

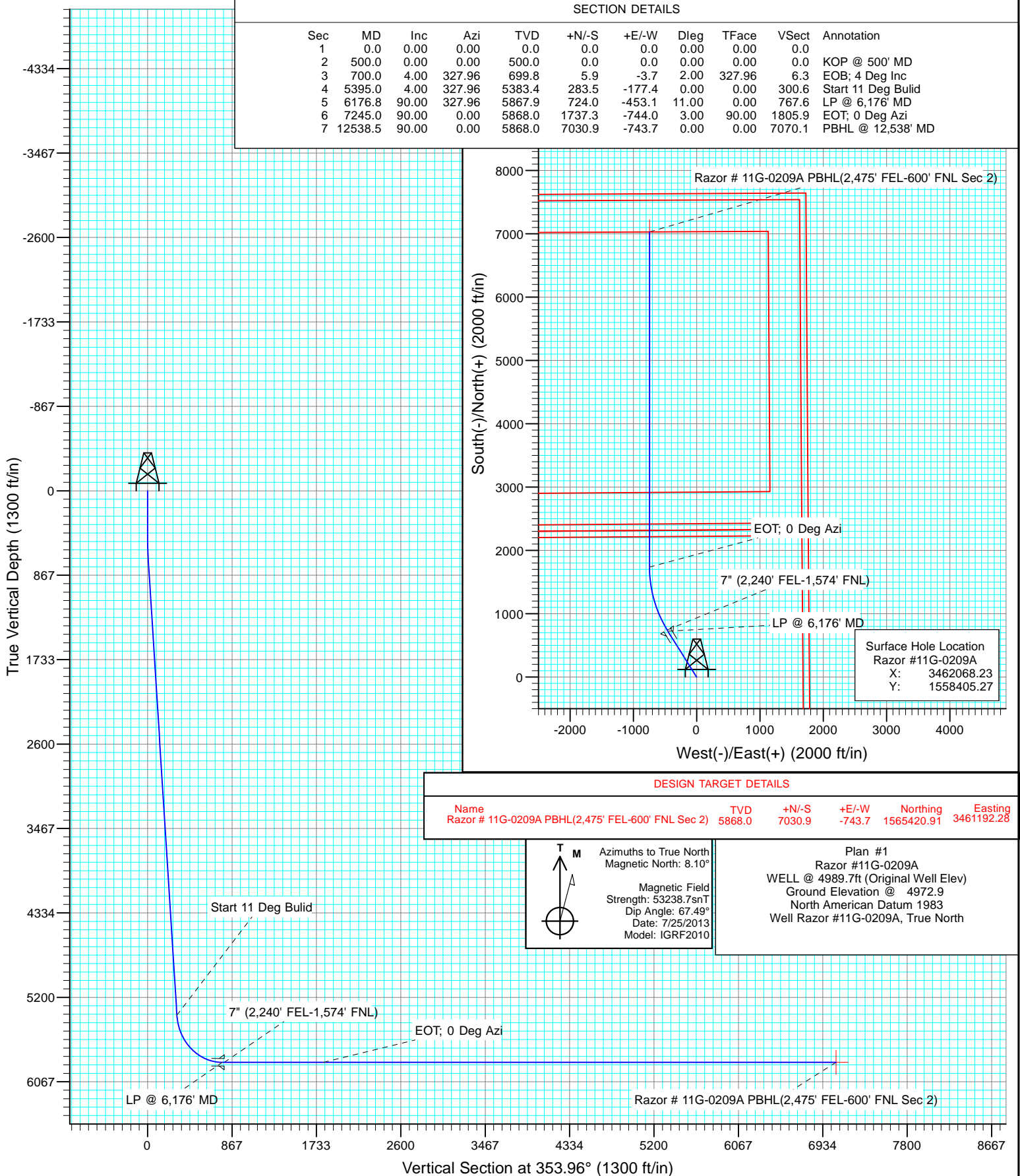


Project: Weld County, CO  
Site: S11-T10N-R58W  
Well: Razor #11G-0209A  
Wellbore: HZ  
Design: Plan #1



#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP @ 500' MD
3	700.0	4.00	327.96	699.8	5.9	-3.7	2.00	327.96	6.3	EOB; 4 Deg Inc
4	5395.0	4.00	327.96	5383.4	283.5	-177.4	0.00	0.00	300.6	Start 11 Deg Bulid
5	6176.8	90.00	327.96	5867.9	724.0	-453.1	11.00	0.00	767.6	LP @ 6,176' MD
6	7245.0	90.00	0.00	5868.0	1737.3	-744.0	3.00	90.00	1805.9	EOT; 0 Deg Azi
7	12538.5	90.00	0.00	5868.0	7030.9	-743.7	0.00	0.00	7070.1	PBHL @ 12,538' MD



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor # 11G-0209A PBHL(2,475' FEL-600' FNL Sec 2)	5868.0	7030.9	-743.7	1565420.91	3461192.28



Azimuths to True North  
Magnetic North: 8.10°  
Magnetic Field  
Strength: 53238.7snT  
Dip Angle: 67.49°  
Date: 7/25/2013  
Model: IGRF2010

Plan #1  
Razor #11G-0209A  
WELL @ 4989.7ft (Original Well Elev)  
Ground Elevation @ 4972.9  
North American Datum 1983  
Well Razor #11G-0209A, True North

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

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

Site		S11-T10N-R58W			
Site Position:		Northing:	1,558,623.69 ft	Latitude:	40.854775
From:	Lat/Long	Easting:	3,463,396.85 ft	Longitude:	-103.824847
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.08 °

Well	Razor #11G-0209A					
Well Position	+N/-S	0.0 ft	Northing:	1,558,405.27 ft	Latitude:	40.854244
	+E/-W	0.0 ft	Easting:	3,462,068.23 ft	Longitude:	-103.829664
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,972.9 ft

<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	7/25/2013	8.10	67.49	53,239

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	353.96	

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	4.00	327.96	699.8	5.9	-3.7	2.00	2.00	0.00	327.96	
5,395.0	4.00	327.96	5,383.4	283.5	-177.4	0.00	0.00	0.00	0.00	
6,176.8	90.00	327.96	5,867.9	724.0	-453.1	11.00	11.00	0.00	0.00	
7,245.0	90.00	0.00	5,868.0	1,737.3	-744.0	3.00	0.00	3.00	90.00	
12,538.5	90.00	0.00	5,868.0	7,030.9	-743.7	0.00	0.00	0.00	0.00	Razor # 11G-0209A P

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500' MD
600.0	2.00	327.96	600.0	1.5	-0.9	1.6	2.00	2.00	
700.0	4.00	327.96	699.8	5.9	-3.7	6.3	2.00	2.00	EOB; 4 Deg Inc
800.0	4.00	327.96	799.6	11.8	-7.4	12.5	0.00	0.00	
900.0	4.00	327.96	899.4	17.7	-11.1	18.8	0.00	0.00	
1,000.0	4.00	327.96	999.1	23.7	-14.8	25.1	0.00	0.00	
1,100.0	4.00	327.96	1,098.9	29.6	-18.5	31.4	0.00	0.00	
1,200.0	4.00	327.96	1,198.6	35.5	-22.2	37.6	0.00	0.00	
1,300.0	4.00	327.96	1,298.4	41.4	-25.9	43.9	0.00	0.00	
1,400.0	4.00	327.96	1,398.1	47.3	-29.6	50.2	0.00	0.00	
1,500.0	4.00	327.96	1,497.9	53.2	-33.3	56.4	0.00	0.00	
1,600.0	4.00	327.96	1,597.6	59.1	-37.0	62.7	0.00	0.00	
1,700.0	4.00	327.96	1,697.4	65.0	-40.7	69.0	0.00	0.00	
1,800.0	4.00	327.96	1,797.2	71.0	-44.4	75.2	0.00	0.00	
1,900.0	4.00	327.96	1,896.9	76.9	-48.1	81.5	0.00	0.00	
2,000.0	4.00	327.96	1,996.7	82.8	-51.8	87.8	0.00	0.00	
2,100.0	4.00	327.96	2,096.4	88.7	-55.5	94.0	0.00	0.00	
2,200.0	4.00	327.96	2,196.2	94.6	-59.2	100.3	0.00	0.00	
2,300.0	4.00	327.96	2,295.9	100.5	-62.9	106.6	0.00	0.00	
2,400.0	4.00	327.96	2,395.7	106.4	-66.6	112.9	0.00	0.00	
2,500.0	4.00	327.96	2,495.5	112.4	-70.3	119.1	0.00	0.00	
2,600.0	4.00	327.96	2,595.2	118.3	-74.0	125.4	0.00	0.00	
2,700.0	4.00	327.96	2,695.0	124.2	-77.7	131.7	0.00	0.00	
2,800.0	4.00	327.96	2,794.7	130.1	-81.4	137.9	0.00	0.00	
2,900.0	4.00	327.96	2,894.5	136.0	-85.1	144.2	0.00	0.00	
3,000.0	4.00	327.96	2,994.2	141.9	-88.8	150.5	0.00	0.00	
3,100.0	4.00	327.96	3,094.0	147.8	-92.5	156.7	0.00	0.00	
3,200.0	4.00	327.96	3,193.7	153.7	-96.2	163.0	0.00	0.00	
3,300.0	4.00	327.96	3,293.5	159.7	-99.9	169.3	0.00	0.00	
3,400.0	4.00	327.96	3,393.3	165.6	-103.6	175.5	0.00	0.00	
3,500.0	4.00	327.96	3,493.0	171.5	-107.3	181.8	0.00	0.00	
3,600.0	4.00	327.96	3,592.8	177.4	-111.0	188.1	0.00	0.00	
3,700.0	4.00	327.96	3,692.5	183.3	-114.7	194.4	0.00	0.00	
3,800.0	4.00	327.96	3,792.3	189.2	-118.4	200.6	0.00	0.00	
3,900.0	4.00	327.96	3,892.0	195.1	-122.1	206.9	0.00	0.00	
4,000.0	4.00	327.96	3,991.8	201.0	-125.8	213.2	0.00	0.00	
4,100.0	4.00	327.96	4,091.6	207.0	-129.5	219.4	0.00	0.00	
4,200.0	4.00	327.96	4,191.3	212.9	-133.2	225.7	0.00	0.00	
4,300.0	4.00	327.96	4,291.1	218.8	-136.9	232.0	0.00	0.00	
4,400.0	4.00	327.96	4,390.8	224.7	-140.6	238.2	0.00	0.00	
4,500.0	4.00	327.96	4,490.6	230.6	-144.3	244.5	0.00	0.00	
4,600.0	4.00	327.96	4,590.3	236.5	-148.0	250.8	0.00	0.00	
4,700.0	4.00	327.96	4,690.1	242.4	-151.7	257.1	0.00	0.00	
4,800.0	4.00	327.96	4,789.9	248.4	-155.4	263.3	0.00	0.00	
4,900.0	4.00	327.96	4,889.6	254.3	-159.1	269.6	0.00	0.00	
5,000.0	4.00	327.96	4,989.4	260.2	-162.8	275.9	0.00	0.00	
5,100.0	4.00	327.96	5,089.1	266.1	-166.5	282.1	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 #11G-0209A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	327.96	5,188.9	272.0	-170.2	288.4	0.00	0.00	
5,300.0	4.00	327.96	5,288.6	277.9	-173.9	294.7	0.00	0.00	
5,395.0	4.00	327.96	5,383.4	283.5	-177.4	300.6	0.00	0.00	Start 11 Deg Build
5,400.0	4.55	327.96	5,388.4	283.9	-177.6	301.0	11.00	11.00	
5,450.0	10.05	327.96	5,438.0	289.2	-181.0	306.7	11.00	11.00	
5,500.0	15.55	327.96	5,486.7	298.6	-186.9	316.6	11.00	11.00	
5,550.0	21.05	327.96	5,534.2	311.9	-195.2	330.7	11.00	11.00	
5,600.0	26.55	327.96	5,579.9	329.0	-205.9	348.9	11.00	11.00	
5,650.0	32.05	327.96	5,623.5	349.8	-218.9	370.8	11.00	11.00	
5,700.0	37.55	327.96	5,664.5	373.9	-234.0	396.5	11.00	11.00	
5,750.0	43.05	327.96	5,702.6	401.3	-251.2	425.5	11.00	11.00	
5,800.0	48.55	327.96	5,737.5	431.7	-270.2	457.7	11.00	11.00	
5,850.0	54.05	327.96	5,768.7	464.8	-290.9	492.8	11.00	11.00	
5,900.0	59.55	327.96	5,796.1	500.2	-313.1	530.4	11.00	11.00	
5,931.0	62.96	327.96	5,811.0	523.3	-327.5	554.8	11.00	11.00	Top Niobrara
5,950.0	65.05	327.96	5,819.3	537.7	-336.5	570.1	11.00	11.00	
6,000.0	70.55	327.96	5,838.2	577.0	-361.1	611.7	11.00	11.00	
6,050.0	76.05	327.96	5,852.6	617.5	-386.5	654.8	11.00	11.00	
6,100.0	81.55	327.96	5,862.3	659.1	-412.5	698.8	11.00	11.00	
6,150.0	87.05	327.96	5,867.3	701.3	-438.9	743.5	11.00	11.00	
6,176.8	90.00	327.96	5,867.9	724.0	-453.1	767.6	11.00	11.00	LP @ 6,176' MD
6,200.0	90.00	328.66	5,867.9	743.7	-465.3	788.5	3.00	0.00	7" (2,240' FEL-1,574' FNL)
6,300.0	90.00	331.66	5,867.9	830.4	-515.0	880.0	3.00	0.00	
6,400.0	90.00	334.66	5,867.9	919.6	-560.2	973.5	3.00	0.00	
6,500.0	90.00	337.66	5,867.9	1,011.1	-600.6	1,068.7	3.00	0.00	
6,600.0	90.00	340.66	5,868.0	1,104.5	-636.2	1,165.3	3.00	0.00	
6,700.0	90.00	343.66	5,868.0	1,199.7	-666.8	1,263.2	3.00	0.00	
6,800.0	90.00	346.66	5,868.0	1,296.4	-692.4	1,362.0	3.00	0.00	
6,900.0	90.00	349.66	5,868.0	1,394.2	-713.0	1,461.5	3.00	0.00	
7,000.0	90.00	352.66	5,868.0	1,493.0	-728.3	1,561.4	3.00	0.00	
7,100.0	90.00	355.66	5,868.0	1,592.5	-738.5	1,661.3	3.00	0.00	
7,200.0	90.00	358.66	5,868.0	1,692.4	-743.5	1,761.2	3.00	0.00	
7,245.0	90.00	0.00	5,868.0	1,737.3	-744.0	1,805.9	3.00	0.00	EOT; 0 Deg Azi
7,300.0	90.00	0.00	5,868.0	1,792.4	-744.0	1,860.7	0.00	0.00	
7,400.0	90.00	0.00	5,868.0	1,892.4	-744.0	1,960.1	0.00	0.00	
7,500.0	90.00	0.00	5,868.0	1,992.4	-744.0	2,059.6	0.00	0.00	
7,600.0	90.00	0.00	5,868.0	2,092.4	-744.0	2,159.0	0.00	0.00	
7,700.0	90.00	0.00	5,868.0	2,192.4	-744.0	2,258.5	0.00	0.00	
7,800.0	90.00	0.00	5,868.0	2,292.4	-744.0	2,357.9	0.00	0.00	
7,900.0	90.00	0.00	5,868.0	2,392.4	-744.0	2,457.3	0.00	0.00	
8,000.0	90.00	0.00	5,868.0	2,492.4	-744.0	2,556.8	0.00	0.00	
8,100.0	90.00	0.00	5,868.0	2,592.4	-744.0	2,656.2	0.00	0.00	
8,200.0	90.00	0.00	5,868.0	2,692.4	-744.0	2,755.7	0.00	0.00	
8,300.0	90.00	0.00	5,868.0	2,792.4	-743.9	2,855.1	0.00	0.00	
8,400.0	90.00	0.00	5,868.0	2,892.4	-743.9	2,954.6	0.00	0.00	
8,500.0	90.00	0.00	5,868.0	2,992.4	-743.9	3,054.0	0.00	0.00	
8,600.0	90.00	0.00	5,868.0	3,092.4	-743.9	3,153.5	0.00	0.00	
8,700.0	90.00	0.00	5,868.0	3,192.4	-743.9	3,252.9	0.00	0.00	
8,800.0	90.00	0.00	5,868.0	3,292.4	-743.9	3,352.3	0.00	0.00	
8,900.0	90.00	0.00	5,868.0	3,392.4	-743.9	3,451.8	0.00	0.00	
9,000.0	90.00	0.00	5,868.0	3,492.4	-743.9	3,551.2	0.00	0.00	
9,100.0	90.00	0.00	5,868.0	3,592.4	-743.9	3,650.7	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 #11G-0209A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,200.0	90.00	0.00	5,868.0	3,692.4	-743.9	3,750.1	0.00	0.00	
9,300.0	90.00	0.00	5,868.0	3,792.4	-743.9	3,849.6	0.00	0.00	
9,400.0	90.00	0.00	5,868.0	3,892.4	-743.9	3,949.0	0.00	0.00	
9,500.0	90.00	0.00	5,868.0	3,992.4	-743.9	4,048.5	0.00	0.00	
9,600.0	90.00	0.00	5,868.0	4,092.4	-743.9	4,147.9	0.00	0.00	
9,700.0	90.00	0.00	5,868.0	4,192.4	-743.8	4,247.3	0.00	0.00	
9,800.0	90.00	0.00	5,868.0	4,292.4	-743.8	4,346.8	0.00	0.00	
9,900.0	90.00	0.00	5,868.0	4,392.4	-743.8	4,446.2	0.00	0.00	
10,000.0	90.00	0.00	5,868.0	4,492.4	-743.8	4,545.7	0.00	0.00	
10,100.0	90.00	0.00	5,868.0	4,592.4	-743.8	4,645.1	0.00	0.00	
10,200.0	90.00	0.00	5,868.0	4,692.4	-743.8	4,744.6	0.00	0.00	
10,300.0	90.00	0.00	5,868.0	4,792.4	-743.8	4,844.0	0.00	0.00	
10,400.0	90.00	0.00	5,868.0	4,892.4	-743.8	4,943.5	0.00	0.00	
10,500.0	90.00	0.00	5,868.0	4,992.4	-743.8	5,042.9	0.00	0.00	
10,600.0	90.00	0.00	5,868.0	5,092.4	-743.8	5,142.3	0.00	0.00	
10,700.0	90.00	0.00	5,868.0	5,192.4	-743.8	5,241.8	0.00	0.00	
10,800.0	90.00	0.00	5,868.0	5,292.4	-743.8	5,341.2	0.00	0.00	
10,900.0	90.00	0.00	5,868.0	5,392.4	-743.8	5,440.7	0.00	0.00	
11,000.0	90.00	0.00	5,868.0	5,492.4	-743.8	5,540.1	0.00	0.00	
11,100.0	90.00	0.00	5,868.0	5,592.4	-743.8	5,639.6	0.00	0.00	
11,200.0	90.00	0.00	5,868.0	5,692.4	-743.7	5,739.0	0.00	0.00	
11,300.0	90.00	0.00	5,868.0	5,792.4	-743.7	5,838.5	0.00	0.00	
11,400.0	90.00	0.00	5,868.0	5,892.4	-743.7	5,937.9	0.00	0.00	
11,500.0	90.00	0.00	5,868.0	5,992.4	-743.7	6,037.4	0.00	0.00	
11,600.0	90.00	0.00	5,868.0	6,092.4	-743.7	6,136.8	0.00	0.00	
11,700.0	90.00	0.00	5,868.0	6,192.4	-743.7	6,236.2	0.00	0.00	
11,800.0	90.00	0.00	5,868.0	6,292.4	-743.7	6,335.7	0.00	0.00	
11,900.0	90.00	0.00	5,868.0	6,392.4	-743.7	6,435.1	0.00	0.00	
12,000.0	90.00	0.00	5,868.0	6,492.4	-743.7	6,534.6	0.00	0.00	
12,100.0	90.00	0.00	5,868.0	6,592.4	-743.7	6,634.0	0.00	0.00	
12,200.0	90.00	0.00	5,868.0	6,692.4	-743.7	6,733.5	0.00	0.00	
12,300.0	90.00	0.00	5,868.0	6,792.4	-743.7	6,832.9	0.00	0.00	
12,400.0	90.00	0.00	5,868.0	6,892.4	-743.7	6,932.4	0.00	0.00	
12,500.0	90.00	0.00	5,868.0	6,992.4	-743.7	7,031.8	0.00	0.00	
12,538.5	90.00	0.00	5,868.0	7,030.9	-743.7	7,070.1	0.00	0.00	PBHL @ 12,538' MD

Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
Razor # 11G-0209A PBI	0.00	0.00	5,868.0	7,030.9	-743.7	1,565,420.91	3,461,192.28	40.873542	-103.832353
- plan hits target center									
- Point									

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,200.0	5,867.9	7" (2,240' FEL-1,574' FNL)	7.000	7.500

Formations				
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip Direction (°)
5,931.0	5,811.0	Top Niobrara		0.00

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
500.0	500.0	0.0	0.0	KOP @ 500' MD
700.0	699.8	5.9	-3.7	EOB; 4 Deg Inc
5,395.0	5,383.4	283.5	-177.4	Start 11 Deg Bulid
6,176.8	5,867.9	724.0	-453.1	LP @ 6,176' MD
7,245.0	5,868.0	1,737.3	-744.0	EOT; 0 Deg Azi
12,538.5	5,868.0	7,030.9	-743.7	PBHL @ 12,538' MD

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S11-T10N-R58W**

**Razor #11G-0209A**

**HZ**

**Plan #1**

## **Anticollision Report**

**26 July, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

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

<b>Survey Tool Program</b>	<b>Date</b>	7/26/2013		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	12,538.5	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (usft)</b>	<b>Offset Measured Depth (usft)</b>	<b>Distance Between Centres (usft)</b>	<b>Distance Between Ellipses (usft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
S11-T10N-R58W						
Razor #11G-0210B - HZ - Plan #1	500.0	500.0	33.0	31.1	16.646	CC, ES
Razor #11G-0210B - HZ - Plan #1	12,538.5	12,531.1	344.7	86.4	1.335	Level 3, SF
Razor #11G-0211A - HZ - Plan #1	500.0	500.0	66.1	64.1	33.291	CC, ES
Razor #11G-0211A - HZ - Plan #1	12,538.5	12,380.8	659.9	390.9	2.453	SF
Razor #11G-0212B - HZ - Plan #1	500.0	500.0	99.1	97.1	49.937	CC, ES
Razor #11G-0212B - HZ - Plan #1	12,538.5	12,478.9	994.6	727.6	3.725	SF
Razor #11G-1409A - HZ - Plan #1	500.0	500.0	74.9	72.9	37.725	CC, ES
Razor #11G-1409A - HZ - Plan #1	900.0	896.7	94.7	90.9	25.168	SF
Razor #11G-1410B - HZ - Plan #1	500.0	500.0	81.9	79.9	41.238	CC, ES
Razor #11G-1410B - HZ - Plan #1	5,300.0	5,258.3	662.0	638.1	27.620	SF
Razor #11G-1411A - HZ - Plan #1	500.0	500.0	99.9	97.9	50.320	CC, ES
Razor #11G-1411A - HZ - Plan #1	5,400.0	5,352.5	722.9	698.7	29.841	SF
Razor #11G-1412B - HZ - Plan #1	500.0	500.0	124.3	122.3	62.592	CC, ES
Razor #11G-1412B - HZ - Plan #1	5,400.0	5,347.0	774.0	750.0	32.172	SF



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0210B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	33.0	33.0	32.9	0.19	176.699		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	33.0	33.0	32.4	0.64	51.911		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	33.0	33.0	31.5	1.54	21.518		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	33.0	33.0	31.1	1.99	16.646	CC, ES	
600.0	600.0	600.0	600.0	1.2	1.2	124.53	0.0	33.0	34.0	31.6	2.43	13.976		
700.0	699.8	700.5	700.4	1.4	1.4	128.79	1.6	32.4	36.4	33.5	2.88	12.624		
800.0	799.6	801.1	800.9	1.7	1.7	130.01	6.6	30.5	38.2	34.9	3.33	11.478		
900.0	899.4	901.1	900.7	1.9	1.9	128.95	13.0	27.9	39.3	35.5	3.79	10.357		
1,000.0	999.1	1,001.1	1,000.4	2.2	2.1	127.95	19.5	25.3	40.4	36.1	4.27	9.463		
1,100.0	1,098.9	1,101.1	1,100.2	2.4	2.4	126.99	26.0	22.8	41.4	36.7	4.74	8.737		
1,200.0	1,198.6	1,201.0	1,199.9	2.7	2.6	126.09	32.5	20.2	42.5	37.3	5.23	8.138		
1,300.0	1,298.4	1,301.0	1,299.7	2.9	2.9	125.23	39.0	17.6	43.6	37.9	5.71	7.637		
1,400.0	1,398.1	1,401.0	1,399.4	3.2	3.1	124.41	45.5	15.1	44.7	38.5	6.20	7.213		
1,500.0	1,497.9	1,501.0	1,499.1	3.4	3.4	123.64	52.0	12.5	45.9	39.2	6.70	6.848		
1,600.0	1,597.6	1,601.0	1,598.9	3.7	3.6	122.90	58.5	10.0	47.0	39.8	7.19	6.533		
1,700.0	1,697.4	1,701.0	1,698.6	3.9	3.9	122.19	64.9	7.4	48.1	40.4	7.69	6.258		
1,800.0	1,797.2	1,801.0	1,798.4	4.2	4.1	121.52	71.4	4.8	49.3	41.1	8.19	6.016		
1,900.0	1,896.9	1,901.0	1,898.1	4.4	4.4	120.88	77.9	2.3	50.4	41.7	8.69	5.801		
2,000.0	1,996.7	2,001.0	1,997.9	4.7	4.6	120.26	84.4	-0.3	51.6	42.4	9.19	5.610		
2,100.0	2,096.4	2,101.0	2,097.6	4.9	4.9	119.68	90.9	-2.9	52.7	43.0	9.69	5.438		
2,200.0	2,196.2	2,201.0	2,197.4	5.2	5.1	119.12	97.4	-5.4	53.9	43.7	10.20	5.283		
2,300.0	2,295.9	2,301.0	2,297.1	5.5	5.4	118.58	103.9	-8.0	55.0	44.3	10.70	5.143		
2,400.0	2,395.7	2,400.9	2,396.9	5.7	5.7	118.06	110.4	-10.5	56.2	45.0	11.21	5.016		
2,500.0	2,495.5	2,500.9	2,496.6	6.0	5.9	117.57	116.8	-13.1	57.4	45.7	11.72	4.899		
2,600.0	2,595.2	2,600.9	2,596.4	6.2	6.2	117.10	123.3	-15.7	58.6	46.4	12.22	4.793		
2,700.0	2,695.0	2,700.9	2,696.1	6.5	6.4	116.64	129.8	-18.2	59.8	47.0	12.73	4.695		
2,800.0	2,794.7	2,800.9	2,795.9	6.7	6.7	116.20	136.3	-20.8	61.0	47.7	13.24	4.604		
2,900.0	2,894.5	2,900.9	2,895.6	7.0	6.9	115.78	142.8	-23.4	62.1	48.4	13.75	4.520		
3,000.0	2,994.2	3,000.9	2,995.4	7.2	7.2	115.38	149.3	-25.9	63.3	49.1	14.26	4.443		
3,100.0	3,094.0	3,100.9	3,095.1	7.5	7.4	114.99	155.8	-28.5	64.5	49.8	14.77	4.370		
3,200.0	3,193.7	3,200.9	3,194.9	7.8	7.7	114.61	162.3	-31.0	65.7	50.5	15.28	4.303		
3,300.0	3,293.5	3,300.9	3,294.6	8.0	8.0	114.25	168.7	-33.6	66.9	51.2	15.79	4.240		
3,400.0	3,393.3	3,400.9	3,394.4	8.3	8.2	113.90	175.2	-36.2	68.2	51.9	16.30	4.181		
3,500.0	3,493.0	3,500.9	3,494.1	8.5	8.5	113.56	181.7	-38.7	69.4	52.6	16.81	4.126		
3,600.0	3,592.8	3,600.8	3,593.9	8.8	8.7	113.24	188.2	-41.3	70.6	53.3	17.32	4.074		
3,700.0	3,692.5	3,700.8	3,693.6	9.0	9.0	112.92	194.7	-43.8	71.8	54.0	17.83	4.026		
3,800.0	3,792.3	3,800.8	3,793.4	9.3	9.2	112.62	201.2	-46.4	73.0	54.7	18.35	3.980		
3,900.0	3,892.0	3,900.8	3,893.1	9.6	9.5	112.32	207.7	-49.0	74.2	55.4	18.86	3.936		
4,000.0	3,991.8	4,000.8	3,992.9	9.8	9.8	112.04	214.2	-51.5	75.4	56.1	19.37	3.895		
4,100.0	4,091.6	4,100.8	4,092.6	10.1	10.0	111.76	220.6	-54.1	76.7	56.8	19.88	3.856		
4,200.0	4,191.3	4,200.8	4,192.4	10.3	10.3	111.50	227.1	-56.7	77.9	57.5	20.40	3.819		
4,300.0	4,291.1	4,300.8	4,292.1	10.6	10.5	111.24	233.6	-59.2	79.1	58.2	20.91	3.784		
4,400.0	4,390.8	4,400.8	4,391.8	10.9	10.8	110.99	240.1	-61.8	80.3	58.9	21.42	3.751		
4,500.0	4,490.6	4,500.8	4,491.6	11.1	11.0	110.74	246.6	-64.3	81.6	59.6	21.93	3.719		
4,600.0	4,590.3	4,600.8	4,591.3	11.4	11.3	110.51	253.1	-66.9	82.8	60.4	22.45	3.689		
4,700.0	4,690.1	4,700.8	4,691.1	11.6	11.5	110.28	259.6	-69.5	84.0	61.1	22.96	3.660		
4,800.0	4,789.9	4,800.7	4,790.8	11.9	11.8	110.06	266.1	-72.0	85.3	61.8	23.47	3.632		
4,900.0	4,889.6	4,900.7	4,890.6	12.1	12.1	109.84	272.5	-74.6	86.5	62.5	23.99	3.606		
5,000.0	4,989.4	5,000.7	4,990.3	12.4	12.3	109.63	279.0	-77.2	87.7	63.2	24.50	3.581		
5,100.0	5,089.1	5,100.7	5,090.1	12.7	12.6	109.43	285.5	-79.7	89.0	64.0	25.01	3.557		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0210B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,200.7	5,189.8	12.9	12.8	109.23	292.0	-82.3	90.2	64.7	25.53	3.534	
5,300.0	5,288.6	5,300.7	5,289.6	13.2	13.1	109.03	298.5	-84.8	91.4	65.4	26.04	3.511	
5,400.0	5,388.4	5,400.7	5,389.3	13.4	13.3	108.85	305.0	-87.4	92.7	66.1	26.55	3.491	
5,500.0	5,486.7	5,500.2	5,488.5	13.8	13.6	113.97	311.4	-90.0	97.8	70.9	26.92	3.632	
5,600.0	5,579.9	5,604.9	5,591.5	14.3	14.0	121.78	328.7	-96.8	109.8	82.7	27.05	4.058	
5,700.0	5,664.5	5,713.6	5,692.0	15.0	14.5	126.31	366.4	-111.7	125.6	98.5	27.12	4.633	
5,800.0	5,737.5	5,826.0	5,785.0	15.9	15.3	128.02	425.0	-134.8	143.6	116.2	27.43	5.236	
5,900.0	5,796.1	5,941.9	5,864.3	17.0	16.4	127.52	503.2	-165.7	162.4	134.0	28.43	5.713	
6,000.0	5,838.2	6,060.7	5,924.3	18.3	17.8	125.38	598.3	-203.2	181.1	150.6	30.50	5.938	
6,100.0	5,862.3	6,181.5	5,960.1	19.9	19.5	122.05	705.4	-245.5	198.9	165.2	33.71	5.902	
6,200.0	5,867.9	6,296.6	5,968.9	21.5	21.3	118.33	811.9	-287.5	215.5	177.9	37.65	5.725	
6,300.0	5,867.9	6,385.7	5,968.9	23.1	22.6	116.24	895.8	-317.5	231.3	190.3	41.02	5.639	
6,400.0	5,867.9	6,474.2	5,968.9	24.7	23.9	114.46	980.5	-343.3	246.8	202.5	44.37	5.563	
6,500.0	5,867.9	6,562.1	5,968.9	26.4	25.3	112.95	1,065.6	-365.1	262.0	214.3	47.66	5.497	
6,600.0	5,867.9	6,649.4	5,968.9	28.1	26.6	111.65	1,151.1	-382.8	276.7	225.8	50.87	5.439	
6,700.0	5,867.9	6,736.2	5,968.9	29.7	28.0	110.52	1,236.8	-396.5	290.9	236.9	53.97	5.390	
6,800.0	5,867.9	6,822.4	5,968.9	31.4	29.4	109.55	1,322.5	-406.3	304.6	247.6	56.94	5.349	
6,900.0	5,867.9	6,908.3	5,968.9	33.1	30.7	108.70	1,408.1	-412.2	317.6	257.8	59.77	5.313	
7,000.0	5,867.9	6,996.2	5,968.9	34.8	32.1	107.94	1,496.0	-414.2	330.0	267.5	62.49	5.281	
7,100.0	5,867.9	7,092.7	5,968.9	36.4	33.7	107.34	1,592.5	-414.2	339.7	274.5	65.19	5.211	
7,200.0	5,867.9	7,192.6	5,968.9	38.0	35.4	107.06	1,692.4	-414.2	344.4	276.7	67.73	5.086	
7,300.0	5,867.9	7,292.6	5,968.9	39.5	37.0	107.03	1,792.4	-414.2	344.9	274.3	70.59	4.886	
7,400.0	5,867.9	7,392.6	5,968.9	41.1	38.7	107.03	1,892.4	-414.2	344.9	271.0	73.88	4.668	
7,500.0	5,867.9	7,492.6	5,968.9	42.7	40.5	107.03	1,992.4	-414.2	344.9	267.7	77.21	4.467	
7,600.0	5,867.9	7,592.6	5,968.9	44.3	42.2	107.03	2,092.4	-414.2	344.9	264.3	80.57	4.281	
7,700.0	5,867.9	7,692.6	5,968.9	46.0	43.9	107.03	2,192.4	-414.2	344.9	261.0	83.96	4.108	
7,800.0	5,867.9	7,792.6	5,968.9	47.7	45.7	107.03	2,292.4	-414.2	344.9	257.5	87.37	3.948	
7,900.0	5,868.0	7,892.6	5,968.9	49.3	47.5	107.03	2,392.4	-414.2	344.9	254.1	90.81	3.798	
8,000.0	5,868.0	7,992.6	5,968.9	51.0	49.3	107.03	2,492.4	-414.2	344.9	250.6	94.26	3.659	
8,100.0	5,868.0	8,092.6	5,969.0	52.8	51.1	107.03	2,592.4	-414.2	344.9	247.2	97.73	3.529	
8,200.0	5,868.0	8,192.6	5,969.0	54.5	52.9	107.03	2,692.4	-414.2	344.9	243.7	101.22	3.407	
8,300.0	5,868.0	8,292.6	5,969.0	56.2	54.7	107.03	2,792.4	-414.2	344.9	240.2	104.73	3.293	
8,400.0	5,868.0	8,392.6	5,969.0	58.0	56.5	107.03	2,892.4	-414.2	344.9	236.6	108.24	3.186	
8,500.0	5,868.0	8,492.6	5,969.0	59.7	58.3	107.03	2,992.4	-414.2	344.9	233.1	111.77	3.086	
8,600.0	5,868.0	8,592.6	5,969.0	61.5	60.2	107.03	3,092.4	-414.2	344.9	229.6	115.31	2.991	
8,700.0	5,868.0	8,692.6	5,969.0	63.3	62.0	107.03	3,192.4	-414.2	344.9	226.0	118.86	2.902	
8,800.0	5,868.0	8,792.6	5,969.0	65.1	63.8	107.03	3,292.4	-414.2	344.9	222.4	122.42	2.817	
8,900.0	5,868.0	8,892.6	5,969.0	66.9	65.7	107.03	3,392.4	-414.2	344.9	218.9	125.98	2.737	
9,000.0	5,868.0	8,992.6	5,969.0	68.7	67.5	107.03	3,492.4	-414.2	344.9	215.3	129.55	2.662	
9,100.0	5,868.0	9,092.6	5,969.0	70.5	69.4	107.03	3,592.4	-414.2	344.9	211.7	133.13	2.590	
9,200.0	5,868.0	9,192.6	5,969.0	72.3	71.3	107.03	3,692.4	-414.2	344.8	208.1	136.72	2.522	
9,300.0	5,868.0	9,292.6	5,969.0	74.1	73.1	107.03	3,792.4	-414.2	344.8	204.5	140.31	2.458	
9,400.0	5,868.0	9,392.6	5,969.0	76.0	75.0	107.03	3,892.4	-414.2	344.8	200.9	143.91	2.396	
9,500.0	5,868.0	9,492.6	5,969.0	77.8	76.9	107.03	3,992.4	-414.1	344.8	197.3	147.51	2.338	
9,600.0	5,868.0	9,592.6	5,969.0	79.6	78.7	107.03	4,092.4	-414.1	344.8	193.7	151.12	2.282	
9,700.0	5,868.0	9,692.6	5,969.0	81.5	80.6	107.03	4,192.4	-414.1	344.8	190.1	154.73	2.229	
9,800.0	5,868.0	9,792.6	5,969.0	83.3	82.5	107.03	4,292.4	-414.1	344.8	186.5	158.35	2.178	
9,900.0	5,868.0	9,892.6	5,969.0	85.2	84.4	107.03	4,392.4	-414.1	344.8	182.9	161.97	2.129	
10,000.0	5,868.0	9,992.6	5,969.0	87.0	86.2	107.03	4,492.4	-414.1	344.8	179.2	165.59	2.082	
10,100.0	5,868.0	10,092.6	5,969.0	88.9	88.1	107.03	4,592.4	-414.1	344.8	175.6	169.22	2.038	
10,200.0	5,868.0	10,192.6	5,969.0	90.7	90.0	107.03	4,692.4	-414.1	344.8	172.0	172.85	1.995	
10,300.0	5,868.0	10,292.6	5,969.0	92.6	91.9	107.03	4,792.4	-414.1	344.8	168.3	176.48	1.954	

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0210B - 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
10,400.0	5,868.0	10,392.6	5,969.0	94.4	93.8	107.03	4,892.4	-414.1	344.8	164.7	180.11	1.914	
10,500.0	5,868.0	10,492.6	5,969.0	96.3	95.7	107.03	4,992.4	-414.1	344.8	161.0	183.75	1.876	
10,600.0	5,868.0	10,592.6	5,969.0	98.2	97.5	107.03	5,092.4	-414.1	344.8	157.4	187.39	1.840	
10,700.0	5,868.0	10,692.6	5,969.0	100.0	99.4	107.03	5,192.4	-414.1	344.8	153.8	191.03	1.805	
10,800.0	5,868.0	10,792.6	5,969.0	101.9	101.3	107.03	5,292.4	-414.1	344.8	150.1	194.68	1.771	
10,900.0	5,868.0	10,892.6	5,969.0	103.8	103.2	107.03	5,392.4	-414.1	344.8	146.5	198.32	1.738	
11,000.0	5,868.0	10,992.6	5,969.0	105.6	105.1	107.03	5,492.4	-414.1	344.8	142.8	201.97	1.707	
11,100.0	5,868.0	11,092.6	5,969.0	107.5	107.0	107.03	5,592.4	-414.1	344.8	139.1	205.62	1.677	
11,200.0	5,868.0	11,192.6	5,969.0	109.4	108.9	107.03	5,692.4	-414.1	344.8	135.5	209.27	1.647	
11,300.0	5,868.0	11,292.6	5,969.0	111.3	110.8	107.04	5,792.4	-414.1	344.8	131.8	212.92	1.619	
11,400.0	5,868.0	11,392.6	5,969.0	113.1	112.7	107.04	5,892.4	-414.1	344.8	128.2	216.58	1.592	
11,500.0	5,868.0	11,492.6	5,969.0	115.0	114.6	107.04	5,992.4	-414.1	344.7	124.5	220.24	1.565	
11,600.0	5,868.0	11,592.6	5,969.0	116.9	116.5	107.04	6,092.4	-414.1	344.7	120.9	223.89	1.540	
11,700.0	5,868.0	11,692.6	5,969.0	118.8	118.4	107.04	6,192.4	-414.1	344.7	117.2	227.55	1.515	
11,800.0	5,868.0	11,792.6	5,969.0	120.7	120.3	107.04	6,292.4	-414.1	344.7	113.5	231.21	1.491	Level 3
11,900.0	5,868.0	11,892.6	5,969.0	122.6	122.2	107.04	6,392.4	-414.1	344.7	109.9	234.87	1.468	Level 3
12,000.0	5,868.0	11,992.6	5,969.0	124.5	124.1	107.04	6,492.4	-414.1	344.7	106.2	238.54	1.445	Level 3
12,100.0	5,868.0	12,092.6	5,969.0	126.3	126.0	107.04	6,592.4	-414.1	344.7	102.5	242.20	1.423	Level 3
12,200.0	5,868.0	12,192.6	5,969.0	128.2	127.9	107.04	6,692.4	-414.1	344.7	98.9	245.86	1.402	Level 3
12,300.0	5,868.0	12,292.6	5,969.0	130.1	129.8	107.04	6,792.4	-414.1	344.7	95.2	249.53	1.381	Level 3
12,400.0	5,868.0	12,392.6	5,969.0	132.0	131.7	107.04	6,892.4	-414.1	344.7	91.5	253.20	1.361	Level 3
12,500.0	5,868.0	12,492.6	5,969.0	133.9	133.6	107.04	6,992.4	-414.1	344.7	87.8	256.86	1.342	Level 3
12,538.5	5,868.0	12,531.1	5,969.0	134.6	134.3	107.04	7,030.9	-414.1	344.7	86.4	258.28	1.335	Level 3, SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0211A - 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	90.01	0.0	66.1	66.1						
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	66.1	66.1	65.9	0.19	353.397			
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	66.1	66.1	65.5	0.64	103.823			
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	66.1	66.1	65.0	1.09	60.850			
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	66.1	66.1	64.6	1.54	43.037			
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	66.1	66.1	64.1	1.99	33.291	CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	123.30	0.0	66.1	67.0	64.6	2.43	27.552			
700.0	699.8	699.8	699.8	1.4	1.4	126.83	0.0	66.1	70.0	67.2	2.88	24.308			
800.0	799.6	800.4	800.4	1.7	1.7	129.87	1.7	65.8	73.9	70.5	3.33	22.165			
900.0	899.4	901.2	901.0	1.9	1.9	130.14	6.9	64.8	76.7	72.9	3.79	20.242			
1,000.0	999.1	1,001.2	1,000.7	2.2	2.1	129.20	13.8	63.6	79.1	74.8	4.26	18.572			
1,100.0	1,098.9	1,101.1	1,100.5	2.4	2.4	128.31	20.7	62.4	81.4	76.7	4.73	17.207			
1,200.0	1,198.6	1,201.1	1,200.2	2.7	2.6	127.48	27.5	61.2	83.8	78.6	5.21	16.076			
1,300.0	1,298.4	1,301.1	1,299.9	2.9	2.8	126.69	34.4	59.9	86.1	80.4	5.70	15.126			
1,400.0	1,398.1	1,401.0	1,399.6	3.2	3.1	125.95	41.3	58.7	88.5	82.4	6.18	14.319			
1,500.0	1,497.9	1,501.0	1,499.4	3.4	3.3	125.24	48.1	57.5	90.9	84.3	6.67	13.626			
1,600.0	1,597.6	1,600.9	1,599.1	3.7	3.6	124.57	55.0	56.3	93.4	86.2	7.17	13.025			
1,700.0	1,697.4	1,700.9	1,698.8	3.9	3.8	123.93	61.9	55.0	95.8	88.1	7.66	12.500			
1,800.0	1,797.2	1,800.9	1,798.5	4.2	4.1	123.33	68.7	53.8	98.3	90.1	8.16	12.038			
1,900.0	1,896.9	1,900.8	1,898.2	4.4	4.3	122.76	75.6	52.6	100.7	92.0	8.66	11.627			
2,000.0	1,996.7	2,000.8	1,998.0	4.7	4.6	122.21	82.4	51.4	103.2	94.0	9.16	11.261			
2,100.0	2,096.4	2,100.8	2,097.7	4.9	4.8	121.69	89.3	50.1	105.6	96.0	9.66	10.933			
2,200.0	2,196.2	2,200.7	2,197.4	5.2	5.1	121.19	96.2	48.9	108.1	98.0	10.17	10.637			
2,300.0	2,295.9	2,300.7	2,297.1	5.5	5.3	120.71	103.0	47.7	110.6	100.0	10.67	10.368			
2,400.0	2,395.7	2,400.7	2,396.8	5.7	5.6	120.26	109.9	46.4	113.1	101.9	11.17	10.124			
2,500.0	2,495.5	2,500.6	2,496.6	6.0	5.9	119.82	116.8	45.2	115.6	103.9	11.68	9.900			
2,600.0	2,595.2	2,600.6	2,596.3	6.2	6.1	119.41	123.6	44.0	118.1	106.0	12.18	9.695			
2,700.0	2,695.0	2,700.6	2,696.0	6.5	6.4	119.01	130.5	42.8	120.7	108.0	12.69	9.507			
2,800.0	2,794.7	2,800.5	2,795.7	6.7	6.6	118.63	137.4	41.5	123.2	110.0	13.20	9.333			
2,900.0	2,894.5	2,900.5	2,895.5	7.0	6.9	118.26	144.2	40.3	125.7	112.0	13.70	9.172			
3,000.0	2,994.2	3,000.5	2,995.2	7.2	7.1	117.91	151.1	39.1	128.2	114.0	14.21	9.023			
3,100.0	3,094.0	3,100.4	3,094.9	7.5	7.4	117.57	158.0	37.9	130.8	116.1	14.72	8.884			
3,200.0	3,193.7	3,200.4	3,194.6	7.8	7.6	117.24	164.8	36.6	133.3	118.1	15.23	8.754			
3,300.0	3,293.5	3,300.4	3,294.3	8.0	7.9	116.93	171.7	35.4	135.9	120.1	15.74	8.633			
3,400.0	3,393.3	3,400.3	3,394.1	8.3	8.1	116.62	178.5	34.2	138.4	122.2	16.25	8.520			
3,500.0	3,493.0	3,500.3	3,493.8	8.5	8.4	116.33	185.4	33.0	141.0	124.2	16.76	8.413			
3,600.0	3,592.8	3,600.2	3,593.5	8.8	8.7	116.05	192.3	31.7	143.5	126.3	17.26	8.313			
3,700.0	3,692.5	3,700.2	3,693.2	9.0	8.9	115.78	199.1	30.5	146.1	128.3	17.77	8.219			
3,800.0	3,792.3	3,800.2	3,792.9	9.3	9.2	115.52	206.0	29.3	148.7	130.4	18.28	8.130			
3,900.0	3,892.0	3,900.1	3,892.7	9.6	9.4	115.27	212.9	28.1	151.2	132.4	18.79	8.046			
4,000.0	3,991.8	4,000.1	3,992.4	9.8	9.7	115.02	219.7	26.8	153.8	134.5	19.30	7.967			
4,100.0	4,091.6	4,100.1	4,092.1	10.1	9.9	114.78	226.6	25.6	156.4	136.5	19.81	7.891			
4,200.0	4,191.3	4,200.0	4,191.8	10.3	10.2	114.56	233.5	24.4	158.9	138.6	20.32	7.820			
4,300.0	4,291.1	4,300.0	4,291.6	10.6	10.4	114.33	240.3	23.1	161.5	140.7	20.84	7.752			
4,400.0	4,390.8	4,400.0	4,391.3	10.9	10.7	114.12	247.2	21.9	164.1	142.7	21.35	7.687			
4,500.0	4,490.6	4,499.9	4,491.0	11.1	11.0	113.91	254.1	20.7	166.7	144.8	21.86	7.626			
4,600.0	4,590.3	4,599.9	4,590.7	11.4	11.2	113.71	260.9	19.5	169.3	146.9	22.37	7.567			
4,700.0	4,690.1	4,699.9	4,690.4	11.6	11.5	113.51	267.8	18.2	171.8	149.0	22.88	7.511			
4,800.0	4,789.9	4,799.8	4,790.2	11.9	11.7	113.32	274.7	17.0	174.4	151.0	23.39	7.458			
4,900.0	4,889.6	4,899.8	4,889.9	12.1	12.0	113.14	281.5	15.8	177.0	153.1	23.90	7.407			
5,000.0	4,989.4	4,999.8	4,989.6	12.4	12.2	112.96	288.4	14.6	179.6	155.2	24.41	7.358			
5,100.0	5,089.1	5,099.7	5,089.3	12.7	12.5	112.79	295.2	13.3	182.2	157.3	24.92	7.311			

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0211A - 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	5,188.9	5,199.7	5,189.0	12.9	12.7	112.62	302.1	12.1	184.8	159.4	25.43	7.266		
5,300.0	5,288.6	5,299.6	5,288.8	13.2	13.0	112.45	309.0	10.9	187.4	161.5	25.95	7.223		
5,400.0	5,388.4	5,399.6	5,388.5	13.4	13.3	112.28	315.9	9.6	190.0	163.6	26.46	7.182		
5,500.0	5,486.7	5,499.6	5,486.8	13.8	13.6	111.26	332.9	6.6	196.5	169.4	27.06	7.262		
5,600.0	5,579.9	5,598.5	5,579.0	14.3	14.1	109.24	367.7	0.4	209.9	182.0	27.92	7.518		
5,700.0	5,664.5	5,695.8	5,661.7	15.0	14.7	106.48	418.0	-8.6	229.7	200.6	29.13	7.884		
5,800.0	5,737.5	5,791.4	5,732.2	15.9	15.5	103.24	481.3	-19.9	255.2	224.4	30.79	8.289		
5,900.0	5,796.1	5,885.3	5,789.0	17.0	16.5	99.73	554.8	-33.0	285.4	252.5	32.88	8.679		
6,000.0	5,838.2	5,977.9	5,830.9	18.3	17.6	96.12	636.0	-47.5	319.1	283.8	35.36	9.026		
6,100.0	5,862.3	6,070.0	5,857.5	19.9	18.9	92.54	722.6	-63.0	355.2	317.1	38.10	9.323		
6,200.0	5,867.9	6,162.3	5,868.2	21.5	20.2	90.04	812.7	-79.1	392.3	351.3	41.02	9.563		
6,300.0	5,867.9	6,200.0	5,868.4	23.1	20.7	90.07	850.1	-84.0	431.5	388.3	43.22	9.984		
6,400.0	5,867.9	6,269.6	5,868.4	24.7	21.7	90.06	919.6	-84.0	476.2	430.4	45.83	10.391		
6,500.0	5,867.9	6,361.0	5,868.4	26.4	23.1	90.06	1,011.1	-84.0	516.6	467.8	48.82	10.582		
6,600.0	5,867.9	6,454.5	5,868.4	28.1	24.6	90.05	1,104.5	-84.0	552.2	500.3	51.92	10.636		
6,700.0	5,867.9	6,549.6	5,868.4	29.7	26.1	90.05	1,199.7	-84.0	582.8	527.8	55.05	10.587		
6,800.0	5,867.9	6,646.3	5,868.4	31.4	27.7	90.04	1,296.4	-84.0	608.5	550.3	58.19	10.457		
6,900.0	5,867.9	6,744.1	5,868.4	33.1	29.4	90.04	1,394.2	-84.0	629.0	567.7	61.28	10.264		
7,000.0	5,867.9	6,842.9	5,868.4	34.8	31.1	90.04	1,493.0	-84.0	644.4	580.1	64.31	10.019		
7,100.0	5,867.9	6,942.4	5,868.4	36.4	32.8	90.04	1,592.5	-84.0	654.6	587.3	67.25	9.734		
7,200.0	5,867.9	7,042.3	5,868.4	38.0	34.6	90.04	1,692.4	-84.0	659.5	589.5	70.05	9.415		
7,300.0	5,867.9	7,142.3	5,868.4	39.5	36.3	90.04	1,792.3	-84.0	660.0	586.9	73.16	9.021		
7,400.0	5,867.9	7,242.3	5,868.4	41.1	38.1	90.04	1,892.3	-84.0	660.0	583.4	76.64	8.613		
7,500.0	5,867.9	7,342.3	5,868.3	42.7	39.9	90.03	1,992.3	-84.0	660.0	579.9	80.14	8.236		
7,600.0	5,867.9	7,442.3	5,868.3	44.3	41.7	90.03	2,092.3	-84.0	660.0	576.4	83.68	7.888		
7,700.0	5,867.9	7,542.3	5,868.3	46.0	43.6	90.03	2,192.3	-83.9	660.0	572.8	87.24	7.566		
7,800.0	5,867.9	7,642.3	5,868.3	47.7	45.4	90.03	2,292.3	-83.9	660.0	569.2	90.82	7.267		
7,900.0	5,868.0	7,742.3	5,868.3	49.3	47.2	90.03	2,392.3	-83.9	660.0	565.6	94.42	6.990		
8,000.0	5,868.0	7,842.3	5,868.3	51.0	49.1	90.03	2,492.3	-83.9	660.0	562.0	98.05	6.732		
8,100.0	5,868.0	7,942.3	5,868.3	52.8	50.9	90.03	2,592.3	-83.9	660.0	558.3	101.69	6.491		
8,200.0	5,868.0	8,042.3	5,868.3	54.5	52.8	90.03	2,692.3	-83.9	660.0	554.7	105.34	6.266		
8,300.0	5,868.0	8,142.3	5,868.3	56.2	54.7	90.03	2,792.3	-83.9	660.0	551.0	109.00	6.055		
8,400.0	5,868.0	8,242.3	5,868.3	58.0	56.5	90.03	2,892.3	-83.9	660.0	547.3	112.68	5.857		
8,500.0	5,868.0	8,342.3	5,868.3	59.7	58.4	90.03	2,992.3	-83.9	660.0	543.6	116.37	5.672		
8,600.0	5,868.0	8,442.3	5,868.3	61.5	60.3	90.03	3,092.3	-83.9	660.0	539.9	120.07	5.497		
8,700.0	5,868.0	8,542.3	5,868.3	63.3	62.1	90.03	3,192.3	-83.9	660.0	536.2	123.78	5.332		
8,800.0	5,868.0	8,642.3	5,868.3	65.1	64.0	90.03	3,292.3	-83.9	660.0	532.5	127.49	5.177		
8,900.0	5,868.0	8,742.3	5,868.2	66.9	65.9	90.03	3,392.3	-83.9	660.0	528.8	131.21	5.030		
9,000.0	5,868.0	8,842.3	5,868.2	68.7	67.8	90.02	3,492.3	-83.9	660.0	525.1	134.94	4.891		
9,100.0	5,868.0	8,942.3	5,868.2	70.5	69.7	90.02	3,592.3	-83.9	660.0	521.3	138.68	4.759		
9,200.0	5,868.0	9,042.3	5,868.2	72.3	71.5	90.02	3,692.3	-83.9	660.0	517.6	142.42	4.634		
9,300.0	5,868.0	9,142.3	5,868.2	74.1	73.4	90.02	3,792.3	-83.9	660.0	513.8	146.17	4.515		
9,400.0	5,868.0	9,242.3	5,868.2	76.0	75.3	90.02	3,892.3	-83.9	660.0	510.1	149.92	4.402		
9,500.0	5,868.0	9,342.3	5,868.2	77.8	77.2	90.02	3,992.3	-83.9	660.0	506.3	153.67	4.295		
9,600.0	5,868.0	9,442.3	5,868.2	79.6	79.1	90.02	4,092.3	-83.9	660.0	502.6	157.43	4.192		
9,700.0	5,868.0	9,542.3	5,868.2	81.5	81.0	90.02	4,192.3	-83.9	660.0	498.8	161.20	4.094		
9,800.0	5,868.0	9,642.3	5,868.2	83.3	82.9	90.02	4,292.3	-83.9	660.0	495.0	164.97	4.001		
9,900.0	5,868.0	9,742.3	5,868.2	85.2	84.8	90.02	4,392.3	-83.9	660.0	491.2	168.74	3.911		
10,000.0	5,868.0	9,842.3	5,868.2	87.0	86.7	90.02	4,492.3	-83.8	660.0	487.5	172.51	3.826		
10,100.0	5,868.0	9,942.3	5,868.2	88.9	88.6	90.02	4,592.3	-83.8	660.0	483.7	176.29	3.744		
10,200.0	5,868.0	10,042.3	5,868.2	90.7	90.5	90.02	4,692.3	-83.8	660.0	479.9	180.07	3.665		
10,300.0	5,868.0	10,142.3	5,868.2	92.6	92.4	90.02	4,792.3	-83.8	660.0	476.1	183.85	3.590		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0211A - HZ - Plan #1												Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
10,400.0	5,868.0	10,242.3	5,868.1	94.4	94.3	90.01	4,892.3	-83.8	660.0	472.3	187.64	3.517	
10,500.0	5,868.0	10,342.3	5,868.1	96.3	96.2	90.01	4,992.3	-83.8	660.0	468.5	191.42	3.448	
10,600.0	5,868.0	10,442.3	5,868.1	98.2	98.1	90.01	5,092.3	-83.8	660.0	464.8	195.21	3.381	
10,700.0	5,868.0	10,542.3	5,868.1	100.0	100.0	90.01	5,192.3	-83.8	660.0	461.0	199.01	3.316	
10,800.0	5,868.0	10,642.3	5,868.1	101.9	101.9	90.01	5,292.3	-83.8	660.0	457.2	202.80	3.254	
10,900.0	5,868.0	10,742.3	5,868.1	103.8	103.8	90.01	5,392.3	-83.8	660.0	453.4	206.59	3.194	
11,000.0	5,868.0	10,842.3	5,868.1	105.6	105.7	90.01	5,492.3	-83.8	660.0	449.6	210.39	3.137	
11,100.0	5,868.0	10,942.3	5,868.1	107.5	107.6	90.01	5,592.3	-83.8	660.0	445.8	214.19	3.081	
11,200.0	5,868.0	11,042.3	5,868.1	109.4	109.5	90.01	5,692.3	-83.8	659.9	442.0	217.99	3.027	
11,300.0	5,868.0	11,142.3	5,868.1	111.3	111.4	90.01	5,792.3	-83.8	659.9	438.2	221.79	2.976	
11,400.0	5,868.0	11,242.3	5,868.1	113.1	113.3	90.01	5,892.3	-83.8	659.9	434.3	225.60	2.925	
11,500.0	5,868.0	11,342.3	5,868.1	115.0	115.3	90.01	5,992.3	-83.8	659.9	430.5	229.40	2.877	
11,600.0	5,868.0	11,442.3	5,868.1	116.9	117.2	90.01	6,092.3	-83.8	659.9	426.7	233.21	2.830	
11,700.0	5,868.0	11,542.3	5,868.1	118.8	119.1	90.01	6,192.3	-83.8	659.9	422.9	237.01	2.784	
11,800.0	5,868.0	11,642.3	5,868.1	120.7	121.0	90.01	6,292.3	-83.8	659.9	419.1	240.82	2.740	
11,900.0	5,868.0	11,742.3	5,868.0	122.6	122.9	90.00	6,392.3	-83.8	659.9	415.3	244.63	2.698	
12,000.0	5,868.0	11,842.3	5,868.0	124.5	124.8	90.00	6,492.3	-83.8	659.9	411.5	248.44	2.656	
12,100.0	5,868.0	11,942.3	5,868.0	126.3	126.7	90.00	6,592.3	-83.8	659.9	407.7	252.25	2.616	
12,200.0	5,868.0	12,042.3	5,868.0	128.2	128.6	90.00	6,692.3	-83.8	659.9	403.9	256.07	2.577	
12,300.0	5,868.0	12,142.3	5,868.0	130.1	130.5	90.00	6,792.3	-83.7	659.9	400.0	259.88	2.539	
12,400.0	5,868.0	12,242.3	5,868.0	132.0	132.4	90.00	6,892.3	-83.7	659.9	396.2	263.69	2.503	
12,500.0	5,868.0	12,342.3	5,868.0	133.9	134.4	90.00	6,992.3	-83.7	659.9	392.4	267.51	2.467	
12,538.5	5,868.0	12,380.8	5,868.0	134.6	135.1	90.00	7,030.9	-83.7	659.9	390.9	268.98	2.453 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0212B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.02	0.0	99.1	99.1					
100.0	100.0	100.0	100.0	0.1	0.1	90.02	0.0	99.1	99.1	98.9	0.19	530.096		
200.0	200.0	200.0	200.0	0.3	0.3	90.02	0.0	99.1	99.1	98.5	0.64	155.734		
300.0	300.0	300.0	300.0	0.5	0.5	90.02	0.0	99.1	99.1	98.0	1.09	91.275		
400.0	400.0	400.0	400.0	0.8	0.8	90.02	0.0	99.1	99.1	97.6	1.54	64.555		
500.0	500.0	500.0	500.0	1.0	1.0	90.02	0.0	99.1	99.1	97.1	1.99	49.937	CC, ES	
600.0	600.0	600.0	600.0	1.2	1.2	122.89	0.0	99.1	100.1	97.6	2.43	41.133		
700.0	699.8	699.8	699.8	1.4	1.4	125.28	0.0	99.1	103.0	100.1	2.88	35.749		
800.0	799.6	799.6	799.6	1.7	1.7	128.32	0.0	99.1	107.2	103.9	3.33	32.156		
900.0	899.4	899.4	899.3	1.9	1.9	130.25	1.7	99.4	111.7	107.9	3.79	29.476		
1,000.0	999.1	999.2	999.1	2.2	2.1	130.30	6.8	100.2	116.2	111.9	4.25	27.361		
1,100.0	1,098.9	1,099.1	1,098.7	2.4	2.3	129.52	13.7	101.2	120.8	116.0	4.71	25.615		
1,200.0	1,198.6	1,199.0	1,198.4	2.7	2.6	128.79	20.6	102.2	125.3	120.1	5.19	24.156		
1,300.0	1,298.4	1,298.9	1,298.0	2.9	2.8	128.11	27.5	103.3	129.9	124.3	5.67	22.923		
1,400.0	1,398.1	1,398.8	1,397.6	3.2	3.1	127.48	34.4	104.3	134.5	128.4	6.15	21.870		
1,500.0	1,497.9	1,498.6	1,497.3	3.4	3.3	126.89	41.3	105.4	139.2	132.5	6.64	20.963		
1,600.0	1,597.6	1,598.5	1,596.9	3.7	3.5	126.33	48.2	106.4	143.8	136.7	7.13	20.174		
1,700.0	1,697.4	1,698.4	1,696.5	3.9	3.8	125.82	55.0	107.4	148.5	140.9	7.62	19.483		
1,800.0	1,797.2	1,798.3	1,796.2	4.2	4.0	125.33	61.9	108.5	153.1	145.0	8.11	18.873		
1,900.0	1,896.9	1,898.2	1,895.8	4.4	4.3	124.88	68.8	109.5	157.8	149.2	8.61	18.331		
2,000.0	1,996.7	1,998.1	1,995.5	4.7	4.5	124.44	75.7	110.5	162.5	153.4	9.11	17.847		
2,100.0	2,096.4	2,097.9	2,095.1	4.9	4.8	124.04	82.6	111.6	167.2	157.6	9.60	17.411		
2,200.0	2,196.2	2,197.8	2,194.7	5.2	5.0	123.65	89.5	112.6	171.9	161.8	10.10	17.018		
2,300.0	2,295.9	2,297.7	2,294.4	5.5	5.3	123.29	96.4	113.7	176.6	166.0	10.60	16.661		
2,400.0	2,395.7	2,397.6	2,394.0	5.7	5.5	122.95	103.3	114.7	181.3	170.2	11.10	16.335		
2,500.0	2,495.5	2,497.5	2,493.7	6.0	5.8	122.62	110.2	115.7	186.1	174.5	11.60	16.038		
2,600.0	2,595.2	2,597.4	2,593.3	6.2	6.0	122.31	117.1	116.8	190.8	178.7	12.10	15.765		
2,700.0	2,695.0	2,697.2	2,692.9	6.5	6.3	122.01	123.9	117.8	195.5	182.9	12.60	15.513		
2,800.0	2,794.7	2,797.1	2,792.6	6.7	6.6	121.73	130.8	118.9	200.3	187.2	13.11	15.281		
2,900.0	2,894.5	2,897.0	2,892.2	7.0	6.8	121.46	137.7	119.9	205.0	191.4	13.61	15.066		
3,000.0	2,994.2	2,996.9	2,991.9	7.2	7.1	121.20	144.6	120.9	209.8	195.7	14.11	14.865		
3,100.0	3,094.0	3,096.8	3,091.5	7.5	7.3	120.96	151.5	122.0	214.5	199.9	14.61	14.679		
3,200.0	3,193.7	3,196.7	3,191.1	7.8	7.6	120.72	158.4	123.0	219.3	204.2	15.12	14.505		
3,300.0	3,293.5	3,296.5	3,290.8	8.0	7.8	120.50	165.3	124.0	224.0	208.4	15.62	14.343		
3,400.0	3,393.3	3,396.4	3,390.4	8.3	8.1	120.28	172.2	125.1	228.8	212.7	16.12	14.190		
3,500.0	3,493.0	3,496.3	3,490.1	8.5	8.3	120.08	179.1	126.1	233.6	217.0	16.63	14.047		
3,600.0	3,592.8	3,596.2	3,589.7	8.8	8.6	119.88	185.9	127.2	238.4	221.2	17.13	13.912		
3,700.0	3,692.5	3,696.1	3,689.3	9.0	8.8	119.69	192.8	128.2	243.1	225.5	17.64	13.785		
3,800.0	3,792.3	3,796.0	3,789.0	9.3	9.1	119.50	199.7	129.2	247.9	229.8	18.14	13.665		
3,900.0	3,892.0	3,895.8	3,888.6	9.6	9.3	119.33	206.6	130.3	252.7	234.0	18.65	13.552		
4,000.0	3,991.8	3,995.7	3,988.3	9.8	9.6	119.16	213.5	131.3	257.5	238.3	19.15	13.444		
4,100.0	4,091.6	4,095.6	4,087.9	10.1	9.9	118.99	220.4	132.3	262.2	242.6	19.66	13.342		
4,200.0	4,191.3	4,195.5	4,187.5	10.3	10.1	118.84	227.3	133.4	267.0	246.9	20.16	13.245		
4,300.0	4,291.1	4,295.4	4,287.2	10.6	10.4	118.68	234.2	134.4	271.8	251.1	20.66	13.153		
4,400.0	4,390.8	4,395.2	4,386.8	10.9	10.6	118.54	241.1	135.5	276.6	255.4	21.17	13.066		
4,500.0	4,490.6	4,495.1	4,486.5	11.1	10.9	118.40	248.0	136.5	281.4	259.7	21.67	12.982		
4,600.0	4,590.3	4,595.0	4,586.1	11.4	11.1	118.26	254.8	137.5	286.2	264.0	22.18	12.903		
4,700.0	4,690.1	4,694.9	4,685.7	11.6	11.4	118.13	261.7	138.6	291.0	268.3	22.69	12.827		
4,800.0	4,789.9	4,794.8	4,785.4	11.9	11.6	118.00	268.6	139.6	295.8	272.6	23.19	12.754		
4,900.0	4,889.6	4,894.7	4,885.0	12.1	11.9	117.87	275.5	140.7	300.6	276.9	23.70	12.684		
5,000.0	4,989.4	4,994.5	4,984.7	12.4	12.2	117.75	282.4	141.7	305.4	281.2	24.20	12.618		
5,100.0	5,089.1	5,094.4	5,084.3	12.7	12.4	117.64	289.3	142.7	310.2	285.5	24.71	12.554		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0212B - 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	5,188.9	5,194.3	5,183.9	12.9	12.7	117.52	296.2	143.8	315.0	289.8	25.21	12.493		
5,300.0	5,288.6	5,294.2	5,283.6	13.2	12.9	117.41	303.1	144.8	319.8	294.1	25.72	12.434		
5,400.0	5,388.4	5,394.1	5,383.2	13.4	13.2	117.29	310.0	145.8	324.6	298.4	26.22	12.379		
5,500.0	5,486.7	5,493.1	5,482.0	13.8	13.4	117.83	316.8	146.9	334.3	307.7	26.63	12.552		
5,600.0	5,579.9	5,579.6	5,567.4	14.3	13.7	118.38	329.3	148.8	354.9	327.9	27.00	13.144		
5,700.0	5,664.5	5,664.6	5,648.3	15.0	14.1	117.50	355.1	152.7	387.5	359.9	27.54	14.071		
5,800.0	5,737.5	5,747.6	5,722.0	15.9	14.6	115.18	392.4	158.3	430.5	402.1	28.45	15.131		
5,900.0	5,796.1	5,827.8	5,786.8	17.0	15.1	111.49	439.1	165.3	482.3	452.4	29.96	16.101		
6,000.0	5,838.2	5,905.5	5,841.9	18.3	15.8	106.57	493.2	173.5	541.1	509.0	32.08	16.868		
6,100.0	5,862.3	5,981.4	5,887.3	19.9	16.6	100.66	553.2	182.5	604.9	570.2	34.64	17.460		
6,200.0	5,867.9	6,057.4	5,923.5	21.5	17.4	96.38	619.3	192.5	671.7	634.5	37.21	18.052		
6,300.0	5,867.9	6,143.6	5,952.2	23.1	18.5	98.39	699.5	204.6	736.2	696.7	39.50	18.638		
6,400.0	5,867.9	6,241.8	5,968.2	24.7	19.9	98.75	795.2	219.0	795.4	753.1	42.25	18.828		
6,500.0	5,867.9	6,376.8	5,969.4	26.4	21.7	97.78	929.0	236.5	847.3	801.6	45.67	18.550		
6,600.0	5,867.9	6,543.4	5,969.4	28.1	24.1	96.98	1,095.3	245.6	887.6	837.9	49.70	17.858		
6,700.0	5,867.9	6,647.8	5,969.4	29.7	25.7	96.61	1,199.7	245.7	918.1	865.0	53.10	17.290		
6,800.0	5,867.9	6,744.5	5,969.4	31.4	27.3	96.34	1,296.4	245.7	943.6	887.2	56.41	16.727		
6,900.0	5,867.9	6,842.3	5,969.4	33.1	28.9	96.14	1,394.2	245.7	964.0	904.3	59.70	16.146		
7,000.0	5,867.9	6,941.1	5,969.4	34.8	30.6	95.99	1,493.0	245.7	979.3	916.3	62.94	15.558		
7,100.0	5,867.9	7,040.6	5,969.4	36.4	32.3	95.90	1,592.5	245.7	989.4	923.3	66.10	14.969		
7,200.0	5,867.9	7,140.4	5,969.4	38.0	34.0	95.86	1,692.4	245.7	994.4	925.2	69.13	14.383		
7,300.0	5,867.9	7,240.4	5,969.4	39.5	35.8	95.85	1,792.4	245.7	994.9	922.5	72.34	13.753		
7,400.0	5,867.9	7,340.4	5,969.4	41.1	37.5	95.85	1,892.4	245.7	994.9	919.1	75.77	13.129		
7,500.0	5,867.9	7,440.4	5,969.4	42.7	39.3	95.85	1,992.4	245.7	994.9	915.6	79.24	12.554		
7,600.0	5,867.9	7,540.4	5,969.3	44.3	41.1	95.85	2,092.4	245.7	994.9	912.1	82.75	12.023		
7,700.0	5,867.9	7,640.4	5,969.3	46.0	42.9	95.85	2,192.4	245.7	994.9	908.6	86.28	11.531		
7,800.0	5,867.9	7,740.4	5,969.3	47.7	44.8	95.85	2,292.4	245.7	994.8	905.0	89.83	11.075		
7,900.0	5,868.0	7,840.4	5,969.3	49.3	46.6	95.85	2,392.4	245.7	994.8	901.4	93.40	10.651		
8,000.0	5,868.0	7,940.4	5,969.3	51.0	48.4	95.85	2,492.4	245.7	994.8	897.8	97.00	10.256		
8,100.0	5,868.0	8,040.4	5,969.3	52.8	50.3	95.85	2,592.4	245.7	994.8	894.2	100.61	9.888		
8,200.0	5,868.0	8,140.4	5,969.3	54.5	52.1	95.85	2,692.4	245.7	994.8	890.6	104.24	9.544		
8,300.0	5,868.0	8,240.4	5,969.3	56.2	54.0	95.85	2,792.4	245.7	994.8	886.9	107.88	9.222		
8,400.0	5,868.0	8,340.4	5,969.3	58.0	55.8	95.85	2,892.4	245.7	994.8	883.3	111.53	8.920		
8,500.0	5,868.0	8,440.4	5,969.3	59.7	57.7	95.85	2,992.4	245.7	994.8	879.6	115.19	8.636		
8,600.0	5,868.0	8,540.4	5,969.3	61.5	59.5	95.85	3,092.4	245.7	994.8	875.9	118.87	8.369		
8,700.0	5,868.0	8,640.4	5,969.3	63.3	61.4	95.84	3,192.4	245.7	994.8	872.3	122.55	8.118		
8,800.0	5,868.0	8,740.4	5,969.3	65.1	63.3	95.84	3,292.4	245.7	994.8	868.6	126.24	7.880		
8,900.0	5,868.0	8,840.4	5,969.3	66.9	65.1	95.84	3,392.4	245.7	994.8	864.9	129.94	7.656		
9,000.0	5,868.0	8,940.4	5,969.2	68.7	67.0	95.84	3,492.4	245.7	994.8	861.1	133.65	7.443		
9,100.0	5,868.0	9,040.4	5,969.2	70.5	68.9	95.84	3,592.4	245.7	994.8	857.4	137.36	7.242		
9,200.0	5,868.0	9,140.4	5,969.2	72.3	70.8	95.84	3,692.4	245.7	994.8	853.7	141.08	7.051		
9,300.0	5,868.0	9,240.4	5,969.2	74.1	72.7	95.84	3,792.4	245.7	994.8	850.0	144.81	6.870		
9,400.0	5,868.0	9,340.4	5,969.2	76.0	74.6	95.84	3,892.4	245.7	994.8	846.2	148.54	6.697		
9,500.0	5,868.0	9,440.4	5,969.2	77.8	76.4	95.84	3,992.4	245.7	994.8	842.5	152.27	6.533		
9,600.0	5,868.0	9,540.4	5,969.2	79.6	78.3	95.84	4,092.4	245.7	994.8	838.8	156.01	6.376		
9,700.0	5,868.0	9,640.4	5,969.2	81.5	80.2	95.84	4,192.4	245.7	994.8	835.0	159.75	6.227		
9,800.0	5,868.0	9,740.4	5,969.2	83.3	82.1	95.84	4,292.4	245.8	994.8	831.3	163.50	6.084		
9,900.0	5,868.0	9,840.4	5,969.2	85.2	84.0	95.84	4,392.4	245.8	994.8	827.5	167.25	5.948		
10,000.0	5,868.0	9,940.4	5,969.2	87.0	85.9	95.84	4,492.4	245.8	994.7	823.7	171.01	5.817		
10,100.0	5,868.0	10,040.4	5,969.2	88.9	87.8	95.84	4,592.4	245.8	994.7	820.0	174.76	5.692		
10,200.0	5,868.0	10,140.4	5,969.2	90.7	89.7	95.84	4,692.4	245.8	994.7	816.2	178.52	5.572		
10,300.0	5,868.0	10,240.4	5,969.2	92.6	91.6	95.84	4,792.4	245.8	994.7	812.4	182.29	5.457		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0212B - 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
10,400.0	5,868.0	10,340.4	5,969.1	94.4	93.5	95.84	4,892.4	245.8	994.7	808.7	186.05	5.347	
10,500.0	5,868.0	10,440.4	5,969.1	96.3	95.4	95.84	4,992.4	245.8	994.7	804.9	189.82	5.240	
10,600.0	5,868.0	10,540.4	5,969.1	98.2	97.3	95.84	5,092.4	245.8	994.7	801.1	193.59	5.138	
10,700.0	5,868.0	10,640.4	5,969.1	100.0	99.2	95.84	5,192.4	245.8	994.7	797.4	197.36	5.040	
10,800.0	5,868.0	10,740.4	5,969.1	101.9	101.1	95.84	5,292.4	245.8	994.7	793.6	201.14	4.945	
10,900.0	5,868.0	10,840.4	5,969.1	103.8	103.0	95.84	5,392.4	245.8	994.7	789.8	204.91	4.854	
11,000.0	5,868.0	10,940.4	5,969.1	105.6	104.9	95.83	5,492.4	245.8	994.7	786.0	208.69	4.766	
11,100.0	5,868.0	11,040.4	5,969.1	107.5	106.8	95.83	5,592.4	245.8	994.7	782.2	212.47	4.682	
11,200.0	5,868.0	11,140.4	5,969.1	109.4	108.7	95.83	5,692.4	245.8	994.7	778.4	216.25	4.600	
11,300.0	5,868.0	11,240.4	5,969.1	111.3	110.6	95.83	5,792.4	245.8	994.7	774.7	220.03	4.521	
11,400.0	5,868.0	11,340.4	5,969.1	113.1	112.5	95.83	5,892.4	245.8	994.7	770.9	223.82	4.444	
11,500.0	5,868.0	11,440.4	5,969.1	115.0	114.4	95.83	5,992.4	245.8	994.7	767.1	227.61	4.370	
11,600.0	5,868.0	11,540.4	5,969.1	116.9	116.3	95.83	6,092.4	245.8	994.7	763.3	231.39	4.299	
11,700.0	5,868.0	11,640.4	5,969.1	118.8	118.2	95.83	6,192.4	245.8	994.7	759.5	235.18	4.229	
11,800.0	5,868.0	11,740.4	5,969.1	120.7	120.1	95.83	6,292.4	245.8	994.7	755.7	238.97	4.162	
11,900.0	5,868.0	11,840.4	5,969.0	122.6	122.1	95.83	6,392.4	245.8	994.7	751.9	242.76	4.097	
12,000.0	5,868.0	11,940.4	5,969.0	124.5	124.0	95.83	6,492.4	245.8	994.7	748.1	246.55	4.034	
12,100.0	5,868.0	12,040.4	5,969.0	126.3	125.9	95.83	6,592.4	245.8	994.6	744.3	250.35	3.973	
12,200.0	5,868.0	12,140.4	5,969.0	128.2	127.8	95.83	6,692.4	245.8	994.6	740.5	254.14	3.914	
12,300.0	5,868.0	12,240.4	5,969.0	130.1	129.7	95.83	6,792.4	245.8	994.6	736.7	257.94	3.856	
12,400.0	5,868.0	12,340.4	5,969.0	132.0	131.6	95.83	6,892.4	245.8	994.6	732.9	261.73	3.800	
12,500.0	5,868.0	12,440.4	5,969.0	133.9	133.5	95.83	6,992.4	245.8	994.6	729.1	265.53	3.746	
12,538.5	5,868.0	12,478.9	5,969.0	134.6	134.2	95.83	7,030.9	245.8	994.6	727.6	266.99	3.725 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1409A - 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	180.00	-74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-74.9	0.0	74.9	74.7	0.19	400.465		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-74.9	0.0	74.9	74.3	0.64	117.651		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-74.9	0.0	74.9	73.8	1.09	68.954		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-74.9	0.0	74.9	73.4	1.54	48.769		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-74.9	0.0	74.9	72.9	1.99	37.725 CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	-148.64	-74.9	0.0	76.4	73.9	2.43	31.365		
700.0	699.8	699.8	699.8	1.4	1.4	-150.52	-74.9	0.0	80.9	78.0	2.89	28.023		
800.0	799.6	799.6	799.6	1.7	1.7	-152.78	-74.9	0.0	87.0	83.7	3.34	26.080		
900.0	899.4	896.7	896.7	1.9	1.9	-154.12	-76.3	-0.8	94.7	90.9	3.76	25.168 SF		
1,000.0	999.1	993.4	993.3	2.2	2.0	-154.21	-80.6	-3.1	105.1	100.9	4.17	25.176		
1,100.0	1,098.9	1,092.5	1,092.1	2.4	2.2	-153.76	-86.7	-6.4	117.1	112.5	4.60	25.458		
1,200.0	1,198.6	1,191.8	1,191.1	2.7	2.4	-153.38	-92.8	-9.7	129.1	124.1	5.03	25.666		
1,300.0	1,298.4	1,291.0	1,290.2	2.9	2.7	-153.07	-98.9	-13.0	141.1	135.7	5.47	25.809		
1,400.0	1,398.1	1,390.3	1,389.2	3.2	2.9	-152.81	-105.0	-16.2	153.1	147.2	5.91	25.906		
1,500.0	1,497.9	1,489.6	1,488.2	3.4	3.1	-152.59	-111.1	-19.5	165.2	158.8	6.36	25.971		
1,600.0	1,597.6	1,588.9	1,587.3	3.7	3.3	-152.39	-117.2	-22.8	177.2	170.4	6.81	26.015		
1,700.0	1,697.4	1,688.1	1,686.3	3.9	3.6	-152.23	-123.3	-26.1	189.2	181.9	7.27	26.042		
1,800.0	1,797.2	1,787.4	1,785.3	4.2	3.8	-152.08	-129.4	-29.4	201.2	193.5	7.72	26.058		
1,900.0	1,896.9	1,886.7	1,884.4	4.4	4.1	-151.95	-135.5	-32.7	213.3	205.1	8.18	26.067		
2,000.0	1,996.7	1,986.0	1,983.4	4.7	4.3	-151.83	-141.6	-36.0	225.3	216.7	8.64	26.069		
2,100.0	2,096.4	2,085.2	2,082.4	4.9	4.6	-151.72	-147.7	-39.3	237.3	228.2	9.10	26.067		
2,200.0	2,196.2	2,184.5	2,181.5	5.2	4.8	-151.63	-153.7	-42.5	249.4	239.8	9.57	26.062		
2,300.0	2,295.9	2,283.8	2,280.5	5.5	5.1	-151.54	-159.8	-45.8	261.4	251.4	10.03	26.055		
2,400.0	2,395.7	2,383.0	2,379.5	5.7	5.3	-151.46	-165.9	-49.1	273.4	262.9	10.50	26.046		
2,500.0	2,495.5	2,482.3	2,478.5	6.0	5.6	-151.39	-172.0	-52.4	285.4	274.5	10.96	26.037		
2,600.0	2,595.2	2,581.6	2,577.6	6.2	5.8	-151.32	-178.1	-55.7	297.5	286.0	11.43	26.026		
2,700.0	2,695.0	2,680.9	2,676.6	6.5	6.1	-151.26	-184.2	-59.0	309.5	297.6	11.90	26.015		
2,800.0	2,794.7	2,780.1	2,775.6	6.7	6.3	-151.20	-190.3	-62.3	321.5	309.2	12.37	26.004		
2,900.0	2,894.5	2,879.4	2,874.7	7.0	6.6	-151.15	-196.4	-65.6	333.6	320.7	12.83	25.992		
3,000.0	2,994.2	2,978.7	2,973.7	7.2	6.9	-151.10	-202.5	-68.9	345.6	332.3	13.30	25.981		
3,100.0	3,094.0	3,078.0	3,072.7	7.5	7.1	-151.06	-208.6	-72.1	357.6	343.9	13.77	25.970		
3,200.0	3,193.7	3,177.2	3,171.8	7.8	7.4	-151.01	-214.7	-75.4	369.7	355.4	14.24	25.959		
3,300.0	3,293.5	3,276.5	3,270.8	8.0	7.6	-150.97	-220.8	-78.7	381.7	367.0	14.71	25.948		
3,400.0	3,393.3	3,375.8	3,369.8	8.3	7.9	-150.94	-226.9	-82.0	393.7	378.6	15.18	25.937		
3,500.0	3,493.0	3,475.0	3,468.9	8.5	8.2	-150.90	-233.0	-85.3	405.8	390.1	15.65	25.926		
3,600.0	3,592.8	3,574.3	3,567.9	8.8	8.4	-150.87	-239.1	-88.6	417.8	401.7	16.12	25.916		
3,700.0	3,692.5	3,673.6	3,666.9	9.0	8.7	-150.84	-245.2	-91.9	429.8	413.3	16.59	25.906		
3,800.0	3,792.3	3,772.9	3,766.0	9.3	8.9	-150.81	-251.3	-95.2	441.9	424.8	17.06	25.896		
3,900.0	3,892.0	3,872.1	3,865.0	9.6	9.2	-150.78	-257.4	-98.5	453.9	436.4	17.53	25.887		
4,000.0	3,991.8	3,971.4	3,964.0	9.8	9.5	-150.75	-263.4	-101.7	465.9	447.9	18.01	25.877		
4,100.0	4,091.6	4,070.7	4,063.0	10.1	9.7	-150.73	-269.5	-105.0	478.0	459.5	18.48	25.869		
4,200.0	4,191.3	4,170.0	4,162.1	10.3	10.0	-150.70	-275.6	-108.3	490.0	471.1	18.95	25.860		
4,300.0	4,291.1	4,269.2	4,261.1	10.6	10.2	-150.68	-281.7	-111.6	502.1	482.6	19.42	25.851		
4,400.0	4,390.8	4,368.5	4,360.1	10.9	10.5	-150.66	-287.8	-114.9	514.1	494.2	19.89	25.843		
4,500.0	4,490.6	4,467.8	4,459.2	11.1	10.8	-150.64	-293.9	-118.2	526.1	505.8	20.36	25.835		
4,600.0	4,590.3	4,567.1	4,558.2	11.4	11.0	-150.62	-300.0	-121.5	538.2	517.3	20.84	25.828		
4,700.0	4,690.1	4,666.3	4,657.2	11.6	11.3	-150.60	-306.1	-124.8	550.2	528.9	21.31	25.820		
4,800.0	4,789.9	4,765.6	4,756.3	11.9	11.5	-150.58	-312.2	-128.0	562.2	540.4	21.78	25.813		
4,900.0	4,889.6	4,864.9	4,855.3	12.1	11.8	-150.56	-318.3	-131.3	574.3	552.0	22.25	25.806		
5,000.0	4,989.4	4,964.1	4,954.3	12.4	12.1	-150.55	-324.4	-134.6	586.3	563.6	22.73	25.799		
5,100.0	5,089.1	5,063.4	5,053.4	12.7	12.3	-150.53	-330.5	-137.9	598.3	575.1	23.20	25.792		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1409A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,162.7	5,152.4	12.9	12.6	-150.51	-336.6	-141.2	610.4	586.7	23.67	25.786		
5,300.0	5,288.6	5,262.0	5,251.4	13.2	12.8	-150.50	-342.7	-144.5	622.4	598.3	24.14	25.779		
5,400.0	5,388.4	5,361.2	5,350.4	13.4	13.1	-150.45	-348.8	-147.8	634.5	609.9	24.60	25.786		
5,500.0	5,486.7	5,425.2	5,414.1	13.8	13.3	-149.36	-353.5	-150.3	657.2	632.7	24.47	26.852		
5,600.0	5,579.9	5,467.3	5,455.6	14.3	13.4	-146.84	-359.8	-153.7	701.9	678.0	23.87	29.408		
5,700.0	5,664.5	5,500.0	5,487.4	15.0	13.6	-142.15	-366.7	-157.4	765.3	742.1	23.25	32.925		
5,800.0	5,737.5	5,528.1	5,514.3	15.9	13.7	-133.94	-374.0	-161.4	843.1	819.5	23.61	35.717		
5,900.0	5,796.1	5,550.0	5,534.8	17.0	13.8	-119.45	-380.6	-164.9	930.6	903.9	26.73	34.814		
6,000.0	5,838.2	5,550.0	5,534.8	18.3	13.8	-93.16	-380.6	-164.9	1,023.4	991.8	31.62	32.366		
6,100.0	5,862.3	5,550.0	5,534.8	19.9	13.8	-62.87	-380.6	-164.9	1,117.8	1,087.4	30.37	36.804		
6,200.0	5,867.9	5,550.0	5,534.8	21.5	13.8	-44.58	-380.6	-164.9	1,210.5	1,184.7	25.74	47.024		
6,300.0	5,867.9	5,550.0	5,534.8	23.1	13.8	-38.69	-380.6	-164.9	1,303.9	1,279.2	24.63	52.947		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1410B - 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	156.19	-74.9	33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	156.19	-74.9	33.0	81.9	81.7	0.19	437.753		
200.0	200.0	200.0	200.0	0.3	0.3	156.19	-74.9	33.0	81.9	81.2	0.64	128.606		
300.0	300.0	300.0	300.0	0.5	0.5	156.19	-74.9	33.0	81.9	80.8	1.09	75.375		
400.0	400.0	400.0	400.0	0.8	0.8	156.19	-74.9	33.0	81.9	80.3	1.54	53.310		
500.0	500.0	500.0	500.0	1.0	1.0	156.19	-74.9	33.0	81.9	79.9	1.99	41.238 CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	-171.93	-74.9	33.0	83.6	81.2	2.44	34.324		
700.0	699.8	699.8	699.8	1.4	1.4	-172.39	-74.9	33.0	88.8	85.9	2.89	30.761		
800.0	799.6	797.1	797.1	1.7	1.6	-172.28	-76.5	32.6	97.0	93.7	3.30	29.342		
900.0	899.4	893.9	893.8	1.9	1.8	-171.03	-81.2	31.1	107.7	104.0	3.71	29.011		
1,000.0	999.1	992.9	992.5	2.2	2.0	-169.41	-87.8	29.1	120.0	115.8	4.13	29.020		
1,100.0	1,098.9	1,092.1	1,091.5	2.4	2.2	-168.09	-94.4	27.1	132.3	127.7	4.56	29.004		
1,200.0	1,198.6	1,191.3	1,190.4	2.7	2.4	-167.00	-101.0	25.1	144.7	139.7	5.00	28.959		
1,300.0	1,298.4	1,290.5	1,289.4	2.9	2.7	-166.07	-107.6	23.1	157.1	151.7	5.44	28.899		
1,400.0	1,398.1	1,389.7	1,388.4	3.2	2.9	-165.29	-114.3	21.1	169.6	163.7	5.88	28.831		
1,500.0	1,497.9	1,488.9	1,487.3	3.4	3.1	-164.61	-120.9	19.1	182.1	175.8	6.33	28.761		
1,600.0	1,597.6	1,588.1	1,586.3	3.7	3.4	-164.02	-127.5	17.1	194.6	187.9	6.78	28.693		
1,700.0	1,697.4	1,687.3	1,685.2	3.9	3.6	-163.50	-134.1	15.1	207.2	199.9	7.24	28.625		
1,800.0	1,797.2	1,786.5	1,784.2	4.2	3.9	-163.03	-140.7	13.0	219.7	212.0	7.69	28.562		
1,900.0	1,896.9	1,885.7	1,883.1	4.4	4.1	-162.62	-147.4	11.0	232.3	224.2	8.15	28.502		
2,000.0	1,996.7	1,984.9	1,982.1	4.7	4.4	-162.25	-154.0	9.0	244.9	236.3	8.61	28.445		
2,100.0	2,096.4	2,084.1	2,081.0	4.9	4.6	-161.92	-160.6	7.0	257.5	248.4	9.07	28.391		
2,200.0	2,196.2	2,183.3	2,180.0	5.2	4.9	-161.62	-167.2	5.0	270.1	260.6	9.53	28.341		
2,300.0	2,295.9	2,282.5	2,278.9	5.5	5.1	-161.35	-173.8	3.0	282.7	272.7	9.99	28.294		
2,400.0	2,395.7	2,381.6	2,377.9	5.7	5.4	-161.09	-180.5	1.0	295.3	284.8	10.45	28.249		
2,500.0	2,495.5	2,480.8	2,476.8	6.0	5.6	-160.86	-187.1	-1.0	307.9	297.0	10.92	28.208		
2,600.0	2,595.2	2,580.0	2,575.8	6.2	5.9	-160.65	-193.7	-3.1	320.5	309.1	11.38	28.169		
2,700.0	2,695.0	2,679.2	2,674.7	6.5	6.2	-160.45	-200.3	-5.1	333.2	321.3	11.84	28.132		
2,800.0	2,794.7	2,778.4	2,773.7	6.7	6.4	-160.27	-206.9	-7.1	345.8	333.5	12.31	28.097		
2,900.0	2,894.5	2,877.6	2,872.6	7.0	6.7	-160.10	-213.6	-9.1	358.4	345.6	12.77	28.064		
3,000.0	2,994.2	2,976.8	2,971.6	7.2	6.9	-159.94	-220.2	-11.1	371.0	357.8	13.24	28.034		
3,100.0	3,094.0	3,076.0	3,070.5	7.5	7.2	-159.80	-226.8	-13.1	383.7	370.0	13.70	28.004		
3,200.0	3,193.7	3,175.2	3,169.5	7.8	7.4	-159.66	-233.4	-15.1	396.3	382.2	14.17	27.977		
3,300.0	3,293.5	3,274.4	3,268.4	8.0	7.7	-159.53	-240.1	-17.1	409.0	394.3	14.63	27.951		
3,400.0	3,393.3	3,373.6	3,367.4	8.3	8.0	-159.41	-246.7	-19.1	421.6	406.5	15.10	27.926		
3,500.0	3,493.0	3,472.8	3,466.3	8.5	8.2	-159.29	-253.3	-21.2	434.2	418.7	15.56	27.902		
3,600.0	3,592.8	3,572.0	3,565.3	8.8	8.5	-159.19	-259.9	-23.2	446.9	430.9	16.03	27.880		
3,700.0	3,692.5	3,671.2	3,664.3	9.0	8.7	-159.08	-266.5	-25.2	459.5	443.0	16.50	27.859		
3,800.0	3,792.3	3,770.4	3,763.2	9.3	9.0	-158.99	-273.2	-27.2	472.2	455.2	16.96	27.838		
3,900.0	3,892.0	3,869.6	3,862.2	9.6	9.3	-158.89	-279.8	-29.2	484.8	467.4	17.43	27.819		
4,000.0	3,991.8	3,968.7	3,961.1	9.8	9.5	-158.81	-286.4	-31.2	497.5	479.6	17.89	27.801		
4,100.0	4,091.6	4,067.9	4,060.1	10.1	9.8	-158.73	-293.0	-33.2	510.1	491.8	18.36	27.783		
4,200.0	4,191.3	4,167.1	4,159.0	10.3	10.0	-158.65	-299.6	-35.2	522.8	504.0	18.83	27.766		
4,300.0	4,291.1	4,266.3	4,258.0	10.6	10.3	-158.57	-306.3	-37.2	535.4	516.2	19.30	27.750		
4,400.0	4,390.8	4,365.5	4,356.9	10.9	10.6	-158.50	-312.9	-39.3	548.1	528.3	19.76	27.734		
4,500.0	4,490.6	4,464.7	4,455.9	11.1	10.8	-158.43	-319.5	-41.3	560.8	540.5	20.23	27.720		
4,600.0	4,590.3	4,563.9	4,554.8	11.4	11.1	-158.37	-326.1	-43.3	573.4	552.7	20.70	27.705		
4,700.0	4,690.1	4,663.1	4,653.8	11.6	11.4	-158.30	-332.7	-45.3	586.1	564.9	21.16	27.692		
4,800.0	4,789.9	4,762.3	4,752.7	11.9	11.6	-158.24	-339.4	-47.3	598.7	577.1	21.63	27.679		
4,900.0	4,889.6	4,861.5	4,851.7	12.1	11.9	-158.19	-346.0	-49.3	611.4	589.3	22.10	27.666		
5,000.0	4,989.4	4,960.7	4,950.6	12.4	12.1	-158.13	-352.6	-51.3	624.0	601.5	22.57	27.654		
5,100.0	5,089.1	5,059.9	5,049.6	12.7	12.4	-158.08	-359.2	-53.3	636.7	613.7	23.03	27.642		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1410B - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,159.1	5,148.5	12.9	12.7	-158.03	-365.8	-55.4	649.4	625.9	23.50	27.631		
5,300.0	5,288.6	5,258.3	5,247.5	13.2	12.9	-157.98	-372.5	-57.4	662.0	638.1	23.97	27.620 SF		
5,400.0	5,388.4	5,357.5	5,346.4	13.4	13.2	-157.91	-379.1	-59.4	674.7	650.3	24.42	27.625		
5,500.0	5,486.7	5,454.7	5,443.5	13.8	13.4	-157.23	-385.6	-61.3	697.0	672.7	24.27	28.721		
5,600.0	5,579.9	5,518.3	5,506.8	14.3	13.6	-155.86	-390.3	-62.8	737.0	713.6	23.42	31.466		
5,700.0	5,664.5	5,550.0	5,538.2	15.0	13.7	-152.71	-394.6	-64.1	797.2	775.0	22.20	35.904		
5,800.0	5,737.5	5,578.6	5,566.3	15.9	13.8	-146.84	-400.1	-65.7	873.5	852.0	21.46	40.694		
5,900.0	5,796.1	5,600.0	5,587.0	17.0	13.9	-135.29	-405.1	-67.3	961.1	937.8	23.32	41.216		
6,000.0	5,838.2	5,600.0	5,587.0	18.3	13.9	-108.73	-405.1	-67.3	1,055.4	1,025.0	30.42	34.699		
6,100.0	5,862.3	5,600.0	5,587.0	19.9	13.9	-67.46	-405.1	-67.3	1,152.2	1,120.4	31.80	36.230		
6,200.0	5,867.9	5,600.0	5,587.0	21.5	13.9	-42.53	-405.1	-67.3	1,247.8	1,222.6	25.21	49.503		
6,300.0	5,867.9	5,600.0	5,587.0	23.1	13.9	-34.42	-405.1	-67.3	1,343.9	1,321.0	22.87	58.766		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1411A - 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	138.58	-74.9	66.1	99.9					
100.0	100.0	100.0	100.0	0.1	0.1	138.58	-74.9	66.1	99.9	99.7	0.19	534.162		
200.0	200.0	200.0	200.0	0.3	0.3	138.58	-74.9	66.1	99.9	99.3	0.64	156.929		
300.0	300.0	300.0	300.0	0.5	0.5	138.58	-74.9	66.1	99.9	98.8	1.09	91.975		
400.0	400.0	400.0	400.0	0.8	0.8	138.58	-74.9	66.1	99.9	98.4	1.54	65.050		
500.0	500.0	500.0	500.0	1.0	1.0	138.58	-74.9	66.1	99.9	97.9	1.99	50.320 CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	170.77	-74.9	66.1	101.6	99.2	2.43	41.731		
700.0	699.8	697.1	697.1	1.4	1.4	171.79	-76.6	66.0	108.0	105.2	2.86	37.833		
800.0	799.6	793.6	793.5	1.7	1.6	173.86	-81.4	65.9	118.8	115.5	3.26	36.415		
900.0	899.4	892.5	892.1	1.9	1.8	176.14	-88.3	65.6	131.1	127.4	3.68	35.610		
1,000.0	999.1	991.6	991.0	2.2	2.0	178.04	-95.2	65.3	143.6	139.5	4.11	34.961		
1,100.0	1,098.9	1,090.7	1,089.9	2.4	2.2	179.63	-102.1	65.1	156.3	151.7	4.54	34.407		
1,200.0	1,198.6	1,189.9	1,188.7	2.7	2.5	-179.01	-109.1	64.8	169.0	164.0	4.98	33.933		
1,300.0	1,298.4	1,289.0	1,287.6	2.9	2.7	-177.85	-116.0	64.6	181.8	176.4	5.42	33.525		
1,400.0	1,398.1	1,388.1	1,386.5	3.2	2.9	-176.84	-122.9	64.3	194.7	188.9	5.87	33.172		
1,500.0	1,497.9	1,487.2	1,485.3	3.4	3.2	-175.96	-129.8	64.1	207.7	201.4	6.32	32.865		
1,600.0	1,597.6	1,586.3	1,584.2	3.7	3.4	-175.18	-136.7	63.8	220.7	213.9	6.77	32.594		
1,700.0	1,697.4	1,685.4	1,683.1	3.9	3.7	-174.48	-143.6	63.6	233.7	226.5	7.22	32.357		
1,800.0	1,797.2	1,784.5	1,782.0	4.2	3.9	-173.86	-150.5	63.3	246.8	239.1	7.68	32.146		
1,900.0	1,896.9	1,883.6	1,880.8	4.4	4.2	-173.31	-157.4	63.1	259.8	251.7	8.13	31.958		
2,000.0	1,996.7	1,982.7	1,979.7	4.7	4.4	-172.80	-164.3	62.8	272.9	264.4	8.59	31.789		
2,100.0	2,096.4	2,081.8	2,078.6	4.9	4.7	-172.34	-171.2	62.6	286.1	277.0	9.04	31.636		
2,200.0	2,196.2	2,181.0	2,177.4	5.2	4.9	-171.92	-178.1	62.3	299.2	289.7	9.50	31.498		
2,300.0	2,295.9	2,280.1	2,276.3	5.5	5.2	-171.54	-185.1	62.1	312.4	302.4	9.96	31.372		
2,400.0	2,395.7	2,379.2	2,375.2	5.7	5.5	-171.19	-192.0	61.8	325.5	315.1	10.41	31.257		
2,500.0	2,495.5	2,478.3	2,474.0	6.0	5.7	-170.87	-198.9	61.6	338.7	327.8	10.87	31.151		
2,600.0	2,595.2	2,577.4	2,572.9	6.2	6.0	-170.57	-205.8	61.3	351.9	340.6	11.33	31.054		
2,700.0	2,695.0	2,676.5	2,671.8	6.5	6.2	-170.29	-212.7	61.1	365.1	353.3	11.79	30.964		
2,800.0	2,794.7	2,775.6	2,770.6	6.7	6.5	-170.03	-219.6	60.8	378.3	366.0	12.25	30.881		
2,900.0	2,894.5	2,874.7	2,869.5	7.0	6.8	-169.79	-226.5	60.6	391.5	378.8	12.71	30.803		
3,000.0	2,994.2	2,973.8	2,968.4	7.2	7.0	-169.56	-233.4	60.3	404.7	391.5	13.17	30.732		
3,100.0	3,094.0	3,073.0	3,067.3	7.5	7.3	-169.35	-240.3	60.1	417.9	404.3	13.63	30.664		
3,200.0	3,193.7	3,172.1	3,166.1	7.8	7.5	-169.15	-247.2	59.8	431.2	417.1	14.09	30.602		
3,300.0	3,293.5	3,271.2	3,265.0	8.0	7.8	-168.96	-254.1	59.6	444.4	429.8	14.55	30.543		
3,400.0	3,393.3	3,370.3	3,363.9	8.3	8.0	-168.79	-261.1	59.3	457.6	442.6	15.01	30.488		
3,500.0	3,493.0	3,469.4	3,462.7	8.5	8.3	-168.62	-268.0	59.1	470.9	455.4	15.47	30.436		
3,600.0	3,592.8	3,568.5	3,561.6	8.8	8.6	-168.46	-274.9	58.8	484.1	468.2	15.93	30.387		
3,700.0	3,692.5	3,667.6	3,660.5	9.0	8.8	-168.32	-281.8	58.6	497.4	481.0	16.39	30.340		
3,800.0	3,792.3	3,766.7	3,759.3	9.3	9.1	-168.17	-288.7	58.3	510.6	493.8	16.85	30.297		
3,900.0	3,892.0	3,865.8	3,858.2	9.6	9.4	-168.04	-295.6	58.1	523.9	506.6	17.31	30.255		
4,000.0	3,991.8	3,964.9	3,957.1	9.8	9.6	-167.91	-302.5	57.8	537.1	519.3	17.78	30.216		
4,100.0	4,091.6	4,064.1	4,055.9	10.1	9.9	-167.79	-309.4	57.6	550.4	532.1	18.24	30.179		
4,200.0	4,191.3	4,163.2	4,154.8	10.3	10.1	-167.68	-316.3	57.3	563.6	544.9	18.70	30.143		
4,300.0	4,291.1	4,262.3	4,253.7	10.6	10.4	-167.57	-323.2	57.1	576.9	557.7	19.16	30.109		
4,400.0	4,390.8	4,361.4	4,352.6	10.9	10.7	-167.46	-330.1	56.8	590.2	570.5	19.62	30.077		
4,500.0	4,490.6	4,460.5	4,451.4	11.1	10.9	-167.36	-337.1	56.6	603.4	583.4	20.08	30.046		
4,600.0	4,590.3	4,559.6	4,550.3	11.4	11.2	-167.27	-344.0	56.3	616.7	596.2	20.55	30.017		
4,700.0	4,690.1	4,658.7	4,649.2	11.6	11.4	-167.17	-350.9	56.1	630.0	609.0	21.01	29.989		
4,800.0	4,789.9	4,757.8	4,748.0	11.9	11.7	-167.09	-357.8	55.8	643.3	621.8	21.47	29.962		
4,900.0	4,889.6	4,856.9	4,846.9	12.1	12.0	-167.00	-364.7	55.6	656.5	634.6	21.93	29.936		
5,000.0	4,989.4	4,956.1	4,945.8	12.4	12.2	-166.92	-371.6	55.3	669.8	647.4	22.39	29.911		
5,100.0	5,089.1	5,055.2	5,044.6	12.7	12.5	-166.84	-378.5	55.1	683.1	660.2	22.85	29.888		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		S11-T10N-R58W - Razor #11G-1411A - HZ - Plan #1											Offset Site Error:		0.0 usft
Survey Program:		0-ISCSWA MWD											Offset Well Error:		0.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor			
5,200.0	5,188.9	5,154.3	5,143.5	12.9	12.7	-166.77	-385.4	54.8	696.4	673.0	23.32	29.865			
5,300.0	5,288.6	5,253.4	5,242.4	13.2	13.0	-166.69	-392.3	54.6	709.6	685.9	23.78	29.843			
5,400.0	5,388.4	5,352.5	5,341.2	13.4	13.3	-166.61	-399.2	54.3	722.9	698.7	24.23	29.841 SF			
5,500.0	5,486.7	5,418.3	5,406.9	13.8	13.5	-165.99	-404.3	54.1	747.4	723.5	23.92	31.240			
5,600.0	5,579.9	5,450.0	5,438.2	14.3	13.6	-164.55	-408.9	54.0	795.1	772.2	22.84	34.812			
5,700.0	5,664.5	5,484.7	5,472.2	15.0	13.7	-161.86	-416.1	53.7	862.5	841.3	21.26	40.563			
5,800.0	5,737.5	5,500.0	5,486.9	15.9	13.8	-156.28	-420.0	53.6	945.0	925.1	19.84	47.639			
5,900.0	5,796.1	5,519.3	5,505.5	17.0	13.9	-143.69	-425.5	53.4	1,037.2	1,015.9	21.29	48.719			
6,000.0	5,838.2	5,525.1	5,511.0	18.3	13.9	-104.85	-427.3	53.3	1,134.6	1,103.2	31.40	36.129			
6,100.0	5,862.3	5,524.4	5,510.3	19.9	13.9	-45.77	-427.1	53.3	1,233.1	1,207.6	25.57	48.222			
6,200.0	5,867.9	5,518.2	5,504.4	21.5	13.8	-24.42	-425.2	53.4	1,329.5	1,312.8	16.67	79.748			

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1412B - 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		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			
0.0	0.0	0.0	0.0	0.0	0.0	127.08	-74.9	99.1	124.3					
100.0	100.0	100.0	100.0	0.1	0.1	127.08	-74.9	99.1	124.3	124.1	0.19	664.436		
200.0	200.0	200.0	200.0	0.3	0.3	127.08	-74.9	99.1	124.3	123.6	0.64	195.202		
300.0	300.0	300.0	300.0	0.5	0.5	127.08	-74.9	99.1	124.3	123.2	1.09	114.406		
400.0	400.0	400.0	400.0	0.8	0.8	127.08	-74.9	99.1	124.3	122.7	1.54	80.915		
500.0	500.0	500.0	500.0	1.0	1.0	127.08	-74.9	99.1	124.3	122.3	1.99	62.592 CC, ES		
600.0	600.0	596.5	596.5	1.2	1.2	159.79	-76.5	99.6	127.3	124.9	2.40	52.952		
700.0	699.8	692.3	692.2	1.4	1.4	161.63	-81.1	101.0	136.4	133.6	2.82	48.395		
800.0	799.6	791.0	790.7	1.7	1.6	163.93	-87.6	103.1	148.9	145.7	3.24	45.966		
900.0	899.4	890.1	889.5	1.9	1.8	165.87	-94.2	105.1	161.7	158.0	3.67	44.099		
1,000.0	999.1	989.1	988.3	2.2	2.0	167.53	-100.8	107.2	174.6	170.5	4.10	42.587		
1,100.0	1,098.9	1,088.2	1,087.1	2.4	2.3	168.96	-107.4	109.3	187.7	183.2	4.54	41.346		
1,200.0	1,198.6	1,187.2	1,185.9	2.7	2.5	170.21	-114.0	111.3	200.9	195.9	4.98	40.316		
1,300.0	1,298.4	1,286.3	1,284.7	2.9	2.7	171.30	-120.6	113.4	214.1	208.7	5.43	39.450		
1,400.0	1,398.1	1,385.3	1,383.5	3.2	3.0	172.26	-127.2	115.4	227.4	221.5	5.87	38.714		
1,500.0	1,497.9	1,484.3	1,482.3	3.4	3.2	173.12	-133.8	117.5	240.8	234.4	6.32	38.080		
1,600.0	1,597.6	1,583.4	1,581.1	3.7	3.5	173.88	-140.4	119.5	254.2	247.4	6.77	37.533		
1,700.0	1,697.4	1,682.4	1,679.9	3.9	3.8	174.57	-147.0	121.6	267.6	260.4	7.22	37.054		
1,800.0	1,797.2	1,781.5	1,778.7	4.2	4.0	175.20	-153.6	123.6	281.1	273.4	7.67	36.632		
1,900.0	1,896.9	1,880.5	1,877.5	4.4	4.3	175.76	-160.2	125.7	294.6	286.5	8.13	36.258		
2,000.0	1,996.7	1,979.6	1,976.3	4.7	4.5	176.28	-166.8	127.7	308.1	299.6	8.58	35.923		
2,100.0	2,096.4	2,078.6	2,075.1	4.9	4.8	176.75	-173.4	129.8	321.7	312.7	9.03	35.623		
2,200.0	2,196.2	2,177.6	2,173.9	5.2	5.0	177.19	-180.0	131.9	335.3	325.8	9.48	35.352		
2,300.0	2,295.9	2,276.7	2,272.7	5.5	5.3	177.59	-186.6	133.9	348.9	338.9	9.94	35.106		
2,400.0	2,395.7	2,375.7	2,371.5	5.7	5.6	177.96	-193.2	136.0	362.5	352.1	10.39	34.882		
2,500.0	2,495.5	2,474.8	2,470.3	6.0	5.8	178.31	-199.8	138.0	376.1	365.3	10.85	34.678		
2,600.0	2,595.2	2,573.8	2,569.1	6.2	6.1	178.63	-206.4	140.1	389.8	378.5	11.30	34.490		
2,700.0	2,695.0	2,672.9	2,667.9	6.5	6.3	178.92	-213.0	142.1	403.4	391.6	11.76	34.317		
2,800.0	2,794.7	2,771.9	2,766.7	6.7	6.6	179.20	-219.6	144.2	417.1	404.9	12.21	34.157		
2,900.0	2,894.5	2,870.9	2,865.5	7.0	6.9	179.47	-226.2	146.2	430.7	418.1	12.67	34.009		
3,000.0	2,994.2	2,970.0	2,964.3	7.2	7.1	179.71	-232.8	148.3	444.4	431.3	13.12	33.871		
3,100.0	3,094.0	3,069.0	3,063.1	7.5	7.4	179.94	-239.4	150.3	458.1	444.5	13.58	33.743		
3,200.0	3,193.7	3,168.1	3,161.9	7.8	7.6	-179.84	-246.0	152.4	471.8	457.8	14.03	33.623		
3,300.0	3,293.5	3,267.1	3,260.7	8.0	7.9	-179.64	-252.5	154.5	485.5	471.0	14.49	33.511		
3,400.0	3,393.3	3,366.2	3,359.5	8.3	8.2	-179.44	-259.1	156.5	499.2	484.2	14.94	33.405		
3,500.0	3,493.0	3,465.2	3,458.3	8.5	8.4	-179.26	-265.7	158.6	512.9	497.5	15.40	33.307		
3,600.0	3,592.8	3,564.2	3,557.1	8.8	8.7	-179.09	-272.3	160.6	526.6	510.8	15.86	33.214		
3,700.0	3,692.5	3,663.3	3,655.9	9.0	8.9	-178.92	-278.9	162.7	540.3	524.0	16.31	33.126		
3,800.0	3,792.3	3,762.3	3,754.7	9.3	9.2	-178.76	-285.5	164.7	554.1	537.3	16.77	33.043		
3,900.0	3,892.0	3,861.4	3,853.5	9.6	9.5	-178.61	-292.1	166.8	567.8	550.6	17.22	32.965		
4,000.0	3,991.8	3,960.4	3,952.3	9.8	9.7	-178.47	-298.7	168.8	581.5	563.8	17.68	32.890		
4,100.0	4,091.6	4,059.5	4,051.1	10.1	10.0	-178.34	-305.3	170.9	595.2	577.1	18.14	32.820		
4,200.0	4,191.3	4,158.5	4,149.9	10.3	10.2	-178.21	-311.9	172.9	609.0	590.4	18.59	32.753		
4,300.0	4,291.1	4,257.5	4,248.7	10.6	10.5	-178.08	-318.5	175.0	622.7	603.7	19.05	32.689		
4,400.0	4,390.8	4,356.6	4,347.5	10.9	10.8	-177.97	-325.1	177.1	636.5	617.0	19.51	32.629		
4,500.0	4,490.6	4,455.6	4,446.3	11.1	11.0	-177.85	-331.7	179.1	650.2	630.2	19.96	32.571		
4,600.0	4,590.3	4,554.7	4,545.1	11.4	11.3	-177.74	-338.3	181.2	664.0	643.5	20.42	32.515		
4,700.0	4,690.1	4,653.7	4,643.9	11.6	11.5	-177.64	-344.9	183.2	677.7	656.8	20.88	32.463		
4,800.0	4,789.9	4,752.8	4,742.7	11.9	11.8	-177.54	-351.5	185.3	691.5	670.1	21.33	32.412		
4,900.0	4,889.6	4,851.8	4,841.5	12.1	12.1	-177.44	-358.1	187.3	705.2	683.4	21.79	32.364		
5,000.0	4,989.4	4,950.8	4,940.3	12.4	12.3	-177.35	-364.7	189.4	719.0	696.7	22.25	32.318		
5,100.0	5,089.1	5,049.9	5,039.1	12.7	12.6	-177.26	-371.3	191.4	732.7	710.0	22.70	32.273		

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 #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> S11-T10N-R58W - Razor #11G-1412B - HZ - Plan #1													<b>Offset Site Error:</b> 0.0 usft
Survey Program: 0-ISCSWA MWD													<b>Offset Well Error:</b> 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	5,188.9	5,148.9	5,137.9	12.9	12.9	-177.17	-377.9	193.5	746.5	723.3	23.16	32.231	
5,300.0	5,288.6	5,248.0	5,236.7	13.2	13.1	-177.09	-384.5	195.5	760.2	736.6	23.62	32.190	
5,400.0	5,388.4	5,347.0	5,335.5	13.4	13.4	-177.01	-391.1	197.6	774.0	750.0	24.06	32.172 SF	
5,500.0	5,486.7	5,443.9	5,432.2	13.8	13.6	-176.83	-397.5	199.6	798.1	774.3	23.77	33.572	
5,600.0	5,579.9	5,500.0	5,488.1	14.3	13.8	-176.54	-401.3	200.8	840.9	818.3	22.59	37.219	
5,700.0	5,664.5	5,550.0	5,537.7	15.0	13.9	-175.99	-407.2	202.6	903.9	883.2	20.67	43.728	
5,800.0	5,737.5	5,550.0	5,537.7	15.9	13.9	-174.81	-407.2	202.6	983.5	965.5	18.05	54.477	
5,900.0	5,796.1	5,576.0	5,563.2	17.0	14.0	-172.14	-412.1	204.2	1,074.3	1,059.1	15.26	70.421	
6,000.0	5,838.2	5,582.8	5,569.8	18.3	14.1	-160.02	-413.6	204.6	1,171.9	1,156.3	15.63	74.991	
6,100.0	5,862.3	5,600.0	5,586.5	19.9	14.1	-27.49	-417.7	205.9	1,272.0	1,253.9	18.12	70.211	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-0209A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-0209A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4989.7usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #11G-0209A  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.08°

