8	38.5	39.0	-90.00	1,963.7	-303.1	659.7	583.0	76.69	8.603	
7,300.0	5,689.8	7,287.9	5,689.8	40.2	40.7	-90.00	2,063.7	-303.1	659.7	579.5	80.26	8.220	
7,400.0	5,689.8	7,387.9	5,689.8	42.0	42.5	-90.00	2,163.7	-303.1	659.7	575.9	83.85	7.868	
7,500.0	5,689.8	7,487.9	5,689.8	43.8	44.4	-90.00	2,263.7	-303.0	659.7	572.3	87.46	7.543	
7,600.0	5,689.8	7,587.9	5,689.8	45.6	46.2	-90.00	2,363.7	-303.0	659.7	568.7	91.09	7.243	
7,700.0	5,689.8	7,687.9	5,689.8	47.4	48.0	-90.00	2,463.7	-303.0	659.7	565.0	94.74	6.964	
7,800.0	5,689.8	7,787.9	5,689.8	49.2	49.8	-90.00	2,563.7	-303.0	659.7	561.3	98.40	6.705	
7,900.0	5,689.8	7,887.9	5,689.8	51.0	51.7	-90.00	2,663.7	-303.0	659.7	557.7	102.08	6.463	
8,000.0	5,689.8	7,987.9	5,689.8	52.8	53.5	-90.00	2,763.7	-303.0	659.7	554.0	105.76	6.238	
8,100.0	5,689.8	8,087.9	5,689.8	54.6	55.4	-90.00	2,863.7	-303.0	659.7	550.3	109.46	6.027	
8,200.0	5,689.8	8,187.9	5,689.8	56.5	57.2	-90.00	2,963.7	-303.0	659.7	546.6	113.17	5.830	
8,300.0	5,689.8	8,287.9	5,689.8	58.3	59.1	-90.00	3,063.7	-303.0	659.7	542.9	116.89	5.644	
8,400.0	5,689.8	8,387.9	5,689.8	60.1	61.0	-90.00	3,163.7	-303.0	659.7	539.1	120.61	5.470	
8,500.0	5,689.8	8,487.9	5,689.8	62.0	62.8	-90.00	3,263.7	-303.0	659.7	535.4	124.34	5.306	
8,600.0	5,689.8	8,587.9	5,689.8	63.8	64.7	-90.00	3,363.7	-303.0	659.7	531.7	128.08	5.151	
8,700.0	5,689.8	8,687.9	5,689.8	65.7	66.6	-90.00	3,463.7	-303.0	659.7	527.9	131.82	5.005	
8,800.0	5,689.8	8,787.9	5,689.8	67.6	68.4	-90.00	3,563.7	-303.0	659.7	524.2	135.57	4.866	
8,900.0	5,689.8	8,887.9	5,689.8	69.4	70.3	-90.00	3,663.7	-303.0	659.7	520.4	139.32	4.735	
9,000.0	5,689.8	8,987.9	5,689.8	71.3	72.2	-90.00	3,763.7	-303.0	659.7	516.7	143.08	4.611	
9,100.0	5,689.8	9,087.9	5,689.8	73.2	74.1	-90.00	3,863.7	-302.9	659.7	512.9	146.85	4.493	
9,200.0	5,690.0	9,187.9	5,690.0	75.0	76.0	-90.00	3,963.7	-302.9	659.8	509.1	150.61	4.380	
9,300.0	5,690.0	9,287.9	5,690.0	76.9	77.9	-90.00	4,063.7	-302.9	659.8	505.4	154.38	4.273	
9,400.0	5,690.0	9,387.9	5,690.0	78.8	79.7	-90.00	4,163.7	-302.9	659.8	501.6	158.16	4.172	
9,500.0	5,690.0	9,487.9	5,690.0	80.7	81.6	-90.00	4,263.7	-302.9	659.8	497.8	161.93	4.074	
9,600.0	5,690.0	9,587.9	5,690.0	82.5	83.5	-90.00	4,363.7	-302.9	659.8	494.0	165.71	3.981	
9,700.0	5,690.0	9,687.9	5,690.0	84.4	85.4	-90.00	4,463.7	-302.9	659.8	490.3	169.50	3.892	
9,800.0	5,690.0	9,787.9	5,690.0	86.3	87.3	-90.00	4,563.7	-302.9	659.8	486.5	173.28	3.807	
9,900.0	5,690.0	9,887.9	5,690.0	88.2	89.2	-90.00	4,663.7	-302.9	659.8	482.7	177.07	3.726	
10,000.0	5,690.0	9,987.9	5,690.0	90.1	91.1	-90.00	4,763.7	-302.9	659.8	478.9	180.86	3.648	
10,045.4	5,690.0	10,033.3	5,690.0	90.8	92.0	-90.00	4,809.1	-302.9	659.8	477.3	182.43	3.617	
10,077.4	5,690.0	10,063.6	5,690.0	91.3	92.5	-90.00	4,839.5	-302.9	659.8	476.3	183.50	3.595 SF	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3315A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis				Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.98	0.0	-29.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	-89.98	0.0	-29.9	29.9	29.7	0.19	159.906		
200.0	200.0	200.0	200.0	0.3	0.3	-89.98	0.0	-29.9	29.9	29.3	0.64	46.982		
300.0	300.0	300.0	300.0	0.5	0.5	-89.98	0.0	-29.9	29.9	28.8	1.09	27.536		
400.0	400.0	400.0	400.0	0.8	0.8	-89.98	0.0	-29.9	29.9	28.4	1.54	19.475		
500.0	500.0	500.0	500.0	1.0	1.0	-89.98	0.0	-29.9	29.9	27.9	1.99	15.065		
600.0	600.0	600.0	600.0	1.2	1.2	-89.98	0.0	-29.9	29.9	27.5	2.43	12.284		
700.0	700.0	700.0	700.0	1.4	1.4	-89.98	0.0	-29.9	29.9	27.0	2.88	10.369		
800.0	800.0	800.0	800.0	1.7	1.7	-89.98	0.0	-29.9	29.9	26.6	3.33	8.971		
900.0	900.0	900.0	900.0	1.9	1.9	-89.98	0.0	-29.9	29.9	26.1	3.78	7.905 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-111.57	0.0	-29.9	30.5	26.3	4.23	7.210		
1,100.0	1,099.8	1,100.1	1,100.1	2.3	2.3	-117.10	1.8	-29.8	32.4	27.7	4.68	6.922		
1,200.0	1,199.6	1,200.3	1,200.2	2.6	2.6	-118.93	7.0	-29.4	34.4	29.3	5.13	6.718		
1,300.0	1,299.3	1,300.3	1,299.9	2.8	2.8	-117.88	14.0	-29.0	36.1	30.5	5.59	6.465		
1,400.0	1,399.1	1,400.3	1,399.7	3.0	3.0	-116.93	20.9	-28.5	37.8	31.7	6.05	6.244		
1,500.0	1,498.9	1,500.3	1,499.4	3.3	3.3	-116.06	27.9	-28.1	39.5	33.0	6.53	6.050		
1,600.0	1,598.6	1,600.3	1,599.1	3.5	3.5	-115.26	34.8	-27.6	41.2	34.2	7.01	5.879		
1,700.0	1,698.4	1,700.3	1,698.9	3.8	3.7	-114.53	41.8	-27.2	42.9	35.4	7.49	5.728		
1,800.0	1,798.1	1,800.2	1,798.6	4.0	4.0	-113.85	48.8	-26.7	44.6	36.6	7.98	5.594		
1,900.0	1,897.9	1,900.2	1,898.4	4.3	4.2	-113.22	55.7	-26.3	46.3	37.9	8.46	5.473		
2,000.0	1,997.6	2,000.2	1,998.1	4.5	4.5	-112.64	62.7	-25.8	48.1	39.1	8.96	5.365		
2,100.0	2,097.4	2,100.2	2,097.8	4.8	4.7	-112.09	69.6	-25.3	49.8	40.3	9.45	5.268		
2,200.0	2,197.2	2,200.2	2,197.6	5.0	5.0	-111.59	76.6	-24.9	51.5	41.6	9.95	5.180		
2,300.0	2,296.9	2,300.2	2,297.3	5.3	5.2	-111.11	83.6	-24.4	53.2	42.8	10.44	5.099		
2,400.0	2,396.7	2,400.2	2,397.1	5.5	5.5	-110.67	90.5	-24.0	55.0	44.0	10.94	5.026		
2,500.0	2,496.4	2,500.1	2,496.8	5.8	5.7	-110.25	97.5	-23.5	56.7	45.3	11.44	4.959		
2,600.0	2,596.2	2,600.1	2,596.5	6.0	6.0	-109.86	104.4	-23.1	58.5	46.5	11.94	4.897		
2,700.0	2,695.9	2,700.1	2,696.3	6.3	6.2	-109.49	111.4	-22.6	60.2	47.8	12.44	4.840		
2,800.0	2,795.7	2,800.1	2,796.0	6.5	6.5	-109.15	118.3	-22.2	62.0	49.0	12.95	4.787		
2,900.0	2,895.4	2,900.1	2,895.8	6.8	6.7	-108.82	125.3	-21.7	63.7	50.3	13.45	4.739		
3,000.0	2,995.2	3,000.1	2,995.5	7.0	7.0	-108.51	132.3	-21.2	65.5	51.5	13.95	4.693		
3,100.0	3,095.0	3,100.0	3,095.2	7.3	7.2	-108.21	139.2	-20.8	67.2	52.8	14.46	4.651		
3,200.0	3,194.7	3,200.0	3,195.0	7.5	7.5	-107.93	146.2	-20.3	69.0	54.0	14.96	4.611		
3,300.0	3,294.5	3,300.0	3,294.7	7.8	7.7	-107.66	153.1	-19.9	70.8	55.3	15.47	4.574		
3,400.0	3,394.2	3,400.0	3,394.5	8.0	8.0	-107.41	160.1	-19.4	72.5	56.5	15.97	4.540		
3,500.0	3,494.0	3,500.0	3,494.2	8.3	8.2	-107.17	167.1	-19.0	74.3	57.8	16.48	4.507		
3,600.0	3,593.7	3,600.0	3,593.9	8.5	8.5	-106.94	174.0	-18.5	76.0	59.1	16.99	4.477		
3,700.0	3,693.5	3,699.9	3,693.7	8.8	8.8	-106.72	181.0	-18.0	77.8	60.3	17.49	4.448		
3,800.0	3,793.3	3,799.9	3,793.4	9.1	9.0	-106.51	187.9	-17.6	79.6	61.6	18.00	4.421		
3,900.0	3,893.0	3,899.9	3,893.2	9.3	9.3	-106.31	194.9	-17.1	81.3	62.8	18.51	4.395		
4,000.0	3,992.8	3,999.9	3,992.9	9.6	9.5	-106.12	201.9	-16.7	83.1	64.1	19.02	4.371		
4,100.0	4,092.5	4,099.9	4,092.6	9.8	9.8	-105.93	208.8	-16.2	84.9	65.4	19.52	4.347		
4,200.0	4,192.3	4,199.9	4,192.4	10.1	10.0	-105.76	215.8	-15.8	86.7	66.6	20.03	4.325		
4,300.0	4,292.0	4,299.8	4,292.1	10.3	10.3	-105.59	222.7	-15.3	88.4	67.9	20.54	4.305		
4,400.0	4,391.8	4,399.8	4,391.9	10.6	10.5	-105.43	229.7	-14.9	90.2	69.1	21.05	4.285		
4,500.0	4,491.5	4,499.8	4,491.6	10.8	10.8	-105.27	236.7	-14.4	92.0	70.4	21.56	4.266		
4,600.0	4,591.3	4,599.8	4,591.3	11.1	11.0	-105.12	243.6	-13.9	93.7	71.7	22.07	4.248		
4,700.0	4,691.1	4,699.8	4,691.1	11.3	11.3	-104.97	250.6	-13.5	95.5	72.9	22.58	4.231		
4,800.0	4,790.8	4,799.8	4,790.8	11.6	11.5	-104.83	257.5	-13.0	97.3	74.2	23.09	4.214		
4,900.0	4,890.6	4,899.7	4,890.6	11.9	11.8	-104.70	264.5	-12.6	99.1	75.5	23.60	4.198		
5,000.0	4,990.3	4,999.7	4,990.3	12.1	12.1	-104.57	271.5	-12.1	100.8	76.7	24.10	4.183		
5,100.0	5,090.1	5,099.7	5,090.1	12.4	12.3	-104.44	278.4	-11.7	102.6	78.0	24.61	4.169		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S33-T10N-R58W - Razor #33P-3315A - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,200.0	5,189.8	5,199.2	5,188.9	12.6	12.6	-102.01	289.5	-10.9	104.5	79.3	25.17	4.152	
5,300.0	5,288.7	5,295.6	5,281.1	12.9	13.0	-93.70	316.9	-9.1	109.8	83.9	25.88	4.243	
5,400.0	5,383.3	5,389.1	5,364.2	13.4	13.5	-86.36	359.3	-6.4	121.5	94.7	26.79	4.534	
5,500.0	5,469.9	5,479.7	5,436.4	14.0	14.2	-80.73	413.8	-2.8	138.0	110.2	27.85	4.957	
5,600.0	5,545.5	5,568.0	5,496.6	14.8	15.0	-76.70	478.2	1.4	158.1	129.0	29.06	5.439	
5,700.0	5,607.3	5,654.4	5,544.0	15.8	15.9	-73.94	550.0	6.1	180.3	149.8	30.48	5.915	
5,800.0	5,652.9	5,739.2	5,578.5	17.0	16.9	-72.10	627.3	11.2	203.7	171.6	32.18	6.331	
5,900.0	5,680.8	5,823.1	5,599.7	18.3	18.0	-70.94	708.2	16.5	227.7	193.4	34.22	6.653	
6,000.0	5,689.8	5,906.6	5,607.7	19.7	19.2	-70.36	791.0	21.9	251.3	214.7	36.59	6.869	
6,100.0	5,689.8	5,992.1	5,607.8	21.1	20.4	-72.12	876.4	26.0	274.6	235.2	39.40	6.971	
6,200.0	5,689.8	6,082.6	5,607.8	22.5	21.7	-73.60	967.0	26.6	297.0	254.7	42.28	7.024	
6,300.0	5,689.8	6,180.8	5,607.8	23.9	23.3	-74.72	1,065.1	26.6	315.2	269.9	45.37	6.948	
6,400.0	5,689.8	6,279.8	5,607.8	25.4	24.9	-75.45	1,164.2	26.6	328.5	280.1	48.45	6.781	
6,500.0	5,689.8	6,379.5	5,607.8	27.0	26.6	-75.88	1,263.8	26.6	336.8	285.3	51.48	6.542	
6,600.0	5,689.8	6,479.4	5,607.8	28.5	28.3	-76.04	1,363.7	26.6	340.0	285.6	54.44	6.246	
6,700.0	5,689.9	6,579.4	5,607.8	30.1	30.0	-76.04	1,463.7	26.6	340.1	282.4	57.66	5.898	
6,800.0	5,689.9	6,679.4	5,607.8	31.7	31.7	-76.04	1,563.7	26.6	340.1	279.1	60.98	5.577	
6,900.0	5,689.9	6,779.4	5,607.8	33.4	33.5	-76.04	1,663.7	26.6	340.1	275.7	64.35	5.285	
7,000.0	5,689.9	6,879.4	5,607.8	35.1	35.3	-76.04	1,763.7	26.6	340.1	272.3	67.76	5.019	
7,100.0	5,689.9	6,979.4	5,607.8	36.8	37.1	-76.04	1,863.7	26.6	340.1	268.9	71.20	4.776	
7,200.0	5,689.9	7,079.4	5,607.8	38.5	38.9	-76.04	1,963.7	26.6	340.1	265.4	74.67	4.554	
7,300.0	5,689.9	7,179.4	5,607.8	40.2	40.7	-76.04	2,063.7	26.7	340.1	261.9	78.17	4.351	
7,400.0	5,689.9	7,279.4	5,607.8	42.0	42.5	-76.04	2,163.7	26.7	340.1	258.4	81.68	4.163	
7,500.0	5,689.9	7,379.4	5,607.9	43.8	44.4	-76.04	2,263.7	26.7	340.1	254.8	85.22	3.990	
7,600.0	5,689.9	7,479.4	5,607.9	45.6	46.2	-76.04	2,363.7	26.7	340.1	251.3	88.78	3.831	
7,700.0	5,689.9	7,579.4	5,607.9	47.4	48.1	-76.04	2,463.7	26.7	340.1	247.7	92.35	3.683	
7,800.0	5,689.9	7,679.4	5,607.9	49.2	49.9	-76.04	2,563.7	26.7	340.1	244.1	95.93	3.545	
7,900.0	5,689.9	7,779.4	5,607.9	51.0	51.8	-76.04	2,663.7	26.7	340.1	240.5	99.52	3.417	
8,000.0	5,689.9	7,879.4	5,607.9	52.8	53.6	-76.04	2,763.7	26.7	340.1	236.9	103.13	3.298	
8,100.0	5,689.9	7,979.4	5,607.9	54.6	55.5	-76.04	2,863.7	26.7	340.1	233.3	106.74	3.186	
8,200.0	5,689.9	8,079.4	5,607.9	56.5	57.4	-76.04	2,963.7	26.7	340.1	229.7	110.37	3.081	
8,300.0	5,689.9	8,179.4	5,607.9	58.3	59.3	-76.04	3,063.7	26.7	340.1	226.1	114.00	2.983	
8,400.0	5,689.9	8,279.4	5,607.9	60.1	61.1	-76.04	3,163.7	26.7	340.1	222.4	117.64	2.891	
8,500.0	5,689.9	8,379.4	5,607.9	62.0	63.0	-76.04	3,263.7	26.7	340.1	218.8	121.28	2.804	
8,600.0	5,689.9	8,479.4	5,607.9	63.8	64.9	-76.04	3,363.7	26.7	340.1	215.1	124.93	2.722	
8,700.0	5,689.9	8,579.4	5,607.9	65.7	66.8	-76.04	3,463.7	26.8	340.1	211.5	128.59	2.645	
8,800.0	5,689.9	8,679.4	5,607.9	67.6	68.7	-76.04	3,563.7	26.8	340.1	207.8	132.25	2.571	
8,900.0	5,689.9	8,779.4	5,607.9	69.4	70.6	-76.04	3,663.7	26.8	340.1	204.1	135.91	2.502	
9,000.0	5,689.9	8,879.4	5,607.9	71.3	72.4	-76.04	3,763.7	26.8	340.1	200.5	139.58	2.436	
9,100.0	5,689.9	8,979.4	5,607.9	73.2	74.3	-76.04	3,863.7	26.8	340.1	196.8	143.26	2.374	
9,200.0	5,690.0	9,079.4	5,607.9	75.0	76.2	-76.04	3,963.7	26.8	340.1	193.1	146.93	2.314	
9,300.0	5,690.0	9,179.4	5,607.9	76.9	78.1	-76.04	4,063.7	26.8	340.1	189.4	150.61	2.258	
9,400.0	5,690.0	9,279.4	5,608.0	78.8	80.0	-76.04	4,163.7	26.8	340.1	185.8	154.30	2.204	
9,500.0	5,690.0	9,379.4	5,608.0	80.7	81.9	-76.05	4,263.7	26.8	340.1	182.1	157.98	2.152	
9,600.0	5,690.0	9,479.4	5,608.0	82.5	83.8	-76.05	4,363.7	26.8	340.1	178.4	161.67	2.103	
9,700.0	5,690.0	9,579.4	5,608.0	84.4	85.7	-76.05	4,463.7	26.8	340.1	174.7	165.36	2.056	
9,800.0	5,690.0	9,679.4	5,608.0	86.3	87.6	-76.05	4,563.7	26.8	340.1	171.0	169.06	2.011	
9,900.0	5,690.0	9,779.4	5,608.0	88.2	89.5	-76.05	4,663.7	26.8	340.1	167.3	172.75	1.968	
10,000.0	5,690.0	9,879.4	5,608.0	90.1	91.4	-76.05	4,763.7	26.8	340.1	163.6	176.45	1.927	
10,056.5	5,690.0	9,935.9	5,608.0	91.0	92.5	-76.05	4,820.2	26.9	340.1	161.7	178.36	1.907	
10,077.4	5,690.0	9,956.1	5,608.0	91.3	92.9	-76.05	4,840.5	26.9	340.1	161.0	179.04	1.899 SF	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33P-3316B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4725.0usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33P-3316B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4725.0usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #33P-3316B  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.06°

