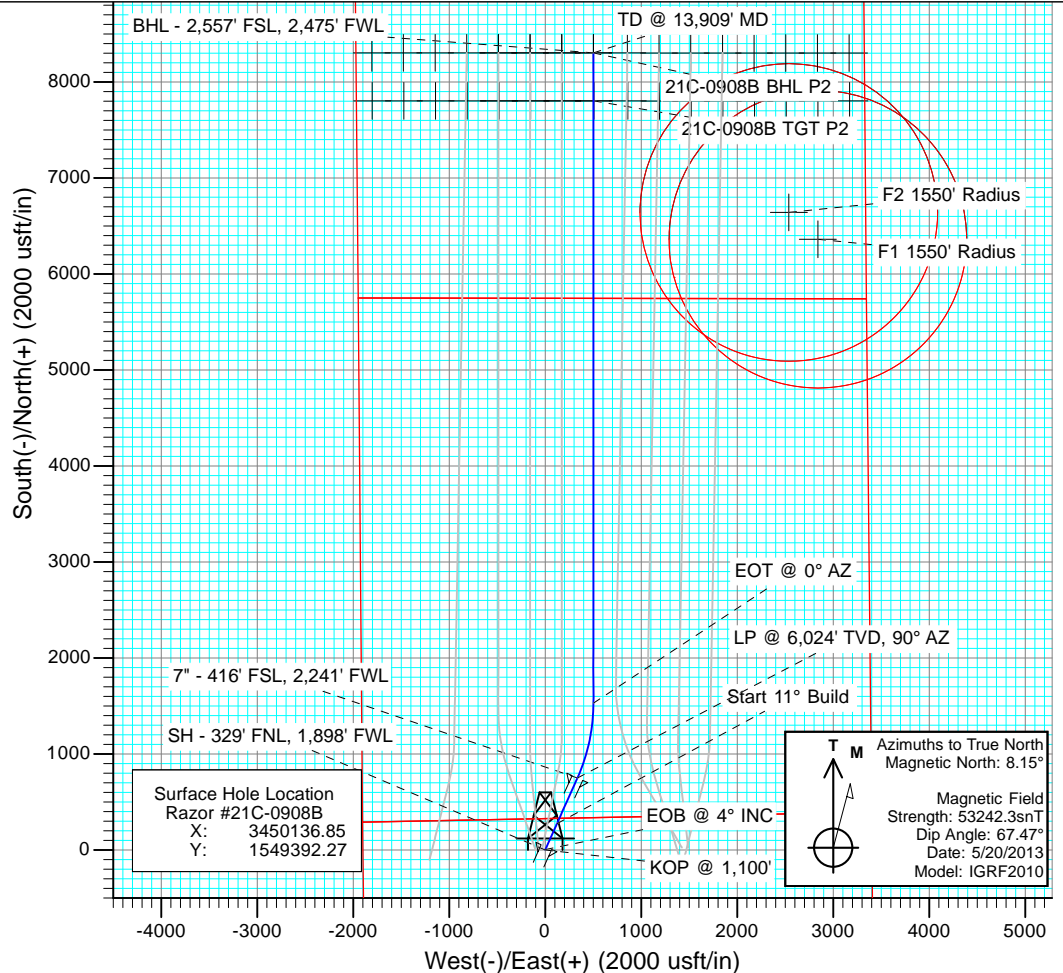
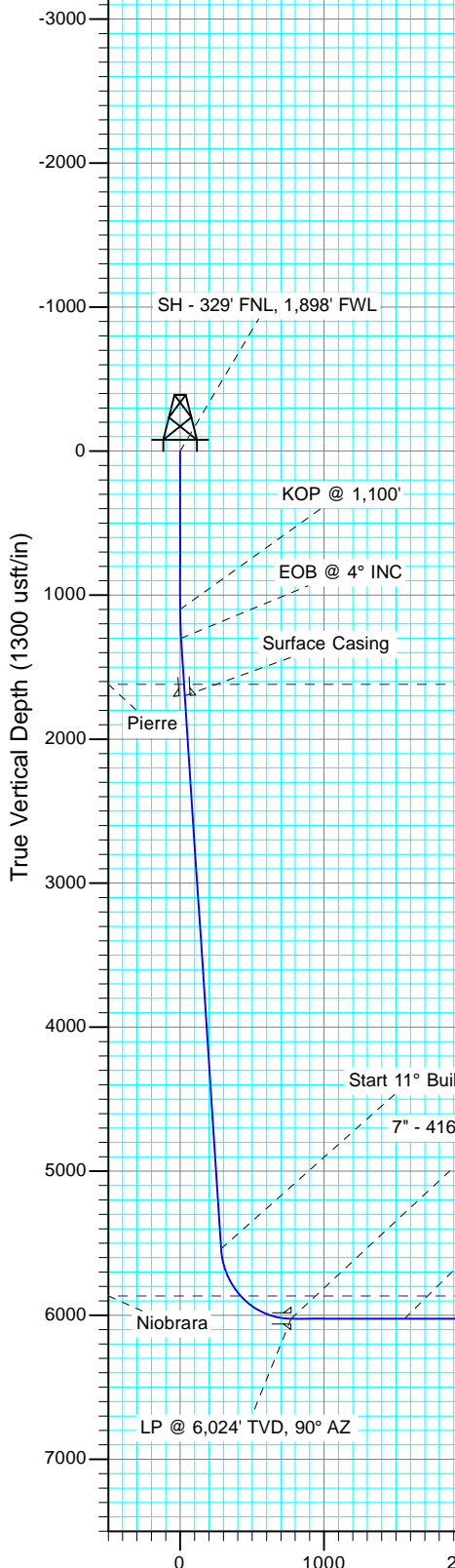


Plan #2  
 Razor #21C-0908B  
 KB=17' @ 4861.0usft  
 Ground Elevation @ 4844.0  
 North American Datum 1983  
 Well Razor #21C-0908B, True North

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0	
3	1300.0	4.00	24.12	1299.8	6.4	2.9	2.00	24.12	6.5	
4	5550.0	4.00	24.12	5539.5	277.0	124.0	0.00	0.00	283.9	
5	6331.8	90.00	24.12	6024.0	751.2	336.3	11.00	0.00	770.2	
6	7135.8	90.00	0.00	6024.0	1531.6	503.1	3.00	-90.00	1559.2	
7	13909.0	90.00	0.00	6024.0	8304.9	503.2	0.00	0.00	8320.1	21C-0908B BHL P2



DESIGN TARGET DETAILS					
Name	TVD	+N/-S	+E/-W	Northing	Easting
21C-0908B BHL P2	6024.0	8304.9	503.2	1557704.95	3450487.66
21C-0908B TGT P2	6024.0	7805.0	507.9	1557205.24	3450501.54

Vertical Section at 3.47° (1300 usft/in)

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site:</b>	S21-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #21C-0908B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

<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		S21-T10N-R58W			
Site Position:		Northing:	1,549,494.62 usft	Latitude:	40.830272
From:	Lat/Long	Easting:	3,452,846.68 usft	Longitude:	-103.863561
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.06 °

Well	Razor #21C-0908B					
Well Position	+N/-S	0.0 usft	Northing:	1,549,392.27 usft	Latitude:	40.830128
	+E/-W	0.0 usft	Easting:	3,450,136.85 usft	Longitude:	-103.873358
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	4,844.0 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</b>
			(°)	(°)	(nT)
	IGRF2010	5/20/2013	8.15	67.47	53,242

<b>Design</b>	Plan #2			
<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	3.47

<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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,300.0	4.00	24.12	1,299.8	6.4	2.9	2.00	2.00	0.00	24.12	
5,550.0	4.00	24.12	5,539.5	277.0	124.0	0.00	0.00	0.00	0.00	
6,331.8	90.00	24.12	6,024.0	751.2	336.3	11.00	11.00	0.00	0.00	
7,135.8	90.00	0.00	6,024.0	1,531.6	503.1	3.00	0.00	-3.00	-90.00	
13,909.0	90.00	0.00	6,024.0	8,304.9	503.2	0.00	0.00	0.00	0.00	21C-0908B BHL P2

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site:</b>	S21-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #21C-0908B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### 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	
0.5	0.00	0.00	0.5	0.0	0.0	0.0	0.00	0.00	SH - 329' FNL, 1,898' FWL
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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1,100'
1,200.0	2.00	24.12	1,200.0	1.6	0.7	1.6	2.00	2.00	
1,300.0	4.00	24.12	1,299.8	6.4	2.9	6.5	2.00	2.00	EOB @ 4° INC
1,400.0	4.00	24.12	1,399.6	12.7	5.7	13.1	0.00	0.00	
1,500.0	4.00	24.12	1,499.4	19.1	8.6	19.6	0.00	0.00	
1,600.0	4.00	24.12	1,599.1	25.5	11.4	26.1	0.00	0.00	
1,620.9	4.00	24.12	1,620.0	26.8	12.0	27.5	0.00	0.00	Pierre
1,700.0	4.00	24.12	1,698.9	31.8	14.3	32.6	0.00	0.00	Surface Casing
1,800.0	4.00	24.12	1,798.6	38.2	17.1	39.2	0.00	0.00	
1,900.0	4.00	24.12	1,898.4	44.6	20.0	45.7	0.00	0.00	
2,000.0	4.00	24.12	1,998.1	50.9	22.8	52.2	0.00	0.00	
2,100.0	4.00	24.12	2,097.9	57.3	25.7	58.7	0.00	0.00	
2,200.0	4.00	24.12	2,197.6	63.7	28.5	65.3	0.00	0.00	
2,300.0	4.00	24.12	2,297.4	70.0	31.4	71.8	0.00	0.00	
2,400.0	4.00	24.12	2,397.2	76.4	34.2	78.3	0.00	0.00	
2,500.0	4.00	24.12	2,496.9	82.8	37.1	84.9	0.00	0.00	
2,600.0	4.00	24.12	2,596.7	89.1	39.9	91.4	0.00	0.00	
2,700.0	4.00	24.12	2,696.4	95.5	42.8	97.9	0.00	0.00	
2,800.0	4.00	24.12	2,796.2	101.9	45.6	104.4	0.00	0.00	
2,900.0	4.00	24.12	2,895.9	108.2	48.5	111.0	0.00	0.00	
3,000.0	4.00	24.12	2,995.7	114.6	51.3	117.5	0.00	0.00	
3,100.0	4.00	24.12	3,095.5	121.0	54.2	124.0	0.00	0.00	
3,200.0	4.00	24.12	3,195.2	127.3	57.0	130.6	0.00	0.00	
3,300.0	4.00	24.12	3,295.0	133.7	59.9	137.1	0.00	0.00	
3,400.0	4.00	24.12	3,394.7	140.1	62.7	143.6	0.00	0.00	
3,500.0	4.00	24.12	3,494.5	146.4	65.6	150.1	0.00	0.00	
3,600.0	4.00	24.12	3,594.2	152.8	68.4	156.7	0.00	0.00	
3,700.0	4.00	24.12	3,694.0	159.2	71.3	163.2	0.00	0.00	
3,800.0	4.00	24.12	3,793.7	165.5	74.1	169.7	0.00	0.00	
3,900.0	4.00	24.12	3,893.5	171.9	77.0	176.2	0.00	0.00	
4,000.0	4.00	24.12	3,993.3	178.3	79.8	182.8	0.00	0.00	
4,100.0	4.00	24.12	4,093.0	184.6	82.7	189.3	0.00	0.00	
4,200.0	4.00	24.12	4,192.8	191.0	85.5	195.8	0.00	0.00	
4,300.0	4.00	24.12	4,292.5	197.4	88.4	202.4	0.00	0.00	
4,400.0	4.00	24.12	4,392.3	203.7	91.2	208.9	0.00	0.00	
4,500.0	4.00	24.12	4,492.0	210.1	94.1	215.4	0.00	0.00	
4,600.0	4.00	24.12	4,591.8	216.5	96.9	221.9	0.00	0.00	
4,700.0	4.00	24.12	4,691.6	222.8	99.8	228.5	0.00	0.00	
4,800.0	4.00	24.12	4,791.3	229.2	102.6	235.0	0.00	0.00	
4,900.0	4.00	24.12	4,891.1	235.6	105.5	241.5	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 #21C-0908B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site:</b>	S21-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #21C-0908B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### 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
5,000.0	4.00	24.12	4,990.8	241.9	108.3	248.0	0.00	0.00	
5,100.0	4.00	24.12	5,090.6	248.3	111.2	254.6	0.00	0.00	
5,200.0	4.00	24.12	5,190.3	254.7	114.0	261.1	0.00	0.00	
5,300.0	4.00	24.12	5,290.1	261.0	116.9	267.6	0.00	0.00	
5,400.0	4.00	24.12	5,389.9	267.4	119.7	274.2	0.00	0.00	
5,500.0	4.00	24.12	5,489.6	273.8	122.6	280.7	0.00	0.00	
5,550.0	4.00	24.12	5,539.5	277.0	124.0	283.9	0.00	0.00	Start 11° Build
5,600.0	9.50	24.12	5,589.1	282.3	126.4	289.4	11.00	11.00	
5,650.0	15.00	24.12	5,638.0	292.0	130.7	299.4	11.00	11.00	
5,700.0	20.50	24.12	5,685.6	305.9	137.0	313.6	11.00	11.00	
5,750.0	26.00	24.12	5,731.5	323.9	145.0	332.1	11.00	11.00	
5,800.0	31.50	24.12	5,775.3	345.8	154.9	354.6	11.00	11.00	
5,850.0	37.00	24.12	5,816.6	371.5	166.3	380.9	11.00	11.00	
5,900.0	42.50	24.12	5,855.0	400.7	179.4	410.8	11.00	11.00	
5,916.5	44.31	24.12	5,867.0	411.0	184.0	421.4	11.00	11.00	Niobrara
5,950.0	48.00	24.12	5,890.2	433.1	193.9	444.0	11.00	11.00	
6,000.0	53.50	24.12	5,921.9	468.4	209.7	480.2	11.00	11.00	
6,050.0	59.00	24.12	5,949.6	506.3	226.7	519.1	11.00	11.00	
6,100.0	64.50	24.12	5,973.3	546.5	244.7	560.3	11.00	11.00	
6,150.0	70.00	24.12	5,992.6	588.6	263.5	603.5	11.00	11.00	
6,200.0	75.50	24.12	6,007.4	632.2	283.0	648.1	11.00	11.00	
6,250.0	81.00	24.12	6,017.6	676.8	303.0	693.9	11.00	11.00	
6,300.0	86.50	24.12	6,023.0	722.2	323.3	740.4	11.00	11.00	
6,331.8	90.00	24.12	6,024.0	751.2	336.3	770.1	11.00	11.00	LP @ 6,024' TVD, 90° AZ - 7" - 416' FSL, 2,241
6,400.0	90.00	22.07	6,024.0	813.9	363.1	834.4	3.00	0.00	
6,500.0	90.00	19.07	6,024.0	907.5	398.2	929.9	3.00	0.00	
6,600.0	90.00	16.07	6,024.0	1,002.8	428.4	1,026.9	3.00	0.00	
6,700.0	90.00	13.07	6,024.0	1,099.6	453.6	1,125.0	3.00	0.00	
6,800.0	90.00	10.07	6,024.0	1,197.6	473.6	1,224.0	3.00	0.00	
6,900.0	90.00	7.07	6,024.0	1,296.4	488.5	1,323.6	3.00	0.00	
7,000.0	90.00	4.07	6,024.0	1,395.9	498.3	1,423.5	3.00	0.00	
7,100.0	90.00	1.07	6,024.0	1,495.8	502.7	1,523.5	3.00	0.00	
7,135.8	90.00	0.00	6,024.0	1,531.6	503.1	1,559.2	3.00	0.00	EOT @ 0° AZ
7,200.0	90.00	0.00	6,024.0	1,595.8	503.1	1,623.3	0.00	0.00	
7,300.0	90.00	0.00	6,024.0	1,695.8	503.1	1,723.2	0.00	0.00	
7,400.0	90.00	0.00	6,024.0	1,795.8	503.1	1,823.0	0.00	0.00	
7,500.0	90.00	0.00	6,024.0	1,895.8	503.1	1,922.8	0.00	0.00	
7,600.0	90.00	0.00	6,024.0	1,995.8	503.1	2,022.6	0.00	0.00	
7,700.0	90.00	0.00	6,024.0	2,095.8	503.1	2,122.4	0.00	0.00	
7,800.0	90.00	0.00	6,024.0	2,195.8	503.1	2,222.2	0.00	0.00	
7,900.0	90.00	0.00	6,024.0	2,295.8	503.1	2,322.1	0.00	0.00	
8,000.0	90.00	0.00	6,024.0	2,395.8	503.1	2,421.9	0.00	0.00	
8,100.0	90.00	0.00	6,024.0	2,495.8	503.1	2,521.7	0.00	0.00	
8,200.0	90.00	0.00	6,024.0	2,595.8	503.1	2,621.5	0.00	0.00	
8,300.0	90.00	0.00	6,024.0	2,695.8	503.1	2,721.3	0.00	0.00	
8,400.0	90.00	0.00	6,024.0	2,795.8	503.1	2,821.1	0.00	0.00	
8,500.0	90.00	0.00	6,024.0	2,895.8	503.1	2,921.0	0.00	0.00	
8,600.0	90.00	0.00	6,024.0	2,995.8	503.1	3,020.8	0.00	0.00	
8,700.0	90.00	0.00	6,024.0	3,095.8	503.1	3,120.6	0.00	0.00	
8,800.0	90.00	0.00	6,024.0	3,195.8	503.1	3,220.4	0.00	0.00	
8,900.0	90.00	0.00	6,024.0	3,295.8	503.1	3,320.2	0.00	0.00	
9,000.0	90.00	0.00	6,024.0	3,395.8	503.1	3,420.0	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 #21C-0908B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site:</b>	S21-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #21C-0908B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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
9,100.0	90.00	0.00	6,024.0	3,495.8	503.1	3,519.9	0.00	0.00	
9,200.0	90.00	0.00	6,024.0	3,595.8	503.1	3,619.7	0.00	0.00	
9,300.0	90.00	0.00	6,024.0	3,695.8	503.1	3,719.5	0.00	0.00	
9,400.0	90.00	0.00	6,024.0	3,795.8	503.1	3,819.3	0.00	0.00	
9,500.0	90.00	0.00	6,024.0	3,895.8	503.1	3,919.1	0.00	0.00	
9,600.0	90.00	0.00	6,024.0	3,995.8	503.1	4,018.9	0.00	0.00	
9,700.0	90.00	0.00	6,024.0	4,095.8	503.1	4,118.8	0.00	0.00	
9,800.0	90.00	0.00	6,024.0	4,195.8	503.1	4,218.6	0.00	0.00	
9,900.0	90.00	0.00	6,024.0	4,295.8	503.1	4,318.4	0.00	0.00	
10,000.0	90.00	0.00	6,024.0	4,395.8	503.1	4,418.2	0.00	0.00	
10,100.0	90.00	0.00	6,024.0	4,495.8	503.1	4,518.0	0.00	0.00	
10,200.0	90.00	0.00	6,024.0	4,595.8	503.1	4,617.9	0.00	0.00	
10,300.0	90.00	0.00	6,024.0	4,695.8	503.1	4,717.7	0.00	0.00	
10,400.0	90.00	0.00	6,024.0	4,795.8	503.2	4,817.5	0.00	0.00	
10,500.0	90.00	0.00	6,024.0	4,895.8	503.2	4,917.3	0.00	0.00	
10,600.0	90.00	0.00	6,024.0	4,995.8	503.2	5,017.1	0.00	0.00	
10,700.0	90.00	0.00	6,024.0	5,095.8	503.2	5,116.9	0.00	0.00	
10,800.0	90.00	0.00	6,024.0	5,195.8	503.2	5,216.8	0.00	0.00	
10,900.0	90.00	0.00	6,024.0	5,295.8	503.2	5,316.6	0.00	0.00	
11,000.0	90.00	0.00	6,024.0	5,395.8	503.2	5,416.4	0.00	0.00	
11,100.0	90.00	0.00	6,024.0	5,495.8	503.2	5,516.2	0.00	0.00	
11,200.0	90.00	0.00	6,024.0	5,595.8	503.2	5,616.0	0.00	0.00	
11,300.0	90.00	0.00	6,024.0	5,695.8	503.2	5,715.8	0.00	0.00	
11,400.0	90.00	0.00	6,024.0	5,795.8	503.2	5,815.7	0.00	0.00	
11,500.0	90.00	0.00	6,024.0	5,895.8	503.2	5,915.5	0.00	0.00	
11,600.0	90.00	0.00	6,024.0	5,995.8	503.2	6,015.3	0.00	0.00	
11,700.0	90.00	0.00	6,024.0	6,095.8	503.2	6,115.1	0.00	0.00	
11,800.0	90.00	0.00	6,024.0	6,195.8	503.2	6,214.9	0.00	0.00	
11,900.0	90.00	0.00	6,024.0	6,295.8	503.2	6,314.7	0.00	0.00	
12,000.0	90.00	0.00	6,024.0	6,395.8	503.2	6,414.6	0.00	0.00	
12,100.0	90.00	0.00	6,024.0	6,495.8	503.2	6,514.4	0.00	0.00	
12,200.0	90.00	0.00	6,024.0	6,595.8	503.2	6,614.2	0.00	0.00	
12,300.0	90.00	0.00	6,024.0	6,695.8	503.2	6,714.0	0.00	0.00	
12,400.0	90.00	0.00	6,024.0	6,795.8	503.2	6,813.8	0.00	0.00	
12,500.0	90.00	0.00	6,024.0	6,895.8	503.2	6,913.6	0.00	0.00	
12,600.0	90.00	0.00	6,024.0	6,995.8	503.2	7,013.5	0.00	0.00	
12,700.0	90.00	0.00	6,024.0	7,095.8	503.2	7,113.3	0.00	0.00	
12,800.0	90.00	0.00	6,024.0	7,195.8	503.2	7,213.1	0.00	0.00	
12,900.0	90.00	0.00	6,024.0	7,295.8	503.2	7,312.9	0.00	0.00	
13,000.0	90.00	0.00	6,024.0	7,395.8	503.2	7,412.7	0.00	0.00	
13,100.0	90.00	0.00	6,024.0	7,495.8	503.2	7,512.5	0.00	0.00	
13,200.0	90.00	0.00	6,024.0	7,595.8	503.2	7,612.4	0.00	0.00	
13,300.0	90.00	0.00	6,024.0	7,695.8	503.2	7,712.2	0.00	0.00	
13,400.0	90.00	0.00	6,024.0	7,795.8	503.2	7,812.0	0.00	0.00	
13,500.0	90.00	0.00	6,024.0	7,895.8	503.2	7,911.8	0.00	0.00	
13,600.0	90.00	0.00	6,024.0	7,995.8	503.2	8,011.6	0.00	0.00	
13,700.0	90.00	0.00	6,024.0	8,095.8	503.2	8,111.4	0.00	0.00	
13,800.0	90.00	0.00	6,024.0	8,195.8	503.2	8,211.3	0.00	0.00	
13,909.0	90.00	0.00	6,024.0	8,304.8	503.2	8,320.1	0.00	0.00	BHL - 2,557' FSL, 2,475' FWL

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site:</b>	S21-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #21C-0908B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
21C-0908B BHL	0.00	1.05	5,892.5	8,304.9	503.2	1,557,704.95	3,450,487.66	40.852922	-103.871539
- plan misses target center by 131.5usft at 13909.0usft MD (6024.0 TVD, 8304.8 N, 503.2 E)									
- Point									
21C-0908B BHL P2	0.00	1.05	6,024.0	8,304.9	503.2	1,557,704.95	3,450,487.66	40.852922	-103.871539
- plan hits target center									
- Point									
21C-0908B TGT	0.00	1.05	5,892.5	7,805.0	507.9	1,557,205.24	3,450,501.54	40.851550	-103.871522
- plan misses target center by 131.6usft at 13409.1usft MD (6024.0 TVD, 7805.0 N, 503.2 E)									
- Point									
21C-0908B TGT P2	0.00	1.05	6,024.0	7,805.0	507.9	1,557,205.24	3,450,501.54	40.851550	-103.871522
- plan misses target center by 4.7usft at 13409.1usft MD (6024.0 TVD, 7805.0 N, 503.2 E)									
- Point									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(usft)	(usft)	Name	(")	(")
	6,331.8	6,024.0	7" - 416' FSL, 2,241' FWL	0	0
	1,700.0	1,698.9	Surface Casing	0	0

Formations					
	Measured Depth	Vertical Depth		Dip	Dip Direction
	(usft)	(usft)	Name	(°)	(°)
	1,620.9	1,620.0	Pierre		
	5,916.5	5,867.0	Niobrara		

Plan Annotations					
	Measured Depth	Vertical Depth	Local Coordinates		
	(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	Comment
	0.5	0.5	0.0	0.0	SH - 329' FNL, 1,898' FWL
	1,100.0	1,100.0	0.0	0.0	KOP @ 1,100'
	1,300.0	1,299.8	6.4	2.9	EOB @ 4° INC
	5,550.0	5,539.5	277.0	124.0	Start 11° Build
	6,331.8	6,024.0	751.2	336.3	LP @ 6,024' TVD, 90° AZ
	7,135.8	6,024.0	1,531.6	503.1	EOT @ 0° AZ
	13,909.0	6,024.0	8,304.8	503.2	BHL - 2,557' FSL, 2,475' FWL
	13,909.0	6,024.0	8,304.9	503.2	TD @ 13,909' MD

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S21-T10N-R58W**

**Razor #21C-0908B**

**HZ**

**Plan #2**

## **Anticollision Report**

**31 March, 2014**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #2		
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
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 1,590.9usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	3/31/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,908.7	Plan #2 (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						
S21-T10N-R58W						
Razor #21B-0909A - HZ - Plan #1	7,326.9	7,110.1	323.5	268.1	5.831	CC
Razor #21B-0909A - HZ - Plan #1	13,909.0	13,686.7	419.1	143.4	1.520	ES, SF
Razor #21B-0910B - HZ - Plan #1	7,102.0	6,926.6	577.0	513.3	9.057	CC
Razor #21B-0910B - HZ - Plan #1	13,909.0	13,732.4	698.5	385.7	2.233	ES, SF
Razor #21B-0911A - HZ - Plan #1	7,101.9	6,739.8	917.3	856.0	14.965	CC
Razor #21B-0911A - HZ - Plan #1	13,909.0	13,545.7	1,038.7	728.9	3.353	ES, SF
Razor #21B-0912B - HZ - Plan #1	7,102.0	6,925.8	1,227.8	1,165.6	19.737	CC
Razor #21B-0912B - HZ - Plan #1	13,909.0	13,731.7	1,351.7	1,037.8	4.306	ES, SF
Razor #21C-0905A - HZ - Plan #2	466.7	466.7	98.5	96.7	53.698	CC
Razor #21C-0905A - HZ - Plan #2	500.0	500.0	98.5	96.5	49.644	ES
Razor #21C-0905A - HZ - Plan #2	13,909.0	13,737.7	995.2	681.7	3.174	SF
Razor #21C-0906B - HZ - Plan #2	666.7	666.7	66.1	63.4	24.193	CC
Razor #21C-0906B - HZ - Plan #2	800.0	799.7	66.3	63.0	19.907	ES
Razor #21C-0906B - HZ - Plan #2	13,909.0	13,790.8	659.3	343.6	2.089	SF
Razor #21C-0907A - HZ - Plan #2	1,095.8	1,095.9	32.5	27.9	6.976	CC
Razor #21C-0907A - HZ - Plan #2	1,100.0	1,100.1	32.5	27.8	6.948	ES
Razor #21C-0907A - HZ - Plan #2	13,909.0	13,723.8	345.5	43.4	1.144	Level 2, SF
Razor #21D-0904B - HZ - Plan #1	1,100.0	1,097.9	1,208.0	1,203.3	258.248	CC
Razor #21D-0904B - HZ - Plan #1	13,909.0	13,821.2	1,325.7	1,010.8	4.209	ES, SF



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0909A - 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							
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
0.0	0.0	0.0	0.0	0.0	0.0	88.90	27.4	1,424.4	1,424.7				
100.0	100.0	92.8	92.8	0.1	0.1	88.90	27.4	1,424.4	1,424.7	1,424.5	0.18	7,899.385	
200.0	200.0	192.8	192.8	0.3	0.3	88.90	27.4	1,424.4	1,424.7	1,424.0	0.62	2,296.147	
300.0	300.0	292.8	292.8	0.5	0.5	88.90	27.4	1,424.4	1,424.7	1,423.6	1.07	1,331.471	
400.0	400.0	392.8	392.8	0.8	0.8	88.90	27.4	1,424.4	1,424.7	1,423.1	1.52	937.571	
500.0	500.0	492.8	492.8	1.0	1.0	88.90	27.4	1,424.4	1,424.7	1,422.7	1.97	723.525	
600.0	600.0	622.4	622.4	1.2	1.3	88.81	29.6	1,423.1	1,423.7	1,421.2	2.48	573.252	
700.0	700.0	740.9	740.6	1.4	1.5	88.55	35.9	1,419.4	1,420.7	1,417.7	2.98	476.775	
800.0	800.0	840.7	840.1	1.7	1.8	88.31	41.9	1,415.9	1,417.3	1,413.9	3.44	411.698	
900.0	900.0	940.4	939.7	1.9	2.0	88.06	47.9	1,412.4	1,414.0	1,410.1	3.91	361.584	
1,000.0	1,000.0	1,040.2	1,039.2	2.1	2.3	87.81	53.9	1,408.9	1,410.7	1,406.3	4.38	321.939	
1,100.0	1,100.0	1,139.9	1,138.7	2.3	2.5	87.56	59.9	1,405.4	1,407.4	1,402.6	4.86	289.853	
1,200.0	1,200.0	1,239.7	1,238.3	2.6	2.8	87.32	65.9	1,401.9	1,403.4	1,398.1	5.30	264.574	
1,300.0	1,299.8	1,339.6	1,337.8	2.8	3.0	87.36	71.9	1,398.4	1,397.8	1,392.1	5.77	242.145	
1,400.0	1,399.6	1,439.4	1,437.4	3.0	3.3	87.36	77.9	1,394.9	1,391.5	1,385.2	6.25	222.749	
1,500.0	1,499.4	1,539.2	1,536.9	3.2	3.5	87.37	84.0	1,391.4	1,385.1	1,378.4	6.73	205.948	
1,600.0	1,599.1	1,638.9	1,636.5	3.5	3.8	87.37	90.0	1,387.9	1,378.7	1,371.5	7.21	191.278	
1,700.0	1,698.9	1,738.7	1,736.1	3.7	4.0	87.37	96.0	1,384.4	1,372.3	1,364.6	7.69	178.375	
1,800.0	1,798.6	1,838.5	1,835.6	4.0	4.3	87.37	102.0	1,380.9	1,366.0	1,357.8	8.18	166.952	
1,900.0	1,898.4	1,938.3	1,935.2	4.2	4.5	87.38	108.0	1,377.4	1,359.6	1,350.9	8.67	156.776	
2,000.0	1,998.1	2,038.1	2,034.7	4.4	4.8	87.38	114.0	1,373.9	1,353.2	1,344.1	9.16	147.659	
2,100.0	2,097.9	2,137.9	2,134.3	4.7	5.0	87.38	120.0	1,370.4	1,346.9	1,337.2	9.66	139.448	
2,200.0	2,197.6	2,237.7	2,233.8	4.9	5.3	87.38	126.0	1,366.8	1,340.5	1,330.3	10.15	132.018	
2,300.0	2,297.4	2,337.5	2,333.4	5.2	5.5	87.39	132.1	1,363.3	1,334.1	1,323.5	10.65	125.265	
2,400.0	2,397.2	2,437.3	2,432.9	5.4	5.8	87.39	138.1	1,359.8	1,327.8	1,316.6	11.15	119.102	
2,500.0	2,496.9	2,537.1	2,532.5	5.7	6.1	87.39	144.1	1,356.3	1,321.4	1,309.7	11.65	113.456	
2,600.0	2,596.7	2,636.9	2,632.0	5.9	6.3	87.39	150.1	1,352.8	1,315.0	1,302.9	12.15	108.266	
2,700.0	2,696.4	2,736.7	2,731.6	6.2	6.6	87.40	156.1	1,349.3	1,308.6	1,296.0	12.65	103.479	
2,800.0	2,796.2	2,836.5	2,831.1	6.4	6.8	87.40	162.1	1,345.8	1,302.3	1,289.1	13.15	99.052	
2,900.0	2,895.9	2,936.3	2,930.7	6.7	7.1	87.40	168.1	1,342.3	1,295.9	1,282.3	13.65	94.945	
3,000.0	2,995.7	3,036.1	3,030.3	6.9	7.3	87.40	174.2	1,338.8	1,289.5	1,275.4	14.15	91.125	
3,100.0	3,095.5	3,135.9	3,129.8	7.2	7.6	87.41	180.2	1,335.3	1,283.2	1,268.5	14.65	87.564	
3,200.0	3,195.2	3,235.7	3,229.4	7.4	7.9	87.41	186.2	1,331.8	1,276.8	1,261.6	15.16	84.236	
3,300.0	3,295.0	3,335.5	3,328.9	7.7	8.1	87.41	192.2	1,328.3	1,270.4	1,254.8	15.66	81.119	
3,400.0	3,394.7	3,435.3	3,428.5	7.9	8.4	87.41	198.2	1,324.8	1,264.0	1,247.9	16.17	78.195	
3,500.0	3,494.5	3,535.1	3,528.0	8.2	8.6	87.42	204.2	1,321.3	1,257.7	1,241.0	16.67	75.445	
3,600.0	3,594.2	3,634.9	3,627.6	8.4	8.9	87.42	210.2	1,317.7	1,251.3	1,234.1	17.18	72.856	
3,700.0	3,694.0	3,734.7	3,727.1	8.7	9.1	87.42	216.3	1,314.2	1,244.9	1,227.3	17.68	70.413	
3,800.0	3,793.7	3,834.5	3,826.7	9.0	9.4	87.43	222.3	1,310.7	1,238.6	1,220.4	18.19	68.104	
3,900.0	3,893.5	3,934.3	3,926.2	9.2	9.6	87.43	228.3	1,307.2	1,232.2	1,213.5	18.69	65.919	
4,000.0	3,993.3	4,034.1	4,025.8	9.5	9.9	87.43	234.3	1,303.7	1,225.8	1,206.6	19.20	63.848	
4,100.0	4,093.0	4,133.9	4,125.3	9.7	10.2	87.43	240.3	1,300.2	1,219.5	1,199.8	19.71	61.882	
4,200.0	4,192.8	4,233.7	4,224.9	10.0	10.4	87.44	246.3	1,296.7	1,213.1	1,192.9	20.21	60.014	
4,300.0	4,292.5	4,333.5	4,324.5	10.2	10.7	87.44	252.3	1,293.2	1,206.7	1,186.0	20.72	58.237	
4,400.0	4,392.3	4,433.3	4,424.0	10.5	10.9	87.44	258.3	1,289.7	1,200.3	1,179.1	21.23	56.544	
4,500.0	4,492.0	4,533.1	4,523.6	10.7	11.2	87.45	264.4	1,286.2	1,194.0	1,172.2	21.74	54.929	
4,600.0	4,591.8	4,632.9	4,623.1	11.0	11.4	87.45	270.4	1,282.7	1,187.6	1,165.4	22.24	53.388	
4,700.0	4,691.6	4,732.7	4,722.7	11.2	11.7	87.45	276.4	1,279.2	1,181.2	1,158.5	22.75	51.914	
4,800.0	4,791.3	4,832.4	4,822.2	11.5	12.0	87.46	282.4	1,275.7	1,174.9	1,151.6	23.26	50.505	
4,900.0	4,891.1	4,932.2	4,921.8	11.8	12.2	87.46	288.4	1,272.2	1,168.5	1,144.7	23.77	49.155	
5,000.0	4,990.8	5,032.0	5,021.3	12.0	12.5	87.46	294.4	1,268.7	1,162.1	1,137.8	24.28	47.862	
5,100.0	5,090.6	5,131.8	5,120.9	12.3	12.7	87.46	300.4	1,265.1	1,155.8	1,131.0	24.79	46.621	

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0909A - 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						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		
5,200.0	5,190.3	5,231.6	5,220.4	12.5	13.0	63.47	306.5	1,261.6	1,149.4	1,124.1	25.30	45.429		
5,300.0	5,290.1	6,101.7	5,793.0	12.8	20.9	37.59	760.6	996.8	1,133.2	1,098.3	34.90	32.470		
5,400.0	5,389.9	6,101.7	5,793.0	13.0	20.9	37.59	760.6	996.8	1,086.7	1,051.6	35.14	30.926		
5,500.0	5,489.6	6,101.7	5,793.0	13.3	20.9	37.59	760.6	996.8	1,047.7	1,012.4	35.38	29.616		
5,600.0	5,589.1	6,101.7	5,793.0	13.6	20.9	38.74	760.6	996.8	1,015.3	979.9	35.46	28.636		
5,700.0	5,685.6	6,128.4	5,793.0	14.0	21.3	39.82	783.8	983.5	978.8	943.5	35.37	27.676		
5,800.0	5,775.3	6,145.9	5,793.0	14.5	21.6	42.01	799.0	975.0	937.3	902.8	34.57	27.111		
5,900.0	5,855.0	6,170.5	5,793.0	15.2	22.0	44.37	820.7	963.2	890.9	857.3	33.62	26.499		
6,000.0	5,921.9	6,200.0	5,793.0	16.1	22.5	47.14	846.8	949.5	839.7	806.9	32.80	25.604		
6,100.0	5,973.3	6,240.3	5,793.0	17.2	23.1	50.10	882.8	931.4	783.9	751.4	32.48	24.132		
6,200.0	6,007.4	6,284.4	5,793.0	18.5	23.8	53.98	922.6	912.4	723.5	690.5	33.02	21.908		
6,300.0	6,023.0	6,333.3	5,793.0	19.9	24.6	59.17	967.3	892.5	658.5	623.8	34.79	18.927		
6,400.0	6,024.0	6,386.6	5,793.0	21.3	25.5	60.50	1,016.5	872.1	591.8	554.6	37.21	15.906		
6,500.0	6,024.0	6,445.7	5,793.0	22.7	26.5	59.13	1,071.7	851.1	531.2	491.8	39.40	13.482		
6,600.0	6,024.0	6,510.7	5,793.0	24.1	27.6	57.39	1,133.2	830.0	477.9	436.4	41.52	11.510		
6,700.0	6,024.0	6,581.3	5,793.0	25.6	28.7	55.35	1,200.7	809.5	432.4	388.9	43.52	9.935		
6,800.0	6,024.0	6,657.1	5,793.0	27.1	30.0	53.12	1,274.1	790.2	395.2	349.8	45.38	8.708		
6,900.0	6,024.0	6,737.5	5,793.0	28.6	31.3	50.89	1,352.6	773.0	366.2	319.1	47.11	7.774		
7,000.0	6,024.0	6,821.7	5,793.0	30.1	32.7	48.92	1,435.5	758.5	345.5	296.6	48.84	7.074		
7,100.0	6,024.0	6,908.6	5,793.0	31.7	34.2	47.48	1,521.7	747.4	332.5	281.8	50.75	6.553		
7,200.0	6,024.0	7,000.0	5,793.0	33.2	35.6	46.62	1,612.8	739.9	326.3	273.5	52.75	6.185		
7,300.0	6,024.0	7,086.0	5,793.0	34.8	37.0	46.25	1,698.8	736.9	323.7	268.8	54.88	5.898		
7,326.9	6,024.0	7,110.1	5,793.0	35.2	37.4	46.23	1,722.8	736.7	323.5	268.1	55.48	5.831 CC		
7,400.0	6,024.0	7,178.8	5,793.0	36.4	38.4	46.35	1,791.5	737.7	324.3	266.8	57.45	5.644		
7,500.0	6,024.0	7,278.8	5,793.0	38.1	40.0	46.57	1,891.5	739.5	325.6	265.3	60.25	5.404		
7,600.0	6,024.0	7,378.8	5,793.0	39.7	41.6	46.79	1,991.4	741.4	326.9	263.8	63.08	5.182		
7,700.0	6,024.0	7,478.7	5,793.0	41.4	43.2	47.01	2,091.4	743.2	328.3	262.3	65.96	4.977		
7,800.0	6,024.0	7,578.7	5,793.0	43.1	44.9	47.23	2,191.4	745.0	329.6	260.7	68.87	4.786		
7,900.0	6,024.0	7,678.7	5,793.0	44.9	46.6	47.45	2,291.3	746.9	331.0	259.1	71.82	4.608		
8,000.0	6,024.0	7,778.7	5,793.0	46.6	48.2	47.66	2,391.3	748.7	332.3	257.5	74.80	4.443		
8,100.0	6,024.0	7,878.7	5,793.0	48.4	49.9	47.88	2,491.3	750.6	333.7	255.9	77.81	4.289		
8,200.0	6,024.0	7,978.7	5,793.0	50.1	51.7	48.09	2,591.2	752.4	335.1	254.2	80.84	4.144		
8,300.0	6,024.0	8,078.6	5,793.0	51.9	53.4	48.30	2,691.2	754.3	336.4	252.5	83.90	4.010		
8,400.0	6,024.0	8,178.6	5,793.0	53.7	55.1	48.50	2,791.2	756.1	337.8	250.8	86.99	3.883		
8,500.0	6,024.0	8,278.6	5,793.0	55.5	56.9	48.71	2,891.1	757.9	339.2	249.1	90.09	3.765		
8,600.0	6,024.0	8,378.6	5,793.0	57.3	58.6	48.91	2,991.1	759.8	340.6	247.3	93.22	3.653		
8,700.0	6,024.0	8,478.6	5,793.0	59.1	60.4	49.12	3,091.1	761.6	341.9	245.6	96.37	3.548		
8,800.0	6,024.0	8,578.6	5,793.0	60.9	62.2	49.32	3,191.0	763.5	343.3	243.8	99.53	3.449		
8,900.0	6,024.0	8,678.5	5,793.0	62.8	64.0	49.52	3,291.0	765.3	344.7	242.0	102.72	3.356		
9,000.0	6,024.0	8,778.5	5,793.0	64.6	65.8	49.71	3,391.0	767.1	346.1	240.2	105.92	3.268		
9,100.0	6,024.0	8,878.5	5,793.0	66.4	67.6	49.91	3,490.9	769.0	347.5	238.4	109.14	3.184		
9,200.0	6,024.0	8,978.5	5,793.0	68.3	69.4	50.10	3,590.9	770.8	349.0	236.6	112.38	3.105		
9,300.0	6,024.0	9,078.5	5,793.0	70.1	71.2	50.30	3,690.9	772.7	350.4	234.7	115.63	3.030		
9,400.0	6,024.0	9,178.5	5,793.0	72.0	73.0	50.49	3,790.8	774.5	351.8	232.9	118.89	2.959		
9,500.0	6,024.0	9,278.4	5,793.0	73.8	74.8	50.68	3,890.8	776.3	353.2	231.0	122.17	2.891		
9,600.0	6,024.0	9,378.4	5,793.0	75.7	76.7	50.87	3,990.8	778.2	354.6	229.2	125.47	2.826		
9,700.0	6,024.0	9,478.4	5,793.0	77.5	78.5	51.05	4,090.7	780.0	356.1	227.3	128.77	2.765		
9,800.0	6,024.0	9,578.4	5,793.0	79.4	80.3	51.24	4,190.7	781.9	357.5	225.4	132.09	2.706		
9,900.0	6,024.0	9,678.4	5,793.0	81.3	82.2	51.42	4,290.7	783.7	358.9	223.5	135.43	2.650		
10,000.0	6,024.0	9,778.4	5,793.0	83.1	84.0	51.60	4,390.6	785.5	360.4	221.6	138.77	2.597		
10,100.0	6,024.0	9,878.3	5,793.0	85.0	85.9	51.78	4,490.6	787.4	361.8	219.7	142.13	2.546		
10,200.0	6,024.0	9,978.3	5,793.0	86.9	87.7	51.96	4,590.6	789.2	363.3	217.8	145.50	2.497		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0909A - 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
10,300.0	6,024.0	10,078.3	5,793.0	88.7	89.6	52.14	4,690.5	791.1	364.7	215.8	148.88	2.450	
10,400.0	6,024.0	10,178.3	5,793.0	90.6	91.4	52.32	4,790.5	792.9	366.2	213.9	152.27	2.405	
10,500.0	6,024.0	10,278.3	5,793.0	92.5	93.3	52.49	4,890.5	794.7	367.6	211.9	155.67	2.362	
10,600.0	6,024.0	10,378.3	5,793.0	94.4	95.1	52.67	4,990.4	796.6	369.1	210.0	159.08	2.320	
10,700.0	6,024.0	10,478.2	5,793.0	96.2	97.0	52.84	5,090.4	798.4	370.5	208.0	162.50	2.280	
10,800.0	6,024.0	10,578.2	5,793.0	98.1	98.9	53.01	5,190.4	800.3	372.0	206.1	165.93	2.242	
10,900.0	6,024.0	10,678.2	5,793.0	100.0	100.7	53.18	5,290.3	802.1	373.5	204.1	169.37	2.205	
11,000.0	6,024.0	10,778.2	5,793.0	101.9	102.6	53.35	5,390.3	803.9	375.0	202.1	172.82	2.170	
11,100.0	6,024.0	10,878.2	5,793.0	103.8	104.5	53.52	5,490.3	805.8	376.4	200.2	176.28	2.135	
11,200.0	6,024.0	10,978.2	5,793.0	105.7	106.4	53.68	5,590.2	807.6	377.9	198.2	179.74	2.102	
11,300.0	6,024.0	11,078.1	5,793.0	107.6	108.2	53.85	5,690.2	809.5	379.4	196.2	183.22	2.071	
11,400.0	6,024.0	11,178.1	5,793.0	109.5	110.1	54.01	5,790.2	811.3	380.9	194.2	186.70	2.040	
11,500.0	6,024.0	11,278.1	5,793.0	111.3	112.0	54.17	5,890.1	813.2	382.4	192.2	190.20	2.010	
11,600.0	6,024.0	11,378.1	5,793.0	113.2	113.9	54.33	5,990.1	815.0	383.9	190.2	193.70	1.982	
11,700.0	6,024.0	11,478.1	5,793.0	115.1	115.7	54.49	6,090.1	816.8	385.4	188.2	197.20	1.954	
11,800.0	6,024.0	11,578.1	5,793.0	117.0	117.6	54.65	6,190.0	818.7	386.9	186.1	200.72	1.927	
11,900.0	6,024.0	11,678.0	5,793.0	118.9	119.5	54.81	6,290.0	820.5	388.4	184.1	204.24	1.901	
12,000.0	6,024.0	11,778.0	5,793.0	120.8	121.4	54.96	6,390.0	822.4	389.9	182.1	207.77	1.876	
12,100.0	6,024.0	11,878.0	5,793.0	122.7	123.3	55.12	6,489.9	824.2	391.4	180.1	211.31	1.852	
12,200.0	6,024.0	11,978.0	5,793.0	124.6	125.1	55.27	6,589.9	826.0	392.9	178.0	214.85	1.829	
12,300.0	6,024.0	12,078.0	5,793.0	126.5	127.0	55.42	6,689.9	827.9	394.4	176.0	218.41	1.806	
12,400.0	6,024.0	12,178.0	5,793.0	128.4	128.9	55.57	6,789.8	829.7	395.9	173.9	221.96	1.784	
12,500.0	6,024.0	12,277.9	5,793.0	130.3	130.8	55.72	6,889.8	831.6	397.4	171.9	225.53	1.762	
12,600.0	6,024.0	12,377.9	5,793.0	132.2	132.7	55.87	6,989.8	833.4	398.9	169.8	229.10	1.741	
12,700.0	6,024.0	12,477.9	5,793.0	134.1	134.6	56.02	7,089.7	835.2	400.5	167.8	232.68	1.721	
12,800.0	6,024.0	12,577.9	5,793.0	136.0	136.5	56.17	7,189.7	837.1	402.0	165.7	236.26	1.702	
12,900.0	6,024.0	12,677.9	5,793.0	137.9	138.4	56.31	7,289.7	838.9	403.5	163.7	239.85	1.682	
13,000.0	6,024.0	12,777.9	5,793.0	139.8	140.3	56.46	7,389.6	840.8	405.1	161.6	243.44	1.664	
13,100.0	6,024.0	12,877.8	5,793.0	141.7	142.2	56.60	7,489.6	842.6	406.6	159.5	247.04	1.646	
13,200.0	6,024.0	12,977.8	5,793.0	143.6	144.0	56.74	7,589.6	844.4	408.1	157.5	250.65	1.628	
13,300.0	6,024.0	13,077.8	5,793.0	145.5	145.9	56.88	7,689.5	846.3	409.7	155.4	254.26	1.611	
13,400.0	6,024.0	13,177.8	5,793.0	147.4	147.8	57.02	7,789.5	848.1	411.2	153.3	257.88	1.595	
13,500.0	6,024.0	13,277.8	5,793.0	149.3	149.7	57.16	7,889.4	850.0	412.7	151.2	261.50	1.578	
13,600.0	6,024.0	13,377.8	5,793.0	151.2	151.6	57.30	7,989.4	851.8	414.3	149.2	265.13	1.563	
13,700.0	6,024.0	13,477.7	5,793.0	153.2	153.5	57.44	8,089.4	853.6	415.8	147.1	268.76	1.547	
13,800.0	6,024.0	13,577.7	5,793.0	155.1	155.4	57.57	8,189.3	855.5	417.4	145.0	272.40	1.532	
13,900.0	6,024.0	13,677.7	5,793.0	156.6	157.0	57.71	8,289.3	857.3	418.9	143.5	275.46	1.521	
13,909.0	6,024.0	13,686.7	5,793.0	156.8	157.2	57.72	8,298.3	857.5	419.1	143.4	275.73	1.520 ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - 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						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	91.96	-47.7	1,392.0	1,392.9					
100.0	100.0	92.8	92.8	0.1	0.1	91.96	-47.7	1,392.0	1,392.8	1,392.7	0.18	7,722.946		
200.0	200.0	192.8	192.8	0.3	0.3	91.96	-47.7	1,392.0	1,392.8	1,392.2	0.62	2,244.860		
300.0	300.0	292.8	292.8	0.5	0.5	91.96	-47.7	1,392.0	1,392.8	1,391.8	1.07	1,301.732		
400.0	400.0	392.8	392.8	0.8	0.8	91.96	-47.7	1,392.0	1,392.8	1,391.3	1.52	916.630		
500.0	500.0	492.8	492.8	1.0	1.0	91.96	-47.7	1,392.0	1,392.8	1,390.9	1.97	707.364		
600.0	600.0	592.8	592.8	1.2	1.2	91.96	-47.7	1,392.0	1,392.8	1,390.4	2.42	575.890		
700.0	700.0	692.8	692.8	1.4	1.4	91.96	-47.7	1,392.0	1,392.8	1,390.0	2.87	485.628		
800.0	800.0	810.3	810.3	1.7	1.7	91.88	-45.7	1,391.4	1,392.3	1,388.9	3.36	414.870		
900.0	900.0	924.3	924.0	1.9	2.0	91.62	-39.4	1,389.5	1,390.4	1,386.5	3.84	362.140		
1,000.0	1,000.0	1,024.0	1,023.5	2.1	2.2	91.35	-32.7	1,387.4	1,388.1	1,383.8	4.30	323.002		
1,100.0	1,100.0	1,123.8	1,123.1	2.3	2.4	91.08	-26.1	1,385.4	1,385.9	1,381.2	4.76	291.120		
1,200.0	1,200.0	1,223.6	1,222.6	2.6	2.7	66.80	-19.4	1,383.3	1,383.1	1,377.9	5.22	264.896		
1,300.0	1,299.8	1,323.5	1,322.3	2.8	2.9	66.81	-12.8	1,381.3	1,378.9	1,373.2	5.69	242.490		
1,400.0	1,399.6	1,423.4	1,421.9	3.0	3.1	66.80	-6.1	1,379.2	1,374.0	1,367.8	6.16	223.117		
1,500.0	1,499.4	1,523.2	1,521.6	3.2	3.4	66.79	0.5	1,377.2	1,369.1	1,362.4	6.64	206.328		
1,600.0	1,599.1	1,623.1	1,621.2	3.5	3.6	66.78	7.2	1,375.1	1,364.2	1,357.0	7.12	191.667		
1,700.0	1,698.9	1,723.0	1,720.8	3.7	3.9	66.77	13.9	1,373.1	1,359.2	1,351.6	7.60	178.780		
1,800.0	1,798.6	1,822.9	1,820.5	4.0	4.1	66.76	20.5	1,371.0	1,354.3	1,346.2	8.09	167.377		
1,900.0	1,898.4	1,922.8	1,920.1	4.2	4.4	66.75	27.2	1,369.0	1,349.4	1,340.9	8.58	157.226		
2,000.0	1,998.1	2,022.6	2,019.7	4.4	4.6	66.74	33.8	1,366.9	1,344.5	1,335.5	9.08	148.139		
2,100.0	2,097.9	2,122.5	2,119.4	4.7	4.9	66.73	40.5	1,364.9	1,339.6	1,330.0	9.57	139.961		
2,200.0	2,197.6	2,222.4	2,219.0	4.9	5.2	66.72	47.1	1,362.8	1,334.7	1,324.6	10.07	132.567		
2,300.0	2,297.4	2,322.3	2,318.7	5.2	5.4	66.71	53.8	1,360.8	1,329.8	1,319.2	10.57	125.852		
2,400.0	2,397.2	2,422.2	2,418.3	5.4	5.7	66.70	60.5	1,358.7	1,324.9	1,313.8	11.07	119.728		
2,500.0	2,496.9	2,522.0	2,517.9	5.7	5.9	66.69	67.1	1,356.7	1,320.0	1,308.4	11.57	114.122		
2,600.0	2,596.7	2,621.9	2,617.6	5.9	6.2	66.68	73.8	1,354.6	1,315.1	1,303.0	12.07	108.973		
2,700.0	2,696.4	2,721.8	2,717.2	6.2	6.4	66.67	80.4	1,352.6	1,310.2	1,297.6	12.57	104.228		
2,800.0	2,796.2	2,821.7	2,816.8	6.4	6.7	66.66	87.1	1,350.5	1,305.3	1,292.2	13.07	99.841		
2,900.0	2,895.9	2,921.6	2,916.5	6.7	6.9	66.65	93.8	1,348.5	1,300.4	1,286.8	13.58	95.774		
3,000.0	2,995.7	3,021.4	3,016.1	6.9	7.2	66.64	100.4	1,346.4	1,295.5	1,281.4	14.08	91.995		
3,100.0	3,095.5	3,121.3	3,115.7	7.2	7.4	66.63	107.1	1,344.4	1,290.6	1,276.0	14.59	88.473		
3,200.0	3,195.2	3,221.2	3,215.4	7.4	7.7	66.62	113.7	1,342.3	1,285.7	1,270.6	15.09	85.183		
3,300.0	3,295.0	3,321.1	3,315.0	7.7	7.9	66.60	120.4	1,340.3	1,280.7	1,265.2	15.60	82.105		
3,400.0	3,394.7	3,420.9	3,414.6	7.9	8.2	66.59	127.0	1,338.2	1,275.8	1,259.7	16.11	79.217		
3,500.0	3,494.5	3,520.8	3,514.3	8.2	8.5	66.58	133.7	1,336.2	1,270.9	1,254.3	16.61	76.504		
3,600.0	3,594.2	3,620.7	3,613.9	8.4	8.7	66.57	140.4	1,334.1	1,266.0	1,248.9	17.12	73.950		
3,700.0	3,694.0	3,720.6	3,713.6	8.7	9.0	66.56	147.0	1,332.1	1,261.1	1,243.5	17.63	71.541		
3,800.0	3,793.7	3,820.5	3,813.2	9.0	9.2	66.55	153.7	1,330.0	1,256.2	1,238.1	18.14	69.265		
3,900.0	3,893.5	3,920.3	3,912.8	9.2	9.5	66.54	160.3	1,327.9	1,251.3	1,232.7	18.64	67.113		
4,000.0	3,993.3	4,020.2	4,012.5	9.5	9.7	66.53	167.0	1,325.9	1,246.4	1,227.3	19.15	65.073		
4,100.0	4,093.0	4,120.1	4,112.1	9.7	10.0	66.52	173.7	1,323.8	1,241.5	1,221.8	19.66	63.139		
4,200.0	4,192.8	4,220.0	4,211.7	10.0	10.2	66.50	180.3	1,321.8	1,236.6	1,216.4	20.17	61.301		
4,300.0	4,292.5	4,319.9	4,311.4	10.2	10.5	66.49	187.0	1,319.7	1,231.7	1,211.0	20.68	59.552		
4,400.0	4,392.3	4,419.7	4,411.0	10.5	10.8	66.48	193.6	1,317.7	1,226.8	1,205.6	21.19	57.887		
4,500.0	4,492.0	4,519.6	4,510.6	10.7	11.0	66.47	200.3	1,315.6	1,221.9	1,200.2	21.70	56.300		
4,600.0	4,591.8	4,619.5	4,610.3	11.0	11.3	66.46	206.9	1,313.6	1,217.0	1,194.8	22.21	54.785		
4,700.0	4,691.6	4,719.4	4,709.9	11.2	11.5	66.44	213.6	1,311.5	1,212.1	1,189.4	22.72	53.337		
4,800.0	4,791.3	4,819.3	4,809.6	11.5	11.8	66.43	220.3	1,309.5	1,207.2	1,183.9	23.24	51.953		
4,900.0	4,891.1	4,919.1	4,909.2	11.8	12.0	66.42	226.9	1,307.4	1,202.3	1,178.5	23.75	50.628		
5,000.0	4,990.8	5,019.0	5,008.8	12.0	12.3	66.41	233.6	1,305.4	1,197.4	1,173.1	24.26	49.358		
5,100.0	5,090.6	5,118.9	5,108.5	12.3	12.6	66.40	240.2	1,303.3	1,192.5	1,167.7	24.77	48.140		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - 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							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)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,218.8	5,208.1	12.5	12.8	66.38	246.9	1,301.3	1,187.6	1,162.3	25.28	46.971		
5,300.0	5,290.1	5,318.7	5,307.7	12.8	13.1	66.37	253.6	1,299.2	1,182.6	1,156.9	25.80	45.848		
5,400.0	5,389.9	5,448.1	5,436.7	13.0	13.4	66.27	263.9	1,296.0	1,177.6	1,151.2	26.40	44.604		
5,500.0	5,489.6	5,714.4	5,678.3	13.3	14.9	62.03	364.0	1,265.2	1,162.8	1,134.6	28.20	41.242		
5,600.0	5,589.1	5,875.3	5,787.8	13.6	16.4	57.78	475.9	1,230.7	1,139.9	1,109.9	30.09	37.884		
5,700.0	5,685.6	5,981.3	5,838.1	14.0	17.6	56.52	564.9	1,203.3	1,109.0	1,077.5	31.50	35.208		
5,800.0	5,775.3	6,061.5	5,863.1	14.5	18.7	56.80	637.6	1,181.0	1,071.0	1,038.5	32.47	32.982		
5,900.0	5,855.0	6,127.9	5,874.7	15.2	19.7	58.24	700.1	1,161.7	1,027.3	994.0	33.25	30.891		
6,000.0	5,921.9	6,186.4	5,878.0	16.1	20.6	60.71	755.9	1,144.5	978.7	944.5	34.14	28.663		
6,100.0	5,973.3	6,230.1	5,878.0	17.2	21.2	64.70	797.8	1,132.1	926.5	891.1	35.37	26.197		
6,200.0	6,007.4	6,279.7	5,878.0	18.5	21.9	69.50	845.6	1,119.3	871.6	834.3	37.30	23.369		
6,300.0	6,023.0	6,334.1	5,878.0	19.9	22.7	75.44	898.5	1,106.6	814.6	774.6	39.94	20.394		
6,400.0	6,024.0	6,400.0	5,878.0	21.3	23.7	77.39	963.1	1,093.2	758.0	715.1	42.86	17.686		
6,500.0	6,024.0	6,454.7	5,878.0	22.7	24.5	77.22	1,017.0	1,083.8	708.0	662.4	45.56	15.540		
6,600.0	6,024.0	6,521.4	5,878.0	24.1	25.5	76.94	1,083.0	1,074.4	665.6	617.2	48.45	13.738		
6,700.0	6,024.0	6,600.0	5,878.0	25.6	26.7	76.61	1,161.2	1,066.4	631.3	579.8	51.53	12.251		
6,800.0	6,024.0	6,664.9	5,878.0	27.1	27.8	76.41	1,226.0	1,062.1	605.3	550.9	54.41	11.124		
6,900.0	6,024.0	6,740.4	5,878.0	28.6	28.9	76.23	1,301.4	1,060.0	588.1	530.7	57.40	10.246		
7,000.0	6,024.0	6,824.6	5,878.0	30.1	30.3	76.12	1,385.6	1,060.8	579.5	519.1	60.46	9.586		
7,100.0	6,024.0	6,924.6	5,878.0	31.7	31.9	76.08	1,485.5	1,062.7	577.0	513.2	63.71	9.056		
7,102.0	6,024.0	6,926.6	5,878.0	31.7	31.9	76.08	1,487.5	1,062.7	577.0	513.3	63.70	9.057 CC		
7,200.0	6,024.0	7,024.6	5,878.0	33.2	33.6	76.11	1,585.5	1,064.5	578.4	511.5	66.94	8.641		
7,300.0	6,024.0	7,124.5	5,878.0	34.8	35.3	76.16	1,685.5	1,066.3	580.2	510.0	70.22	8.263		
7,400.0	6,024.0	7,224.5	5,878.0	36.4	37.0	76.20	1,785.5	1,068.2	582.0	508.4	73.55	7.913		
7,500.0	6,024.0	7,324.5	5,878.0	38.1	38.7	76.24	1,885.4	1,070.0	583.8	506.8	76.92	7.589		
7,600.0	6,024.0	7,424.5	5,878.0	39.7	40.5	76.28	1,985.4	1,071.8	585.5	505.2	80.32	7.290		
7,700.0	6,024.0	7,524.5	5,878.0	41.4	42.2	76.33	2,085.4	1,073.7	587.3	503.6	83.76	7.012		
7,800.0	6,024.0	7,624.5	5,878.0	43.1	44.0	76.37	2,185.3	1,075.5	589.1	501.9	87.22	6.754		
7,900.0	6,024.0	7,724.4	5,878.0	44.9	45.8	76.41	2,285.3	1,077.4	590.9	500.2	90.71	6.514		
8,000.0	6,024.0	7,824.4	5,878.0	46.6	47.6	76.45	2,385.2	1,079.2	592.7	498.5	94.22	6.290		
8,100.0	6,024.0	7,924.4	5,878.0	48.4	49.4	76.49	2,485.2	1,081.0	594.5	496.7	97.75	6.081		
8,200.0	6,024.0	8,024.4	5,878.0	50.1	51.2	76.54	2,585.2	1,082.9	596.2	494.9	101.30	5.886		
8,300.0	6,024.0	8,124.4	5,878.0	51.9	53.0	76.58	2,685.1	1,084.7	598.0	493.2	104.86	5.703		
8,400.0	6,024.0	8,224.4	5,878.0	53.7	54.9	76.62	2,785.1	1,086.5	599.8	491.4	108.44	5.531		
8,500.0	6,024.0	8,324.3	5,878.0	55.5	56.7	76.66	2,885.1	1,088.4	601.6	489.6	112.03	5.370		
8,600.0	6,024.0	8,424.3	5,878.0	57.3	58.5	76.70	2,985.0	1,090.2	603.4	487.7	115.63	5.218		
8,700.0	6,024.0	8,524.3	5,878.0	59.1	60.4	76.74	3,085.0	1,092.1	605.2	485.9	119.25	5.075		
8,800.0	6,024.0	8,624.3	5,878.0	60.9	62.2	76.78	3,185.0	1,093.9	607.0	484.1	122.87	4.940		
8,900.0	6,024.0	8,724.3	5,878.0	62.8	64.1	76.82	3,284.9	1,095.7	608.7	482.2	126.50	4.812		
9,000.0	6,024.0	8,824.3	5,878.0	64.6	65.9	76.86	3,384.9	1,097.6	610.5	480.4	130.14	4.691		
9,100.0	6,024.0	8,924.2	5,878.0	66.4	67.8	76.90	3,484.9	1,099.4	612.3	478.5	133.79	4.577		
9,200.0	6,024.0	9,024.2	5,878.0	68.3	69.7	76.93	3,584.8	1,101.2	614.1	476.7	137.44	4.468		
9,300.0	6,024.0	9,124.2	5,878.0	70.1	71.5	76.97	3,684.8	1,103.1	615.9	474.8	141.11	4.365		
9,400.0	6,024.0	9,224.2	5,878.0	72.0	73.4	77.01	3,784.8	1,104.9	617.7	472.9	144.77	4.267		
9,500.0	6,024.0	9,324.2	5,878.0	73.8	75.3	77.05	3,884.7	1,106.7	619.5	471.0	148.45	4.173		
9,600.0	6,024.0	9,424.2	5,878.0	75.7	77.1	77.09	3,984.7	1,108.6	621.3	469.1	152.12	4.084		
9,700.0	6,024.0	9,524.1	5,878.0	77.5	79.0	77.12	4,084.7	1,110.4	623.0	467.2	155.81	3.999		
9,800.0	6,024.0	9,624.1	5,878.0	79.4	80.9	77.16	4,184.6	1,112.3	624.8	465.3	159.50	3.918		
9,900.0	6,024.0	9,724.1	5,878.0	81.3	82.8	77.20	4,284.6	1,114.1	626.6	463.4	163.19	3.840		
10,000.0	6,024.0	9,824.1	5,878.0	83.1	84.6	77.24	4,384.6	1,115.9	628.4	461.5	166.89	3.766		
10,100.0	6,024.0	9,924.1	5,878.0	85.0	86.5	77.27	4,484.5	1,117.8	630.2	459.6	170.59	3.694		
10,200.0	6,024.0	10,024.1	5,878.0	86.9	88.4	77.31	4,584.5	1,119.6	632.0	457.7	174.29	3.626		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - 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							
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
10,300.0	6,024.0	10,124.0	5,878.0	88.7	90.3	77.35	4,684.5	1,121.4	633.8	455.8	178.00	3.561	
10,400.0	6,024.0	10,224.0	5,878.0	90.6	92.2	77.38	4,784.4	1,123.3	635.6	453.9	181.71	3.498	
10,500.0	6,024.0	10,324.0	5,878.0	92.5	94.1	77.42	4,884.4	1,125.1	637.4	451.9	185.42	3.437	
10,600.0	6,024.0	10,424.0	5,878.0	94.4	96.0	77.45	4,984.4	1,126.9	639.2	450.0	189.14	3.379	
10,700.0	6,024.0	10,524.0	5,878.0	96.2	97.8	77.49	5,084.3	1,128.8	640.9	448.1	192.86	3.323	
10,800.0	6,024.0	10,624.0	5,878.0	98.1	99.7	77.53	5,184.3	1,130.6	642.7	446.1	196.58	3.270	
10,900.0	6,024.0	10,723.9	5,878.0	100.0	101.6	77.56	5,284.3	1,132.5	644.5	444.2	200.31	3.218	
11,000.0	6,024.0	10,823.9	5,878.0	101.9	103.5	77.60	5,384.2	1,134.3	646.3	442.3	204.04	3.168	
11,100.0	6,024.0	10,923.9	5,878.0	103.8	105.4	77.63	5,484.2	1,136.1	648.1	440.3	207.77	3.119	
11,200.0	6,024.0	11,023.9	5,878.0	105.7	107.3	77.67	5,584.2	1,138.0	649.9	438.4	211.50	3.073	
11,300.0	6,024.0	11,123.9	5,878.0	107.6	109.2	77.70	5,684.1	1,139.8	651.7	436.5	215.24	3.028	
11,400.0	6,024.0	11,223.9	5,878.0	109.5	111.1	77.73	5,784.1	1,141.6	653.5	434.5	218.97	2.984	
11,500.0	6,024.0	11,323.8	5,878.0	111.3	113.0	77.77	5,884.1	1,143.5	655.3	432.6	222.71	2.942	
11,600.0	6,024.0	11,423.8	5,878.0	113.2	114.9	77.80	5,984.0	1,145.3	657.1	430.6	226.45	2.902	
11,700.0	6,024.0	11,523.8	5,878.0	115.1	116.8	77.84	6,084.0	1,147.1	658.9	428.7	230.19	2.862	
11,800.0	6,024.0	11,623.8	5,878.0	117.0	118.7	77.87	6,184.0	1,149.0	660.7	426.7	233.94	2.824	
11,900.0	6,024.0	11,723.8	5,878.0	118.9	120.6	77.90	6,283.9	1,150.8	662.5	424.8	237.69	2.787	
12,000.0	6,024.0	11,823.8	5,878.0	120.8	122.5	77.94	6,383.9	1,152.7	664.2	422.8	241.43	2.751	
12,100.0	6,024.0	11,923.7	5,878.0	122.7	124.4	77.97	6,483.9	1,154.5	666.0	420.9	245.18	2.717	
12,200.0	6,024.0	12,023.7	5,878.0	124.6	126.3	78.00	6,583.8	1,156.3	667.8	418.9	248.93	2.683	
12,300.0	6,024.0	12,123.7	5,878.0	126.5	128.2	78.03	6,683.8	1,158.2	669.6	416.9	252.69	2.650	
12,400.0	6,024.0	12,223.7	5,878.0	128.4	130.1	78.07	6,783.8	1,160.0	671.4	415.0	256.44	2.618	
12,500.0	6,024.0	12,323.7	5,878.0	130.3	132.0	78.10	6,883.7	1,161.8	673.2	413.0	260.20	2.587	
12,600.0	6,024.0	12,423.7	5,878.0	132.2	133.9	78.13	6,983.7	1,163.7	675.0	411.1	263.95	2.557	
12,700.0	6,024.0	12,523.6	5,878.0	134.1	135.8	78.16	7,083.7	1,165.5	676.8	409.1	267.71	2.528	
12,800.0	6,024.0	12,623.6	5,878.0	136.0	137.7	78.20	7,183.6	1,167.4	678.6	407.1	271.47	2.500	
12,900.0	6,024.0	12,723.6	5,878.0	137.9	139.6	78.23	7,283.6	1,169.2	680.4	405.2	275.23	2.472	
13,000.0	6,024.0	12,823.6	5,878.0	139.8	141.5	78.26	7,383.6	1,171.0	682.2	403.2	278.99	2.445	
13,100.0	6,024.0	12,923.6	5,878.0	141.7	143.4	78.29	7,483.5	1,172.9	684.0	401.2	282.76	2.419	
13,200.0	6,024.0	13,023.6	5,878.0	143.6	145.3	78.32	7,583.5	1,174.7	685.8	399.3	286.52	2.394	
13,300.0	6,024.0	13,123.5	5,878.0	145.5	147.2	78.35	7,683.5	1,176.5	687.6	397.3	290.28	2.369	
13,400.0	6,024.0	13,223.5	5,878.0	147.4	149.1	78.38	7,783.4	1,178.4	689.4	395.3	294.05	2.344	
13,500.0	6,024.0	13,323.5	5,878.0	149.3	151.0	78.41	7,883.4	1,180.2	691.2	393.4	297.82	2.321	
13,600.0	6,024.0	13,423.5	5,878.0	151.2	152.9	78.44	7,983.4	1,182.0	693.0	391.4	301.59	2.298	
13,700.0	6,024.0	13,523.5	5,878.0	153.2	154.8	78.47	8,083.3	1,183.9	694.8	389.4	305.36	2.275	
13,800.0	6,024.0	13,623.5	5,878.0	155.1	156.7	78.50	8,183.3	1,185.7	696.6	387.5	309.13	2.253	
13,900.0	6,024.0	13,723.4	5,878.0	156.6	158.7	78.53	8,283.3	1,187.6	698.4	385.8	312.56	2.234	
13,909.0	6,024.0	13,732.4	5,878.0	156.8	158.8	78.54	8,292.3	1,187.7	698.5	385.7	312.87	2.233 ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - 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		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	88.95	27.3	1,490.5	1,490.8					
100.0	100.0	92.8	92.8	0.1	0.1	88.95	27.3	1,490.5	1,490.8	1,490.6	0.18	8,266.057		
200.0	200.0	192.8	192.8	0.3	0.3	88.95	27.3	1,490.5	1,490.8	1,490.2	0.62	2,402.729		
300.0	300.0	292.8	292.8	0.5	0.5	88.95	27.3	1,490.5	1,490.8	1,489.7	1.07	1,393.275		
400.0	400.0	392.8	392.8	0.8	0.8	88.95	27.3	1,490.5	1,490.8	1,489.3	1.52	981.091		
500.0	500.0	492.8	492.8	1.0	1.0	88.95	27.3	1,490.5	1,490.8	1,488.8	1.97	757.109		
600.0	600.0	592.8	592.8	1.2	1.2	88.95	27.3	1,490.5	1,490.8	1,488.4	2.42	616.389		
700.0	700.0	692.8	692.8	1.4	1.4	88.95	27.3	1,490.5	1,490.8	1,487.9	2.87	519.779		
800.0	800.0	792.8	792.8	1.7	1.7	88.95	27.3	1,490.5	1,490.8	1,487.5	3.32	449.351		
900.0	900.0	892.8	892.8	1.9	1.9	88.95	27.3	1,490.5	1,490.8	1,487.0	3.77	395.730		
1,000.0	1,000.0	997.6	997.6	2.1	2.1	88.89	29.0	1,490.3	1,490.6	1,486.4	4.23	352.668		
1,100.0	1,100.0	1,102.4	1,102.3	2.3	2.4	88.68	34.4	1,489.7	1,490.2	1,485.5	4.69	317.903		
1,200.0	1,200.0	1,202.3	1,201.8	2.6	2.6	64.37	41.4	1,488.9	1,488.8	1,483.6	5.14	289.660		
1,300.0	1,299.8	1,302.2	1,301.5	2.8	2.8	64.34	48.3	1,488.1	1,485.9	1,480.3	5.60	265.518		
1,400.0	1,399.6	1,402.1	1,401.2	3.0	3.0	64.31	55.2	1,487.3	1,482.3	1,476.2	6.06	244.548		
1,500.0	1,499.4	1,502.1	1,500.9	3.2	3.3	64.29	62.1	1,486.6	1,478.7	1,472.1	6.53	226.333		
1,600.0	1,599.1	1,602.0	1,600.6	3.5	3.5	64.26	69.1	1,485.8	1,475.0	1,468.0	7.01	210.408		
1,700.0	1,698.9	1,701.9	1,700.3	3.7	3.8	64.24	76.0	1,485.0	1,471.4	1,463.9	7.49	196.398		
1,800.0	1,798.6	1,801.9	1,800.0	4.0	4.0	64.21	82.9	1,484.2	1,467.8	1,459.8	7.98	183.997		
1,900.0	1,898.4	1,901.8	1,899.7	4.2	4.3	64.18	89.8	1,483.4	1,464.2	1,455.7	8.47	172.956		
2,000.0	1,998.1	2,001.7	1,999.4	4.4	4.5	64.16	96.8	1,482.6	1,460.5	1,451.6	8.96	163.073		
2,100.0	2,097.9	2,101.6	2,099.0	4.7	4.8	64.13	103.7	1,481.8	1,456.9	1,447.5	9.45	154.181		
2,200.0	2,197.6	2,201.6	2,198.7	4.9	5.0	64.10	110.6	1,481.0	1,453.3	1,443.3	9.94	146.144		
2,300.0	2,297.4	2,301.5	2,298.4	5.2	5.3	64.08	117.5	1,480.2	1,449.7	1,439.2	10.44	138.848		
2,400.0	2,397.2	2,401.4	2,398.1	5.4	5.5	64.05	124.5	1,479.4	1,446.0	1,435.1	10.94	132.197		
2,500.0	2,496.9	2,501.4	2,497.8	5.7	5.8	64.02	131.4	1,478.6	1,442.4	1,431.0	11.44	126.112		
2,600.0	2,596.7	2,601.3	2,597.5	5.9	6.0	64.00	138.3	1,477.8	1,438.8	1,426.9	11.94	120.525		
2,700.0	2,696.4	2,701.2	2,697.2	6.2	6.3	63.97	145.2	1,477.0	1,435.2	1,422.7	12.44	115.378		
2,800.0	2,796.2	2,801.2	2,796.9	6.4	6.5	63.94	152.2	1,476.3	1,431.5	1,418.6	12.94	110.622		
2,900.0	2,895.9	2,901.1	2,896.6	6.7	6.8	63.91	159.1	1,475.5	1,427.9	1,414.5	13.44	106.216		
3,000.0	2,995.7	3,001.0	2,996.2	6.9	7.0	63.89	166.0	1,474.7	1,424.3	1,410.4	13.95	102.122		
3,100.0	3,095.5	3,101.0	3,095.9	7.2	7.3	63.86	172.9	1,473.9	1,420.7	1,406.2	14.45	98.309		
3,200.0	3,195.2	3,200.9	3,195.6	7.4	7.5	63.83	179.9	1,473.1	1,417.1	1,402.1	14.96	94.749		
3,300.0	3,295.0	3,300.8	3,295.3	7.7	7.8	63.80	186.8	1,472.3	1,413.4	1,398.0	15.46	91.419		
3,400.0	3,394.7	3,400.8	3,395.0	7.9	8.0	63.77	193.7	1,471.5	1,409.8	1,393.9	15.97	88.297		
3,500.0	3,494.5	3,500.7	3,494.7	8.2	8.3	63.74	200.7	1,470.7	1,406.2	1,389.7	16.47	85.364		
3,600.0	3,594.2	3,600.6	3,594.4	8.4	8.6	63.72	207.6	1,469.9	1,402.6	1,385.6	16.98	82.604		
3,700.0	3,694.0	3,700.6	3,694.1	8.7	8.8	63.69	214.5	1,469.1	1,399.0	1,381.5	17.49	80.002		
3,800.0	3,793.7	3,800.5	3,793.8	9.0	9.1	63.66	221.4	1,468.3	1,395.3	1,377.4	17.99	77.546		
3,900.0	3,893.5	3,900.4	3,893.4	9.2	9.3	63.63	228.4	1,467.5	1,391.7	1,373.2	18.50	75.222		
4,000.0	3,993.3	4,000.4	3,993.1	9.5	9.6	63.60	235.3	1,466.7	1,388.1	1,369.1	19.01	73.022		
4,100.0	4,093.0	4,100.3	4,092.8	9.7	9.8	63.57	242.2	1,465.9	1,384.5	1,365.0	19.52	70.935		
4,200.0	4,192.8	4,200.2	4,192.5	10.0	10.1	63.54	249.1	1,465.2	1,380.9	1,360.8	20.03	68.953		
4,300.0	4,292.5	4,300.2	4,292.2	10.2	10.3	63.51	256.1	1,464.4	1,377.3	1,356.7	20.54	67.068		
4,400.0	4,392.3	4,400.1	4,391.9	10.5	10.6	63.48	263.0	1,463.6	1,373.6	1,352.6	21.04	65.274		
4,500.0	4,492.0	4,500.0	4,491.6	10.7	10.8	63.45	269.9	1,462.8	1,370.0	1,348.5	21.55	63.563		
4,600.0	4,591.8	4,599.9	4,591.3	11.0	11.1	63.42	276.8	1,462.0	1,366.4	1,344.3	22.06	61.931		
4,700.0	4,691.6	4,699.9	4,690.9	11.2	11.4	63.39	283.8	1,461.2	1,362.8	1,340.2	22.57	60.373		
4,800.0	4,791.3	4,799.8	4,790.6	11.5	11.6	63.36	290.7	1,460.4	1,359.2	1,336.1	23.08	58.882		
4,900.0	4,891.1	4,899.7	4,890.3	11.8	11.9	63.33	297.6	1,459.6	1,355.6	1,332.0	23.59	57.456		
5,000.0	4,990.8	4,999.7	4,990.0	12.0	12.1	63.30	304.5	1,458.8	1,352.0	1,327.9	24.10	56.089		
5,100.0	5,090.6	5,099.6	5,089.7	12.3	12.4	63.27	311.5	1,458.0	1,348.3	1,323.7	24.61	54.779		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - 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						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		
5,200.0	5,190.3	5,199.5	5,189.4	12.5	12.6	63.24	318.4	1,457.2	1,344.7	1,319.6	25.13	53.521		
5,300.0	5,290.1	5,299.5	5,289.1	12.8	12.9	63.21	325.3	1,456.4	1,341.1	1,315.5	25.64	52.314		
5,400.0	5,389.9	5,414.6	5,402.8	13.0	13.3	62.79	341.9	1,454.5	1,337.0	1,310.8	26.26	50.919		
5,500.0	5,489.6	5,524.1	5,505.1	13.3	13.8	61.42	380.0	1,450.2	1,332.0	1,305.0	27.05	49.249		
5,600.0	5,589.1	5,618.1	5,584.9	13.6	14.4	59.89	429.1	1,444.6	1,326.3	1,298.4	27.89	47.560		
5,700.0	5,685.6	5,702.1	5,647.8	14.0	15.1	59.32	484.4	1,438.2	1,313.8	1,285.1	28.68	45.807		
5,800.0	5,775.3	5,778.8	5,696.7	14.5	15.8	59.63	543.1	1,431.5	1,293.8	1,264.3	29.48	43.885		
5,900.0	5,855.0	5,850.0	5,733.8	15.2	16.6	60.81	603.3	1,424.6	1,266.7	1,236.3	30.39	41.683		
6,000.0	5,921.9	5,916.6	5,760.8	16.1	17.4	62.90	663.8	1,417.7	1,233.3	1,201.7	31.61	39.012		
6,100.0	5,973.3	5,980.3	5,779.1	17.2	18.3	65.89	724.3	1,410.8	1,194.3	1,160.9	33.32	35.845		
6,200.0	6,007.4	6,041.8	5,789.7	18.5	19.1	69.81	784.5	1,403.9	1,150.6	1,115.0	35.59	32.332		
6,300.0	6,023.0	6,100.7	5,793.0	19.9	20.0	74.62	842.9	1,397.2	1,103.4	1,065.0	38.34	28.781		
6,400.0	6,024.0	6,158.4	5,793.0	21.3	20.8	76.33	900.3	1,391.5	1,056.0	1,015.0	41.03	25.737		
6,500.0	6,024.0	6,217.9	5,793.0	22.7	21.6	76.30	959.6	1,387.5	1,015.6	972.0	43.57	23.308		
6,600.0	6,024.0	6,280.2	5,793.0	24.1	22.5	76.24	1,021.9	1,385.2	982.8	936.6	46.17	21.289		
6,700.0	6,024.0	6,353.5	5,793.0	25.6	23.6	76.16	1,095.2	1,385.1	958.1	909.2	48.91	19.590		
6,800.0	6,024.0	6,439.1	5,793.0	27.1	24.9	76.06	1,180.8	1,386.7	940.3	888.4	51.89	18.120		
6,900.0	6,024.0	6,538.2	5,793.0	28.6	26.5	75.96	1,279.9	1,388.5	927.6	872.5	55.08	16.839		
7,000.0	6,024.0	6,637.9	5,793.0	30.1	28.2	75.90	1,379.5	1,390.4	919.9	861.7	58.24	15.796		
7,100.0	6,024.0	6,737.8	5,793.0	31.7	29.9	75.88	1,479.5	1,392.2	917.3	856.0	61.31	14.961		
7,101.9	6,024.0	6,739.8	5,793.0	31.7	29.9	75.88	1,481.4	1,392.2	917.3	856.0	61.30	14.965 CC		
7,200.0	6,024.0	6,837.8	5,793.0	33.2	31.6	75.90	1,579.4	1,394.0	918.8	854.3	64.49	14.247		
7,300.0	6,024.0	6,937.8	5,793.0	34.8	33.4	75.93	1,679.4	1,395.9	920.6	852.8	67.79	13.579		
7,400.0	6,024.0	7,037.8	5,793.0	36.4	35.1	75.95	1,779.4	1,397.7	922.3	851.2	71.14	12.965		
7,500.0	6,024.0	7,137.8	5,793.0	38.1	36.9	75.98	1,879.3	1,399.6	924.1	849.6	74.53	12.400		
7,600.0	6,024.0	7,237.8	5,793.0	39.7	38.7	76.01	1,979.3	1,401.4	925.9	848.0	77.95	11.879		
7,700.0	6,024.0	7,337.7	5,793.0	41.4	40.5	76.04	2,079.3	1,403.2	927.7	846.3	81.40	11.397		
7,800.0	6,024.0	7,437.7	5,793.0	43.1	42.3	76.06	2,179.2	1,405.1	929.5	844.6	84.87	10.951		
7,900.0	6,024.0	7,537.7	5,793.0	44.9	44.1	76.09	2,279.2	1,406.9	931.3	842.9	88.37	10.538		
8,000.0	6,024.0	7,637.7	5,793.0	46.6	46.0	76.12	2,379.2	1,408.7	933.0	841.2	91.89	10.154		
8,100.0	6,024.0	7,737.7	5,793.0	48.4	47.8	76.15	2,479.1	1,410.6	934.8	839.4	95.43	9.796		
8,200.0	6,024.0	7,837.7	5,793.0	50.1	49.7	76.17	2,579.1	1,412.4	936.6	837.6	98.98	9.463		
8,300.0	6,024.0	7,937.6	5,793.0	51.9	51.5	76.20	2,679.1	1,414.3	938.4	835.8	102.55	9.151		
8,400.0	6,024.0	8,037.6	5,793.0	53.7	53.4	76.23	2,779.0	1,416.1	940.2	834.0	106.13	8.859		
8,500.0	6,024.0	8,137.6	5,793.0	55.5	55.2	76.25	2,879.0	1,417.9	942.0	832.2	109.72	8.585		
8,600.0	6,024.0	8,237.6	5,793.0	57.3	57.1	76.28	2,979.0	1,419.8	943.7	830.4	113.32	8.328		
8,700.0	6,024.0	8,337.6	5,793.0	59.1	58.9	76.31	3,078.9	1,421.6	945.5	828.6	116.94	8.086		
8,800.0	6,024.0	8,437.6	5,793.0	60.9	60.8	76.33	3,178.9	1,423.5	947.3	826.8	120.56	7.858		
8,900.0	6,024.0	8,537.5	5,793.0	62.8	62.7	76.36	3,278.9	1,425.3	949.1	824.9	124.19	7.642		
9,000.0	6,024.0	8,637.5	5,793.0	64.6	64.6	76.38	3,378.8	1,427.1	950.9	823.1	127.83	7.439		
9,100.0	6,024.0	8,737.5	5,793.0	66.4	66.4	76.41	3,478.8	1,429.0	952.7	821.2	131.47	7.246		
9,200.0	6,024.0	8,837.5	5,793.0	68.3	68.3	76.44	3,578.8	1,430.8	954.5	819.3	135.12	7.064		
9,300.0	6,024.0	8,937.5	5,793.0	70.1	70.2	76.46	3,678.7	1,432.6	956.2	817.5	138.78	6.890		
9,400.0	6,024.0	9,037.5	5,793.0	72.0	72.1	76.49	3,778.7	1,434.5	958.0	815.6	142.44	6.726		
9,500.0	6,024.0	9,137.4	5,793.0	73.8	74.0	76.51	3,878.7	1,436.3	959.8	813.7	146.11	6.569		
9,600.0	6,024.0	9,237.4	5,793.0	75.7	75.8	76.54	3,978.6	1,438.2	961.6	811.8	149.78	6.420		
9,700.0	6,024.0	9,337.4	5,793.0	77.5	77.7	76.56	4,078.6	1,440.0	963.4	809.9	153.46	6.278		
9,800.0	6,024.0	9,437.4	5,793.0	79.4	79.6	76.59	4,178.6	1,441.8	965.2	808.0	157.14	6.142		
9,900.0	6,024.0	9,537.4	5,793.0	81.3	81.5	76.61	4,278.5	1,443.7	967.0	806.1	160.82	6.013		
10,000.0	6,024.0	9,637.4	5,793.0	83.1	83.4	76.64	4,378.5	1,445.5	968.7	804.2	164.51	5.889		
10,100.0	6,024.0	9,737.3	5,793.0	85.0	85.3	76.66	4,478.5	1,447.4	970.5	802.3	168.20	5.770		
10,200.0	6,024.0	9,837.3	5,793.0	86.9	87.2	76.69	4,578.4	1,449.2	972.3	800.4	171.90	5.656		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - 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
10,300.0	6,024.0	9,937.3	5,793.0	88.7	89.1	76.71	4,678.4	1,451.0	974.1	798.5	175.60	5.547	
10,400.0	6,024.0	10,037.3	5,793.0	90.6	91.0	76.74	4,778.4	1,452.9	975.9	796.6	179.30	5.443	
10,500.0	6,024.0	10,137.3	5,793.0	92.5	92.9	76.76	4,878.3	1,454.7	977.7	794.7	183.00	5.342	
10,600.0	6,024.0	10,237.3	5,793.0	94.4	94.8	76.79	4,978.3	1,456.5	979.5	792.8	186.71	5.246	
10,700.0	6,024.0	10,337.2	5,793.0	96.2	96.7	76.81	5,078.3	1,458.4	981.3	790.8	190.42	5.153	
10,800.0	6,024.0	10,437.2	5,793.0	98.1	98.6	76.84	5,178.2	1,460.2	983.0	788.9	194.13	5.064	
10,900.0	6,024.0	10,537.2	5,793.0	100.0	100.5	76.86	5,278.2	1,462.1	984.8	787.0	197.85	4.978	
11,000.0	6,024.0	10,637.2	5,793.0	101.9	102.4	76.89	5,378.2	1,463.9	986.6	785.1	201.56	4.895	
11,100.0	6,024.0	10,737.2	5,793.0	103.8	104.3	76.91	5,478.1	1,465.7	988.4	783.1	205.28	4.815	
11,200.0	6,024.0	10,837.2	5,793.0	105.7	106.2	76.93	5,578.1	1,467.6	990.2	781.2	209.00	4.738	
11,300.0	6,024.0	10,937.1	5,793.0	107.6	108.1	76.96	5,678.1	1,469.4	992.0	779.3	212.73	4.663	
11,400.0	6,024.0	11,037.1	5,793.0	109.5	110.0	76.98	5,778.0	1,471.3	993.8	777.3	216.45	4.591	
11,500.0	6,024.0	11,137.1	5,793.0	111.3	111.9	77.01	5,878.0	1,473.1	995.6	775.4	220.18	4.522	
11,600.0	6,024.0	11,237.1	5,793.0	113.2	113.8	77.03	5,978.0	1,474.9	997.4	773.4	223.91	4.454	
11,700.0	6,024.0	11,337.1	5,793.0	115.1	115.7	77.05	6,077.9	1,476.8	999.1	771.5	227.64	4.389	
11,800.0	6,024.0	11,437.1	5,793.0	117.0	117.6	77.08	6,177.9	1,478.6	1,000.9	769.6	231.37	4.326	
11,900.0	6,024.0	11,537.0	5,793.0	118.9	119.5	77.10	6,277.9	1,480.4	1,002.7	767.6	235.10	4.265	
12,000.0	6,024.0	11,637.0	5,793.0	120.8	121.4	77.12	6,377.8	1,482.3	1,004.5	765.7	238.83	4.206	
12,100.0	6,024.0	11,737.0	5,793.0	122.7	123.3	77.15	6,477.8	1,484.1	1,006.3	763.7	242.57	4.149	
12,200.0	6,024.0	11,837.0	5,793.0	124.6	125.2	77.17	6,577.8	1,486.0	1,008.1	761.8	246.31	4.093	
12,300.0	6,024.0	11,937.0	5,793.0	126.5	127.1	77.19	6,677.7	1,487.8	1,009.9	759.8	250.05	4.039	
12,400.0	6,024.0	12,037.0	5,793.0	128.4	129.0	77.22	6,777.7	1,489.6	1,011.7	757.9	253.78	3.986	
12,500.0	6,024.0	12,136.9	5,793.0	130.3	130.9	77.24	6,877.7	1,491.5	1,013.5	755.9	257.53	3.935	
12,600.0	6,024.0	12,236.9	5,793.0	132.2	132.8	77.26	6,977.6	1,493.3	1,015.3	754.0	261.27	3.886	
12,700.0	6,024.0	12,336.9	5,793.0	134.1	134.8	77.29	7,077.6	1,495.1	1,017.0	752.0	265.01	3.838	
12,800.0	6,024.0	12,436.9	5,793.0	136.0	136.7	77.31	7,177.6	1,497.0	1,018.8	750.1	268.76	3.791	
12,900.0	6,024.0	12,536.9	5,793.0	137.9	138.6	77.33	7,277.5	1,498.8	1,020.6	748.1	272.50	3.745	
13,000.0	6,024.0	12,636.9	5,793.0	139.8	140.5	77.35	7,377.5	1,500.7	1,022.4	746.2	276.25	3.701	
13,100.0	6,024.0	12,736.8	5,793.0	141.7	142.4	77.38	7,477.5	1,502.5	1,024.2	744.2	280.00	3.658	
13,200.0	6,024.0	12,836.8	5,793.0	143.6	144.3	77.40	7,577.4	1,504.3	1,026.0	742.3	283.75	3.616	
13,300.0	6,024.0	12,936.8	5,793.0	145.5	146.2	77.42	7,677.4	1,506.2	1,027.8	740.3	287.50	3.575	
13,400.0	6,024.0	13,036.8	5,793.0	147.4	148.1	77.44	7,777.4	1,508.0	1,029.6	738.3	291.25	3.535	
13,500.0	6,024.0	13,136.8	5,793.0	149.3	150.0	77.47	7,877.3	1,509.9	1,031.4	736.4	295.00	3.496	
13,600.0	6,024.0	13,236.8	5,793.0	151.2	151.9	77.49	7,977.3	1,511.7	1,033.2	734.4	298.75	3.458	
13,700.0	6,024.0	13,336.7	5,793.0	153.2	153.8	77.51	8,077.3	1,513.5	1,035.0	732.5	302.50	3.421	
13,800.0	6,024.0	13,436.7	5,793.0	155.1	155.7	77.53	8,177.2	1,515.4	1,036.8	730.5	306.26	3.385	
13,900.0	6,024.0	13,536.7	5,793.0	156.6	157.5	77.55	8,277.2	1,517.2	1,038.6	729.0	309.55	3.355	
13,909.0	6,024.0	13,545.7	5,793.0	156.8	157.7	77.56	8,286.2	1,517.4	1,038.7	728.9	309.83	3.353 ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - 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						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	91.87	-47.7	1,457.3	1,458.1					
100.0	100.0	92.8	92.8	0.1	0.1	91.87	-47.7	1,457.3	1,458.1	1,457.9	0.18	8,084.879		
200.0	200.0	192.8	192.8	0.3	0.3	91.87	-47.7	1,457.3	1,458.1	1,457.5	0.62	2,350.065		
300.0	300.0	292.8	292.8	0.5	0.5	91.87	-47.7	1,457.3	1,458.1	1,457.0	1.07	1,362.737		
400.0	400.0	392.8	392.8	0.8	0.8	91.87	-47.7	1,457.3	1,458.1	1,456.6	1.52	959.587		
500.0	500.0	492.8	492.8	1.0	1.0	91.87	-47.7	1,457.3	1,458.1	1,456.1	1.97	740.515		
600.0	600.0	592.8	592.8	1.2	1.2	91.87	-47.7	1,457.3	1,458.1	1,455.7	2.42	602.878		
700.0	700.0	692.8	692.8	1.4	1.4	91.87	-47.7	1,457.3	1,458.1	1,455.2	2.87	508.387		
800.0	800.0	792.8	792.8	1.7	1.7	91.87	-47.7	1,457.3	1,458.1	1,454.8	3.32	439.502		
900.0	900.0	892.8	892.8	1.9	1.9	91.87	-47.7	1,457.3	1,458.1	1,454.3	3.77	387.057		
1,000.0	1,000.0	992.8	992.8	2.1	2.1	91.87	-47.7	1,457.3	1,458.1	1,453.9	4.22	345.794		
1,100.0	1,100.0	1,092.8	1,092.8	2.3	2.3	91.87	-47.7	1,457.3	1,458.1	1,453.4	4.67	312.482		
1,200.0	1,200.0	1,183.6	1,183.6	2.6	2.5	67.77	-46.5	1,457.6	1,457.7	1,452.7	5.09	286.298		
1,300.0	1,299.8	1,273.8	1,273.7	2.8	2.7	67.81	-42.6	1,458.6	1,456.7	1,451.2	5.51	264.191		
1,400.0	1,399.6	1,370.9	1,370.6	3.0	3.0	67.80	-36.1	1,460.3	1,455.6	1,449.6	5.96	244.237		
1,500.0	1,499.4	1,470.9	1,470.3	3.2	3.2	67.78	-29.4	1,462.0	1,454.4	1,448.0	6.42	226.547		
1,600.0	1,599.1	1,570.9	1,570.1	3.5	3.4	67.77	-22.6	1,463.7	1,453.3	1,446.4	6.89	211.013		
1,700.0	1,698.9	1,670.9	1,669.8	3.7	3.7	67.76	-15.8	1,465.4	1,452.1	1,444.8	7.36	197.305		
1,800.0	1,798.6	1,770.9	1,769.6	4.0	3.9	67.74	-9.1	1,467.2	1,451.0	1,443.2	7.84	185.144		
1,900.0	1,898.4	1,870.9	1,869.3	4.2	4.1	67.73	-2.3	1,468.9	1,449.9	1,441.5	8.32	174.300		
2,000.0	1,998.1	1,970.9	1,969.1	4.4	4.4	67.71	4.4	1,470.6	1,448.7	1,439.9	8.80	164.583		
2,100.0	2,097.9	2,070.9	2,068.8	4.7	4.6	67.70	11.2	1,472.3	1,447.6	1,438.3	9.29	155.835		
2,200.0	2,197.6	2,170.9	2,168.6	4.9	4.9	67.68	17.9	1,474.1	1,446.4	1,436.7	9.78	147.924		
2,300.0	2,297.4	2,270.9	2,268.3	5.2	5.1	67.67	24.7	1,475.8	1,445.3	1,435.0	10.27	140.740		
2,400.0	2,397.2	2,370.8	2,368.1	5.4	5.4	67.66	31.5	1,477.5	1,444.2	1,433.4	10.76	134.191		
2,500.0	2,496.9	2,470.8	2,467.8	5.7	5.6	67.64	38.2	1,479.2	1,443.0	1,431.8	11.26	128.198		
2,600.0	2,596.7	2,570.8	2,567.6	5.9	5.9	67.63	45.0	1,481.0	1,441.9	1,430.1	11.75	122.696		
2,700.0	2,696.4	2,670.8	2,667.3	6.2	6.1	67.61	51.7	1,482.7	1,440.7	1,428.5	12.25	117.629		
2,800.0	2,796.2	2,770.8	2,767.1	6.4	6.4	67.60	58.5	1,484.4	1,439.6	1,426.9	12.75	112.947		
2,900.0	2,895.9	2,870.8	2,866.8	6.7	6.6	67.59	65.3	1,486.1	1,438.5	1,425.2	13.24	108.610		
3,000.0	2,895.7	2,870.8	2,866.6	6.9	6.9	67.57	72.0	1,487.8	1,437.3	1,423.6	13.74	104.582		
3,100.0	3,095.5	3,070.8	3,066.3	7.2	7.1	67.56	78.8	1,489.6	1,436.2	1,422.0	14.24	100.831		
3,200.0	3,195.2	3,170.8	3,166.1	7.4	7.4	67.54	85.5	1,491.3	1,435.1	1,420.3	14.74	97.331		
3,300.0	3,295.0	3,270.8	3,265.8	7.7	7.6	67.53	92.3	1,493.0	1,433.9	1,418.7	15.25	94.056		
3,400.0	3,394.7	3,370.8	3,365.6	7.9	7.9	67.51	99.1	1,494.7	1,432.8	1,417.0	15.75	90.987		
3,500.0	3,494.5	3,470.8	3,465.3	8.2	8.1	67.50	105.8	1,496.5	1,431.6	1,415.4	16.25	88.105		
3,600.0	3,594.2	3,570.8	3,565.1	8.4	8.4	67.48	112.6	1,498.2	1,430.5	1,413.8	16.75	85.394		
3,700.0	3,694.0	3,670.8	3,664.8	8.7	8.6	67.47	119.3	1,499.9	1,429.4	1,412.1	17.25	82.838		
3,800.0	3,793.7	3,770.7	3,764.6	9.0	8.9	67.46	126.1	1,501.6	1,428.2	1,410.5	17.76	80.426		
3,900.0	3,893.5	3,870.7	3,864.3	9.2	9.1	67.44	132.8	1,503.4	1,427.1	1,408.8	18.26	78.145		
4,000.0	3,993.3	3,970.7	3,964.1	9.5	9.4	67.43	139.6	1,505.1	1,426.0	1,407.2	18.77	75.986		
4,100.0	4,093.0	4,070.7	4,063.8	9.7	9.6	67.41	146.4	1,506.8	1,424.8	1,405.5	19.27	73.938		
4,200.0	4,192.8	4,170.7	4,163.6	10.0	9.9	67.40	153.1	1,508.5	1,423.7	1,403.9	19.78	71.994		
4,300.0	4,292.5	4,270.7	4,263.3	10.2	10.2	67.38	159.9	1,510.2	1,422.5	1,402.3	20.28	70.145		
4,400.0	4,392.3	4,370.7	4,363.1	10.5	10.4	67.37	166.6	1,512.0	1,421.4	1,400.6	20.78	68.386		
4,500.0	4,492.0	4,470.7	4,462.8	10.7	10.7	67.35	173.4	1,513.7	1,420.3	1,399.0	21.29	66.710		
4,600.0	4,591.8	4,570.7	4,562.6	11.0	10.9	67.34	180.2	1,515.4	1,419.1	1,397.3	21.80	65.110		
4,700.0	4,691.6	4,670.7	4,662.3	11.2	11.2	67.32	186.9	1,517.1	1,418.0	1,395.7	22.30	63.583		
4,800.0	4,791.3	4,770.7	4,762.1	11.5	11.4	67.31	193.7	1,518.9	1,416.9	1,394.0	22.81	62.123		
4,900.0	4,891.1	4,870.7	4,861.8	11.8	11.7	67.29	200.4	1,520.6	1,415.7	1,392.4	23.31	60.725		
5,000.0	4,990.8	4,970.7	4,961.6	12.0	11.9	67.28	207.2	1,522.3	1,414.6	1,390.8	23.82	59.387		
5,100.0	5,090.6	5,070.7	5,061.3	12.3	12.2	67.26	214.0	1,524.0	1,413.4	1,389.1	24.33	58.104		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: O-ISCWSA 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		
5,200.0	5,190.3	5,170.6	5,161.1	12.5	12.4	67.25	220.7	1,525.8	1,412.3	1,387.5	24.83	56.873		
5,300.0	5,290.1	5,270.6	5,260.8	12.8	12.7	67.23	227.5	1,527.5	1,411.2	1,385.8	25.34	55.691		
5,400.0	5,389.9	5,370.6	5,360.6	13.0	13.0	67.22	234.2	1,529.2	1,410.0	1,384.2	25.85	54.555		
5,478.3	5,467.9	5,431.7	5,421.4	13.2	13.1	67.18	239.1	1,530.4	1,409.4	1,383.2	26.21	53.781		
5,500.0	5,489.6	5,450.0	5,439.5	13.3	13.2	67.13	241.6	1,531.1	1,409.5	1,383.2	26.31	53.569		
5,600.0	5,589.1	5,500.0	5,488.4	13.6	13.3	66.84	251.5	1,533.6	1,410.6	1,383.9	26.72	52.800		
5,700.0	5,685.6	5,567.0	5,552.0	14.0	13.6	66.90	271.9	1,538.8	1,407.9	1,380.7	27.24	51.692		
5,800.0	5,775.3	5,627.4	5,606.6	14.5	14.0	67.62	296.9	1,545.2	1,400.5	1,372.7	27.87	50.260		
5,900.0	5,855.0	5,687.8	5,657.8	15.2	14.4	68.98	327.8	1,553.1	1,388.6	1,359.9	28.75	48.302		
6,000.0	5,921.9	5,750.0	5,706.3	16.1	14.8	70.97	365.5	1,562.7	1,372.7	1,342.7	30.03	45.713		
6,100.0	5,973.3	5,809.2	5,747.9	17.2	15.3	73.52	406.3	1,573.1	1,353.4	1,321.7	31.75	42.628		
6,200.0	6,007.4	5,870.6	5,785.7	18.5	15.9	76.62	453.2	1,585.0	1,331.6	1,297.7	33.93	39.249		
6,300.0	6,023.0	5,932.9	5,818.0	19.9	16.6	80.16	504.8	1,598.2	1,308.3	1,271.8	36.43	35.913		
6,400.0	6,024.0	6,000.0	5,845.3	21.3	17.4	82.20	564.1	1,613.3	1,286.4	1,247.4	38.97	33.007		
6,500.0	6,024.0	6,069.8	5,865.2	22.7	18.3	83.11	628.9	1,629.8	1,271.8	1,230.3	41.43	30.697		
6,600.0	6,024.0	6,150.0	5,876.8	24.1	19.4	83.64	705.7	1,649.4	1,264.4	1,220.4	44.02	28.722		
6,700.0	6,024.0	6,334.0	5,878.0	25.6	21.9	83.67	885.2	1,689.2	1,261.7	1,213.8	47.89	26.348		
6,800.0	6,024.0	6,621.5	5,878.0	27.1	26.1	83.55	1,171.1	1,716.9	1,251.2	1,197.7	53.55	23.368		
6,900.0	6,024.0	6,724.2	5,878.0	28.6	27.7	83.53	1,273.8	1,718.8	1,238.2	1,181.7	56.54	21.899		
7,000.0	6,024.0	6,823.9	5,878.0	30.1	29.3	83.51	1,373.5	1,720.6	1,230.4	1,171.0	59.43	20.703		
7,100.0	6,024.0	6,923.8	5,878.0	31.7	31.0	83.51	1,473.4	1,722.4	1,227.8	1,165.5	62.23	19.731		
7,102.0	6,024.0	6,925.8	5,878.0	31.7	31.0	83.51	1,475.4	1,722.5	1,227.8	1,165.6	62.21	19.737 CC		
7,200.0	6,024.0	7,023.8	5,878.0	33.2	32.7	83.51	1,573.4	1,724.3	1,229.3	1,163.9	65.32	18.820		
7,300.0	6,024.0	7,123.8	5,878.0	34.8	34.4	83.52	1,673.3	1,726.1	1,231.1	1,162.4	68.65	17.932		
7,400.0	6,024.0	7,223.8	5,878.0	36.4	36.1	83.53	1,773.3	1,727.9	1,232.9	1,160.9	72.04	17.114		
7,500.0	6,024.0	7,323.8	5,878.0	38.1	37.9	83.54	1,873.3	1,729.8	1,234.7	1,159.3	75.47	16.362		
7,600.0	6,024.0	7,423.8	5,878.0	39.7	39.6	83.55	1,973.2	1,731.6	1,236.6	1,157.6	78.93	15.667		
7,700.0	6,024.0	7,523.8	5,878.0	41.4	41.4	83.56	2,073.2	1,733.5	1,238.4	1,156.0	82.42	15.025		
7,800.0	6,024.0	7,623.7	5,878.0	43.1	43.2	83.57	2,173.2	1,735.3	1,240.2	1,154.3	85.94	14.431		
7,900.0	6,024.0	7,723.7	5,878.0	44.9	45.0	83.58	2,273.1	1,737.1	1,242.0	1,152.5	89.49	13.880		
8,000.0	6,024.0	7,823.7	5,878.0	46.6	46.8	83.59	2,373.1	1,739.0	1,243.9	1,150.8	93.05	13.367		
8,100.0	6,024.0	7,923.7	5,878.0	48.4	48.7	83.60	2,473.1	1,740.8	1,245.7	1,149.0	96.64	12.890		
8,200.0	6,024.0	8,023.7	5,878.0	50.1	50.5	83.61	2,573.0	1,742.7	1,247.5	1,147.3	100.24	12.446		
8,300.0	6,024.0	8,123.7	5,878.0	51.9	52.3	83.62	2,673.0	1,744.5	1,249.3	1,145.5	103.85	12.030		
8,400.0	6,024.0	8,223.6	5,878.0	53.7	54.1	83.63	2,773.0	1,746.3	1,251.2	1,143.7	107.48	11.640		
8,500.0	6,024.0	8,323.6	5,878.0	55.5	56.0	83.64	2,872.9	1,748.2	1,253.0	1,141.9	111.13	11.275		
8,600.0	6,024.0	8,423.6	5,878.0	57.3	57.8	83.65	2,972.9	1,750.0	1,254.8	1,140.0	114.78	10.932		
8,700.0	6,024.0	8,523.6	5,878.0	59.1	59.7	83.66	3,072.9	1,751.8	1,256.6	1,138.2	118.44	10.609		
8,800.0	6,024.0	8,623.6	5,878.0	60.9	61.5	83.67	3,172.8	1,753.7	1,258.5	1,136.3	122.12	10.305		
8,900.0	6,024.0	8,723.5	5,878.0	62.8	63.4	83.67	3,272.8	1,755.5	1,260.3	1,134.5	125.80	10.018		
9,000.0	6,024.0	8,823.5	5,878.0	64.6	65.3	83.68	3,372.8	1,757.4	1,262.1	1,132.6	129.49	9.747		
9,100.0	6,024.0	8,923.5	5,878.0	66.4	67.1	83.69	3,472.7	1,759.2	1,263.9	1,130.7	133.18	9.490		
9,200.0	6,024.0	9,023.5	5,878.0	68.3	69.0	83.70	3,572.7	1,761.0	1,265.8	1,128.9	136.88	9.247		
9,300.0	6,024.0	9,123.5	5,878.0	70.1	70.9	83.71	3,672.7	1,762.9	1,267.6	1,127.0	140.59	9.016		
9,400.0	6,024.0	9,223.5	5,878.0	72.0	72.8	83.72	3,772.6	1,764.7	1,269.4	1,125.1	144.31	8.797		
9,500.0	6,024.0	9,323.4	5,878.0	73.8	74.6	83.73	3,872.6	1,766.5	1,271.2	1,123.2	148.02	8.588		
9,600.0	6,024.0	9,423.4	5,878.0	75.7	76.5	83.74	3,972.6	1,768.4	1,273.1	1,121.3	151.75	8.389		
9,700.0	6,024.0	9,523.4	5,878.0	77.5	78.4	83.75	4,072.5	1,770.2	1,274.9	1,119.4	155.48	8.200		
9,800.0	6,024.0	9,623.4	5,878.0	79.4	80.3	83.76	4,172.5	1,772.1	1,276.7	1,117.5	159.21	8.019		
9,900.0	6,024.0	9,723.4	5,878.0	81.3	82.2	83.77	4,272.5	1,773.9	1,278.5	1,115.6	162.94	7.846		
10,000.0	6,024.0	9,823.4	5,878.0	83.1	84.0	83.77	4,372.4	1,775.7	1,280.4	1,113.7	166.68	7.681		
10,100.0	6,024.0	9,923.3	5,878.0	85.0	85.9	83.78	4,472.4	1,777.6	1,282.2	1,111.8	170.42	7.523		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - 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							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty	Separation Factor			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	Axis			
10,200.0	6,024.0	10,023.3	5,878.0	86.9	87.8	83.79	4,572.4	1,779.4	1,284.0	1,109.8	174.17	7.372		
10,300.0	6,024.0	10,123.3	5,878.0	88.7	89.7	83.80	4,672.3	1,781.2	1,285.8	1,107.9	177.92	7.227		
10,400.0	6,024.0	10,223.3	5,878.0	90.6	91.6	83.81	4,772.3	1,783.1	1,287.7	1,106.0	181.67	7.088		
10,500.0	6,024.0	10,323.3	5,878.0	92.5	93.5	83.82	4,872.3	1,784.9	1,289.5	1,104.1	185.42	6.954		
10,600.0	6,024.0	10,423.3	5,878.0	94.4	95.4	83.83	4,972.2	1,786.8	1,291.3	1,102.1	189.18	6.826		
10,700.0	6,024.0	10,523.2	5,878.0	96.2	97.3	83.84	5,072.2	1,788.6	1,293.1	1,100.2	192.94	6.702		
10,800.0	6,024.0	10,623.2	5,878.0	98.1	99.2	83.85	5,172.2	1,790.4	1,295.0	1,098.3	196.70	6.583		
10,900.0	6,024.0	10,723.2	5,878.0	100.0	101.1	83.85	5,272.1	1,792.3	1,296.8	1,096.3	200.46	6.469		
11,000.0	6,024.0	10,823.2	5,878.0	101.9	103.0	83.86	5,372.1	1,794.1	1,298.6	1,094.4	204.22	6.359		
11,100.0	6,024.0	10,923.2	5,878.0	103.8	104.8	83.87	5,472.1	1,796.0	1,300.4	1,092.4	207.99	6.252		
11,200.0	6,024.0	11,023.2	5,878.0	105.7	106.7	83.88	5,572.0	1,797.8	1,302.3	1,090.5	211.76	6.150		
11,300.0	6,024.0	11,123.1	5,878.0	107.6	108.6	83.89	5,672.0	1,799.6	1,304.1	1,088.6	215.53	6.051		
11,400.0	6,024.0	11,223.1	5,878.0	109.5	110.5	83.90	5,772.0	1,801.5	1,305.9	1,086.6	219.30	5.955		
11,500.0	6,024.0	11,323.1	5,878.0	111.3	112.4	83.91	5,871.9	1,803.3	1,307.7	1,084.7	223.07	5.862		
11,600.0	6,024.0	11,423.1	5,878.0	113.2	114.3	83.91	5,971.9	1,805.1	1,309.6	1,082.7	226.85	5.773		
11,700.0	6,024.0	11,523.1	5,878.0	115.1	116.2	83.92	6,071.9	1,807.0	1,311.4	1,080.8	230.62	5.686		
11,800.0	6,024.0	11,623.1	5,878.0	117.0	118.1	83.93	6,171.8	1,808.8	1,313.2	1,078.8	234.40	5.602		
11,900.0	6,024.0	11,723.0	5,878.0	118.9	120.0	83.94	6,271.8	1,810.7	1,315.0	1,076.9	238.18	5.521		
12,000.0	6,024.0	11,823.0	5,878.0	120.8	121.9	83.95	6,371.8	1,812.5	1,316.9	1,074.9	241.96	5.443		
12,100.0	6,024.0	11,923.0	5,878.0	122.7	123.8	83.96	6,471.7	1,814.3	1,318.7	1,073.0	245.74	5.366		
12,200.0	6,024.0	12,023.0	5,878.0	124.6	125.8	83.97	6,571.7	1,816.2	1,320.5	1,071.0	249.52	5.292		
12,300.0	6,024.0	12,123.0	5,878.0	126.5	127.7	83.97	6,671.7	1,818.0	1,322.3	1,069.0	253.30	5.220		
12,400.0	6,024.0	12,223.0	5,878.0	128.4	129.6	83.98	6,771.6	1,819.8	1,324.2	1,067.1	257.08	5.151		
12,500.0	6,024.0	12,322.9	5,878.0	130.3	131.5	83.99	6,871.6	1,821.7	1,326.0	1,065.1	260.87	5.083		
12,600.0	6,024.0	12,422.9	5,878.0	132.2	133.4	84.00	6,971.6	1,823.5	1,327.8	1,063.2	264.65	5.017		
12,700.0	6,024.0	12,522.9	5,878.0	134.1	135.3	84.01	7,071.5	1,825.4	1,329.7	1,061.2	268.44	4.953		
12,800.0	6,024.0	12,622.9	5,878.0	136.0	137.2	84.02	7,171.5	1,827.2	1,331.5	1,059.2	272.23	4.891		
12,900.0	6,024.0	12,722.9	5,878.0	137.9	139.1	84.02	7,271.5	1,829.0	1,333.3	1,057.3	276.02	4.831		
13,000.0	6,024.0	12,822.9	5,878.0	139.8	141.0	84.03	7,371.4	1,830.9	1,335.1	1,055.3	279.80	4.772		
13,100.0	6,024.0	12,922.8	5,878.0	141.7	142.9	84.04	7,471.4	1,832.7	1,337.0	1,053.4	283.59	4.714		
13,200.0	6,024.0	13,022.8	5,878.0	143.6	144.8	84.05	7,571.4	1,834.6	1,338.8	1,051.4	287.38	4.659		
13,300.0	6,024.0	13,122.8	5,878.0	145.5	146.7	84.06	7,671.3	1,836.4	1,340.6	1,049.4	291.17	4.604		
13,400.0	6,024.0	13,222.8	5,878.0	147.4	148.6	84.06	7,771.3	1,838.2	1,342.4	1,047.5	294.97	4.551		
13,500.0	6,024.0	13,322.8	5,878.0	149.3	150.5	84.07	7,871.3	1,840.1	1,344.3	1,045.5	298.76	4.499		
13,600.0	6,024.0	13,422.8	5,878.0	151.2	152.4	84.08	7,971.2	1,841.9	1,346.1	1,043.5	302.55	4.449		
13,700.0	6,024.0	13,522.7	5,878.0	153.2	154.3	84.09	8,071.2	1,843.7	1,347.9	1,041.6	306.34	4.400		
13,800.0	6,024.0	13,622.7	5,878.0	155.1	156.2	84.10	8,171.2	1,845.6	1,349.7	1,039.6	310.14	4.352		
13,900.0	6,024.0	13,722.7	5,878.0	156.6	158.2	84.10	8,271.1	1,847.4	1,351.6	1,038.0	313.59	4.310		
13,909.0	6,024.0	13,731.7	5,878.0	156.8	158.3	84.11	8,280.1	1,847.6	1,351.7	1,037.8	313.90	4.306 ES, SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA 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	-90.64	-1.1	-98.5	98.5					
100.0	100.0	100.0	100.0	0.1	0.1	-90.64	-1.1	-98.5	98.5	98.3	0.19	528.196		
200.0	200.0	200.0	200.0	0.3	0.3	-90.64	-1.1	-98.5	98.5	97.9	0.64	154.900		
300.0	300.0	300.0	300.0	0.5	0.5	-90.64	-1.1	-98.5	98.5	97.4	1.09	90.758		
400.0	400.0	400.0	400.0	0.8	0.8	-90.64	-1.1	-98.5	98.5	97.0	1.54	64.181		
466.7	466.7	466.7	466.7	0.9	0.9	-90.64	-1.1	-98.5	98.5	96.7	1.83	53.698 CC		
500.0	500.0	500.0	500.0	1.0	1.0	-90.64	-1.1	-98.5	98.5	96.5	1.98	49.644 ES		
600.0	600.0	598.9	598.9	1.2	1.2	-89.70	0.5	-99.1	99.1	96.7	2.43	40.769		
700.0	700.0	697.5	697.4	1.4	1.4	-86.97	5.3	-100.8	100.9	98.1	2.88	35.065		
800.0	800.0	797.2	796.8	1.7	1.7	-83.41	11.9	-103.0	103.8	100.4	3.34	31.102		
900.0	900.0	897.0	896.4	1.9	1.9	-80.05	18.5	-105.3	107.0	103.2	3.80	28.155		
1,000.0	1,000.0	996.8	995.9	2.1	2.2	-76.90	25.0	-107.6	110.6	106.3	4.27	25.911		
1,100.0	1,100.0	1,096.5	1,095.4	2.3	2.4	-73.95	31.6	-109.9	114.5	109.7	4.74	24.167		
1,200.0	1,200.0	1,196.3	1,195.0	2.6	2.6	-96.07	38.2	-112.2	118.8	113.6	5.18	22.951		
1,300.0	1,299.8	1,296.2	1,294.6	2.8	2.9	-95.81	44.8	-114.5	123.6	117.9	5.64	21.916		
1,400.0	1,399.6	1,396.1	1,394.2	3.0	3.2	-96.44	51.4	-116.8	128.5	122.4	6.11	21.045		
1,500.0	1,499.4	1,496.0	1,493.9	3.2	3.4	-97.01	57.9	-119.1	133.5	126.9	6.58	20.284		
1,600.0	1,599.1	1,595.8	1,593.5	3.5	3.7	-97.55	64.5	-121.4	138.5	131.4	7.06	19.615		
1,700.0	1,698.9	1,695.7	1,693.1	3.7	3.9	-98.05	71.1	-123.6	143.5	136.0	7.54	19.023		
1,800.0	1,798.6	1,795.6	1,792.7	4.0	4.2	-98.52	77.7	-125.9	148.5	140.5	8.03	18.497		
1,900.0	1,898.4	1,895.4	1,892.3	4.2	4.4	-98.95	84.3	-128.2	153.5	145.0	8.52	18.028		
2,000.0	1,998.1	1,995.3	1,992.0	4.4	4.7	-99.36	90.8	-130.5	158.5	149.5	9.01	17.605		
2,100.0	2,097.9	2,095.2	2,091.6	4.7	4.9	-99.74	97.4	-132.8	163.6	154.1	9.50	17.225		
2,200.0	2,197.6	2,195.0	2,191.2	4.9	5.2	-100.10	104.0	-135.1	168.6	158.6	9.99	16.880		
2,300.0	2,297.4	2,294.9	2,290.8	5.2	5.4	-100.44	110.6	-137.4	173.7	163.2	10.48	16.565		
2,400.0	2,397.2	2,394.8	2,390.5	5.4	5.7	-100.76	117.1	-139.7	178.7	167.7	10.98	16.279		
2,500.0	2,496.9	2,494.6	2,490.1	5.7	5.9	-101.06	123.7	-142.0	183.8	172.3	11.47	16.016		
2,600.0	2,596.7	2,594.5	2,589.7	5.9	6.2	-101.35	130.3	-144.3	188.8	176.9	11.97	15.774		
2,700.0	2,696.4	2,694.4	2,689.3	6.2	6.5	-101.62	136.9	-146.5	193.9	181.4	12.47	15.551		
2,800.0	2,796.2	2,794.2	2,789.0	6.4	6.7	-101.87	143.5	-148.8	199.0	186.0	12.97	15.344		
2,900.0	2,895.9	2,894.1	2,888.6	6.7	7.0	-102.12	150.0	-151.1	204.0	190.6	13.47	15.153		
3,000.0	2,995.7	2,994.0	2,988.2	6.9	7.2	-102.35	156.6	-153.4	209.1	195.2	13.97	14.975		
3,100.0	3,095.5	3,093.8	3,087.8	7.2	7.5	-102.57	163.2	-155.7	214.2	199.7	14.46	14.809		
3,200.0	3,195.2	3,193.7	3,187.5	7.4	7.7	-102.78	169.8	-158.0	219.3	204.3	14.96	14.654		
3,300.0	3,295.0	3,293.6	3,287.1	7.7	8.0	-102.98	176.4	-160.3	224.4	208.9	15.47	14.508		
3,400.0	3,394.7	3,393.4	3,386.7	7.9	8.2	-103.18	182.9	-162.6	229.5	213.5	15.97	14.372		
3,500.0	3,494.5	3,493.3	3,486.3	8.2	8.5	-103.36	189.5	-164.9	234.6	218.1	16.47	14.244		
3,600.0	3,594.2	3,593.2	3,586.0	8.4	8.8	-103.54	196.1	-167.2	239.7	222.7	16.97	14.124		
3,700.0	3,694.0	3,693.0	3,685.6	8.7	9.0	-103.71	202.7	-169.4	244.8	227.3	17.47	14.010		
3,800.0	3,793.7	3,792.9	3,785.2	9.0	9.3	-103.87	209.3	-171.7	249.9	231.9	17.97	13.902		
3,900.0	3,893.5	3,892.8	3,884.8	9.2	9.5	-104.03	215.8	-174.0	255.0	236.5	18.47	13.801		
4,000.0	3,993.3	3,992.6	3,984.5	9.5	9.8	-104.17	222.4	-176.3	260.1	241.1	18.98	13.704		
4,100.0	4,093.0	4,092.5	4,084.1	9.7	10.0	-104.32	229.0	-178.6	265.2	245.7	19.48	13.613		
4,200.0	4,192.8	4,192.4	4,183.7	10.0	10.3	-104.46	235.6	-180.9	270.3	250.3	19.98	13.526		
4,300.0	4,292.5	4,292.2	4,283.3	10.2	10.6	-104.59	242.2	-183.2	275.4	254.9	20.48	13.444		
4,400.0	4,392.3	4,392.1	4,383.0	10.5	10.8	-104.72	248.7	-185.5	280.5	259.5	20.99	13.365		
4,500.0	4,492.0	4,492.0	4,482.6	10.7	11.1	-104.84	255.3	-187.8	285.6	264.1	21.49	13.290		
4,600.0	4,591.8	4,591.8	4,582.2	11.0	11.3	-104.96	261.9	-190.0	290.7	268.7	21.99	13.219		
4,700.0	4,691.6	4,691.7	4,681.8	11.2	11.6	-105.08	268.5	-192.3	295.8	273.3	22.49	13.150		
4,800.0	4,791.3	4,791.6	4,781.5	11.5	11.8	-105.19	275.1	-194.6	300.9	277.9	23.00	13.085		
4,900.0	4,891.1	4,891.4	4,881.1	11.8	12.1	-105.30	281.6	-196.9	306.0	282.5	23.50	13.022		
5,000.0	4,990.8	4,991.3	4,980.7	12.0	12.3	-105.40	288.2	-199.2	311.2	287.2	24.00	12.962		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2												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
5,100.0	5,090.6	5,091.2	5,080.3	12.3	12.6	-105.50	294.8	-201.5	316.3	291.8	24.51	12.905	
5,200.0	5,190.3	5,191.1	5,179.9	12.5	12.9	-105.60	301.4	-203.8	321.4	296.4	25.01	12.850	
5,300.0	5,290.1	5,290.9	5,279.6	12.8	13.1	-105.69	307.9	-206.1	326.5	301.0	25.52	12.797	
5,400.0	5,389.9	5,390.8	5,379.2	13.0	13.4	-105.79	314.5	-208.4	331.6	305.6	26.02	12.746	
5,500.0	5,489.6	5,489.9	5,469.0	13.3	13.6	-105.71	321.4	-210.8	337.4	310.9	26.51	12.727	
5,600.0	5,589.1	5,556.2	5,542.7	13.6	13.9	-103.79	335.9	-215.8	349.5	322.5	26.99	12.947	
5,700.0	5,685.6	5,628.8	5,610.8	14.0	14.3	-100.71	359.2	-223.9	372.3	344.7	27.60	13.489	
5,800.0	5,775.3	5,700.0	5,673.8	14.5	14.7	-97.32	390.5	-234.8	405.1	376.7	28.42	14.256	
5,900.0	5,855.0	5,762.8	5,725.2	15.2	15.2	-93.52	424.6	-246.7	446.1	416.7	29.43	15.156	
6,000.0	5,921.9	5,823.9	5,770.6	16.1	15.7	-89.38	463.2	-260.1	493.6	463.0	30.65	16.104	
6,100.0	5,973.3	5,881.4	5,808.6	17.2	16.2	-84.92	503.8	-274.3	546.1	514.1	31.99	17.072	
6,200.0	6,007.4	5,935.6	5,840.0	18.5	16.8	-80.23	545.6	-288.8	602.1	568.7	33.35	18.055	
6,300.0	6,023.0	5,987.2	5,865.4	19.9	17.5	-75.46	588.0	-303.5	660.2	625.5	34.66	19.044	
6,400.0	6,024.0	6,038.9	5,886.3	21.3	18.1	-76.28	632.5	-319.0	719.1	682.4	36.74	19.571	
6,500.0	6,024.0	6,100.0	5,904.9	22.7	19.0	-79.19	687.5	-338.2	777.7	738.6	39.18	19.849	
6,600.0	6,024.0	6,161.2	5,916.5	24.1	19.9	-81.06	744.3	-357.9	834.7	793.1	41.61	20.063	
6,700.0	6,024.0	6,230.5	5,921.0	25.6	20.9	-82.15	809.5	-380.6	889.2	845.1	44.14	20.147	
6,800.0	6,024.0	6,398.3	5,921.0	27.1	23.4	-83.08	970.2	-428.7	936.2	888.3	47.93	19.532	
6,900.0	6,024.0	6,585.0	5,921.0	28.6	26.3	-83.67	1,153.2	-465.4	970.1	917.9	52.29	18.555	
7,000.0	6,024.0	6,785.4	5,921.0	30.1	29.4	-83.98	1,352.5	-484.7	989.3	932.3	57.07	17.335	
7,100.0	6,024.0	6,928.7	5,921.0	31.7	31.7	-84.05	1,495.8	-486.6	994.7	933.7	61.00	16.306	
7,200.0	6,024.0	7,028.7	5,921.0	33.2	33.4	-84.06	1,595.8	-486.6	995.0	930.8	64.27	15.482	
7,300.0	6,024.0	7,128.7	5,921.0	34.8	35.0	-84.06	1,695.8	-486.6	995.0	927.4	67.61	14.717	
7,400.0	6,024.0	7,228.7	5,921.0	36.4	36.7	-84.06	1,795.8	-486.6	995.0	924.0	71.00	14.015	
7,500.0	6,024.0	7,328.7	5,921.0	38.1	38.5	-84.06	1,895.8	-486.6	995.0	920.6	74.43	13.369	
7,600.0	6,024.0	7,428.7	5,921.0	39.7	40.2	-84.06	1,995.8	-486.6	995.0	917.1	77.89	12.774	
7,700.0	6,024.0	7,528.7	5,921.0	41.4	42.0	-84.06	2,095.8	-486.6	995.0	913.6	81.39	12.225	
7,800.0	6,024.0	7,628.7	5,921.0	43.1	43.7	-84.06	2,195.8	-486.6	995.0	910.1	84.92	11.717	
7,900.0	6,024.0	7,728.7	5,921.0	44.9	45.5	-84.06	2,295.8	-486.6	995.0	906.6	88.47	11.247	
8,000.0	6,024.0	7,828.7	5,921.0	46.6	47.3	-84.06	2,395.8	-486.6	995.0	903.0	92.05	10.810	
8,100.0	6,024.0	7,928.7	5,921.0	48.4	49.1	-84.06	2,495.8	-486.6	995.1	899.4	95.64	10.404	
8,200.0	6,024.0	8,028.7	5,921.0	50.1	50.9	-84.06	2,595.8	-486.6	995.1	895.8	99.25	10.026	
8,300.0	6,024.0	8,128.7	5,921.0	51.9	52.7	-84.06	2,695.8	-486.6	995.1	892.2	102.88	9.672	
8,400.0	6,024.0	8,228.7	5,921.0	53.7	54.6	-84.06	2,795.8	-486.6	995.1	888.5	106.52	9.342	
8,500.0	6,024.0	8,328.7	5,921.0	55.5	56.4	-84.06	2,895.8	-486.6	995.1	884.9	110.17	9.032	
8,600.0	6,024.0	8,428.7	5,921.0	57.3	58.2	-84.06	2,995.8	-486.6	995.1	881.2	113.83	8.741	
8,700.0	6,024.0	8,528.7	5,921.0	59.1	60.1	-84.06	3,095.8	-486.6	995.1	877.6	117.51	8.468	
8,800.0	6,024.0	8,628.7	5,921.0	60.9	61.9	-84.06	3,195.8	-486.6	995.1	873.9	121.19	8.211	
8,900.0	6,024.0	8,728.7	5,921.0	62.8	63.8	-84.06	3,295.8	-486.6	995.1	870.2	124.88	7.968	
9,000.0	6,024.0	8,828.7	5,921.0	64.6	65.6	-84.06	3,395.8	-486.6	995.1	866.5	128.58	7.739	
9,100.0	6,024.0	8,928.7	5,921.0	66.4	67.5	-84.06	3,495.8	-486.6	995.1	862.8	132.29	7.522	
9,200.0	6,024.0	9,028.7	5,921.0	68.3	69.4	-84.06	3,595.8	-486.6	995.1	859.1	136.00	7.317	
9,300.0	6,024.0	9,128.7	5,921.0	70.1	71.2	-84.06	3,695.8	-486.6	995.1	855.4	139.72	7.122	
9,400.0	6,024.0	9,228.7	5,921.0	72.0	73.1	-84.06	3,795.8	-486.6	995.1	851.6	143.45	6.937	
9,500.0	6,024.0	9,328.7	5,921.0	73.8	75.0	-84.06	3,895.8	-486.6	995.1	847.9	147.18	6.761	
9,600.0	6,024.0	9,428.7	5,921.0	75.7	76.8	-84.06	3,995.8	-486.6	995.1	844.2	150.91	6.594	
9,700.0	6,024.0	9,528.7	5,921.0	77.5	78.7	-84.06	4,095.8	-486.6	995.1	840.4	154.65	6.434	
9,800.0	6,024.0	9,628.7	5,921.0	79.4	80.6	-84.06	4,195.8	-486.6	995.1	836.7	158.39	6.282	
9,900.0	6,024.0	9,728.7	5,921.0	81.3	82.5	-84.06	4,295.8	-486.6	995.1	833.0	162.14	6.137	
10,000.0	6,024.0	9,828.7	5,921.0	83.1	84.4	-84.06	4,395.8	-486.6	995.1	829.2	165.89	5.998	
10,100.0	6,024.0	9,928.7	5,921.0	85.0	86.2	-84.06	4,495.8	-486.6	995.1	825.5	169.65	5.866	
10,200.0	6,024.0	10,028.7	5,921.0	86.9	88.1	-84.06	4,595.8	-486.6	995.1	821.7	173.40	5.739	

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA 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
10,300.0	6,024.0	10,128.7	5,921.0	88.7	90.0	-84.06	4,695.8	-486.6	995.1	817.9	177.16	5.617	
10,400.0	6,024.0	10,228.7	5,921.0	90.6	91.9	-84.06	4,795.8	-486.6	995.1	814.2	180.93	5.500	
10,500.0	6,024.0	10,328.7	5,921.0	92.5	93.8	-84.06	4,895.8	-486.6	995.1	810.4	184.69	5.388	
10,600.0	6,024.0	10,428.7	5,921.0	94.4	95.7	-84.06	4,995.8	-486.6	995.1	806.7	188.46	5.280	
10,700.0	6,024.0	10,528.7	5,921.0	96.2	97.6	-84.06	5,095.8	-486.6	995.1	802.9	192.23	5.177	
10,800.0	6,024.0	10,628.7	5,921.0	98.1	99.5	-84.06	5,195.8	-486.6	995.1	799.1	196.00	5.077	
10,900.0	6,024.0	10,728.7	5,921.0	100.0	101.4	-84.06	5,295.8	-486.6	995.1	795.3	199.78	4.981	
11,000.0	6,024.0	10,828.7	5,921.0	101.9	103.3	-84.06	5,395.8	-486.6	995.1	791.6	203.55	4.889	
11,100.0	6,024.0	10,928.7	5,921.0	103.8	105.2	-84.06	5,495.8	-486.6	995.1	787.8	207.33	4.800	
11,200.0	6,024.0	11,028.7	5,921.0	105.7	107.1	-84.06	5,595.8	-486.6	995.1	784.0	211.11	4.714	
11,300.0	6,024.0	11,128.7	5,921.0	107.6	108.9	-84.06	5,695.8	-486.6	995.1	780.2	214.89	4.631	
11,400.0	6,024.0	11,228.7	5,921.0	109.5	110.8	-84.06	5,795.8	-486.6	995.1	776.5	218.67	4.551	
11,500.0	6,024.0	11,328.7	5,921.0	111.3	112.7	-84.06	5,895.8	-486.6	995.1	772.7	222.46	4.473	
11,600.0	6,024.0	11,428.7	5,921.0	113.2	114.6	-84.06	5,995.8	-486.6	995.1	768.9	226.24	4.399	
11,700.0	6,024.0	11,528.7	5,921.0	115.1	116.5	-84.06	6,095.8	-486.6	995.1	765.1	230.03	4.326	
11,800.0	6,024.0	11,628.7	5,921.0	117.0	118.5	-84.06	6,195.8	-486.6	995.1	761.3	233.82	4.256	
11,900.0	6,024.0	11,728.7	5,921.0	118.9	120.4	-84.06	6,295.8	-486.6	995.1	757.5	237.61	4.188	
12,000.0	6,024.0	11,828.7	5,921.0	120.8	122.3	-84.06	6,395.8	-486.6	995.1	753.8	241.40	4.122	
12,100.0	6,024.0	11,928.7	5,921.0	122.7	124.2	-84.06	6,495.8	-486.6	995.2	750.0	245.19	4.059	
12,200.0	6,024.0	12,028.7	5,921.0	124.6	126.1	-84.06	6,595.8	-486.6	995.2	746.2	248.98	3.997	
12,300.0	6,024.0	12,128.7	5,921.0	126.5	128.0	-84.06	6,695.8	-486.6	995.2	742.4	252.77	3.937	
12,400.0	6,024.0	12,228.7	5,921.0	128.4	129.9	-84.06	6,795.8	-486.6	995.2	738.6	256.57	3.879	
12,500.0	6,024.0	12,328.7	5,921.0	130.3	131.8	-84.06	6,895.8	-486.6	995.2	734.8	260.36	3.822	
12,600.0	6,024.0	12,428.7	5,921.0	132.2	133.7	-84.06	6,995.8	-486.6	995.2	731.0	264.16	3.767	
12,700.0	6,024.0	12,528.7	5,921.0	134.1	135.6	-84.06	7,095.8	-486.6	995.2	727.2	267.95	3.714	
12,800.0	6,024.0	12,628.7	5,921.0	136.0	137.5	-84.06	7,195.8	-486.6	995.2	723.4	271.75	3.662	
12,900.0	6,024.0	12,728.7	5,921.0	137.9	139.4	-84.06	7,295.8	-486.6	995.2	719.6	275.55	3.612	
13,000.0	6,024.0	12,828.7	5,921.0	139.8	141.3	-84.06	7,395.8	-486.6	995.2	715.8	279.35	3.562	
13,100.0	6,024.0	12,928.7	5,921.0	141.7	143.2	-84.06	7,495.8	-486.6	995.2	712.0	283.15	3.515	
13,200.0	6,024.0	13,028.7	5,921.0	143.6	145.1	-84.06	7,595.8	-486.6	995.2	708.2	286.95	3.468	
13,300.0	6,024.0	13,128.7	5,921.0	145.5	147.0	-84.06	7,695.8	-486.6	995.2	704.4	290.75	3.423	
13,400.0	6,024.0	13,228.7	5,921.0	147.4	148.9	-84.06	7,795.8	-486.6	995.2	700.6	294.55	3.379	
13,500.0	6,024.0	13,328.7	5,921.0	149.3	150.9	-84.06	7,895.8	-486.6	995.2	696.8	298.35	3.336	
13,600.0	6,024.0	13,428.7	5,921.0	151.2	152.8	-84.06	7,995.8	-486.6	995.2	693.0	302.16	3.294	
13,700.0	6,024.0	13,528.7	5,921.0	153.2	154.7	-84.06	8,095.8	-486.6	995.2	689.2	305.96	3.253	
13,800.0	6,024.0	13,628.7	5,921.0	155.1	156.6	-84.06	8,195.8	-486.6	995.2	685.4	309.76	3.213	
13,900.0	6,024.0	13,728.7	5,921.0	156.6	158.5	-84.06	8,295.8	-486.6	995.2	682.0	313.23	3.177	
13,909.0	6,024.0	13,737.7	5,921.0	156.8	158.7	-84.06	8,304.8	-486.6	995.2	681.7	313.54	3.174 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-66.1	66.1	66.0	0.19	354.582		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-66.1	66.1	65.5	0.64	103.985		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-66.1	66.1	65.1	1.09	60.926		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-66.1	66.1	64.6	1.54	43.085		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-66.1	66.1	64.2	1.98	33.326		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-66.1	66.1	63.7	2.43	27.172		
666.7	666.7	666.7	666.7	1.4	1.4	-90.00	0.0	-66.1	66.1	63.4	2.73	24.193 CC		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-66.1	66.1	63.3	2.88	22.936		
800.0	800.0	799.7	799.7	1.7	1.7	-88.51	1.7	-66.3	66.3	63.0	3.33	19.907 ES		
900.0	900.0	899.2	899.1	1.9	1.9	-84.11	6.9	-66.8	67.2	63.4	3.78	17.763		
1,000.0	1,000.0	999.0	998.6	2.1	2.1	-78.42	13.8	-67.5	68.9	64.6	4.24	16.260		
1,100.0	1,100.0	1,098.7	1,098.1	2.3	2.4	-73.06	20.7	-68.1	71.2	66.5	4.70	15.169		
1,200.0	1,200.0	1,198.6	1,197.7	2.6	2.6	-93.49	27.7	-68.8	74.3	69.1	5.15	14.415		
1,300.0	1,299.8	1,298.5	1,297.4	2.8	2.8	-92.65	34.6	-69.5	77.7	72.1	5.61	13.836		
1,400.0	1,399.6	1,398.5	1,397.1	3.0	3.1	-93.18	41.6	-70.1	81.2	75.1	6.08	13.345		
1,500.0	1,499.4	1,498.4	1,496.8	3.2	3.3	-93.66	48.5	-70.8	84.7	78.1	6.56	12.912		
1,600.0	1,599.1	1,598.3	1,596.5	3.5	3.6	-94.11	55.4	-71.5	88.2	81.1	7.04	12.531		
1,700.0	1,698.9	1,698.3	1,696.2	3.7	3.8	-94.52	62.4	-72.1	91.7	84.1	7.52	12.192		
1,800.0	1,798.6	1,798.2	1,795.9	4.0	4.1	-94.90	69.3	-72.8	95.2	87.2	8.00	11.890		
1,900.0	1,898.4	1,898.1	1,895.5	4.2	4.3	-95.26	76.3	-73.5	98.7	90.2	8.49	11.619		
2,000.0	1,998.1	1,998.1	1,995.2	4.4	4.6	-95.59	83.2	-74.1	102.2	93.2	8.98	11.375		
2,100.0	2,097.9	2,098.0	2,094.9	4.7	4.8	-95.89	90.1	-74.8	105.7	96.2	9.48	11.154		
2,200.0	2,197.6	2,197.9	2,194.6	4.9	5.1	-96.18	97.1	-75.5	109.2	99.3	9.97	10.954		
2,300.0	2,297.4	2,297.9	2,294.3	5.2	5.3	-96.45	104.0	-76.1	112.8	102.3	10.47	10.772		
2,400.0	2,397.2	2,397.8	2,394.0	5.4	5.6	-96.71	111.0	-76.8	116.3	105.3	10.97	10.605		
2,500.0	2,496.9	2,497.8	2,493.7	5.7	5.8	-96.94	117.9	-77.5	119.8	108.4	11.46	10.452		
2,600.0	2,596.7	2,597.7	2,593.4	5.9	6.1	-97.17	124.8	-78.1	123.3	111.4	11.96	10.311		
2,700.0	2,696.4	2,697.6	2,693.1	6.2	6.4	-97.38	131.8	-78.8	126.9	114.4	12.46	10.180		
2,800.0	2,796.2	2,797.6	2,792.8	6.4	6.6	-97.58	138.7	-79.4	130.4	117.5	12.96	10.060		
2,900.0	2,895.9	2,897.5	2,892.5	6.7	6.9	-97.77	145.6	-80.1	134.0	120.5	13.47	9.948		
3,000.0	2,995.7	2,997.4	2,992.2	6.9	7.1	-97.96	152.6	-80.8	137.5	123.5	13.97	9.843		
3,100.0	3,095.5	3,097.4	3,091.9	7.2	7.4	-98.13	159.5	-81.4	141.0	126.6	14.47	9.746		
3,200.0	3,195.2	3,197.3	3,191.6	7.4	7.6	-98.29	166.5	-82.1	144.6	129.6	14.97	9.655		
3,300.0	3,295.0	3,297.3	3,291.2	7.7	7.9	-98.45	173.4	-82.8	148.1	132.6	15.48	9.570		
3,400.0	3,394.7	3,397.2	3,390.9	7.9	8.1	-98.59	180.3	-83.4	151.7	135.7	15.98	9.490		
3,500.0	3,494.5	3,497.1	3,490.6	8.2	8.4	-98.74	187.3	-84.1	155.2	138.7	16.48	9.415		
3,600.0	3,594.2	3,597.1	3,590.3	8.4	8.6	-98.87	194.2	-84.8	158.7	141.8	16.99	9.344		
3,700.0	3,694.0	3,697.0	3,690.0	8.7	8.9	-99.00	201.2	-85.4	162.3	144.8	17.49	9.277		
3,800.0	3,793.7	3,796.9	3,789.7	9.0	9.2	-99.12	208.1	-86.1	165.8	147.8	18.00	9.214		
3,900.0	3,893.5	3,896.9	3,889.4	9.2	9.4	-99.24	215.0	-86.8	169.4	150.9	18.50	9.154		
4,000.0	3,993.3	3,996.8	3,989.1	9.5	9.7	-99.36	222.0	-87.4	172.9	153.9	19.01	9.097		
4,100.0	4,093.0	4,096.7	4,088.8	9.7	9.9	-99.46	228.9	-88.1	176.5	157.0	19.51	9.043		
4,200.0	4,192.8	4,196.7	4,188.5	10.0	10.2	-99.57	235.9	-88.8	180.0	160.0	20.02	8.992		
4,300.0	4,292.5	4,296.6	4,288.2	10.2	10.4	-99.67	242.8	-89.4	183.6	163.0	20.53	8.943		
4,400.0	4,392.3	4,396.6	4,387.9	10.5	10.7	-99.77	249.7	-90.1	187.1	166.1	21.03	8.897		
4,500.0	4,492.0	4,496.5	4,487.6	10.7	10.9	-99.86	256.7	-90.8	190.7	169.1	21.54	8.852		
4,600.0	4,591.8	4,596.4	4,587.3	11.0	11.2	-99.95	263.6	-91.4	194.2	172.2	22.04	8.810		
4,700.0	4,691.6	4,696.4	4,687.0	11.2	11.5	-100.04	270.6	-92.1	197.8	175.2	22.55	8.770		
4,800.0	4,791.3	4,796.3	4,786.6	11.5	11.7	-100.12	277.5	-92.8	201.3	178.3	23.06	8.731		
4,900.0	4,891.1	4,896.2	4,886.3	11.8	12.0	-100.20	284.4	-93.4	204.9	181.3	23.56	8.694		
5,000.0	4,990.8	4,996.2	4,986.0	12.0	12.2	-100.28	291.4	-94.1	208.4	184.4	24.07	8.659		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA 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		
5,100.0	5,090.6	5,096.1	5,085.7	12.3	12.5	-100.35	298.3	-94.8	212.0	187.4	24.58	8.624		
5,200.0	5,190.3	5,196.0	5,185.4	12.5	12.7	-100.43	305.3	-95.4	215.5	190.4	25.09	8.592		
5,300.0	5,290.1	5,296.0	5,285.1	12.8	13.0	-100.50	312.2	-96.1	219.1	193.5	25.59	8.560		
5,400.0	5,389.9	5,395.9	5,384.8	13.0	13.2	-100.57	319.1	-96.8	222.6	196.5	26.10	8.530		
5,500.0	5,489.6	5,495.9	5,484.5	13.3	13.5	-100.63	326.1	-97.4	226.2	199.6	26.61	8.501		
5,600.0	5,589.1	5,590.2	5,578.5	13.6	13.8	-100.56	334.1	-98.2	230.7	203.6	27.12	8.508		
5,700.0	5,685.6	5,677.0	5,663.0	14.0	14.1	-100.10	353.6	-100.1	242.8	215.1	27.79	8.740		
5,800.0	5,775.3	5,762.6	5,741.9	14.5	14.5	-99.23	386.3	-103.2	263.3	234.6	28.68	9.182		
5,900.0	5,855.0	5,846.4	5,813.0	15.2	15.1	-97.91	430.3	-107.4	291.4	261.6	29.84	9.765		
6,000.0	5,921.9	5,928.5	5,874.9	16.1	15.8	-96.11	483.9	-112.5	326.0	294.7	31.30	10.416		
6,100.0	5,973.3	6,009.1	5,926.7	17.2	16.5	-93.86	545.3	-118.4	366.1	333.0	33.06	11.074		
6,200.0	6,007.4	6,088.9	5,968.0	18.5	17.4	-91.24	613.1	-124.9	410.3	375.2	35.08	11.696		
6,300.0	6,023.0	6,168.9	5,998.5	19.9	18.4	-88.40	686.6	-132.0	457.3	420.0	37.30	12.262		
6,400.0	6,024.0	6,251.7	6,017.7	21.3	19.6	-89.20	766.8	-139.6	505.0	465.2	39.78	12.693		
6,500.0	6,024.0	6,344.2	6,024.0	22.7	20.9	-90.00	858.5	-148.4	548.8	506.3	42.47	12.921		
6,600.0	6,024.0	6,477.2	6,024.0	24.1	22.7	-90.00	991.2	-155.6	584.2	538.4	45.76	12.767		
6,700.0	6,024.0	6,585.6	6,024.0	25.6	24.3	-90.00	1,099.6	-156.0	609.6	560.7	48.88	12.471		
6,800.0	6,024.0	6,683.5	6,024.0	27.1	25.9	-90.00	1,197.6	-156.0	629.7	577.7	51.99	12.110		
6,900.0	6,024.0	6,782.4	6,024.0	28.6	27.5	-90.00	1,296.4	-156.0	644.6	589.4	55.14	11.690		
7,000.0	6,024.0	6,881.9	6,024.0	30.1	29.2	-90.00	1,395.9	-156.0	654.3	596.0	58.27	11.228		
7,100.0	6,024.0	6,981.8	6,024.0	31.7	30.9	-90.00	1,495.8	-156.0	658.8	597.4	61.35	10.737		
7,200.0	6,024.0	7,081.8	6,024.0	33.2	32.6	-90.00	1,595.8	-156.0	659.1	594.5	64.60	10.203		
7,300.0	6,024.0	7,181.8	6,024.0	34.8	34.4	-90.00	1,695.8	-156.0	659.1	591.1	67.99	9.694		
7,400.0	6,024.0	7,281.8	6,024.0	36.4	36.1	-90.00	1,795.8	-156.0	659.1	587.7	71.43	9.227		
7,500.0	6,024.0	7,381.8	6,024.0	38.1	37.9	-90.00	1,895.8	-156.0	659.1	584.2	74.91	8.799		
7,600.0	6,024.0	7,481.8	6,024.0	39.7	39.7	-90.00	1,995.8	-156.0	659.1	580.7	78.42	8.405		
7,700.0	6,024.0	7,581.8	6,024.0	41.4	41.5	-90.00	2,095.8	-156.0	659.1	577.2	81.97	8.041		
7,800.0	6,024.0	7,681.8	6,024.0	43.1	43.4	-90.00	2,195.8	-156.0	659.1	573.6	85.53	7.706		
7,900.0	6,024.0	7,781.8	6,024.0	44.9	45.2	-90.00	2,295.8	-156.0	659.1	570.0	89.13	7.395		
8,000.0	6,024.0	7,881.8	6,024.0	46.6	47.0	-90.00	2,395.8	-156.0	659.1	566.4	92.74	7.107		
8,100.0	6,024.0	7,981.8	6,024.0	48.4	48.9	-90.00	2,495.8	-156.0	659.1	562.8	96.37	6.840		
8,200.0	6,024.0	8,081.8	6,024.0	50.1	50.7	-90.00	2,595.8	-156.0	659.1	559.1	100.01	6.590		
8,300.0	6,024.0	8,181.8	6,024.0	51.9	52.6	-90.00	2,695.8	-156.0	659.1	555.5	103.67	6.358		
8,400.0	6,024.0	8,281.8	6,024.0	53.7	54.4	-90.00	2,795.8	-156.0	659.1	551.8	107.34	6.140		
8,500.0	6,024.0	8,381.8	6,024.0	55.5	56.3	-90.00	2,895.8	-156.0	659.1	548.1	111.03	5.937		
8,600.0	6,024.0	8,481.8	6,024.0	57.3	58.1	-90.00	2,995.8	-156.0	659.1	544.4	114.72	5.745		
8,700.0	6,024.0	8,581.8	6,024.0	59.1	60.0	-90.00	3,095.8	-156.0	659.1	540.7	118.43	5.566		
8,800.0	6,024.0	8,681.8	6,024.0	60.9	61.9	-90.00	3,195.8	-156.0	659.1	537.0	122.14	5.397		
8,900.0	6,024.0	8,781.8	6,024.0	62.8	63.8	-90.00	3,295.8	-156.0	659.1	533.3	125.86	5.237		
9,000.0	6,024.0	8,881.8	6,024.0	64.6	65.6	-90.00	3,395.8	-156.0	659.1	529.6	129.59	5.087		
9,100.0	6,024.0	8,981.8	6,024.0	66.4	67.5	-90.00	3,495.8	-156.0	659.1	525.8	133.32	4.944		
9,200.0	6,024.0	9,081.8	6,024.0	68.3	69.4	-90.00	3,595.8	-156.0	659.2	522.1	137.06	4.809		
9,300.0	6,024.0	9,181.8	6,024.0	70.1	71.3	-90.00	3,695.8	-156.0	659.2	518.3	140.81	4.681		
9,400.0	6,024.0	9,281.8	6,024.0	72.0	73.2	-90.00	3,795.8	-156.0	659.2	514.6	144.56	4.560		
9,500.0	6,024.0	9,381.8	6,024.0	73.8	75.1	-90.00	3,895.8	-156.0	659.2	510.8	148.31	4.444		
9,600.0	6,024.0	9,481.8	6,024.0	75.7	76.9	-90.00	3,995.8	-156.0	659.2	507.1	152.07	4.335		
9,700.0	6,024.0	9,581.8	6,024.0	77.5	78.8	-90.00	4,095.8	-156.0	659.2	503.3	155.84	4.230		
9,800.0	6,024.0	9,681.8	6,024.0	79.4	80.7	-90.00	4,195.8	-156.0	659.2	499.6	159.60	4.130		
9,900.0	6,024.0	9,781.8	6,024.0	81.3	82.6	-90.00	4,295.8	-156.0	659.2	495.8	163.37	4.035		
10,000.0	6,024.0	9,881.8	6,024.0	83.1	84.5	-90.00	4,395.8	-156.0	659.2	492.0	167.15	3.944		
10,100.0	6,024.0	9,981.8	6,024.0	85.0	86.4	-90.00	4,495.8	-156.0	659.2	488.2	170.93	3.856		
10,200.0	6,024.0	10,081.8	6,024.0	86.9	88.3	-90.00	4,595.8	-156.0	659.2	484.5	174.71	3.773		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
10,300.0	6,024.0	10,181.8	6,024.0	88.7	90.2	-90.00	4,695.8	-156.0	659.2	480.7	178.49	3.693	
10,400.0	6,024.0	10,281.8	6,024.0	90.6	92.1	-90.00	4,795.8	-156.0	659.2	476.9	182.28	3.616	
10,500.0	6,024.0	10,381.8	6,024.0	92.5	94.0	-90.00	4,895.8	-156.0	659.2	473.1	186.06	3.543	
10,600.0	6,024.0	10,481.8	6,024.0	94.4	95.9	-90.00	4,995.8	-156.0	659.2	469.3	189.85	3.472	
10,700.0	6,024.0	10,581.8	6,024.0	96.2	97.8	-90.00	5,095.8	-156.0	659.2	465.5	193.64	3.404	
10,800.0	6,024.0	10,681.8	6,024.0	98.1	99.7	-90.00	5,195.8	-156.0	659.2	461.7	197.44	3.339	
10,900.0	6,024.0	10,781.8	6,024.0	100.0	101.6	-90.00	5,295.8	-156.0	659.2	458.0	201.23	3.276	
11,000.0	6,024.0	10,881.8	6,024.0	101.9	103.5	-90.00	5,395.8	-156.0	659.2	454.2	205.03	3.215	
11,100.0	6,024.0	10,981.8	6,024.0	103.8	105.4	-90.00	5,495.8	-156.0	659.2	450.4	208.83	3.157	
11,200.0	6,024.0	11,081.8	6,024.0	105.7	107.3	-90.00	5,595.8	-156.0	659.2	446.6	212.63	3.100	
11,300.0	6,024.0	11,181.8	6,024.0	107.6	109.2	-90.00	5,695.8	-156.0	659.2	442.8	216.43	3.046	
11,400.0	6,024.0	11,281.8	6,024.0	109.5	111.1	-90.00	5,795.8	-156.0	659.2	439.0	220.24	2.993	
11,500.0	6,024.0	11,381.8	6,024.0	111.3	113.1	-90.00	5,895.8	-156.0	659.2	435.2	224.04	2.942	
11,600.0	6,024.0	11,481.8	6,024.0	113.2	115.0	-90.00	5,995.8	-156.0	659.2	431.4	227.85	2.893	
11,700.0	6,024.0	11,581.8	6,024.0	115.1	116.9	-90.00	6,095.8	-156.0	659.2	427.5	231.66	2.846	
11,800.0	6,024.0	11,681.8	6,024.0	117.0	118.8	-90.00	6,195.8	-156.0	659.2	423.7	235.47	2.800	
11,900.0	6,024.0	11,781.8	6,024.0	118.9	120.7	-90.00	6,295.8	-156.0	659.2	419.9	239.28	2.755	
12,000.0	6,024.0	11,881.8	6,024.0	120.8	122.6	-90.00	6,395.8	-156.0	659.2	416.1	243.09	2.712	
12,100.0	6,024.0	11,981.8	6,024.0	122.7	124.5	-90.00	6,495.8	-156.0	659.2	412.3	246.90	2.670	
12,200.0	6,024.0	12,081.8	6,024.0	124.6	126.4	-90.00	6,595.8	-156.0	659.2	408.5	250.71	2.629	
12,300.0	6,024.0	12,181.8	6,024.0	126.5	128.3	-90.00	6,695.8	-156.0	659.2	404.7	254.52	2.590	
12,400.0	6,024.0	12,281.8	6,024.0	128.4	130.2	-90.00	6,795.8	-156.0	659.2	400.9	258.34	2.552	
12,500.0	6,024.0	12,381.8	6,024.0	130.3	132.1	-90.00	6,895.8	-156.0	659.2	397.1	262.15	2.515	
12,600.0	6,024.0	12,481.8	6,024.0	132.2	134.1	-90.00	6,995.8	-156.0	659.2	393.3	265.97	2.479	
12,700.0	6,024.0	12,581.8	6,024.0	134.1	136.0	-90.00	7,095.8	-156.0	659.2	389.4	269.79	2.444	
12,800.0	6,024.0	12,681.8	6,024.0	136.0	137.9	-90.00	7,195.8	-156.0	659.2	385.6	273.60	2.409	
12,900.0	6,024.0	12,781.8	6,024.0	137.9	139.8	-90.00	7,295.8	-156.0	659.2	381.8	277.42	2.376	
13,000.0	6,024.0	12,881.8	6,024.0	139.8	141.7	-90.00	7,395.8	-156.0	659.2	378.0	281.24	2.344	
13,100.0	6,024.0	12,981.8	6,024.0	141.7	143.6	-90.00	7,495.8	-156.0	659.2	374.2	285.06	2.313	
13,200.0	6,024.0	13,081.8	6,024.0	143.6	145.5	-90.00	7,595.8	-156.0	659.2	370.4	288.88	2.282	
13,300.0	6,024.0	13,181.8	6,024.0	145.5	147.4	-90.00	7,695.8	-156.0	659.2	366.5	292.70	2.252	
13,400.0	6,024.0	13,281.8	6,024.0	147.4	149.4	-90.00	7,795.8	-156.0	659.2	362.7	296.52	2.223	
13,500.0	6,024.0	13,381.8	6,024.0	149.3	151.3	-90.00	7,895.8	-156.0	659.2	358.9	300.35	2.195	
13,600.0	6,024.0	13,481.8	6,024.0	151.2	153.2	-90.00	7,995.8	-156.0	659.2	355.1	304.17	2.167	
13,700.0	6,024.0	13,581.8	6,024.0	153.2	155.1	-90.00	8,095.8	-156.0	659.3	351.3	307.99	2.140	
13,800.0	6,024.0	13,681.8	6,024.0	155.1	157.0	-90.00	8,195.8	-156.0	659.3	347.4	311.81	2.114	
13,900.0	6,024.0	13,781.8	6,024.0	156.6	158.9	-90.00	8,295.8	-156.0	659.3	344.0	315.30	2.091	
13,909.0	6,024.0	13,790.8	6,024.0	156.8	159.1	-90.00	8,304.8	-156.0	659.3	343.6	315.61	2.089 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-33.2	33.2					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-33.2	33.2	33.0	0.19	178.033		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-33.2	33.2	32.6	0.64	52.210		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-33.2	33.2	32.1	1.09	30.591		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-33.2	33.2	31.7	1.54	21.633		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-33.2	33.2	31.2	1.98	16.733		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-33.2	33.2	30.8	2.43	13.643		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-33.2	33.2	30.3	2.88	11.516		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-33.2	33.2	29.9	3.33	9.963		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-33.2	33.2	29.4	3.78	8.779		
1,000.0	1,000.0	1,000.2	1,000.2	2.1	2.1	-87.01	1.7	-32.9	32.9	28.7	4.23	7.774		
1,095.8	1,095.8	1,095.9	1,095.8	2.3	2.3	-78.37	6.6	-31.9	32.5	27.9	4.66	6.976 CC		
1,100.0	1,100.0	1,100.1	1,100.0	2.3	2.3	-77.85	6.8	-31.8	32.5	27.8	4.68	6.948 ES		
1,200.0	1,200.0	1,200.0	1,199.6	2.6	2.6	-92.88	13.7	-30.4	33.4	28.2	5.13	6.503		
1,300.0	1,299.8	1,300.0	1,299.3	2.8	2.8	-90.13	20.5	-29.0	34.8	29.2	5.59	6.235		
1,400.0	1,399.6	1,400.0	1,399.1	3.0	3.0	-90.39	27.3	-27.6	36.3	30.3	6.05	6.006		
1,500.0	1,499.4	1,499.9	1,498.8	3.2	3.3	-90.62	34.2	-26.2	37.9	31.3	6.52	5.804		
1,600.0	1,599.1	1,599.9	1,598.6	3.5	3.5	-90.83	41.0	-24.8	39.4	32.4	7.00	5.624		
1,700.0	1,698.9	1,699.9	1,698.3	3.7	3.8	-91.03	47.8	-23.4	40.9	33.4	7.48	5.464		
1,800.0	1,798.6	1,799.9	1,798.0	4.0	4.0	-91.22	54.7	-22.0	42.4	34.4	7.97	5.321		
1,900.0	1,898.4	1,899.9	1,897.8	4.2	4.3	-91.39	61.5	-20.5	43.9	35.4	8.45	5.192		
2,000.0	1,998.1	1,999.9	1,997.5	4.4	4.5	-91.55	68.3	-19.1	45.4	36.5	8.95	5.076		
2,100.0	2,097.9	2,099.9	2,097.3	4.7	4.8	-91.70	75.1	-17.7	46.9	37.5	9.44	4.971		
2,200.0	2,197.6	2,199.9	2,197.0	4.9	5.0	-91.85	82.0	-16.3	48.4	38.5	9.93	4.875		
2,300.0	2,297.4	2,299.9	2,296.8	5.2	5.3	-91.98	88.8	-14.9	49.9	39.5	10.43	4.788		
2,400.0	2,397.2	2,399.8	2,396.5	5.4	5.5	-92.10	95.6	-13.5	51.5	40.5	10.93	4.708		
2,500.0	2,496.9	2,499.8	2,496.3	5.7	5.8	-92.22	102.5	-12.1	53.0	41.5	11.43	4.634		
2,600.0	2,596.7	2,599.8	2,596.0	5.9	6.0	-92.33	109.3	-10.7	54.5	42.5	11.93	4.567		
2,700.0	2,696.4	2,699.8	2,695.7	6.2	6.3	-92.44	116.1	-9.3	56.0	43.6	12.43	4.504		
2,800.0	2,796.2	2,799.8	2,795.5	6.4	6.5	-92.54	123.0	-7.9	57.5	44.6	12.93	4.446		
2,900.0	2,895.9	2,899.8	2,895.2	6.7	6.8	-92.63	129.8	-6.5	59.0	45.6	13.44	4.392		
3,000.0	2,995.7	2,999.8	2,995.0	6.9	7.0	-92.72	136.6	-5.1	60.5	46.6	13.94	4.342		
3,100.0	3,095.5	3,099.8	3,094.7	7.2	7.3	-92.81	143.5	-3.7	62.0	47.6	14.44	4.295		
3,200.0	3,195.2	3,199.8	3,194.5	7.4	7.5	-92.89	150.3	-2.2	63.6	48.6	14.95	4.252		
3,300.0	3,295.0	3,299.7	3,294.2	7.7	7.8	-92.97	157.1	-0.8	65.1	49.6	15.45	4.211		
3,400.0	3,394.7	3,399.7	3,394.0	7.9	8.0	-93.04	164.0	0.6	66.6	50.6	15.96	4.172		
3,500.0	3,494.5	3,499.7	3,493.7	8.2	8.3	-93.11	170.8	2.0	68.1	51.6	16.47	4.136		
3,600.0	3,594.2	3,599.7	3,593.5	8.4	8.5	-93.18	177.6	3.4	69.6	52.6	16.97	4.101		
3,700.0	3,694.0	3,699.7	3,693.2	8.7	8.8	-93.24	184.5	4.8	71.1	53.6	17.48	4.069		
3,800.0	3,793.7	3,799.7	3,792.9	9.0	9.1	-93.31	191.3	6.2	72.6	54.7	17.99	4.039		
3,900.0	3,893.5	3,899.7	3,892.7	9.2	9.3	-93.37	198.1	7.6	74.2	55.7	18.49	4.010		
4,000.0	3,993.3	3,999.7	3,992.4	9.5	9.6	-93.42	204.9	9.0	75.7	56.7	19.00	3.982		
4,100.0	4,093.0	4,099.6	4,092.2	9.7	9.8	-93.48	211.8	10.4	77.2	57.7	19.51	3.956		
4,200.0	4,192.8	4,199.6	4,191.9	10.0	10.1	-93.53	218.6	11.8	78.7	58.7	20.02	3.931		
4,300.0	4,292.5	4,299.6	4,291.7	10.2	10.3	-93.58	225.4	13.2	80.2	59.7	20.53	3.908		
4,400.0	4,392.3	4,399.6	4,391.4	10.5	10.6	-93.63	232.3	14.6	81.7	60.7	21.04	3.885		
4,500.0	4,492.0	4,499.6	4,491.2	10.7	10.8	-93.68	239.1	16.0	83.2	61.7	21.54	3.864		
4,600.0	4,591.8	4,599.6	4,590.9	11.0	11.1	-93.72	245.9	17.5	84.8	62.7	22.05	3.843		
4,700.0	4,691.6	4,699.6	4,690.6	11.2	11.3	-93.77	252.8	18.9	86.3	63.7	22.56	3.824		
4,800.0	4,791.3	4,799.6	4,790.4	11.5	11.6	-93.81	259.6	20.3	87.8	64.7	23.07	3.805		
4,900.0	4,891.1	4,899.6	4,890.1	11.8	11.9	-93.85	266.4	21.7	89.3	65.7	23.58	3.787		
5,000.0	4,990.8	4,999.5	4,989.9	12.0	12.1	-93.89	273.3	23.1	90.8	66.7	24.09	3.770		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA 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		
5,100.0	5,090.6	5,099.5	5,089.6	12.3	12.4	-93.93	280.1	24.5	92.3	67.7	24.60	3.754		
5,200.0	5,190.3	5,199.5	5,189.4	12.5	12.6	-93.97	286.9	25.9	93.9	68.7	25.11	3.738		
5,300.0	5,290.1	5,299.5	5,289.1	12.8	12.9	-94.00	293.8	27.3	95.4	69.7	25.62	3.722		
5,400.0	5,389.9	5,399.5	5,388.9	13.0	13.1	-94.04	300.6	28.7	96.9	70.8	26.13	3.708		
5,500.0	5,489.6	5,497.9	5,486.8	13.3	13.4	-92.65	309.7	30.6	98.8	72.1	26.65	3.707		
5,600.0	5,589.1	5,592.1	5,577.7	13.6	13.8	-83.95	333.2	35.4	104.9	77.6	27.23	3.851		
5,700.0	5,685.6	5,682.9	5,660.0	14.0	14.3	-75.79	370.6	43.1	116.8	88.9	27.88	4.190		
5,800.0	5,775.3	5,771.1	5,732.3	14.5	14.9	-70.04	419.8	53.3	132.8	104.3	28.56	4.651		
5,900.0	5,855.0	5,856.9	5,793.6	15.2	15.6	-66.35	478.5	65.4	151.1	121.8	29.28	5.162		
6,000.0	5,921.9	5,941.0	5,843.4	16.1	16.5	-64.19	544.8	79.0	170.5	140.4	30.17	5.652		
6,100.0	5,973.3	6,023.7	5,881.0	17.2	17.4	-63.12	616.8	93.8	190.3	158.9	31.42	6.055		
6,200.0	6,007.4	6,105.4	5,906.4	18.5	18.5	-62.85	692.9	109.5	209.8	176.6	33.15	6.329		
6,300.0	6,023.0	6,186.8	5,919.3	19.9	19.6	-63.18	771.5	125.7	228.6	193.2	35.39	6.460		
6,400.0	6,024.0	6,271.3	5,921.0	21.3	20.8	-64.88	854.3	142.3	247.0	208.7	38.24	6.458		
6,500.0	6,024.0	6,358.6	5,921.0	22.7	22.0	-66.74	940.5	156.0	265.2	224.1	41.11	6.452		
6,600.0	6,024.0	6,445.2	5,921.0	24.1	23.2	-68.30	1,026.5	165.8	283.1	239.2	43.94	6.443		
6,700.0	6,024.0	6,531.2	5,921.0	25.6	24.4	-69.63	1,112.3	171.6	300.5	253.7	46.76	6.426		
6,800.0	6,024.0	6,617.0	5,921.0	27.1	25.7	-70.78	1,198.1	173.5	317.3	267.8	49.55	6.405		
6,900.0	6,024.0	6,715.4	5,921.0	28.6	27.3	-71.76	1,296.4	173.5	331.5	279.0	52.50	6.313		
7,000.0	6,024.0	6,814.9	5,921.0	30.1	28.9	-72.36	1,395.9	173.5	340.7	285.3	55.38	6.153		
7,100.0	6,024.0	6,914.8	5,921.0	31.7	30.6	-72.62	1,495.8	173.5	345.0	286.9	58.11	5.937		
7,200.0	6,024.0	7,014.8	5,921.0	33.2	32.2	-72.64	1,595.8	173.5	345.3	284.2	61.11	5.651		
7,300.0	6,024.0	7,114.8	5,921.0	34.8	34.0	-72.64	1,695.8	173.5	345.3	281.0	64.35	5.367		
7,400.0	6,024.0	7,214.8	5,921.0	36.4	35.7	-72.64	1,795.8	173.5	345.3	277.7	67.63	5.106		
7,500.0	6,024.0	7,314.8	5,921.0	38.1	37.5	-72.64	1,895.8	173.5	345.3	274.4	70.96	4.867		
7,600.0	6,024.0	7,414.8	5,921.0	39.7	39.2	-72.64	1,995.8	173.5	345.3	271.0	74.32	4.647		
7,700.0	6,024.0	7,514.8	5,921.0	41.4	41.0	-72.64	2,095.8	173.5	345.3	267.6	77.71	4.444		
7,800.0	6,024.0	7,614.8	5,921.0	43.1	42.8	-72.64	2,195.8	173.5	345.3	264.2	81.13	4.257		
7,900.0	6,024.0	7,714.8	5,921.0	44.9	44.6	-72.64	2,295.8	173.5	345.3	260.8	84.57	4.084		
8,000.0	6,024.0	7,814.8	5,921.0	46.6	46.5	-72.64	2,395.8	173.5	345.3	257.3	88.03	3.923		
8,100.0	6,024.0	7,914.8	5,921.0	48.4	48.3	-72.64	2,495.8	173.5	345.3	253.8	91.51	3.774		
8,200.0	6,024.0	8,014.8	5,921.0	50.1	50.1	-72.64	2,595.8	173.5	345.3	250.3	95.00	3.635		
8,300.0	6,024.0	8,114.8	5,921.0	51.9	51.9	-72.64	2,695.8	173.5	345.3	246.8	98.51	3.506		
8,400.0	6,024.0	8,214.8	5,921.0	53.7	53.8	-72.64	2,795.8	173.5	345.3	243.3	102.04	3.385		
8,500.0	6,024.0	8,314.8	5,921.0	55.5	55.6	-72.64	2,895.8	173.5	345.4	239.8	105.57	3.271		
8,600.0	6,024.0	8,414.8	5,921.0	57.3	57.5	-72.64	2,995.8	173.5	345.4	236.2	109.11	3.165		
8,700.0	6,024.0	8,514.8	5,921.0	59.1	59.4	-72.64	3,095.8	173.5	345.4	232.7	112.67	3.065		
8,800.0	6,024.0	8,614.8	5,921.0	60.9	61.2	-72.64	3,195.8	173.5	345.4	229.1	116.23	2.971		
8,900.0	6,024.0	8,714.8	5,921.0	62.8	63.1	-72.64	3,295.8	173.5	345.4	225.6	119.80	2.883		
9,000.0	6,024.0	8,814.8	5,921.0	64.6	65.0	-72.64	3,395.8	173.5	345.4	222.0	123.38	2.799		
9,100.0	6,024.0	8,914.8	5,921.0	66.4	66.8	-72.64	3,495.8	173.5	345.4	218.4	126.97	2.720		
9,200.0	6,024.0	9,014.8	5,921.0	68.3	68.7	-72.64	3,595.8	173.5	345.4	214.8	130.56	2.645		
9,300.0	6,024.0	9,114.8	5,921.0	70.1	70.6	-72.64	3,695.8	173.5	345.4	211.2	134.15	2.574		
9,400.0	6,024.0	9,214.8	5,921.0	72.0	72.5	-72.64	3,795.8	173.5	345.4	207.6	137.76	2.507		
9,500.0	6,024.0	9,314.8	5,921.0	73.8	74.3	-72.64	3,895.8	173.5	345.4	204.0	141.36	2.443		
9,600.0	6,024.0	9,414.8	5,921.0	75.7	76.2	-72.65	3,995.8	173.5	345.4	200.4	144.97	2.382		
9,700.0	6,024.0	9,514.8	5,921.0	77.5	78.1	-72.65	4,095.8	173.5	345.4	196.8	148.59	2.324		
9,800.0	6,024.0	9,614.8	5,921.0	79.4	80.0	-72.65	4,195.8	173.5	345.4	193.2	152.21	2.269		
9,900.0	6,024.0	9,714.8	5,921.0	81.3	81.9	-72.65	4,295.8	173.5	345.4	189.6	155.83	2.216		
10,000.0	6,024.0	9,814.8	5,921.0	83.1	83.8	-72.65	4,395.8	173.5	345.4	185.9	159.45	2.166		
10,100.0	6,024.0	9,914.8	5,921.0	85.0	85.7	-72.65	4,495.8	173.5	345.4	182.3	163.08	2.118		
10,200.0	6,024.0	10,014.8	5,921.0	86.9	87.6	-72.65	4,595.8	173.5	345.4	178.7	166.71	2.072		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Between Centres (usft)	Between Ellipses (usft)					
10,300.0	6,024.0	10,114.8	5,921.0	88.7	89.5	-72.65	4,695.8	173.5	345.4	170.35	2.028		
10,400.0	6,024.0	10,214.8	5,921.0	90.6	91.4	-72.65	4,795.8	173.5	345.4	171.4	1.985		
10,500.0	6,024.0	10,314.8	5,921.0	92.5	93.3	-72.65	4,895.8	173.5	345.4	167.8	1.945		
10,600.0	6,024.0	10,414.8	5,921.0	94.4	95.2	-72.65	4,995.8	173.5	345.4	164.1	1.906		
10,700.0	6,024.0	10,514.8	5,921.0	96.2	97.0	-72.65	5,095.8	173.5	345.4	160.5	1.868		
10,800.0	6,024.0	10,614.8	5,921.0	98.1	98.9	-72.65	5,195.8	173.5	345.4	156.9	1.832		
10,900.0	6,024.0	10,714.8	5,921.0	100.0	100.8	-72.65	5,295.8	173.5	345.4	153.2	1.797		
11,000.0	6,024.0	10,814.8	5,921.0	101.9	102.8	-72.65	5,395.8	173.5	345.4	149.6	1.764		
11,100.0	6,024.0	10,914.8	5,921.0	103.8	104.7	-72.65	5,495.8	173.5	345.4	145.9	1.731		
11,200.0	6,024.0	11,014.8	5,921.0	105.7	106.6	-72.65	5,595.8	173.5	345.4	142.3	1.700		
11,300.0	6,024.0	11,114.8	5,921.0	107.6	108.5	-72.65	5,695.8	173.5	345.4	138.6	1.670		
11,400.0	6,024.0	11,214.8	5,921.0	109.5	110.4	-72.65	5,795.8	173.5	345.4	135.0	1.641		
11,500.0	6,024.0	11,314.8	5,921.0	111.3	112.3	-72.65	5,895.8	173.5	345.4	131.3	1.613		
11,600.0	6,024.0	11,414.8	5,921.0	113.2	114.2	-72.65	5,995.8	173.5	345.4	127.7	1.586		
11,700.0	6,024.0	11,514.8	5,921.0	115.1	116.1	-72.65	6,095.8	173.5	345.4	124.0	1.560		
11,800.0	6,024.0	11,614.8	5,921.0	117.0	118.0	-72.65	6,195.8	173.5	345.4	120.3	1.535		
11,900.0	6,024.0	11,714.8	5,921.0	118.9	119.9	-72.65	6,295.8	173.5	345.4	116.7	1.510		
12,000.0	6,024.0	11,814.8	5,921.0	120.8	121.8	-72.65	6,395.8	173.5	345.4	113.0	1.486 Level 3		
12,100.0	6,024.0	11,914.8	5,921.0	122.7	123.7	-72.65	6,495.8	173.5	345.4	109.4	1.463 Level 3		
12,200.0	6,024.0	12,014.8	5,921.0	124.6	125.6	-72.65	6,595.8	173.5	345.4	105.7	1.441 Level 3		
12,300.0	6,024.0	12,114.8	5,921.0	126.5	127.5	-72.65	6,695.8	173.5	345.4	102.0	1.419 Level 3		
12,400.0	6,024.0	12,214.8	5,921.0	128.4	129.4	-72.65	6,795.8	173.5	345.4	98.4	1.398 Level 3		
12,500.0	6,024.0	12,314.8	5,921.0	130.3	131.3	-72.65	6,895.8	173.5	345.4	94.7	1.378 Level 3		
12,600.0	6,024.0	12,414.8	5,921.0	132.2	133.2	-72.65	6,995.8	173.5	345.4	91.0	1.358 Level 3		
12,700.0	6,024.0	12,514.8	5,921.0	134.1	135.2	-72.65	7,095.8	173.5	345.4	87.4	1.339 Level 3		
12,800.0	6,024.0	12,614.8	5,921.0	136.0	137.1	-72.65	7,195.8	173.5	345.5	83.7	1.320 Level 3		
12,900.0	6,024.0	12,714.8	5,921.0	137.9	139.0	-72.65	7,295.8	173.5	345.5	80.0	1.302 Level 3		
13,000.0	6,024.0	12,814.8	5,921.0	139.8	140.9	-72.65	7,395.8	173.5	345.5	76.4	1.284 Level 3		
13,100.0	6,024.0	12,914.8	5,921.0	141.7	142.8	-72.65	7,495.8	173.5	345.5	72.7	1.267 Level 3		
13,200.0	6,024.0	13,014.8	5,921.0	143.6	144.7	-72.65	7,595.8	173.5	345.5	69.0	1.250 Level 2		
13,300.0	6,024.0	13,114.8	5,921.0	145.5	146.6	-72.65	7,695.8	173.5	345.5	65.4	1.233 Level 2		
13,400.0	6,024.0	13,214.8	5,921.0	147.4	148.5	-72.65	7,795.8	173.5	345.5	61.7	1.217 Level 2		
13,500.0	6,024.0	13,314.8	5,921.0	149.3	150.4	-72.65	7,895.8	173.5	345.5	58.0	1.202 Level 2		
13,600.0	6,024.0	13,414.8	5,921.0	151.2	152.4	-72.65	7,995.8	173.5	345.5	54.4	1.187 Level 2		
13,700.0	6,024.0	13,514.8	5,921.0	153.2	154.3	-72.65	8,095.8	173.5	345.5	50.7	1.172 Level 2		
13,800.0	6,024.0	13,614.8	5,921.0	155.1	156.2	-72.65	8,195.8	173.5	345.5	47.0	1.158 Level 2		
13,900.0	6,024.0	13,714.8	5,921.0	156.6	158.1	-72.65	8,295.8	173.5	345.5	43.7	1.145 Level 2		
13,909.0	6,024.0	13,723.8	5,921.0	156.8	158.3	-72.65	8,304.8	173.5	345.5	43.4	1.144 Level 2, SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21D-0904B - 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		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-94.76	-100.2	-1,203.8	1,208.0					
100.0	100.0	97.9	97.9	0.1	0.1	-94.76	-100.2	-1,203.8	1,208.0	1,207.8	0.19	6,525.238		
200.0	200.0	197.9	197.9	0.3	0.3	-94.76	-100.2	-1,203.8	1,208.0	1,207.4	0.63	1,911.702		
300.0	300.0	297.9	297.9	0.5	0.5	-94.76	-100.2	-1,203.8	1,208.0	1,206.9	1.08	1,117.040		
400.0	400.0	397.9	397.9	0.8	0.8	-94.76	-100.2	-1,203.8	1,208.0	1,206.5	1.53	789.046		
500.0	500.0	497.9	497.9	1.0	1.0	-94.76	-100.2	-1,203.8	1,208.0	1,206.0	1.98	609.949		
600.0	600.0	597.9	597.9	1.2	1.2	-94.76	-100.2	-1,203.8	1,208.0	1,205.6	2.43	497.114		
700.0	700.0	697.9	697.9	1.4	1.4	-94.76	-100.2	-1,203.8	1,208.0	1,205.1	2.88	419.509		
800.0	800.0	797.9	797.9	1.7	1.7	-94.76	-100.2	-1,203.8	1,208.0	1,204.7	3.33	362.862		
900.0	900.0	897.9	897.9	1.9	1.9	-94.76	-100.2	-1,203.8	1,208.0	1,204.2	3.78	319.693		
1,000.0	1,000.0	997.9	997.9	2.1	2.1	-94.76	-100.2	-1,203.8	1,208.0	1,203.8	4.23	285.704		
1,100.0	1,100.0	1,097.9	1,097.9	2.3	2.3	-94.76	-100.2	-1,203.8	1,208.0	1,203.3	4.68	258.248 CC		
1,200.0	1,200.0	1,213.3	1,213.3	2.6	2.6	-118.86	-98.0	-1,203.3	1,208.2	1,203.1	5.16	234.255		
1,300.0	1,299.8	1,325.1	1,324.9	2.8	2.9	-118.80	-91.7	-1,201.7	1,208.9	1,203.2	5.63	214.806		
1,400.0	1,399.6	1,425.1	1,424.6	3.0	3.1	-118.77	-85.0	-1,200.0	1,210.0	1,203.9	6.08	198.996		
1,500.0	1,499.4	1,525.1	1,524.4	3.2	3.3	-118.75	-78.2	-1,198.3	1,211.1	1,204.5	6.54	185.163		
1,600.0	1,599.1	1,625.1	1,624.1	3.5	3.5	-118.73	-71.4	-1,196.6	1,212.2	1,205.2	7.01	173.000		
1,700.0	1,698.9	1,725.1	1,723.9	3.7	3.8	-118.70	-64.7	-1,194.9	1,213.3	1,205.8	7.48	162.248		
1,800.0	1,798.6	1,825.1	1,823.6	4.0	4.0	-118.68	-57.9	-1,193.2	1,214.4	1,206.5	7.95	152.692		
1,900.0	1,898.4	1,925.1	1,923.4	4.2	4.3	-118.66	-51.1	-1,191.5	1,215.6	1,207.1	8.43	144.157		
2,000.0	1,998.1	2,025.1	2,023.1	4.4	4.5	-118.63	-44.4	-1,189.8	1,216.7	1,207.8	8.91	136.496		
2,100.0	2,097.9	2,125.1	2,122.9	4.7	4.8	-118.61	-37.6	-1,188.1	1,217.8	1,208.4	9.40	129.586		
2,200.0	2,197.6	2,225.0	2,222.6	4.9	5.0	-118.59	-30.8	-1,186.4	1,218.9	1,209.0	9.88	123.328		
2,300.0	2,297.4	2,325.0	2,322.4	5.2	5.2	-118.56	-24.1	-1,184.7	1,220.0	1,209.7	10.37	117.636		
2,400.0	2,397.2	2,425.0	2,422.1	5.4	5.5	-118.54	-17.3	-1,183.0	1,221.1	1,210.3	10.86	112.439		
2,500.0	2,496.9	2,525.0	2,521.9	5.7	5.7	-118.52	-10.5	-1,181.3	1,222.3	1,210.9	11.35	107.678		
2,600.0	2,596.7	2,625.0	2,621.6	5.9	6.0	-118.50	-3.8	-1,179.6	1,223.4	1,211.5	11.84	103.301		
2,700.0	2,696.4	2,725.0	2,721.4	6.2	6.2	-118.47	3.0	-1,177.9	1,224.5	1,212.2	12.34	99.265		
2,800.0	2,796.2	2,825.0	2,821.1	6.4	6.5	-118.45	9.8	-1,176.2	1,225.6	1,212.8	12.83	95.532		
2,900.0	2,895.9	2,925.0	2,920.9	6.7	6.7	-118.43	16.5	-1,174.5	1,226.7	1,213.4	13.32	92.070		
3,000.0	2,995.7	3,025.0	3,020.6	6.9	7.0	-118.41	23.3	-1,172.8	1,227.9	1,214.0	13.82	88.851		
3,100.0	3,095.5	3,125.0	3,120.4	7.2	7.2	-118.38	30.1	-1,171.1	1,229.0	1,214.7	14.32	85.851		
3,200.0	3,195.2	3,225.0	3,220.1	7.4	7.5	-118.36	36.8	-1,169.4	1,230.1	1,215.3	14.81	83.049		
3,300.0	3,295.0	3,325.0	3,319.9	7.7	7.8	-118.34	43.6	-1,167.7	1,231.2	1,215.9	15.31	80.425		
3,400.0	3,394.7	3,425.0	3,419.6	7.9	8.0	-118.31	50.3	-1,166.1	1,232.3	1,216.5	15.81	77.964		
3,500.0	3,494.5	3,524.9	3,519.4	8.2	8.3	-118.29	57.1	-1,164.4	1,233.5	1,217.1	16.30	75.651		
3,600.0	3,594.2	3,624.9	3,619.1	8.4	8.5	-118.27	63.9	-1,162.7	1,234.6	1,217.8	16.80	73.474		
3,700.0	3,694.0	3,724.9	3,718.9	8.7	8.8	-118.25	70.6	-1,161.0	1,235.7	1,218.4	17.30	71.420		
3,800.0	3,793.7	3,824.9	3,818.6	9.0	9.0	-118.23	77.4	-1,159.3	1,236.8	1,219.0	17.80	69.480		
3,900.0	3,893.5	3,924.9	3,918.4	9.2	9.3	-118.20	84.2	-1,157.6	1,237.9	1,219.6	18.30	67.645		
4,000.0	3,993.3	4,024.9	4,018.1	9.5	9.5	-118.18	90.9	-1,155.9	1,239.1	1,220.3	18.80	65.906		
4,100.0	4,093.0	4,124.9	4,117.9	9.7	9.8	-118.16	97.7	-1,154.2	1,240.2	1,220.9	19.30	64.256		
4,200.0	4,192.8	4,224.9	4,217.6	10.0	10.0	-118.14	104.5	-1,152.5	1,241.3	1,221.5	19.80	62.689		
4,300.0	4,292.5	4,324.9	4,317.4	10.2	10.3	-118.11	111.2	-1,150.8	1,242.4	1,222.1	20.30	61.199		
4,400.0	4,392.3	4,424.9	4,417.1	10.5	10.5	-118.09	118.0	-1,149.1	1,243.5	1,222.7	20.80	59.779		
4,500.0	4,492.0	4,524.9	4,516.9	10.7	10.8	-118.07	124.8	-1,147.4	1,244.7	1,223.4	21.30	58.426		
4,600.0	4,591.8	4,624.9	4,616.6	11.0	11.1	-118.05	131.5	-1,145.7	1,245.8	1,224.0	21.80	57.134		
4,700.0	4,691.6	4,724.9	4,716.4	11.2	11.3	-118.03	138.3	-1,144.0	1,246.9	1,224.6	22.31	55.900		
4,800.0	4,791.3	4,824.9	4,816.1	11.5	11.6	-118.00	145.1	-1,142.3	1,248.0	1,225.2	22.81	54.720		
4,900.0	4,891.1	4,924.8	4,915.9	11.8	11.8	-117.98	151.8	-1,140.6	1,249.2	1,225.8	23.31	53.590		
5,000.0	4,990.8	5,024.8	5,015.6	12.0	12.1	-117.96	158.6	-1,138.9	1,250.3	1,226.5	23.81	52.507		
5,100.0	5,090.6	5,124.8	5,115.3	12.3	12.3	-117.94	165.4	-1,137.2	1,251.4	1,227.1	24.31	51.469		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21D-0904B - 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					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		
5,200.0	5,190.3	5,224.8	5,215.1	12.5	12.6	-117.92	172.1	-1,135.5	1,252.5	1,227.7	24.82	50.473		
5,300.0	5,290.1	5,324.8	5,314.8	12.8	12.8	-117.90	178.9	-1,133.8	1,253.6	1,228.3	25.32	49.516		
5,400.0	5,389.9	5,444.9	5,434.6	13.0	13.1	-117.84	187.7	-1,131.6	1,254.7	1,228.8	25.88	48.486		
5,500.0	5,489.6	5,765.2	5,721.2	13.3	14.9	-112.84	315.0	-1,099.6	1,245.0	1,217.1	27.91	44.615		
5,600.0	5,589.1	5,937.1	5,827.3	13.6	16.5	-107.93	445.3	-1,066.9	1,228.1	1,198.2	29.94	41.016		
5,700.0	5,685.6	6,048.0	5,870.1	14.0	17.8	-104.93	544.2	-1,042.1	1,217.3	1,185.6	31.66	38.443		
5,780.5	5,758.5	6,118.8	5,885.8	14.4	18.8	-102.56	611.2	-1,025.3	1,214.6	1,181.6	33.01	36.795		
5,800.0	5,775.3	6,134.5	5,888.0	14.5	19.0	-101.96	626.3	-1,021.5	1,214.7	1,181.4	33.33	36.443		
5,900.0	5,855.0	6,199.5	5,892.0	15.2	19.9	-98.97	689.1	-1,005.7	1,220.3	1,185.4	34.91	34.961		
6,000.0	5,921.9	6,249.2	5,892.0	16.1	20.6	-95.87	737.5	-994.2	1,234.0	1,197.5	36.51	33.799		
6,100.0	5,973.3	6,300.0	5,892.0	17.2	21.3	-92.35	787.2	-983.8	1,254.4	1,216.0	38.32	32.732		
6,200.0	6,007.4	6,354.7	5,892.0	18.5	22.1	-88.66	841.1	-974.1	1,279.4	1,239.1	40.28	31.758		
6,300.0	6,023.0	6,400.0	5,892.0	19.9	22.7	-85.15	885.8	-967.2	1,307.2	1,265.1	42.17	31.003		
6,400.0	6,024.0	6,468.2	5,892.0	21.3	23.7	-84.19	953.5	-958.8	1,335.6	1,291.0	44.54	29.989		
6,500.0	6,024.0	6,524.8	5,892.0	22.7	24.5	-84.34	1,009.9	-953.7	1,362.0	1,315.2	46.77	29.122		
6,600.0	6,024.0	6,600.0	5,892.0	24.1	25.6	-84.49	1,084.9	-949.5	1,386.4	1,337.2	49.29	28.128		
6,700.0	6,024.0	6,640.5	5,892.0	25.6	26.2	-84.59	1,125.4	-948.4	1,408.3	1,357.0	51.30	27.449		
6,800.0	6,024.0	6,738.8	5,892.0	27.1	27.8	-84.71	1,223.7	-946.6	1,426.4	1,372.2	54.21	26.313		
6,900.0	6,024.0	6,838.0	5,892.0	28.6	29.4	-84.79	1,322.9	-944.8	1,439.5	1,382.3	57.12	25.200		
7,000.0	6,024.0	6,937.6	5,892.0	30.1	31.1	-84.84	1,422.5	-943.0	1,447.3	1,387.3	59.99	24.125		
7,100.0	6,024.0	7,037.6	5,892.0	31.7	32.8	-84.86	1,522.4	-941.1	1,449.9	1,387.2	62.79	23.092		
7,200.0	6,024.0	7,137.6	5,892.0	33.2	34.5	-84.85	1,622.4	-939.3	1,448.4	1,382.5	65.92	21.974		
7,300.0	6,024.0	7,237.6	5,892.0	34.8	36.2	-84.85	1,722.4	-937.4	1,446.6	1,377.3	69.29	20.877		
7,400.0	6,024.0	7,337.6	5,892.0	36.4	38.0	-84.84	1,822.3	-935.6	1,444.8	1,372.1	72.71	19.870		
7,500.0	6,024.0	7,437.5	5,892.0	38.1	39.7	-84.83	1,922.3	-933.8	1,442.9	1,366.8	76.17	18.944		
7,600.0	6,024.0	7,537.5	5,892.0	39.7	41.5	-84.83	2,022.3	-931.9	1,441.1	1,361.4	79.66	18.090		
7,700.0	6,024.0	7,637.5	5,892.0	41.4	43.3	-84.82	2,122.2	-930.1	1,439.3	1,356.1	83.19	17.302		
7,800.0	6,024.0	7,737.5	5,892.0	43.1	45.1	-84.82	2,222.2	-928.2	1,437.4	1,350.7	86.73	16.573		
7,900.0	6,024.0	7,837.5	5,892.0	44.9	46.9	-84.81	2,322.2	-926.4	1,435.6	1,345.3	90.30	15.898		
8,000.0	6,024.0	7,937.5	5,892.0	46.6	48.8	-84.80	2,422.1	-924.5	1,433.8	1,339.9	93.89	15.270		
8,100.0	6,024.0	8,037.4	5,892.0	48.4	50.6	-84.80	2,522.1	-922.7	1,431.9	1,334.4	97.50	14.686		
8,200.0	6,024.0	8,137.4	5,892.0	50.1	52.4	-84.79	2,622.1	-920.9	1,430.1	1,329.0	101.13	14.142		
8,300.0	6,024.0	8,237.4	5,892.0	51.9	54.3	-84.78	2,722.0	-919.0	1,428.3	1,323.5	104.76	13.633		
8,400.0	6,024.0	8,337.4	5,892.0	53.7	56.1	-84.77	2,822.0	-917.2	1,426.4	1,318.0	108.41	13.157		
8,500.0	6,024.0	8,437.4	5,892.0	55.5	58.0	-84.77	2,922.0	-915.3	1,424.6	1,312.5	112.08	12.711		
8,600.0	6,024.0	8,537.4	5,892.0	57.3	59.8	-84.76	3,021.9	-913.5	1,422.8	1,307.0	115.75	12.292		
8,700.0	6,024.0	8,637.3	5,892.0	59.1	61.7	-84.75	3,121.9	-911.6	1,420.9	1,301.5	119.43	11.898		
8,800.0	6,024.0	8,737.3	5,892.0	60.9	63.5	-84.75	3,221.9	-909.8	1,419.1	1,296.0	123.12	11.526		
8,900.0	6,024.0	8,837.3	5,892.0	62.8	65.4	-84.74	3,321.8	-908.0	1,417.3	1,290.5	126.82	11.175		
9,000.0	6,024.0	8,937.3	5,892.0	64.6	67.3	-84.73	3,421.8	-906.1	1,415.4	1,284.9	130.53	10.844		
9,100.0	6,024.0	9,037.3	5,892.0	66.4	69.1	-84.73	3,521.8	-904.3	1,413.6	1,279.4	134.24	10.531		
9,200.0	6,024.0	9,137.2	5,892.0	68.3	71.0	-84.72	3,621.7	-902.4	1,411.8	1,273.8	137.96	10.234		
9,300.0	6,024.0	9,237.2	5,892.0	70.1	72.9	-84.71	3,721.7	-900.6	1,410.0	1,268.3	141.68	9.952		
9,400.0	6,024.0	9,337.2	5,892.0	72.0	74.8	-84.71	3,821.7	-898.7	1,408.1	1,262.7	145.41	9.684		
9,500.0	6,024.0	9,437.2	5,892.0	73.8	76.6	-84.70	3,921.6	-896.9	1,406.3	1,257.1	149.14	9.429		
9,600.0	6,024.0	9,537.2	5,892.0	75.7	78.5	-84.69	4,021.6	-895.1	1,404.5	1,251.6	152.88	9.187		
9,700.0	6,024.0	9,637.2	5,892.0	77.5	80.4	-84.69	4,121.6	-893.2	1,402.6	1,246.0	156.62	8.955		
9,800.0	6,024.0	9,737.1	5,892.0	79.4	82.3	-84.68	4,221.5	-891.4	1,400.8	1,240.4	160.37	8.735		
9,900.0	6,024.0	9,837.1	5,892.0	81.3	84.2	-84.67	4,321.5	-889.5	1,399.0	1,234.8	164.12	8.524		
10,000.0	6,024.0	9,937.1	5,892.0	83.1	86.1	-84.66	4,421.5	-887.7	1,397.1	1,229.3	167.87	8.323		
10,100.0	6,024.0	10,037.1	5,892.0	85.0	88.0	-84.66	4,521.4	-885.8	1,395.3	1,223.7	171.62	8.130		
10,200.0	6,024.0	10,137.1	5,892.0	86.9	89.8	-84.65	4,621.4	-884.0	1,393.5	1,218.1	175.38	7.945		

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 #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S21-T10N-R58W - Razor #21D-0904B - 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		Total		Separation		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)	Uncertainty Axis			
10,300.0	6,024.0	10,237.1	5,892.0	88.7	91.7	-84.64	4,721.4	-882.2	1,391.6	1,212.5	179.14	7.768		
10,400.0	6,024.0	10,337.0	5,892.0	90.6	93.6	-84.64	4,821.3	-880.3	1,389.8	1,206.9	182.91	7.598		
10,500.0	6,024.0	10,437.0	5,892.0	92.5	95.5	-84.63	4,921.3	-878.5	1,388.0	1,201.3	186.67	7.435		
10,600.0	6,024.0	10,537.0	5,892.0	94.4	97.4	-84.62	5,021.3	-876.6	1,386.1	1,195.7	190.44	7.279		
10,700.0	6,024.0	10,637.0	5,892.0	96.2	99.3	-84.61	5,121.2	-874.8	1,384.3	1,190.1	194.21	7.128		
10,800.0	6,024.0	10,737.0	5,892.0	98.1	101.2	-84.61	5,221.2	-873.0	1,382.5	1,184.5	197.98	6.983		
10,900.0	6,024.0	10,837.0	5,892.0	100.0	103.1	-84.60	5,321.2	-871.1	1,380.6	1,178.9	201.75	6.843		
11,000.0	6,024.0	10,936.9	5,892.0	101.9	105.0	-84.59	5,421.1	-869.3	1,378.8	1,173.3	205.53	6.708		
11,100.0	6,024.0	11,036.9	5,892.0	103.8	106.9	-84.59	5,521.1	-867.4	1,377.0	1,167.7	209.31	6.579		
11,200.0	6,024.0	11,136.9	5,892.0	105.7	108.8	-84.58	5,621.1	-865.6	1,375.1	1,162.0	213.08	6.453		
11,300.0	6,024.0	11,236.9	5,892.0	107.6	110.7	-84.57	5,721.0	-863.7	1,373.3	1,156.4	216.86	6.333		
11,400.0	6,024.0	11,336.9	5,892.0	109.5	112.6	-84.56	5,821.0	-861.9	1,371.5	1,150.8	220.65	6.216		
11,500.0	6,024.0	11,436.9	5,892.0	111.3	114.5	-84.56	5,921.0	-860.1	1,369.6	1,145.2	224.43	6.103		
11,600.0	6,024.0	11,536.8	5,892.0	113.2	116.4	-84.55	6,020.9	-858.2	1,367.8	1,139.6	228.21	5.994		
11,700.0	6,024.0	11,636.8	5,892.0	115.1	118.3	-84.54	6,120.9	-856.4	1,366.0	1,134.0	232.00	5.888		
11,800.0	6,024.0	11,736.8	5,892.0	117.0	120.2	-84.54	6,220.9	-854.5	1,364.1	1,128.4	235.78	5.786		
11,900.0	6,024.0	11,836.8	5,892.0	118.9	122.1	-84.53	6,320.8	-852.7	1,362.3	1,122.7	239.57	5.687		
12,000.0	6,024.0	11,936.8	5,892.0	120.8	124.0	-84.52	6,420.8	-850.8	1,360.5	1,117.1	243.36	5.590		
12,100.0	6,024.0	12,036.8	5,892.0	122.7	125.9	-84.51	6,520.8	-849.0	1,358.6	1,111.5	247.14	5.497		
12,200.0	6,024.0	12,136.7	5,892.0	124.6	127.8	-84.51	6,620.7	-847.2	1,356.8	1,105.9	250.93	5.407		
12,300.0	6,024.0	12,236.7	5,892.0	126.5	129.7	-84.50	6,720.7	-845.3	1,355.0	1,100.3	254.72	5.319		
12,400.0	6,024.0	12,336.7	5,892.0	128.4	131.6	-84.49	6,820.7	-843.5	1,353.1	1,094.6	258.51	5.234		
12,500.0	6,024.0	12,436.7	5,892.0	130.3	133.5	-84.48	6,920.6	-841.6	1,351.3	1,089.0	262.31	5.152		
12,600.0	6,024.0	12,536.7	5,892.0	132.2	135.4	-84.48	7,020.6	-839.8	1,349.5	1,083.4	266.10	5.071		
12,700.0	6,024.0	12,636.7	5,892.0	134.1	137.3	-84.47	7,120.6	-837.9	1,347.6	1,077.8	269.89	4.993		
12,800.0	6,024.0	12,736.6	5,892.0	136.0	139.2	-84.46	7,220.5	-836.1	1,345.8	1,072.1	273.69	4.917		
12,900.0	6,024.0	12,836.6	5,892.0	137.9	141.1	-84.45	7,320.5	-834.3	1,344.0	1,066.5	277.48	4.844		
13,000.0	6,024.0	12,936.6	5,892.0	139.8	143.0	-84.45	7,420.5	-832.4	1,342.2	1,060.9	281.28	4.772		
13,100.0	6,024.0	13,036.6	5,892.0	141.7	145.0	-84.44	7,520.4	-830.6	1,340.3	1,055.2	285.07	4.702		
13,200.0	6,024.0	13,136.6	5,892.0	143.6	146.9	-84.43	7,620.4	-828.7	1,338.5	1,049.6	288.87	4.634		
13,300.0	6,024.0	13,236.6	5,892.0	145.5	148.8	-84.42	7,720.3	-826.9	1,336.7	1,044.0	292.66	4.567		
13,400.0	6,024.0	13,336.5	5,892.0	147.4	150.7	-84.41	7,820.3	-825.0	1,334.8	1,038.4	296.46	4.503		
13,500.0	6,024.0	13,436.5	5,892.0	149.3	152.6	-84.41	7,920.3	-823.2	1,333.0	1,032.7	300.26	4.439		
13,600.0	6,024.0	13,536.5	5,892.0	151.2	154.5	-84.40	8,020.2	-821.4	1,331.2	1,027.1	304.06	4.378		
13,700.0	6,024.0	13,636.5	5,892.0	153.2	156.4	-84.39	8,120.2	-819.5	1,329.3	1,021.5	307.85	4.318		
13,800.0	6,024.0	13,736.5	5,892.0	155.1	158.3	-84.38	8,220.2	-817.7	1,327.5	1,015.8	311.65	4.260		
13,900.0	6,024.0	13,821.2	5,892.0	156.6	159.9	-84.38	8,304.9	-816.1	1,325.8	1,010.9	314.82	4.211		
13,909.0	6,024.0	13,821.2	5,892.0	156.8	159.9	-84.38	8,304.9	-816.1	1,325.7	1,010.8	314.96	4.209		
13,909.0	6,024.0	13,821.2	5,892.0	156.8	159.9	-84.38	8,304.9	-816.1	1,325.7	1,010.8	314.96	4.209 ES, SF		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #21C-0908B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4861.0usft
<b>Reference Site:</b>	S21-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4861.0usft
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #21C-0908B	<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 #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB=17' @ 4861.0usft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Razor #21C-0908B  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.05°

