



Project: Weld County, CO  
Site: S12-T10N-R58W  
Well: Razor Federal#12F-1308B  
Wellbore: HZ  
Design: Plan #2

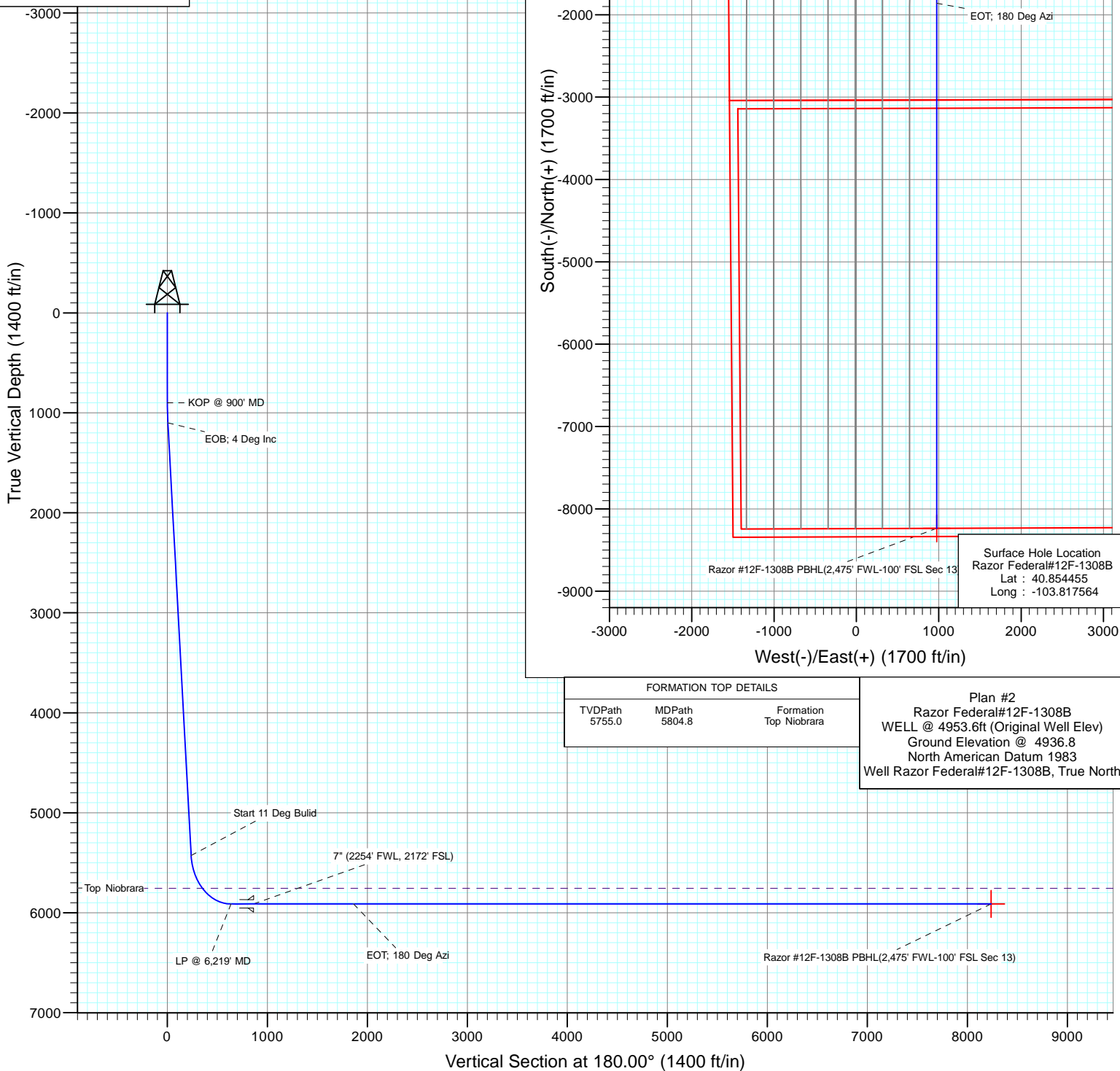
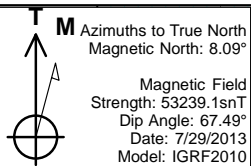


#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0
3	1100.0	4.00	140.12	1099.8	-5.4	4.5	2.00	140.12	5.4
4	5438.0	4.00	140.12	5427.3	-237.6	198.5	0.00	0.00	237.6
5	6219.8	90.00	140.12	5911.8	-636.3	531.7	11.00	0.00	636.3
6	7549.3	90.00	180.00	5911.8	-1861.0	975.9	3.00	90.00	1861.0
7	13925.4	90.00	180.00	5912.0	-8237.1	975.5	0.00	0.00	8237.1

#### Annotation

KOP @ 900' MD  
EOB: 4 Deg Inc  
Start 11 Deg Build  
LP @ 6,219' MD  
EOT: 180 Deg Azi  
PBHL @ 13,925' MD



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5755.0	5804.8	Top Niobrara

Plan #2  
Razor Federal#12F-1308B  
WELL @ 4953.6ft (Original Well Elev)  
Ground Elevation @ 4936.8  
North American Datum 1983  
Well Razor Federal#12F-1308B, True North

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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

Site		S12-T10N-R58W			
Site Position:		Northing:	1,558,541.09 ft	Latitude:	40.854456
From:	Lat/Long	Easting:	3,465,183.08 ft	Longitude:	-103.818397
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.09 °

Well	Razor Federal#12F-1308B					
Well Position	+N/-S	0.0 ft	Northing:	1,558,545.42 ft	Latitude:	40.854455
	+E/-W	0.0 ft	Easting:	3,465,413.58 ft	Longitude:	-103.817564
Position Uncertainty	0.0 ft		Wellhead Elevation:	ft	Ground Level:	4,936.8 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	7/29/2013	8.09	67.49	53,239

<b>Design</b>	Plan #2				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN		<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	180.00	

<b>Plan Sections</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	<b>TFO</b>	<b>Target</b>
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	4.00	140.12	1,099.8	-5.4	4.5	2.00	2.00	0.00	140.12	
5,438.0	4.00	140.12	5,427.3	-237.6	198.5	0.00	0.00	0.00	0.00	
6,219.8	90.00	140.12	5,911.8	-636.3	531.7	11.00	11.00	0.00	0.00	
7,549.3	90.00	180.00	5,911.8	-1,861.0	975.9	3.00	0.00	3.00	90.00	
13,925.4	90.00	180.00	5,912.0	-8,237.1	975.5	0.00	0.00	0.00	0.00	Razor #12F-1308B PI

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### 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	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	KOP @ 900' MD
1,000.0	2.00	140.12	1,000.0	-1.3	1.1	1.3	2.00	2.00	
1,100.0	4.00	140.12	1,099.8	-5.4	4.5	5.4	2.00	2.00	EOB; 4 Deg Inc
1,200.0	4.00	140.12	1,199.6	-10.7	8.9	10.7	0.00	0.00	
1,300.0	4.00	140.12	1,299.4	-16.1	13.4	16.1	0.00	0.00	
1,400.0	4.00	140.12	1,399.1	-21.4	17.9	21.4	0.00	0.00	
1,500.0	4.00	140.12	1,498.9	-26.8	22.4	26.8	0.00	0.00	
1,600.0	4.00	140.12	1,598.6	-32.1	26.8	32.1	0.00	0.00	
1,700.0	4.00	140.12	1,698.4	-37.5	31.3	37.5	0.00	0.00	
1,800.0	4.00	140.12	1,798.1	-42.8	35.8	42.8	0.00	0.00	
1,900.0	4.00	140.12	1,897.9	-48.2	40.3	48.2	0.00	0.00	
2,000.0	4.00	140.12	1,997.6	-53.5	44.7	53.5	0.00	0.00	
2,100.0	4.00	140.12	2,097.4	-58.9	49.2	58.9	0.00	0.00	
2,200.0	4.00	140.12	2,197.2	-64.2	53.7	64.2	0.00	0.00	
2,300.0	4.00	140.12	2,296.9	-69.6	58.1	69.6	0.00	0.00	
2,400.0	4.00	140.12	2,396.7	-74.9	62.6	74.9	0.00	0.00	
2,500.0	4.00	140.12	2,496.4	-80.3	67.1	80.3	0.00	0.00	
2,600.0	4.00	140.12	2,596.2	-85.7	71.6	85.7	0.00	0.00	
2,700.0	4.00	140.12	2,695.9	-91.0	76.0	91.0	0.00	0.00	
2,800.0	4.00	140.12	2,795.7	-96.4	80.5	96.4	0.00	0.00	
2,900.0	4.00	140.12	2,895.5	-101.7	85.0	101.7	0.00	0.00	
3,000.0	4.00	140.12	2,995.2	-107.1	89.5	107.1	0.00	0.00	
3,100.0	4.00	140.12	3,095.0	-112.4	93.9	112.4	0.00	0.00	
3,200.0	4.00	140.12	3,194.7	-117.8	98.4	117.8	0.00	0.00	
3,300.0	4.00	140.12	3,294.5	-123.1	102.9	123.1	0.00	0.00	
3,400.0	4.00	140.12	3,394.2	-128.5	107.3	128.5	0.00	0.00	
3,500.0	4.00	140.12	3,494.0	-133.8	111.8	133.8	0.00	0.00	
3,600.0	4.00	140.12	3,593.7	-139.2	116.3	139.2	0.00	0.00	
3,700.0	4.00	140.12	3,693.5	-144.5	120.8	144.5	0.00	0.00	
3,800.0	4.00	140.12	3,793.3	-149.9	125.2	149.9	0.00	0.00	
3,900.0	4.00	140.12	3,893.0	-155.2	129.7	155.2	0.00	0.00	
4,000.0	4.00	140.12	3,992.8	-160.6	134.2	160.6	0.00	0.00	
4,100.0	4.00	140.12	4,092.5	-165.9	138.7	165.9	0.00	0.00	
4,200.0	4.00	140.12	4,192.3	-171.3	143.1	171.3	0.00	0.00	
4,300.0	4.00	140.12	4,292.0	-176.7	147.6	176.7	0.00	0.00	
4,400.0	4.00	140.12	4,391.8	-182.0	152.1	182.0	0.00	0.00	
4,500.0	4.00	140.12	4,491.6	-187.4	156.5	187.4	0.00	0.00	
4,600.0	4.00	140.12	4,591.3	-192.7	161.0	192.7	0.00	0.00	
4,700.0	4.00	140.12	4,691.1	-198.1	165.5	198.1	0.00	0.00	
4,800.0	4.00	140.12	4,790.8	-203.4	170.0	203.4	0.00	0.00	
4,900.0	4.00	140.12	4,890.6	-208.8	174.4	208.8	0.00	0.00	
5,000.0	4.00	140.12	4,990.3	-214.1	178.9	214.1	0.00	0.00	
5,100.0	4.00	140.12	5,090.1	-219.5	183.4	219.5	0.00	0.00	

# Cathedral Energy Services

## Planning Report

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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### 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	140.12	5,189.9	-224.8	187.9	224.8	0.00	0.00	
5,300.0	4.00	140.12	5,289.6	-230.2	192.3	230.2	0.00	0.00	
5,400.0	4.00	140.12	5,389.4	-235.5	196.8	235.5	0.00	0.00	
5,438.0	4.00	140.12	5,427.3	-237.6	198.5	237.6	0.00	0.00	Start 11 Deg Bulid
5,450.0	5.32	140.12	5,439.2	-238.3	199.1	238.3	11.00	11.00	
5,500.0	10.82	140.12	5,488.7	-243.7	203.6	243.7	11.00	11.00	
5,550.0	16.32	140.12	5,537.3	-252.7	211.1	252.7	11.00	11.00	
5,600.0	21.82	140.12	5,584.5	-265.2	221.6	265.2	11.00	11.00	
5,650.0	27.32	140.12	5,630.0	-281.2	234.9	281.2	11.00	11.00	
5,700.0	32.82	140.12	5,673.2	-300.4	251.0	300.4	11.00	11.00	
5,750.0	38.32	140.12	5,713.9	-322.7	269.6	322.7	11.00	11.00	
5,800.0	43.82	140.12	5,751.6	-347.9	290.7	347.9	11.00	11.00	
5,804.8	44.34	140.12	5,755.0	-350.4	292.8	350.4	11.00	11.00	Top Niobrara
5,850.0	49.32	140.12	5,785.9	-375.8	314.0	375.8	11.00	11.00	
5,900.0	54.82	140.12	5,816.7	-406.0	339.2	406.0	11.00	11.00	
5,950.0	60.32	140.12	5,843.5	-438.4	366.3	438.4	11.00	11.00	
6,000.0	65.82	140.12	5,866.1	-472.6	394.9	472.6	11.00	11.00	
6,050.0	71.32	140.12	5,884.4	-508.3	424.7	508.3	11.00	11.00	
6,100.0	76.82	140.12	5,898.1	-545.2	455.5	545.2	11.00	11.00	
6,150.0	82.32	140.12	5,907.1	-582.9	487.0	582.9	11.00	11.00	
6,200.0	87.82	140.12	5,911.4	-621.1	519.0	621.1	11.00	11.00	
6,219.8	90.00	140.12	5,911.8	-636.3	531.7	636.3	11.00	11.00	LP @ 6,219' MD
6,300.0	90.00	142.53	5,911.8	-698.9	581.8	698.9	3.00	0.00	
6,400.0	90.00	145.53	5,911.8	-779.8	640.5	779.8	3.00	0.00	
6,500.0	90.00	148.53	5,911.8	-863.7	694.9	863.7	3.00	0.00	7" (2254' FWL, 2172' FSL)
6,600.0	90.00	151.53	5,911.8	-950.3	744.9	950.3	3.00	0.00	
6,700.0	90.00	154.53	5,911.8	-1,039.4	790.2	1,039.4	3.00	0.00	
6,800.0	90.00	157.53	5,911.8	-1,130.8	830.9	1,130.8	3.00	0.00	
6,900.0	90.00	160.53	5,911.8	-1,224.1	866.6	1,224.1	3.00	0.00	
7,000.0	90.00	163.53	5,911.8	-1,319.3	897.5	1,319.3	3.00	0.00	
7,100.0	90.00	166.53	5,911.8	-1,415.9	923.3	1,415.9	3.00	0.00	
7,200.0	90.00	169.53	5,911.8	-1,513.7	944.1	1,513.7	3.00	0.00	
7,300.0	90.00	172.53	5,911.8	-1,612.4	959.7	1,612.4	3.00	0.00	
7,400.0	90.00	175.53	5,911.8	-1,711.9	970.1	1,711.9	3.00	0.00	
7,500.0	90.00	178.53	5,911.8	-1,811.7	975.3	1,811.7	3.00	0.00	
7,549.3	90.00	180.00	5,911.8	-1,861.0	975.9	1,861.0	3.00	0.00	EOT; 180 Deg Azi
7,600.0	90.00	180.00	5,911.8	-1,911.7	975.9	1,911.7	0.00	0.00	
7,700.0	90.00	180.00	5,911.8	-2,011.7	975.9	2,011.7	0.00	0.00	
7,800.0	90.00	180.00	5,911.8	-2,111.7	975.9	2,111.7	0.00	0.00	
7,900.0	90.00	180.00	5,911.8	-2,211.7	975.9	2,211.7	0.00	0.00	
8,000.0	90.00	180.00	5,911.8	-2,311.7	975.9	2,311.7	0.00	0.00	
8,100.0	90.00	180.00	5,911.8	-2,411.7	975.9	2,411.7	0.00	0.00	
8,200.0	90.00	180.00	5,911.8	-2,511.7	975.9	2,511.7	0.00	0.00	
8,300.0	90.00	180.00	5,911.8	-2,611.7	975.9	2,611.7	0.00	0.00	
8,400.0	90.00	180.00	5,911.9	-2,711.7	975.9	2,711.7	0.00	0.00	
8,500.0	90.00	180.00	5,911.9	-2,811.7	975.9	2,811.7	0.00	0.00	
8,600.0	90.00	180.00	5,911.9	-2,911.7	975.8	2,911.7	0.00	0.00	
8,700.0	90.00	180.00	5,911.9	-3,011.7	975.8	3,011.7	0.00	0.00	
8,800.0	90.00	180.00	5,911.9	-3,111.7	975.8	3,111.7	0.00	0.00	
8,900.0	90.00	180.00	5,911.9	-3,211.7	975.8	3,211.7	0.00	0.00	
9,000.0	90.00	180.00	5,911.9	-3,311.7	975.8	3,311.7	0.00	0.00	
9,100.0	90.00	180.00	5,911.9	-3,411.7	975.8	3,411.7	0.00	0.00	

# Cathedral Energy Services

## Planning Report

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<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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	180.00	5,911.9	-3,511.7	975.8	3,511.7	0.00	0.00	
9,300.0	90.00	180.00	5,911.9	-3,611.7	975.8	3,611.7	0.00	0.00	
9,400.0	90.00	180.00	5,911.9	-3,711.7	975.8	3,711.7	0.00	0.00	
9,500.0	90.00	180.00	5,911.9	-3,811.7	975.8	3,811.7	0.00	0.00	
9,600.0	90.00	180.00	5,911.9	-3,911.7	975.8	3,911.7	0.00	0.00	
9,700.0	90.00	180.00	5,911.9	-4,011.7	975.8	4,011.7	0.00	0.00	
9,800.0	90.00	180.00	5,911.9	-4,111.7	975.8	4,111.7	0.00	0.00	
9,900.0	90.00	180.00	5,911.9	-4,211.7	975.8	4,211.7	0.00	0.00	
10,000.0	90.00	180.00	5,911.9	-4,311.7	975.8	4,311.7	0.00	0.00	
10,100.0	90.00	180.00	5,911.9	-4,411.7	975.7	4,411.7	0.00	0.00	
10,200.0	90.00	180.00	5,911.9	-4,511.7	975.7	4,511.7	0.00	0.00	
10,300.0	90.00	180.00	5,911.9	-4,611.7	975.7	4,611.7	0.00	0.00	
10,400.0	90.00	180.00	5,911.9	-4,711.7	975.7	4,711.7	0.00	0.00	
10,500.0	90.00	180.00	5,911.9	-4,811.7	975.7	4,811.7	0.00	0.00	
10,600.0	90.00	180.00	5,911.9	-4,911.7	975.7	4,911.7	0.00	0.00	
10,700.0	90.00	180.00	5,911.9	-5,011.7	975.7	5,011.7	0.00	0.00	
10,800.0	90.00	180.00	5,911.9	-5,111.7	975.7	5,111.7	0.00	0.00	
10,900.0	90.00	180.00	5,911.9	-5,211.7	975.7	5,211.7	0.00	0.00	
11,000.0	90.00	180.00	5,911.9	-5,311.7	975.7	5,311.7	0.00	0.00	
11,100.0	90.00	180.00	5,911.9	-5,411.7	975.7	5,411.7	0.00	0.00	
11,200.0	90.00	180.00	5,911.9	-5,511.7	975.7	5,511.7	0.00	0.00	
11,300.0	90.00	180.00	5,911.9	-5,611.7	975.7	5,611.7	0.00	0.00	
11,400.0	90.00	180.00	5,911.9	-5,711.7	975.7	5,711.7	0.00	0.00	
11,500.0	90.00	180.00	5,911.9	-5,811.7	975.7	5,811.7	0.00	0.00	
11,600.0	90.00	180.00	5,911.9	-5,911.7	975.6	5,911.7	0.00	0.00	
11,700.0	90.00	180.00	5,911.9	-6,011.7	975.6	6,011.7	0.00	0.00	
11,800.0	90.00	180.00	5,912.0	-6,111.7	975.6	6,111.7	0.00	0.00	
11,900.0	90.00	180.00	5,912.0	-6,211.7	975.6	6,211.7	0.00	0.00	
12,000.0	90.00	180.00	5,912.0	-6,311.7	975.6	6,311.7	0.00	0.00	
12,100.0	90.00	180.00	5,912.0	-6,411.7	975.6	6,411.7	0.00	0.00	
12,200.0	90.00	180.00	5,912.0	-6,511.7	975.6	6,511.7	0.00	0.00	
12,300.0	90.00	180.00	5,912.0	-6,611.7	975.6	6,611.7	0.00	0.00	
12,400.0	90.00	180.00	5,912.0	-6,711.7	975.6	6,711.7	0.00	0.00	
12,500.0	90.00	180.00	5,912.0	-6,811.7	975.6	6,811.7	0.00	0.00	
12,600.0	90.00	180.00	5,912.0	-6,911.7	975.6	6,911.7	0.00	0.00	
12,700.0	90.00	180.00	5,912.0	-7,011.7	975.6	7,011.7	0.00	0.00	
12,800.0	90.00	180.00	5,912.0	-7,111.7	975.6	7,111.7	0.00	0.00	
12,900.0	90.00	180.00	5,912.0	-7,211.7	975.6	7,211.7	0.00	0.00	
13,000.0	90.00	180.00	5,912.0	-7,311.7	975.6	7,311.7	0.00	0.00	
13,100.0	90.00	180.00	5,912.0	-7,411.7	975.6	7,411.7	0.00	0.00	
13,200.0	90.00	180.00	5,912.0	-7,511.7	975.5	7,511.7	0.00	0.00	
13,300.0	90.00	180.00	5,912.0	-7,611.7	975.5	7,611.7	0.00	0.00	
13,400.0	90.00	180.00	5,912.0	-7,711.7	975.5	7,711.7	0.00	0.00	
13,500.0	90.00	180.00	5,912.0	-7,811.7	975.5	7,811.7	0.00	0.00	
13,600.0	90.00	180.00	5,912.0	-7,911.7	975.5	7,911.7	0.00	0.00	
13,700.0	90.00	180.00	5,912.0	-8,011.7	975.5	8,011.7	0.00	0.00	
13,800.0	90.00	180.00	5,912.0	-8,111.7	975.5	8,111.7	0.00	0.00	
13,900.0	90.00	180.00	5,912.0	-8,211.7	975.5	8,211.7	0.00	0.00	
13,925.4	90.00	180.00	5,912.0	-8,237.1	975.5	8,237.1	0.00	0.00	PBHL @ 13,925' MD

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Razor #12F-1308B PBH	0.00	0.00	5,912.0	-8,237.1	975.5	1,550,328.26	3,466,545.17	40.831847	-103.814039
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
6,500.0	5,911.8	7" (2254' FWL, 2172' FSL)		0.000	0.000

Formations					
Measured Depth	Vertical Depth	Name		Dip	Dip Direction
(ft)	(ft)			(°)	(°)
5,804.8	5,755.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
900.0	900.0	0.0	0.0	KOP @ 900' MD	
1,100.0	1,099.8	-5.4	4.5	EOB; 4 Deg Inc	
5,438.0	5,427.3	-237.6	198.5	Start 11 Deg Bulid	
6,219.8	5,911.8	-636.3	531.7	LP @ 6,219' MD	
7,549.3	5,911.8	-1,861.0	975.9	EOT; 180 Deg Azi	
13,925.4	5,912.0	-8,237.1	975.5	PBHL @ 13,925' MD	

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S12-T10N-R58W**

**Razor Federal#12F-1308B**

**HZ**

**Plan #2**

## **Anticollision Report**

**18 October, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	10/10/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,925.1	Plan #2 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S12-T10N-R58W						
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	10,725.6	5,862.3	4,317.2	4,207.6	39.417	CC
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	10,800.0	5,862.3	4,317.8	4,206.9	38.925	ES
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	13,900.0	5,862.4	5,358.6	5,186.4	31.105	SF
Razor #12F-0101A - HZ - Plan #2	500.0	500.0	211.2	209.2	106.405	CC, ES
Razor #12F-0101A - HZ - Plan #2	5,400.0	5,337.9	834.2	810.4	35.022	SF
Razor #12F-0102B - HZ - Plan #2	500.0	500.0	230.5	228.6	116.131	CC, ES
Razor #12F-0102B - HZ - Plan #2	5,438.0	5,384.3	808.2	784.1	33.549	SF
Razor #12F-0103A - HZ - Plan #2	900.0	900.0	151.3	147.5	39.982	CC, ES
Razor #12F-0103A - HZ - Plan #2	5,300.0	5,249.6	728.5	705.2	31.249	SF
Razor #12F-0104B - HZ - Plan #2	800.0	800.0	164.4	161.1	49.329	CC, ES
Razor #12F-0104B - HZ - Plan #2	4,700.0	4,662.2	604.4	583.6	29.092	SF
Razor #12F-0105A - HZ - Plan #2	900.0	900.0	99.9	96.1	26.406	CC, ES
Razor #12F-0105A - HZ - Plan #2	1,200.0	1,196.5	115.2	110.2	22.953	SF
Razor #12F-0106B - HZ - Plan #2	946.1	947.5	96.4	92.4	24.195	CC, ES
Razor #12F-0106B - HZ - Plan #2	1,500.0	1,497.5	130.5	124.1	20.440	SF
Razor #12F-0107A - HZ - Plan #2	900.0	900.0	74.9	71.1	19.804	CC, ES
Razor #12F-0107A - HZ - Plan #2	1,200.0	1,199.6	86.1	81.1	17.108	SF
Razor #12F-0108B - HZ - Plan #2	1,001.2	1,002.2	30.7	26.5	7.300	CC, ES
Razor #12F-0108B - HZ - Plan #2	1,100.0	1,100.6	33.4	28.8	7.253	SF
Razor Federal #12F-1301A - HZ - Plan #2	900.0	900.0	242.4	238.6	64.072	CC, ES
Razor Federal #12F-1301A - HZ - Plan #2	13,925.4	13,985.8	2,312.2	1,994.1	7.269	SF
Razor Federal #12F-1302B - HZ - Plan #2	900.0	900.0	197.5	193.7	52.202	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	13,925.4	13,865.5	1,980.2	1,663.4	6.250	SF
Razor Federal #12F-1303A - HZ - Plan #2	603.3	603.3	180.7	178.3	74.571	CC
Razor Federal #12F-1303A - HZ - Plan #2	800.0	799.6	181.1	177.8	55.637	ES
Razor Federal #12F-1303A - HZ - Plan #2	13,925.4	13,678.2	1,652.7	1,334.5	5.193	SF
Razor Federal #12F-1304B - HZ - Plan #2	900.0	900.0	131.4	127.6	34.733	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	13,925.4	13,662.9	1,319.9	1,002.0	4.152	SF
Razor Federal #12F-1305A - HZ - Plan #2	900.0	900.0	123.6	119.9	32.680	CC, ES
Razor Federal #12F-1305A - HZ - Plan #2	13,925.4	13,612.5	995.2	677.2	3.129	SF
Razor Federal #12F-1306B - HZ - Plan #2	900.0	900.0	66.1	62.3	17.468	CC, ES
Razor Federal #12F-1306B - HZ - Plan #2	13,925.4	13,693.7	660.3	344.0	2.088	SF
Razor Federal #12F-1307A - HZ - Plan #2	2,025.7	2,030.1	45.4	36.9	5.333	CC
Razor Federal #12F-1307A - HZ - Plan #2	5,550.0	5,562.7	49.5	21.5	1.766	ES
Razor Federal #12F-1307A - HZ - Plan #2	13,925.4	13,732.3	345.6	41.3	1.136	Level 2, SF

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS													Offset Site Error:	0.0 ft
Survey Program: 6719-ISCWSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-146.44	-5,037.0	-3,341.5	6,044.8					
100.0	100.0	50.4	50.4	0.1	0.1	-146.44	-5,037.0	-3,341.5	6,044.6	6,044.4	0.15	N/A		
200.0	200.0	150.4	150.4	0.3	0.2	-146.44	-5,037.0	-3,341.5	6,044.6	6,044.1	0.49	N/A		
300.0	300.0	250.4	250.4	0.5	0.3	-146.44	-5,037.0	-3,341.5	6,044.6	6,043.7	0.82	7,335.168		
400.0	400.0	350.4	350.4	0.8	0.4	-146.44	-5,037.0	-3,341.5	6,044.6	6,043.4	1.16	5,206.116		
500.0	500.0	450.4	450.4	1.0	0.5	-146.44	-5,037.0	-3,341.5	6,044.6	6,043.1	1.50	4,034.959		
600.0	600.0	550.4	550.4	1.2	0.6	-146.44	-5,037.0	-3,341.5	6,044.6	6,042.7	1.84	3,293.957		
700.0	700.0	650.4	650.4	1.4	0.7	-146.44	-5,037.0	-3,341.5	6,044.6	6,042.4	2.17	2,782.892		
800.0	800.0	750.4	750.4	1.7	0.8	-146.44	-5,037.0	-3,341.5	6,044.6	6,042.1	2.51	2,409.112		
900.0	900.0	850.4	850.4	1.9	1.0	-146.44	-5,037.0	-3,341.5	6,044.6	6,041.7	2.85	2,123.850		
1,000.0	1,000.0	950.4	950.4	2.1	1.1	73.47	-5,037.0	-3,341.5	6,044.1	6,040.9	3.17	1,909.006		
1,100.0	1,099.8	1,050.2	1,050.2	2.3	1.2	73.54	-5,037.0	-3,341.5	6,042.6	6,039.1	3.47	1,739.620		
1,200.0	1,199.6	1,150.0	1,150.0	2.5	1.3	73.60	-5,037.0	-3,341.5	6,040.6	6,036.8	3.79	1,594.365		
1,300.0	1,299.4	1,249.7	1,249.7	2.7	1.4	73.67	-5,037.0	-3,341.5	6,038.6	6,034.5	4.11	1,467.668		
1,400.0	1,399.1	1,349.5	1,349.5	2.9	1.5	73.73	-5,037.0	-3,341.5	6,036.7	6,032.2	4.45	1,357.045		
1,500.0	1,498.9	1,449.3	1,449.3	3.1	1.6	73.79	-5,037.0	-3,341.5	6,034.7	6,029.9	4.79	1,260.155		
1,600.0	1,598.6	1,549.0	1,549.0	3.4	1.7	73.86	-5,037.0	-3,341.5	6,032.8	6,027.6	5.13	1,174.934		
1,700.0	1,698.4	1,648.8	1,648.8	3.6	1.9	73.92	-5,037.0	-3,341.5	6,030.8	6,025.4	5.48	1,099.618		
1,800.0	1,798.1	1,748.5	1,748.5	3.8	2.0	73.99	-5,037.0	-3,341.5	6,028.9	6,023.1	5.84	1,032.725		
1,900.0	1,897.9	1,848.3	1,848.3	4.1	2.1	74.05	-5,037.0	-3,341.5	6,027.0	6,020.8	6.19	973.020		
2,000.0	1,997.6	1,948.0	1,948.0	4.3	2.2	74.11	-5,037.0	-3,341.5	6,025.1	6,018.5	6.55	919.476		
2,100.0	2,097.4	2,047.8	2,047.8	4.6	2.3	74.18	-5,037.0	-3,341.5	6,023.2	6,016.2	6.91	871.236		
2,200.0	2,197.2	2,147.5	2,147.5	4.8	2.4	74.24	-5,037.0	-3,341.5	6,021.2	6,014.0	7.28	827.586		
2,300.0	2,296.9	2,247.3	2,247.3	5.1	2.5	74.30	-5,037.0	-3,341.5	6,019.4	6,011.7	7.64	787.928		
2,400.0	2,396.7	2,347.1	2,347.1	5.3	2.6	74.37	-5,037.0	-3,341.5	6,017.5	6,009.5	8.00	751.758		
2,500.0	2,496.4	2,446.8	2,446.8	5.6	2.7	74.43	-5,037.0	-3,341.5	6,015.6	6,007.2	8.37	718.650		
2,600.0	2,596.2	2,546.6	2,546.6	5.8	2.9	74.49	-5,037.0	-3,341.5	6,013.7	6,005.0	8.74	688.242		
2,700.0	2,695.9	2,646.3	2,646.3	6.1	3.0	74.56	-5,037.0	-3,341.5	6,011.8	6,002.7	9.11	660.226		
2,800.0	2,795.7	2,746.1	2,746.1	6.3	3.1	74.62	-5,037.0	-3,341.5	6,010.0	6,000.5	9.47	634.337		
2,900.0	2,895.5	2,845.8	2,845.8	6.6	3.2	74.69	-5,037.0	-3,341.5	6,008.1	5,998.3	9.84	610.347		
3,000.0	2,895.2	2,945.6	2,945.6	6.9	3.3	74.75	-5,037.0	-3,341.5	6,006.3	5,996.1	10.21	588.060		
3,100.0	3,095.0	3,045.4	3,045.4	7.1	3.4	74.81	-5,037.0	-3,341.5	6,004.5	5,993.9	10.58	567.302		
3,200.0	3,194.7	3,145.1	3,145.1	7.4	3.5	74.88	-5,037.0	-3,341.5	6,002.6	5,991.7	10.96	547.926		
3,300.0	3,294.5	3,244.9	3,244.9	7.6	3.6	74.94	-5,037.0	-3,341.5	6,000.8	5,989.5	11.33	529.799		
3,400.0	3,394.2	3,344.6	3,344.6	7.9	3.8	75.01	-5,037.0	-3,341.5	5,999.0	5,987.3	11.70	512.806		
3,500.0	3,494.0	3,444.4	3,444.4	8.2	3.9	75.07	-5,037.0	-3,341.5	5,997.2	5,985.1	12.07	496.846		
3,600.0	3,593.7	3,544.1	3,544.1	8.4	4.0	75.14	-5,037.0	-3,341.5	5,995.4	5,983.0	12.44	481.829		
3,700.0	3,693.5	3,643.9	3,643.9	8.7	4.1	75.20	-5,037.0	-3,341.5	5,993.6	5,980.8	12.82	467.674		
3,800.0	3,793.3	3,743.7	3,743.7	8.9	4.2	75.26	-5,037.0	-3,341.5	5,991.8	5,978.6	13.19	454.311		
3,900.0	3,893.0	3,843.4	3,843.4	9.2	4.3	75.33	-5,037.0	-3,341.5	5,990.1	5,976.5	13.56	441.675		
4,000.0	3,992.8	3,943.2	3,943.2	9.5	4.4	75.39	-5,037.0	-3,341.5	5,988.3	5,974.4	13.94	429.709		
4,100.0	4,092.5	4,042.9	4,042.9	9.7	4.5	75.46	-5,037.0	-3,341.5	5,986.5	5,972.2	14.31	418.362		
4,200.0	4,192.3	4,142.7	4,142.7	10.0	4.6	75.52	-5,037.0	-3,341.5	5,984.8	5,970.1	14.68	407.587		
4,300.0	4,292.0	4,242.4	4,242.4	10.2	4.8	75.59	-5,037.0	-3,341.5	5,983.0	5,968.0	15.06	397.343		
4,400.0	4,391.8	4,342.2	4,342.2	10.5	4.9	75.65	-5,037.0	-3,341.5	5,981.3	5,965.9	15.43	387.592		
4,500.0	4,491.6	4,441.9	4,441.9	10.8	5.0	75.72	-5,037.0	-3,341.5	5,979.6	5,963.8	15.81	378.300		
4,600.0	4,591.3	4,541.7	4,541.7	11.0	5.1	75.78	-5,037.0	-3,341.5	5,977.8	5,961.7	16.18	369.434		
4,700.0	4,691.1	4,641.5	4,641.5	11.3	5.2	75.85	-5,037.0	-3,341.5	5,976.1	5,959.6	16.56	360.967		
4,800.0	4,790.8	4,741.2	4,741.2	11.5	5.3	75.91	-5,037.0	-3,341.5	5,974.4	5,957.5	16.93	352.872		
4,900.0	4,890.6	4,841.0	4,841.0	11.8	5.4	75.97	-5,037.0	-3,341.5	5,972.7	5,955.4	17.31	345.126		
5,000.0	4,990.3	4,940.7	4,940.7	12.1	5.5	76.04	-5,037.0	-3,341.5	5,971.0	5,953.4	17.68	337.706		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS													Offset Site Error: 0.0 ft	
Survey Program: 6719-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,090.1	5,040.5	5,040.5	12.3	5.7	76.10	-5,037.0	-3,341.5	5,969.4	5,951.3	18.06	330.593		
5,200.0	5,189.9	5,140.2	5,140.2	12.6	5.8	76.17	-5,037.0	-3,341.5	5,967.7	5,949.2	18.43	323.768		
5,300.0	5,289.6	5,240.0	5,240.0	12.9	5.9	76.23	-5,037.0	-3,341.5	5,966.0	5,947.2	18.81	317.215		
5,400.0	5,389.4	5,339.8	5,339.8	13.1	6.0	76.30	-5,037.0	-3,341.5	5,964.4	5,945.2	19.18	310.916		
5,438.0	5,427.3	5,377.7	5,377.7	13.2	6.0	76.32	-5,037.0	-3,341.5	5,963.7	5,944.4	19.33	308.587		
5,450.0	5,439.2	5,389.6	5,389.6	13.3	6.0	76.36	-5,037.0	-3,341.5	5,963.5	5,944.1	19.38	307.771		
5,500.0	5,488.7	5,439.1	5,439.1	13.4	6.1	76.60	-5,037.0	-3,341.5	5,961.8	5,942.2	19.61	304.015		
5,550.0	5,537.3	5,487.7	5,487.7	13.6	6.2	77.00	-5,037.0	-3,341.5	5,959.1	5,939.2	19.89	299.670		
5,600.0	5,584.5	5,534.9	5,534.9	13.9	6.2	77.56	-5,037.0	-3,341.5	5,955.3	5,935.1	20.21	294.701		
5,650.0	5,630.0	5,580.4	5,580.4	14.2	6.3	78.25	-5,037.0	-3,341.5	5,950.5	5,929.9	20.59	289.068		
5,700.0	5,673.2	5,623.6	5,623.6	14.5	6.3	79.07	-5,037.0	-3,341.5	5,944.9	5,923.8	21.03	282.748		
5,750.0	5,713.9	5,664.3	5,664.3	14.9	6.4	80.00	-5,037.0	-3,341.5	5,938.4	5,916.9	21.54	275.750		
5,800.0	5,751.6	5,702.0	5,702.0	15.4	6.4	81.02	-5,037.0	-3,341.5	5,931.3	5,909.2	22.12	268.126		
5,850.0	5,785.9	5,736.3	5,736.3	15.9	6.4	82.10	-5,037.0	-3,341.5	5,923.6	5,900.8	22.79	259.972		
5,900.0	5,816.7	5,767.1	5,767.1	16.4	6.5	83.23	-5,037.0	-3,341.5	5,915.5	5,892.0	23.53	251.420		
5,950.0	5,843.5	5,793.9	5,793.9	17.1	6.5	84.38	-5,037.0	-3,341.5	5,907.2	5,882.8	24.35	242.630		
6,000.0	5,866.1	5,816.5	5,816.5	17.7	6.5	85.52	-5,037.0	-3,341.5	5,898.7	5,873.4	25.23	233.768		
6,050.0	5,884.4	5,834.8	5,834.8	18.5	6.5	86.64	-5,037.0	-3,341.5	5,890.1	5,863.9	26.18	224.992		
6,100.0	5,898.1	5,848.5	5,848.5	19.3	6.6	87.72	-5,037.0	-3,341.5	5,881.6	5,854.5	27.17	216.441		
6,150.0	5,907.1	5,857.5	5,857.5	20.1	6.6	88.73	-5,037.0	-3,341.5	5,873.4	5,845.2	28.21	208.227		
6,200.0	5,911.4	5,861.8	5,861.8	20.9	6.6	89.66	-5,037.0	-3,341.5	5,865.4	5,836.2	29.26	200.436		
6,219.8	5,911.8	5,862.2	5,862.2	21.3	6.6	90.00	-5,037.0	-3,341.5	5,862.4	5,832.7	29.69	197.477		
6,300.0	5,911.8	5,862.2	5,862.2	22.6	6.6	90.00	-5,037.0	-3,341.5	5,849.0	5,817.7	31.31	186.820		
6,400.0	5,911.8	5,862.2	5,862.2	24.2	6.6	90.00	-5,037.0	-3,341.5	5,829.2	5,796.0	33.24	175.372		
6,500.0	5,911.8	5,862.2	5,862.2	25.9	6.6	90.00	-5,037.0	-3,341.5	5,805.9	5,770.8	35.15	165.173		
6,600.0	5,911.8	5,862.2	5,862.2	27.7	6.6	90.00	-5,037.0	-3,341.5	5,779.2	5,742.2	37.01	156.140		
6,700.0	5,911.8	5,862.2	5,862.2	29.4	6.6	90.00	-5,037.0	-3,341.5	5,749.1	5,710.2	38.80	148.163		
6,800.0	5,911.8	5,862.2	5,862.2	31.2	6.6	90.00	-5,037.0	-3,341.5	5,715.5	5,675.0	40.50	141.128		
6,900.0	5,911.8	5,862.2	5,862.2	32.9	6.6	90.00	-5,037.0	-3,341.5	5,678.6	5,636.5	42.09	134.925		
7,000.0	5,911.8	5,862.2	5,862.2	34.6	6.6	90.00	-5,037.0	-3,341.5	5,638.3	5,594.8	43.55	129.457		
7,100.0	5,911.8	5,862.2	5,862.2	36.3	6.6	90.00	-5,037.0	-3,341.5	5,594.8	5,549.9	44.89	124.637		
7,200.0	5,911.8	5,862.2	5,862.2	37.9	6.6	90.00	-5,037.0	-3,341.5	5,548.0	5,501.9	46.08	120.392		
7,300.0	5,911.8	5,862.2	5,862.2	39.6	6.6	90.00	-5,037.0	-3,341.5	5,498.0	5,450.8	47.13	116.657		
7,400.0	5,911.8	5,862.2	5,862.2	41.1	6.6	90.00	-5,037.0	-3,341.5	5,444.8	5,396.8	48.02	113.376		
7,500.0	5,911.8	5,862.2	5,862.2	42.7	6.6	90.00	-5,037.0	-3,341.5	5,388.6	5,339.8	48.76	110.504		
7,549.3	5,911.8	5,862.2	5,862.2	43.4	6.6	90.00	-5,037.0	-3,341.5	5,359.7	5,310.7	49.07	109.225		
7,600.0	5,911.8	5,862.2	5,862.2	44.2	6.6	90.00	-5,037.0	-3,341.5	5,329.8	5,279.9	49.96	106.676		
7,700.0	5,911.8	5,862.2	5,862.2	45.7	6.6	90.00	-5,037.0	-3,341.5	5,271.8	5,220.1	51.73	101.908		
7,800.0	5,911.8	5,862.2	5,862.2	47.3	6.6	90.00	-5,037.0	-3,341.5	5,215.1	5,161.5	53.52	97.443		
7,900.0	5,911.8	5,862.2	5,862.2	48.8	6.6	90.00	-5,037.0	-3,341.5	5,159.6	5,104.3	55.32	93.261		
8,000.0	5,911.8	5,862.2	5,862.2	50.4	6.6	90.00	-5,037.0	-3,341.5	5,105.6	5,048.4	57.15	89.343		
8,100.0	5,911.8	5,862.2	5,862.2	52.1	6.6	90.00	-5,037.0	-3,341.5	5,052.9	4,993.9	58.98	85.671		
8,200.0	5,911.8	5,862.2	5,862.2	53.7	6.6	90.00	-5,037.0	-3,341.5	5,001.6	4,940.8	60.83	82.227		
8,300.0	5,911.8	5,862.2	5,862.2	55.3	6.6	90.00	-5,037.0	-3,341.5	4,951.9	4,889.2	62.69	78.996		
8,400.0	5,911.9	5,862.2	5,862.2	57.0	6.6	90.00	-5,037.0	-3,341.5	4,903.7	4,839.1	64.55	75.963		
8,500.0	5,911.9	5,862.2	5,862.2	58.7	6.6	90.00	-5,037.0	-3,341.5	4,857.1	4,790.6	66.43	73.115		
8,600.0	5,911.9	5,862.2	5,862.2	60.4	6.6	90.00	-5,037.0	-3,341.5	4,812.1	4,743.8	68.32	70.438		
8,700.0	5,911.9	5,862.3	5,862.3	62.1	6.6	90.00	-5,037.0	-3,341.5	4,768.7	4,698.5	70.21	67.922		
8,800.0	5,911.9	5,862.3	5,862.3	63.9	6.6	90.00	-5,037.0	-3,341.5	4,727.1	4,655.0	72.11	65.556		
8,900.0	5,911.9	5,862.3	5,862.3	65.6	6.6	90.00	-5,037.0	-3,341.5	4,687.3	4,613.3	74.01	63.330		
9,000.0	5,911.9	5,862.3	5,862.3	67.3	6.6	90.00	-5,037.0	-3,341.5	4,649.3	4,573.3	75.92	61.235		
9,100.0	5,911.9	5,862.3	5,862.3	69.1	6.6	90.00	-5,037.0	-3,341.5	4,613.1	4,535.2	77.84	59.263		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS													Offset Site Error: 0.0 ft	
Survey Program: 6719-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
9,200.0	5,911.9	5,862.3	5,862.3	70.9	6.6	90.00	-5,037.0	-3,341.5	4,578.8	4,499.0	79.76	57.405		
9,300.0	5,911.9	5,862.3	5,862.3	72.6	6.6	90.00	-5,037.0	-3,341.5	4,546.5	4,464.8	81.69	55.656		
9,400.0	5,911.9	5,862.3	5,862.3	74.4	6.6	90.00	-5,037.0	-3,341.5	4,516.1	4,432.5	83.62	54.009		
9,500.0	5,911.9	5,862.3	5,862.3	76.2	6.6	90.00	-5,037.0	-3,341.5	4,487.8	4,402.2	85.55	52.457		
9,600.0	5,911.9	5,862.3	5,862.3	78.0	6.6	90.00	-5,037.0	-3,341.5	4,461.5	4,374.0	87.49	50.996		
9,700.0	5,911.9	5,862.3	5,862.3	79.8	6.6	90.00	-5,037.0	-3,341.5	4,437.3	4,347.9	89.43	49.619		
9,800.0	5,911.9	5,862.3	5,862.3	81.6	6.6	90.00	-5,037.0	-3,341.5	4,415.3	4,323.9	91.37	48.323		
9,900.0	5,911.9	5,862.3	5,862.3	83.4	6.6	90.00	-5,037.0	-3,341.5	4,395.4	4,302.1	93.32	47.102		
10,000.0	5,911.9	5,862.3	5,862.3	85.2	6.6	90.00	-5,037.0	-3,341.5	4,377.7	4,282.5	95.26	45.953		
10,100.0	5,911.9	5,862.3	5,862.3	87.0	6.6	90.00	-5,037.0	-3,341.5	4,362.3	4,265.0	97.22	44.872		
10,200.0	5,911.9	5,862.3	5,862.3	88.9	6.6	90.00	-5,037.0	-3,341.5	4,349.0	4,249.9	99.17	43.855		
10,300.0	5,911.9	5,862.3	5,862.3	90.7	6.6	90.00	-5,037.0	-3,341.5	4,338.1	4,237.0	101.12	42.899		
10,400.0	5,911.9	5,862.3	5,862.3	92.5	6.6	90.00	-5,037.0	-3,341.5	4,329.4	4,226.3	103.08	42.000		
10,500.0	5,911.9	5,862.3	5,862.3	94.4	6.6	90.00	-5,037.0	-3,341.5	4,323.1	4,218.0	105.04	41.156		
10,600.0	5,911.9	5,862.3	5,862.3	96.2	6.6	90.00	-5,037.0	-3,341.5	4,319.0	4,212.0	107.00	40.364		
10,700.0	5,911.9	5,862.3	5,862.3	98.0	6.6	90.00	-5,037.0	-3,341.5	4,317.2	4,208.3	108.96	39.621		
10,725.6	5,911.9	5,862.3	5,862.3	98.5	6.6	90.00	-5,037.0	-3,341.5	4,317.2	4,207.6	109.53	39.417 CC		
10,800.0	5,911.9	5,862.3	5,862.3	99.9	6.6	90.00	-5,037.0	-3,341.5	4,317.8	4,206.9	110.93	38.925 ES		
10,900.0	5,911.9	5,862.3	5,862.3	101.7	6.6	90.00	-5,037.0	-3,341.5	4,320.7	4,207.8	112.89	38.273		
11,000.0	5,911.9	5,862.3	5,862.3	103.6	6.6	90.00	-5,037.0	-3,341.5	4,325.9	4,211.0	114.86	37.662		
11,100.0	5,911.9	5,862.3	5,862.3	105.4	6.6	90.00	-5,037.0	-3,341.5	4,333.4	4,216.6	116.83	37.092		
11,200.0	5,911.9	5,862.3	5,862.3	107.3	6.6	90.00	-5,037.0	-3,341.5	4,343.2	4,224.4	118.80	36.559		
11,300.0	5,911.9	5,862.3	5,862.3	109.2	6.6	90.00	-5,037.0	-3,341.5	4,355.2	4,234.5	120.77	36.063		
11,400.0	5,911.9	5,862.3	5,862.3	111.0	6.6	90.00	-5,037.0	-3,341.5	4,369.5	4,246.8	122.74	35.600		
11,500.0	5,911.9	5,862.3	5,862.3	112.9	6.6	90.00	-5,037.0	-3,341.5	4,386.1	4,261.4	124.71	35.170		
11,600.0	5,911.9	5,862.3	5,862.3	114.7	6.6	90.00	-5,037.0	-3,341.5	4,404.8	4,278.2	126.69	34.770		
11,700.0	5,911.9	5,862.3	5,862.3	116.6	6.6	90.00	-5,037.0	-3,341.5	4,425.8	4,297.1	128.66	34.399		
11,800.0	5,912.0	5,862.3	5,862.3	118.5	6.6	90.00	-5,037.0	-3,341.5	4,448.9	4,318.2	130.64	34.055		
11,900.0	5,912.0	5,862.3	5,862.3	120.4	6.6	90.00	-5,037.0	-3,341.5	4,474.1	4,341.5	132.61	33.738		
12,000.0	5,912.0	5,862.3	5,862.3	122.2	6.6	90.00	-5,037.0	-3,341.5	4,501.4	4,366.8	134.59	33.445		
12,100.0	5,912.0	5,862.3	5,862.3	124.1	6.6	90.00	-5,037.0	-3,341.5	4,530.7	4,394.1	136.57	33.175		
12,200.0	5,912.0	5,862.4	5,862.4	126.0	6.6	90.00	-5,037.0	-3,341.5	4,562.0	4,423.5	138.55	32.927		
12,300.0	5,912.0	5,862.4	5,862.4	127.8	6.6	90.00	-5,037.0	-3,341.5	4,595.3	4,454.8	140.53	32.700		
12,400.0	5,912.0	5,862.4	5,862.4	129.7	6.6	90.00	-5,037.0	-3,341.5	4,630.5	4,488.0	142.51	32.493		
12,500.0	5,912.0	5,862.4	5,862.4	131.6	6.6	90.00	-5,037.0	-3,341.5	4,667.6	4,523.1	144.49	32.304		
12,600.0	5,912.0	5,862.4	5,862.4	133.5	6.6	90.00	-5,037.0	-3,341.5	4,706.5	4,560.1	146.47	32.133		
12,700.0	5,912.0	5,862.4	5,862.4	135.4	6.6	90.00	-5,037.0	-3,341.5	4,747.2	4,598.8	148.45	31.978		
12,800.0	5,912.0	5,862.4	5,862.4	137.2	6.6	90.00	-5,037.0	-3,341.5	4,789.7	4,639.3	150.44	31.839		
12,900.0	5,912.0	5,862.4	5,862.4	139.1	6.6	90.00	-5,037.0	-3,341.5	4,833.9	4,681.4	152.42	31.714		
13,000.0	5,912.0	5,862.4	5,862.4	141.0	6.6	90.00	-5,037.0	-3,341.5	4,879.7	4,725.3	154.40	31.603		
13,100.0	5,912.0	5,862.4	5,862.4	142.9	6.6	90.00	-5,037.0	-3,341.5	4,927.1	4,770.7	156.39	31.506		
13,200.0	5,912.0	5,862.4	5,862.4	144.8	6.6	90.00	-5,037.0	-3,341.5	4,976.0	4,817.6	158.37	31.420		
13,300.0	5,912.0	5,862.4	5,862.4	146.7	6.6	90.00	-5,037.0	-3,341.5	5,026.5	4,866.1	160.36	31.346		
13,400.0	5,912.0	5,862.4	5,862.4	148.6	6.6	90.00	-5,037.0	-3,341.5	5,078.4	4,916.1	162.34	31.282		
13,500.0	5,912.0	5,862.4	5,862.4	150.5	6.6	90.00	-5,037.0	-3,341.5	5,131.8	4,967.5	164.33	31.229		
13,600.0	5,912.0	5,862.4	5,862.4	152.3	6.6	90.00	-5,037.0	-3,341.5	5,186.6	5,020.2	166.32	31.185		
13,700.0	5,912.0	5,862.4	5,862.4	154.2	6.6	90.00	-5,037.0	-3,341.5	5,242.6	5,074.3	168.30	31.150		
13,800.0	5,912.0	5,862.4	5,862.4	156.1	6.6	90.00	-5,037.0	-3,341.5	5,300.0	5,129.7	170.29	31.123		
13,900.0	5,912.0	5,862.4	5,862.4	158.0	6.6	90.00	-5,037.0	-3,341.5	5,358.6	5,186.4	172.28	31.105 SF		
13,925.4	5,912.0	5,862.4	5,862.4	158.4	6.6	90.00	-5,037.0	-3,341.5	5,373.7	5,201.0	172.70	31.117		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-69.22	74.9	-197.5	211.2					
100.0	100.0	100.0	100.0	0.1	0.1	-69.22	74.9	-197.5	211.2	211.0	0.19	1,129.526		
200.0	200.0	200.0	200.0	0.3	0.3	-69.22	74.9	-197.5	211.2	210.6	0.64	331.838		
300.0	300.0	300.0	300.0	0.5	0.5	-69.22	74.9	-197.5	211.2	210.1	1.09	194.488		
400.0	400.0	400.0	400.0	0.8	0.8	-69.22	74.9	-197.5	211.2	209.7	1.54	137.554		
500.0	500.0	500.0	500.0	1.0	1.0	-69.22	74.9	-197.5	211.2	209.2	1.99	106.405 CC, ES		
600.0	600.0	593.5	593.5	1.2	1.2	-69.07	76.0	-198.6	212.7	210.3	2.42	87.998		
700.0	700.0	686.9	686.8	1.4	1.4	-68.63	79.0	-202.0	217.3	214.5	2.85	76.166		
800.0	800.0	785.7	785.4	1.7	1.6	-68.00	83.6	-207.1	223.8	220.5	3.30	67.766		
900.0	900.0	885.5	884.9	1.9	1.9	-67.40	88.3	-212.2	230.4	226.6	3.75	61.383		
1,000.0	1,000.0	985.1	984.2	2.1	2.1	153.16	93.0	-217.4	238.5	234.3	4.17	57.209		
1,100.0	1,099.8	1,084.3	1,083.3	2.3	2.4	154.12	97.7	-222.5	249.8	245.2	4.57	54.615		
1,200.0	1,199.6	1,183.4	1,182.0	2.5	2.6	155.25	102.3	-227.6	262.7	257.8	4.99	52.702		
1,300.0	1,299.4	1,282.4	1,280.8	2.7	2.9	156.28	107.0	-232.7	275.8	270.4	5.41	51.023		
1,400.0	1,399.1	1,381.4	1,379.6	2.9	3.1	157.21	111.6	-237.8	288.9	283.1	5.83	49.547		
1,500.0	1,498.9	1,480.5	1,478.4	3.1	3.4	158.06	116.3	-242.9	302.1	295.8	6.26	48.244		
1,600.0	1,598.6	1,579.5	1,577.2	3.4	3.6	158.84	120.9	-248.0	315.3	308.6	6.70	47.095		
1,700.0	1,698.4	1,678.5	1,676.0	3.6	3.9	159.56	125.6	-253.1	328.6	321.5	7.13	46.072		
1,800.0	1,798.1	1,777.6	1,774.8	3.8	4.1	160.22	130.2	-258.2	342.0	334.4	7.57	45.159		
1,900.0	1,897.9	1,876.6	1,873.6	4.1	4.4	160.83	134.9	-263.4	355.4	347.3	8.01	44.341		
2,000.0	1,997.6	1,975.6	1,972.4	4.3	4.6	161.40	139.5	-268.5	368.8	360.3	8.46	43.604		
2,100.0	2,097.4	2,074.7	2,071.2	4.6	4.9	161.93	144.2	-273.6	382.2	373.3	8.90	42.937		
2,200.0	2,197.2	2,173.7	2,169.9	4.8	5.1	162.42	148.8	-278.7	395.7	386.4	9.35	42.331		
2,300.0	2,296.9	2,272.7	2,268.7	5.1	5.4	162.88	153.5	-283.8	409.2	399.4	9.80	41.780		
2,400.0	2,396.7	2,371.8	2,367.5	5.3	5.6	163.31	158.1	-288.9	422.8	412.5	10.24	41.275		
2,500.0	2,496.4	2,470.8	2,466.3	5.6	5.9	163.71	162.8	-294.0	436.3	425.6	10.69	40.811		
2,600.0	2,596.2	2,569.8	2,565.1	5.8	6.2	164.09	167.4	-299.1	449.9	438.8	11.14	40.385		
2,700.0	2,695.9	2,668.9	2,663.9	6.1	6.4	164.44	172.1	-304.2	463.5	451.9	11.59	39.991		
2,800.0	2,795.7	2,767.9	2,762.7	6.3	6.7	164.78	176.7	-309.3	477.1	465.1	12.04	39.626		
2,900.0	2,895.5	2,866.9	2,861.5	6.6	6.9	165.10	181.4	-314.5	490.7	478.3	12.49	39.287		
3,000.0	2,995.2	2,965.9	2,960.3	6.9	7.2	165.40	186.0	-319.6	504.4	491.4	12.94	38.972		
3,100.0	3,095.0	3,065.0	3,059.1	7.1	7.4	165.68	190.7	-324.7	518.0	504.6	13.39	38.678		
3,200.0	3,194.7	3,164.0	3,157.8	7.4	7.7	165.95	195.3	-329.8	531.7	517.9	13.85	38.403		
3,300.0	3,294.5	3,263.0	3,256.6	7.6	7.9	166.21	200.0	-334.9	545.4	531.1	14.30	38.145		
3,400.0	3,394.2	3,362.1	3,355.4	7.9	8.2	166.45	204.6	-340.0	559.1	544.3	14.75	37.903		
3,500.0	3,494.0	3,461.1	3,454.2	8.2	8.4	166.69	209.2	-345.1	572.8	557.6	15.20	37.676		
3,600.0	3,593.7	3,560.1	3,553.0	8.4	8.7	166.91	213.9	-350.2	586.5	570.8	15.66	37.462		
3,700.0	3,693.5	3,659.2	3,651.8	8.7	9.0	167.12	218.5	-355.3	600.2	584.1	16.11	37.259		
3,800.0	3,793.3	3,758.2	3,750.6	8.9	9.2	167.32	223.2	-360.4	613.9	597.4	16.56	37.068		
3,900.0	3,893.0	3,857.2	3,849.4	9.2	9.5	167.51	227.8	-365.5	627.6	610.6	17.02	36.888		
4,000.0	3,992.8	3,956.3	3,948.2	9.5	9.7	167.70	232.5	-370.7	641.4	623.9	17.47	36.716		
4,100.0	4,092.5	4,055.3	4,047.0	9.7	10.0	167.87	237.1	-375.8	655.1	637.2	17.92	36.553		
4,200.0	4,192.3	4,154.3	4,145.7	10.0	10.2	168.04	241.8	-380.9	668.9	650.5	18.38	36.399		
4,300.0	4,292.0	4,253.4	4,244.5	10.2	10.5	168.21	246.4	-386.0	682.6	663.8	18.83	36.252		
4,400.0	4,391.8	4,352.4	4,343.3	10.5	10.7	168.36	251.1	-391.1	696.4	677.1	19.28	36.111		
4,500.0	4,491.6	4,451.4	4,442.1	10.8	11.0	168.51	255.7	-396.2	710.1	690.4	19.74	35.978		
4,600.0	4,591.3	4,550.4	4,540.9	11.0	11.3	168.66	260.4	-401.3	723.9	703.7	20.19	35.850		
4,700.0	4,691.1	4,649.5	4,639.7	11.3	11.5	168.80	265.0	-406.4	737.7	717.0	20.65	35.728		
4,800.0	4,790.8	4,748.5	4,738.5	11.5	11.8	168.93	269.7	-411.5	751.5	730.4	21.10	35.611		
4,900.0	4,890.6	4,847.5	4,837.3	11.8	12.0	169.06	274.3	-416.6	765.2	743.7	21.56	35.500		
5,000.0	4,990.3	4,946.6	4,936.1	12.1	12.3	169.19	279.0	-421.7	779.0	757.0	22.01	35.392		
5,100.0	5,090.1	5,045.6	5,034.9	12.3	12.5	169.31	283.6	-426.9	792.8	770.4	22.47	35.290		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,144.6	5,133.6	12.6	12.8	169.42	288.3	-432.0	806.6	783.7	22.92	35.191	35.022 SF	
5,300.0	5,289.6	5,243.7	5,232.4	12.9	13.1	169.54	292.9	-437.1	820.4	797.0	23.38	35.096		
5,400.0	5,389.4	5,337.9	5,326.5	13.1	13.3	169.64	297.4	-441.9	834.2	810.4	23.82	35.099		
5,438.0	5,427.3	5,350.0	5,338.5	13.2	13.3	169.65	298.0	-442.7	840.1	816.2	23.94	35.214		
5,450.0	5,439.2	5,350.0	5,338.5	13.3	13.3	169.61	298.0	-442.7	842.4	818.5	23.92	35.914		
5,500.0	5,488.7	5,377.0	5,365.3	13.4	13.4	169.39	300.2	-445.0	855.4	831.6	23.82	37.189		
5,550.0	5,537.3	5,400.0	5,388.0	13.6	13.5	169.04	302.7	-447.9	874.7	851.2	22.99	39.130		
5,600.0	5,584.5	5,400.0	5,388.0	13.9	13.5	168.42	302.7	-447.9	899.7	876.7	22.36	41.568		
5,650.0	5,630.0	5,424.8	5,412.2	14.2	13.6	167.74	306.3	-451.7	929.5	907.2	21.59	44.663		
5,700.0	5,673.2	5,450.0	5,436.6	14.5	13.7	166.85	310.6	-456.5	964.4	942.8	20.70	48.444		
5,750.0	5,713.9	5,450.0	5,436.6	14.9	13.7	165.26	310.6	-456.5	1,002.7	982.0	19.84	52.650		
5,800.0	5,751.6	5,450.0	5,436.6	15.4	13.7	162.93	310.6	-456.5	1,044.6	1,024.8	19.26	56.569		
5,850.0	5,785.9	5,450.0	5,436.6	15.9	13.7	159.32	310.6	-456.5	1,089.5	1,070.2	19.39	58.568		
5,900.0	5,816.7	5,470.0	5,455.7	16.4	13.8	154.54	314.7	-461.0	1,135.8	1,116.4	21.53	54.981		
5,950.0	5,843.5	5,473.7	5,459.2	17.1	13.8	144.78	315.5	-461.9	1,184.0	1,162.5	27.63	44.630		
6,000.0	5,866.1	5,475.8	5,461.2	17.7	13.8	124.23	315.9	-462.4	1,233.1	1,205.5	33.04	38.823		
6,050.0	5,884.4	5,476.4	5,461.7	18.5	13.8	84.17	316.1	-462.5	1,282.7	1,249.7	25.85	51.546		
6,100.0	5,898.1	5,475.7	5,461.0	19.3	13.8	47.25	315.9	-462.3	1,332.3	1,306.4	18.58	74.357		
6,150.0	5,907.1	5,473.6	5,459.1	20.1	13.8	29.35	315.5	-461.8	1,381.3	1,362.8	14.43	99.090		
6,200.0	5,911.4	5,470.4	5,456.1	20.9	13.8	20.63	314.8	-461.1	1,429.6	1,415.1	13.42	107.908		
6,219.8	5,911.8	5,468.9	5,454.6	21.3	13.8	18.38	314.4	-460.7	1,448.4	1,434.9	16.74	91.055		
6,300.0	5,911.8	5,450.0	5,436.6	22.6	13.7	23.82	310.6	-456.5	1,524.2	1,507.4	21.59	74.949		
6,400.0	5,911.8	5,450.0	5,436.6	24.2	13.7	31.14	310.6	-456.5	1,618.2	1,596.6	26.28	65.134		
6,500.0	5,911.8	5,450.0	5,436.6	25.9	13.7	37.82	310.6	-456.5	1,712.0	1,685.7	30.61	58.980		
6,600.0	5,911.8	5,450.0	5,436.6	27.7	13.7	43.75	310.6	-456.5	1,805.3	1,774.7	34.48	55.048		
6,700.0	5,911.8	5,450.0	5,436.6	29.4	13.7	48.91	310.6	-456.5	1,898.2	1,863.7	37.89	52.523		
6,800.0	5,911.8	5,450.0	5,436.6	31.2	13.7	53.34	310.6	-456.5	1,990.2	1,952.3	40.24	51.714		
6,900.0	5,911.8	5,427.9	5,415.3	32.9	13.6	55.89	306.8	-452.3	2,080.8	2,040.6	42.77	50.750		
7,000.0	5,911.8	5,423.9	5,411.3	34.6	13.6	59.00	306.1	-451.6	2,170.8	2,128.0	44.51	50.777		
7,100.0	5,911.8	5,400.0	5,388.0	36.3	13.5	60.69	302.7	-447.9	2,260.1	2,215.6	46.54	50.447		
7,200.0	5,911.8	5,400.0	5,388.0	37.9	13.5	63.24	302.7	-447.9	2,347.6	2,301.1	48.26	50.433		
7,300.0	5,911.8	5,400.0	5,388.0	39.6	13.5	65.45	302.7	-447.9	2,433.8	2,385.6	49.70	50.673		
7,400.0	5,911.8	5,400.0	5,388.0	41.1	13.5	67.37	302.7	-447.9	2,518.7	2,469.0	50.89	51.129		
7,500.0	5,911.8	5,400.0	5,388.0	42.7	13.5	69.05	302.7	-447.9	2,602.1	2,551.2	51.39	51.423		
7,549.3	5,911.8	5,400.0	5,388.0	43.4	13.5	69.80	302.7	-447.9	2,642.6	2,591.2	52.24	51.388		
7,600.0	5,911.8	5,400.0	5,388.0	44.2	13.5	69.80	302.7	-447.9	2,684.3	2,632.1	53.91	51.330		
7,700.0	5,911.8	5,400.0	5,388.0	45.7	13.5	69.80	302.7	-447.9	2,767.4	2,713.5	55.61	51.279		
7,800.0	5,911.8	5,400.0	5,388.0	47.3	13.5	69.80	302.7	-447.9	2,851.5	2,795.9	57.32	51.232		
7,900.0	5,911.8	5,400.0	5,388.0	48.8	13.5	69.80	302.7	-447.9	2,936.7	2,879.4	59.05	51.192		
8,000.0	5,911.8	5,400.0	5,388.0	50.4	13.5	69.80	302.7	-447.9	3,022.7	2,963.7	60.79	51.156		
8,100.0	5,911.8	5,400.0	5,388.0	52.1	13.5	69.80	302.7	-447.9	3,109.6	3,048.8	62.54	51.125		
8,200.0	5,911.8	5,400.0	5,388.0	53.7	13.5	69.80	302.7	-447.9	3,197.3	3,134.8	64.30	51.098		
8,300.0	5,911.8	5,400.0	5,388.0	55.3	13.5	69.80	302.7	-447.9	3,285.7	3,221.4	66.07	51.076		
8,400.0	5,911.9	5,400.0	5,388.0	57.0	13.5	69.80	302.7	-447.9	3,374.7	3,308.6	67.85	51.057		
8,500.0	5,911.9	5,400.0	5,388.0	58.7	13.5	69.80	302.7	-447.9	3,464.3	3,396.4	69.64	51.041		
8,600.0	5,911.9	5,400.0	5,388.0	60.4	13.5	69.80	302.7	-447.9	3,554.5	3,484.8	71.43	51.028		
8,700.0	5,911.9	5,400.0	5,388.0	62.1	13.5	69.80	302.7	-447.9	3,645.1	3,573.7	73.23	51.018		
8,800.0	5,911.9	5,400.0	5,388.0	63.9	13.5	69.80	302.7	-447.9	3,736.3	3,663.1	75.04	51.011		
8,900.0	5,911.9	5,400.0	5,388.0	65.6	13.5	69.80	302.7	-447.9	3,827.9	3,752.9	76.85	51.005		
9,000.0	5,911.9	5,400.0	5,388.0	67.3	13.5	69.80	302.7	-447.9	3,919.9	3,843.1	78.67	51.002		
9,100.0	5,911.9	5,400.0	5,388.0	69.1	13.5	69.80	302.7	-447.9	4,012.3	3,933.6	80.49	51.000		
9,200.0	5,911.9	5,400.0	5,388.0	70.9	13.5	69.80	302.7	-447.9	4,105.1	4,024.6				

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	5,400.0	5,388.0	72.6	13.5	69.80	302.7	-447.9	4,198.1	4,115.8	82.32	51.000		
9,400.0	5,911.9	5,376.9	5,365.2	74.4	13.4	68.96	300.2	-445.0	4,291.0	4,207.4	83.66	51.292		
9,500.0	5,911.9	5,375.8	5,364.1	76.2	13.4	68.92	300.1	-444.9	4,384.7	4,299.2	85.46	51.308		
9,600.0	5,911.9	5,374.7	5,363.0	78.0	13.4	68.88	300.0	-444.8	4,478.6	4,391.3	87.26	51.325		
9,700.0	5,911.9	5,373.6	5,361.9	79.8	13.4	68.84	299.9	-444.7	4,572.7	4,483.7	89.06	51.342		
9,800.0	5,911.9	5,372.5	5,360.9	81.6	13.4	68.80	299.8	-444.6	4,667.1	4,576.3	90.87	51.360		
9,900.0	5,911.9	5,350.0	5,338.5	83.4	13.3	68.00	298.0	-442.7	4,762.2	4,670.0	92.18	51.663		
10,000.0	5,911.9	5,350.0	5,338.5	85.2	13.3	68.00	298.0	-442.7	4,857.0	4,763.0	94.01	51.667		
10,100.0	5,911.9	5,350.0	5,338.5	87.0	13.3	68.00	298.0	-442.7	4,952.0	4,856.2	95.84	51.672		
10,200.0	5,911.9	5,350.0	5,338.5	88.9	13.3	68.00	298.0	-442.7	5,047.2	4,949.5	97.67	51.677		
10,300.0	5,911.9	5,350.0	5,338.5	90.7	13.3	68.00	298.0	-442.7	5,142.6	5,043.1	99.50	51.683		
10,400.0	5,911.9	5,350.0	5,338.5	92.5	13.3	68.00	298.0	-442.7	5,238.1	5,136.8	101.34	51.690		
10,500.0	5,911.9	5,350.0	5,338.5	94.4	13.3	68.00	298.0	-442.7	5,333.9	5,230.7	103.18	51.697		
10,600.0	5,911.9	5,350.0	5,338.5	96.2	13.3	68.00	298.0	-442.7	5,429.7	5,324.7	105.02	51.704		
10,700.0	5,911.9	5,350.0	5,338.5	98.0	13.3	68.00	298.0	-442.7	5,525.8	5,418.9	106.86	51.712		
10,800.0	5,911.9	5,350.0	5,338.5	99.9	13.3	68.00	298.0	-442.7	5,621.9	5,513.2	108.70	51.720		
10,900.0	5,911.9	5,350.0	5,338.5	101.7	13.3	68.00	298.0	-442.7	5,718.2	5,607.7	110.54	51.729		
11,000.0	5,911.9	5,350.0	5,338.5	103.6	13.3	68.00	298.0	-442.7	5,814.6	5,702.2	112.39	51.738		
11,100.0	5,911.9	5,350.0	5,338.5	105.4	13.3	68.00	298.0	-442.7	5,911.2	5,796.9	114.23	51.747		
11,200.0	5,911.9	5,350.0	5,338.5	107.3	13.3	68.00	298.0	-442.7	6,007.8	5,891.7	116.08	51.756		
11,300.0	5,911.9	5,350.0	5,338.5	109.2	13.3	68.00	298.0	-442.7	6,104.6	5,986.6	117.93	51.765		
11,400.0	5,911.9	5,350.0	5,338.5	111.0	13.3	68.00	298.0	-442.7	6,201.4	6,081.6	119.78	51.775		
11,500.0	5,911.9	5,350.0	5,338.5	112.9	13.3	68.00	298.0	-442.7	6,298.4	6,176.7	121.63	51.784		
11,600.0	5,911.9	5,350.0	5,338.5	114.7	13.3	68.00	298.0	-442.7	6,395.4	6,271.9	123.48	51.794		
11,700.0	5,911.9	5,350.0	5,338.5	116.6	13.3	68.00	298.0	-442.7	6,492.6	6,367.2	125.33	51.803		
11,800.0	5,912.0	5,350.0	5,338.5	118.5	13.3	68.00	298.0	-442.7	6,589.8	6,462.6	127.18	51.813		
11,900.0	5,912.0	5,350.0	5,338.5	120.4	13.3	68.00	298.0	-442.7	6,687.1	6,558.1	129.04	51.823		
12,000.0	5,912.0	5,350.0	5,338.5	122.2	13.3	68.00	298.0	-442.7	6,784.5	6,653.6	130.89	51.833		
12,100.0	5,912.0	5,350.0	5,338.5	124.1	13.3	68.00	298.0	-442.7	6,881.9	6,749.2	132.75	51.843		
12,200.0	5,912.0	5,350.0	5,338.5	126.0	13.3	68.00	298.0	-442.7	6,979.5	6,844.9	134.60	51.852		
12,300.0	5,912.0	5,350.0	5,338.5	127.8	13.3	68.00	298.0	-442.7	7,077.1	6,940.6	136.46	51.862		
12,400.0	5,912.0	5,350.0	5,338.5	129.7	13.3	68.00	298.0	-442.7	7,174.7	7,036.4	138.32	51.872		
12,500.0	5,912.0	5,350.0	5,338.5	131.6	13.3	68.00	298.0	-442.7	7,272.5	7,132.3	140.17	51.882		
12,600.0	5,912.0	5,350.0	5,338.5	133.5	13.3	68.00	298.0	-442.7	7,370.3	7,228.2	142.03	51.891		
12,700.0	5,912.0	5,350.0	5,338.5	135.4	13.3	68.00	298.0	-442.7	7,468.1	7,324.2	143.89	51.901		
12,800.0	5,912.0	5,350.0	5,338.5	137.2	13.3	68.00	298.0	-442.7	7,566.0	7,420.3	145.75	51.911		
12,900.0	5,912.0	5,350.0	5,338.5	139.1	13.3	68.00	298.0	-442.7	7,664.0	7,516.4	147.61	51.920		
13,000.0	5,912.0	5,350.0	5,338.5	141.0	13.3	68.00	298.0	-442.7	7,762.0	7,612.5	149.47	51.930		
13,100.0	5,912.0	5,350.0	5,338.5	142.9	13.3	68.00	298.0	-442.7	7,860.0	7,708.7	151.33	51.939		
13,200.0	5,912.0	5,350.0	5,338.5	144.8	13.3	68.00	298.0	-442.7	7,958.2	7,805.0	153.19	51.949		
13,300.0	5,912.0	5,350.0	5,338.5	146.7	13.3	68.00	298.0	-442.7	8,056.3	7,901.3	155.05	51.958		
13,400.0	5,912.0	5,350.0	5,338.5	148.6	13.3	68.00	298.0	-442.7	8,154.5	7,997.6	156.92	51.967		
13,500.0	5,912.0	5,350.0	5,338.5	150.5	13.3	68.00	298.0	-442.7	8,252.8	8,094.0	158.78	51.976		
13,600.0	5,912.0	5,350.0	5,338.5	152.3	13.3	68.00	298.0	-442.7	8,351.1	8,190.4	160.64	51.985		
13,700.0	5,912.0	5,350.0	5,338.5	154.2	13.3	68.00	298.0	-442.7	8,449.4	8,286.9	162.51	51.994		
13,800.0	5,912.0	5,350.0	5,338.5	156.1	13.3	68.00	298.0	-442.7	8,547.7	8,383.4	164.37	52.003		
13,900.0	5,912.0	5,350.0	5,338.5	158.0	13.3	68.00	298.0	-442.7	8,646.1	8,479.9	166.23	52.012		
13,925.4	5,912.0	5,350.0	5,338.5	158.4	13.3	68.00	298.0	-442.7	8,671.2	8,504.6	166.62	52.041		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-230.5	230.5					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-230.5	230.5	230.3	0.19	1,232.779		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-230.5	230.5	229.9	0.64	362.173		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-230.5	230.5	229.5	1.09	212.267		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-230.5	230.5	229.0	1.54	150.128		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-230.5	230.5	228.6	1.99	116.131	CC, ES	
600.0	600.0	595.4	595.4	1.2	1.2	-89.68	1.3	-231.5	231.5	229.1	2.42	95.561		
700.0	700.0	690.5	690.4	1.4	1.4	-88.75	5.1	-234.3	234.6	231.7	2.86	81.899		
800.0	800.0	789.8	789.4	1.7	1.7	-87.44	10.7	-238.4	238.9	235.6	3.32	72.070		
900.0	900.0	889.6	889.0	1.9	1.9	-86.17	16.2	-242.6	243.4	239.6	3.76	64.660		
1,000.0	1,000.0	989.2	988.3	2.1	2.1	135.13	21.8	-246.8	249.2	245.0	4.20	59.340		
1,100.0	1,099.8	1,088.4	1,087.3	2.3	2.4	136.98	27.4	-250.9	257.8	253.1	4.61	55.867		
1,200.0	1,199.6	1,187.5	1,186.1	2.5	2.6	139.06	32.9	-255.0	267.9	262.8	5.04	53.194		
1,300.0	1,299.4	1,286.5	1,284.9	2.7	2.9	140.99	38.4	-259.1	278.3	272.9	5.47	50.920		
1,400.0	1,399.1	1,385.5	1,383.7	2.9	3.1	142.78	44.0	-263.3	289.1	283.2	5.90	48.982		
1,500.0	1,498.9	1,484.6	1,482.5	3.1	3.4	144.44	49.5	-267.4	300.1	293.7	6.34	47.321		
1,600.0	1,598.6	1,583.6	1,581.3	3.4	3.6	145.98	55.1	-271.5	311.3	304.5	6.78	45.892		
1,700.0	1,698.4	1,682.6	1,680.1	3.6	3.9	147.41	60.6	-275.7	322.8	315.5	7.23	44.654		
1,800.0	1,798.1	1,781.6	1,778.8	3.8	4.1	148.75	66.1	-279.8	334.4	326.7	7.67	43.575		
1,900.0	1,897.9	1,880.7	1,877.6	4.1	4.4	149.99	71.7	-283.9	346.2	338.1	8.12	42.630		
2,000.0	1,997.6	1,979.7	1,976.4	4.3	4.6	151.16	77.2	-288.0	358.2	349.6	8.57	41.797		
2,100.0	2,097.4	2,078.7	2,075.2	4.6	4.9	152.24	82.7	-292.2	370.3	361.2	9.02	41.059		
2,200.0	2,197.2	2,177.7	2,174.0	4.8	5.1	153.26	88.3	-296.3	382.5	373.0	9.47	40.402		
2,300.0	2,296.9	2,276.8	2,272.8	5.1	5.4	154.22	93.8	-300.4	394.8	384.9	9.92	39.814		
2,400.0	2,396.7	2,375.8	2,371.6	5.3	5.7	155.12	99.4	-304.5	407.2	396.9	10.37	39.286		
2,500.0	2,496.4	2,474.8	2,470.3	5.6	5.9	155.96	104.9	-308.7	419.7	408.9	10.82	38.810		
2,600.0	2,596.2	2,573.9	2,569.1	5.8	6.2	156.76	110.4	-312.8	432.3	421.1	11.27	38.378		
2,700.0	2,695.9	2,672.9	2,667.9	6.1	6.4	157.51	116.0	-316.9	445.0	433.3	11.72	37.986		
2,800.0	2,795.7	2,771.9	2,766.7	6.3	6.7	158.22	121.5	-321.1	457.8	445.6	12.17	37.628		
2,900.0	2,895.5	2,870.9	2,865.5	6.6	6.9	158.89	127.1	-325.2	470.6	458.0	12.62	37.300		
3,000.0	2,995.2	2,970.0	2,964.3	6.9	7.2	159.53	132.6	-329.3	483.5	470.4	13.07	37.000		
3,100.0	3,095.0	3,069.0	3,063.1	7.1	7.4	160.13	138.1	-333.4	496.4	482.9	13.52	36.722		
3,200.0	3,194.7	3,168.0	3,161.8	7.4	7.7	160.70	143.7	-337.6	509.4	495.4	13.97	36.467		
3,300.0	3,294.5	3,267.0	3,260.6	7.6	7.9	161.25	149.2	-341.7	522.5	508.0	14.42	36.230		
3,400.0	3,394.2	3,366.1	3,359.4	7.9	8.2	161.76	154.8	-345.8	535.5	520.7	14.87	36.010		
3,500.0	3,494.0	3,465.1	3,458.2	8.2	8.4	162.26	160.3	-349.9	548.7	533.3	15.32	35.805		
3,600.0	3,593.7	3,564.1	3,557.0	8.4	8.7	162.72	165.8	-354.1	561.8	546.0	15.77	35.615		
3,700.0	3,693.5	3,663.2	3,655.8	8.7	9.0	163.17	171.4	-358.2	575.0	558.8	16.23	35.437		
3,800.0	3,793.3	3,762.2	3,754.6	8.9	9.2	163.60	176.9	-362.3	588.2	571.6	16.68	35.270		
3,900.0	3,893.0	3,861.2	3,853.4	9.2	9.5	164.01	182.5	-366.5	601.5	584.4	17.13	35.114		
4,000.0	3,992.8	3,960.2	3,952.1	9.5	9.7	164.40	188.0	-370.6	614.8	597.2	17.58	34.967		
4,100.0	4,092.5	4,059.3	4,050.9	9.7	10.0	164.78	193.5	-374.7	628.1	610.1	18.03	34.829		
4,200.0	4,192.3	4,158.3	4,149.7	10.0	10.2	165.14	199.1	-378.8	641.4	622.9	18.49	34.699		
4,300.0	4,292.0	4,257.3	4,248.5	10.2	10.5	165.48	204.6	-383.0	654.8	635.9	18.94	34.576		
4,400.0	4,391.8	4,356.4	4,347.3	10.5	10.7	165.81	210.2	-387.1	668.2	648.8	19.39	34.460		
4,500.0	4,491.6	4,455.4	4,446.1	10.8	11.0	166.13	215.7	-391.2	681.6	661.7	19.84	34.350		
4,600.0	4,591.3	4,554.4	4,544.9	11.0	11.3	166.43	221.2	-395.3	695.0	674.7	20.30	34.246		
4,700.0	4,691.1	4,653.4	4,643.6	11.3	11.5	166.73	226.8	-399.5	708.5	687.7	20.75	34.147		
4,800.0	4,790.8	4,752.5	4,742.4	11.5	11.8	167.01	232.3	-403.6	721.9	700.7	21.20	34.053		
4,900.0	4,890.6	4,851.5	4,841.2	11.8	12.0	167.29	237.8	-407.7	735.4	713.8	21.65	33.963		
5,000.0	4,990.3	4,950.5	4,940.0	12.1	12.3	167.55	243.4	-411.9	748.9	726.8	22.11	33.878		
5,100.0	5,090.1	5,049.5	5,038.8	12.3	12.5	167.80	248.9	-416.0	762.4	739.9	22.56	33.797		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2												Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,200.0	5,189.9	5,148.6	5,137.6	12.6	12.8	168.05	254.5	-420.1	775.9	752.9	23.01	33.720	33.549 SF
5,300.0	5,289.6	5,247.6	5,236.4	12.9	13.0	168.28	260.0	-424.2	789.5	766.0	23.46	33.646	
5,400.0	5,389.4	5,346.6	5,335.1	13.1	13.3	168.51	265.5	-428.4	803.0	779.1	23.92	33.575	
5,438.0	5,427.3	5,384.3	5,372.7	13.2	13.4	168.60	267.7	-429.9	808.2	784.1	24.09	33.549 SF	
5,450.0	5,439.2	5,396.1	5,384.5	13.3	13.4	168.59	268.3	-430.4	809.9	785.8	24.10	33.601	
5,500.0	5,488.7	5,439.0	5,427.3	13.4	13.5	168.49	270.7	-432.2	820.2	796.1	24.03	34.126	
5,550.0	5,537.3	5,450.0	5,438.3	13.6	13.6	168.17	271.4	-432.7	836.1	812.4	23.71	35.262	
5,600.0	5,584.5	5,477.4	5,465.4	13.9	13.7	167.81	274.0	-434.7	857.7	834.4	23.25	36.889	
5,650.0	5,630.0	5,500.0	5,487.8	14.2	13.7	167.27	277.0	-436.9	884.9	862.3	22.62	39.129	
5,700.0	5,673.2	5,500.0	5,487.8	14.5	13.7	166.21	277.0	-436.9	917.0	895.2	21.81	42.041	
5,750.0	5,713.9	5,519.5	5,506.9	14.9	13.8	165.09	280.2	-439.3	953.3	932.4	20.95	45.499	
5,800.0	5,751.6	5,529.8	5,516.9	15.4	13.8	163.31	282.1	-440.7	993.4	973.3	20.08	49.478	
5,850.0	5,785.9	5,550.0	5,536.4	15.9	13.9	161.10	286.3	-443.8	1,036.8	1,017.4	19.32	53.676	
5,900.0	5,816.7	5,550.0	5,536.4	16.4	13.9	156.79	286.3	-443.8	1,082.2	1,063.0	19.14	56.548	
5,950.0	5,843.5	5,550.0	5,536.4	17.1	13.9	149.42	286.3	-443.8	1,129.5	1,109.0	20.47	55.190	
6,000.0	5,866.1	5,550.0	5,536.4	17.7	13.9	135.18	286.3	-443.8	1,178.1	1,153.3	24.82	47.471	
6,050.0	5,884.4	5,550.0	5,536.4	18.5	13.9	105.65	286.3	-443.8	1,227.5	1,195.1	32.42	37.860	
6,100.0	5,898.1	5,550.0	5,536.4	19.3	13.9	64.40	286.3	-443.8	1,277.1	1,245.9	31.20	40.926	
6,150.0	5,907.1	5,550.0	5,536.4	20.1	13.9	38.34	286.3	-443.8	1,326.4	1,303.7	22.74	58.323	
6,200.0	5,911.4	5,550.0	5,536.4	20.9	13.9	25.80	286.3	-443.8	1,375.1	1,358.0	17.09	80.462	
6,219.8	5,911.8	5,550.0	5,536.4	21.3	13.9	22.70	286.3	-443.8	1,394.2	1,378.5	15.63	89.186	
6,300.0	5,911.8	5,550.0	5,536.4	22.6	13.9	29.74	286.3	-443.8	1,470.9	1,450.8	20.04	73.395	
6,400.0	5,911.8	5,550.0	5,536.4	24.2	13.9	37.73	286.3	-443.8	1,566.3	1,541.0	25.31	61.879	
6,500.0	5,911.8	5,529.1	5,516.2	25.9	13.8	43.11	281.9	-440.6	1,660.8	1,631.6	29.25	56.784	
6,600.0	5,911.8	5,523.6	5,510.9	27.7	13.8	48.58	280.9	-439.8	1,755.0	1,721.8	33.26	52.768	
6,700.0	5,911.8	5,500.0	5,487.8	29.4	13.7	51.94	277.0	-436.9	1,848.9	1,812.8	36.14	51.166	
6,800.0	5,911.8	5,500.0	5,487.8	31.2	13.7	56.20	277.0	-436.9	1,941.3	1,901.9	39.41	49.256	
6,900.0	5,911.8	5,500.0	5,487.8	32.9	13.7	59.80	277.0	-436.9	2,032.8	1,990.6	42.26	48.107	
7,000.0	5,911.8	5,500.0	5,487.8	34.6	13.7	62.85	277.0	-436.9	2,123.3	2,078.6	44.72	47.484	
7,100.0	5,911.8	5,500.0	5,487.8	36.3	13.7	65.45	277.0	-436.9	2,212.6	2,165.8	46.83	47.244	
7,200.0	5,911.8	5,500.0	5,487.8	37.9	13.7	67.67	277.0	-436.9	2,300.7	2,252.1	48.65	47.294	
7,300.0	5,911.8	5,500.0	5,487.8	39.6	13.7	69.58	277.0	-436.9	2,387.5	2,337.3	50.18	47.575	
7,400.0	5,911.8	5,500.0	5,487.8	41.1	13.7	71.23	277.0	-436.9	2,472.8	2,421.4	51.46	48.049	
7,500.0	5,911.8	5,500.0	5,487.8	42.7	13.7	72.66	277.0	-436.9	2,556.7	2,504.2	52.51	48.690	
7,549.3	5,911.8	5,500.0	5,487.8	43.4	13.7	73.30	277.0	-436.9	2,597.4	2,544.5	52.94	49.062	
7,600.0	5,911.8	5,500.0	5,487.8	44.2	13.7	73.30	277.0	-436.9	2,639.4	2,585.5	53.80	49.056	
7,700.0	5,911.8	5,500.0	5,487.8	45.7	13.7	73.30	277.0	-436.9	2,722.8	2,667.3	55.51	49.053	
7,800.0	5,911.8	5,500.0	5,487.8	47.3	13.7	73.30	277.0	-436.9	2,807.4	2,750.2	57.23	49.053	
7,900.0	5,911.8	5,500.0	5,487.8	48.8	13.7	73.30	277.0	-436.9	2,893.0	2,834.0	58.97	49.056	
8,000.0	5,911.8	5,500.0	5,487.8	50.4	13.7	73.30	277.0	-436.9	2,979.4	2,918.7	60.73	49.061	
8,100.0	5,911.8	5,500.0	5,487.8	52.1	13.7	73.30	277.0	-436.9	3,066.7	3,004.2	62.50	49.068	
8,200.0	5,911.8	5,477.7	5,465.7	53.7	13.7	72.45	274.0	-434.7	3,154.2	3,090.3	63.94	49.333	
8,300.0	5,911.8	5,476.0	5,464.1	55.3	13.6	72.39	273.8	-434.5	3,242.9	3,177.2	65.70	49.361	
8,400.0	5,911.9	5,474.5	5,462.6	57.0	13.6	72.34	273.7	-434.4	3,332.2	3,264.7	67.47	49.390	
8,500.0	5,911.9	5,473.0	5,461.1	58.7	13.6	72.28	273.5	-434.3	3,422.0	3,352.8	69.24	49.420	
8,600.0	5,911.9	5,450.0	5,438.3	60.4	13.6	71.42	271.4	-432.7	3,512.9	3,442.3	70.66	49.717	
8,700.0	5,911.9	5,450.0	5,438.3	62.1	13.6	71.42	271.4	-432.7	3,603.8	3,531.3	72.47	49.729	
8,800.0	5,911.9	5,450.0	5,438.3	63.9	13.6	71.42	271.4	-432.7	3,695.1	3,620.9	74.28	49.743	
8,900.0	5,911.9	5,450.0	5,438.3	65.6	13.6	71.42	271.4	-432.7	3,786.9	3,710.8	76.11	49.758	
9,000.0	5,911.9	5,450.0	5,438.3	67.3	13.6	71.42	271.4	-432.7	3,879.1	3,801.1	77.93	49.775	
9,100.0	5,911.9	5,450.0	5,438.3	69.1	13.6	71.42	271.4	-432.7	3,971.6	3,891.9	79.76	49.792	
9,200.0	5,911.9	5,450.0	5,438.3	70.9	13.6	71.42	271.4	-432.7	4,064.5	3,982.9	81.60	49.810	

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2												Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,911.9	5,450.0	5,438.3	72.6	13.6	71.42	271.4	-432.7	4,157.8	4,074.3	83.44	49.829	
9,400.0	5,911.9	5,450.0	5,438.3	74.4	13.6	71.42	271.4	-432.7	4,251.3	4,166.0	85.29	49.848	
9,500.0	5,911.9	5,450.0	5,438.3	76.2	13.6	71.42	271.4	-432.7	4,345.2	4,258.0	87.13	49.868	
9,600.0	5,911.9	5,450.0	5,438.3	78.0	13.6	71.42	271.4	-432.7	4,439.3	4,350.3	88.98	49.888	
9,700.0	5,911.9	5,450.0	5,438.3	79.8	13.6	71.42	271.4	-432.7	4,533.6	4,442.8	90.84	49.908	
9,800.0	5,911.9	5,450.0	5,438.3	81.6	13.6	71.42	271.4	-432.7	4,628.2	4,535.5	92.70	49.929	
9,900.0	5,911.9	5,450.0	5,438.3	83.4	13.6	71.42	271.4	-432.7	4,723.0	4,628.5	94.55	49.950	
10,000.0	5,911.9	5,450.0	5,438.3	85.2	13.6	71.42	271.4	-432.7	4,818.0	4,721.6	96.42	49.971	
10,100.0	5,911.9	5,450.0	5,438.3	87.0	13.6	71.42	271.4	-432.7	4,913.2	4,815.0	98.28	49.992	
10,200.0	5,911.9	5,450.0	5,438.3	88.9	13.6	71.42	271.4	-432.7	5,008.7	4,908.5	100.15	50.013	
10,300.0	5,911.9	5,450.0	5,438.3	90.7	13.6	71.42	271.4	-432.7	5,104.2	5,002.2	102.02	50.034	
10,400.0	5,911.9	5,450.0	5,438.3	92.5	13.6	71.42	271.4	-432.7	5,200.0	5,096.1	103.89	50.055	
10,500.0	5,911.9	5,450.0	5,438.3	94.4	13.6	71.42	271.4	-432.7	5,295.9	5,190.1	105.76	50.075	
10,600.0	5,911.9	5,450.0	5,438.3	96.2	13.6	71.42	271.4	-432.7	5,391.9	5,284.3	107.63	50.096	
10,700.0	5,911.9	5,450.0	5,438.3	98.0	13.6	71.42	271.4	-432.7	5,488.1	5,378.6	109.51	50.117	
10,800.0	5,911.9	5,450.0	5,438.3	99.9	13.6	71.42	271.4	-432.7	5,584.5	5,473.1	111.38	50.137	
10,900.0	5,911.9	5,450.0	5,438.3	101.7	13.6	71.42	271.4	-432.7	5,680.9	5,567.7	113.26	50.157	
11,000.0	5,911.9	5,450.0	5,438.3	103.6	13.6	71.42	271.4	-432.7	5,777.5	5,662.4	115.14	50.177	
11,100.0	5,911.9	5,450.0	5,438.3	105.4	13.6	71.42	271.4	-432.7	5,874.2	5,757.2	117.02	50.197	
11,200.0	5,911.9	5,450.0	5,438.3	107.3	13.6	71.42	271.4	-432.7	5,971.0	5,852.1	118.90	50.217	
11,300.0	5,911.9	5,450.0	5,438.3	109.2	13.6	71.42	271.4	-432.7	6,067.9	5,947.1	120.79	50.236	
11,400.0	5,911.9	5,450.0	5,438.3	111.0	13.6	71.42	271.4	-432.7	6,164.9	6,042.2	122.67	50.256	
11,500.0	5,911.9	5,450.0	5,438.3	112.9	13.6	71.42	271.4	-432.7	6,262.0	6,137.4	124.56	50.275	
11,600.0	5,911.9	5,450.0	5,438.3	114.7	13.6	71.42	271.4	-432.7	6,359.2	6,232.7	126.44	50.293	
11,700.0	5,911.9	5,450.0	5,438.3	116.6	13.6	71.42	271.4	-432.7	6,456.5	6,328.1	128.33	50.312	
11,800.0	5,912.0	5,444.4	5,432.7	118.5	13.5	71.22	271.0	-432.5	6,553.8	6,423.7	130.06	50.390	
11,900.0	5,912.0	5,439.0	5,427.3	120.4	13.5	71.02	270.7	-432.2	6,651.2	6,519.4	131.79	50.468	
12,000.0	5,912.0	5,439.0	5,427.3	122.2	13.5	71.02	270.7	-432.2	6,748.7	6,615.1	133.68	50.486	
12,100.0	5,912.0	5,439.0	5,427.3	124.1	13.5	71.02	270.7	-432.2	6,846.3	6,710.7	135.56	50.503	
12,200.0	5,912.0	5,439.0	5,427.3	126.0	13.5	71.02	270.7	-432.2	6,943.9	6,806.5	137.45	50.520	
12,300.0	5,912.0	5,439.0	5,427.3	127.8	13.5	71.02	270.7	-432.2	7,041.6	6,902.3	139.34	50.537	
12,400.0	5,912.0	5,439.0	5,427.3	129.7	13.5	71.02	270.7	-432.2	7,139.4	6,998.2	141.23	50.553	
12,500.0	5,912.0	5,439.0	5,427.3	131.6	13.5	71.02	270.7	-432.2	7,237.2	7,094.1	143.11	50.570	
12,600.0	5,912.0	5,439.0	5,427.3	133.5	13.5	71.02	270.7	-432.2	7,335.1	7,190.1	145.00	50.586	
12,700.0	5,912.0	5,439.0	5,427.3	135.4	13.5	71.02	270.7	-432.2	7,433.1	7,286.2	146.89	50.602	
12,800.0	5,912.0	5,439.0	5,427.3	137.2	13.5	71.02	270.7	-432.2	7,531.1	7,382.3	148.78	50.618	
12,900.0	5,912.0	5,439.0	5,427.3	139.1	13.5	71.02	270.7	-432.2	7,629.1	7,478.5	150.67	50.633	
13,000.0	5,912.0	5,439.0	5,427.3	141.0	13.5	71.02	270.7	-432.2	7,727.2	7,574.7	152.57	50.648	
13,100.0	5,912.0	5,434.1	5,422.4	142.9	13.5	70.84	270.4	-432.0	7,825.4	7,671.1	154.30	50.717	
13,200.0	5,912.0	5,428.5	5,416.8	144.8	13.5	70.63	270.1	-431.8	7,923.6	7,767.6	156.00	50.792	
13,300.0	5,912.0	5,422.9	5,411.3	146.7	13.5	70.43	269.8	-431.5	8,021.8	7,864.1	157.70	50.868	
13,400.0	5,912.0	5,417.3	5,405.7	148.6	13.5	70.22	269.5	-431.3	8,120.1	7,960.7	159.39	50.945	
13,500.0	5,912.0	5,411.7	5,400.1	150.5	13.5	70.02	269.2	-431.1	8,218.4	8,057.3	161.08	51.021	
13,600.0	5,912.0	5,406.2	5,394.5	152.3	13.5	69.81	268.9	-430.8	8,316.7	8,154.0	162.76	51.098	
13,700.0	5,912.0	5,400.6	5,389.0	154.2	13.4	69.61	268.6	-430.6	8,415.1	8,250.7	164.44	51.175	
13,800.0	5,912.0	5,395.0	5,383.4	156.1	13.4	69.41	268.2	-430.4	8,513.5	8,347.4	166.11	51.252	
13,900.0	5,912.0	5,389.4	5,377.8	158.0	13.4	69.21	267.9	-430.1	8,612.0	8,444.2	167.78	51.329	
13,925.4	5,912.0	5,388.0	5,376.4	158.4	13.4	69.16	267.9	-430.1	8,637.0	8,468.9	168.12	51.375	

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-60.31	74.9	-131.4	151.3					
100.0	100.0	100.0	100.0	0.1	0.1	-60.31	74.9	-131.4	151.3	151.1	0.19	808.860		
200.0	200.0	200.0	200.0	0.3	0.3	-60.31	74.9	-131.4	151.3	150.6	0.64	237.631		
300.0	300.0	300.0	300.0	0.5	0.5	-60.31	74.9	-131.4	151.3	150.2	1.09	139.274		
400.0	400.0	400.0	400.0	0.8	0.8	-60.31	74.9	-131.4	151.3	149.7	1.54	98.503		
500.0	500.0	500.0	500.0	1.0	1.0	-60.31	74.9	-131.4	151.3	149.3	1.99	76.197		
600.0	600.0	600.0	600.0	1.2	1.2	-60.31	74.9	-131.4	151.3	148.8	2.43	62.128		
700.0	700.0	700.0	700.0	1.4	1.4	-60.31	74.9	-131.4	151.3	148.4	2.88	52.445		
800.0	800.0	800.0	800.0	1.7	1.7	-60.31	74.9	-131.4	151.3	147.9	3.33	45.373		
900.0	900.0	900.0	900.0	1.9	1.9	-60.31	74.9	-131.4	151.3	147.5	3.78	39.982 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	159.79	74.9	-131.4	152.9	148.7	4.21	36.340		
1,100.0	1,099.8	1,095.2	1,095.2	2.3	2.3	160.65	76.3	-132.2	159.3	154.7	4.60	34.618		
1,200.0	1,199.6	1,189.8	1,189.6	2.5	2.5	162.17	80.4	-134.5	170.2	165.2	5.00	34.021		
1,300.0	1,299.4	1,288.3	1,287.9	2.7	2.8	163.84	86.3	-137.9	183.1	177.7	5.42	33.773		
1,400.0	1,399.1	1,387.3	1,386.7	2.9	3.0	165.31	92.3	-141.4	196.1	190.3	5.84	33.565		
1,500.0	1,498.9	1,486.3	1,485.5	3.1	3.2	166.59	98.3	-144.8	209.2	202.9	6.27	33.376		
1,600.0	1,598.6	1,585.4	1,584.3	3.4	3.5	167.72	104.3	-148.3	222.4	215.7	6.70	33.204		
1,700.0	1,698.4	1,684.4	1,683.0	3.6	3.7	168.72	110.3	-151.7	235.7	228.6	7.13	33.048		
1,800.0	1,798.1	1,783.4	1,781.8	3.8	3.9	169.61	116.3	-155.1	249.1	241.5	7.57	32.906		
1,900.0	1,897.9	1,882.5	1,880.6	4.1	4.2	170.42	122.3	-158.6	262.5	254.4	8.01	32.778		
2,000.0	1,997.6	1,981.5	1,979.4	4.3	4.4	171.14	128.3	-162.0	275.9	267.4	8.45	32.661		
2,100.0	2,097.4	2,080.5	2,078.2	4.6	4.7	171.80	134.2	-165.5	289.4	280.5	8.89	32.554		
2,200.0	2,197.2	2,179.6	2,177.0	4.8	4.9	172.40	140.2	-168.9	302.9	293.6	9.33	32.457		
2,300.0	2,296.9	2,278.6	2,275.8	5.1	5.2	172.95	146.2	-172.3	316.5	306.7	9.78	32.367		
2,400.0	2,396.7	2,377.6	2,374.6	5.3	5.4	173.45	152.2	-175.8	330.0	319.8	10.22	32.285		
2,500.0	2,496.4	2,476.7	2,473.4	5.6	5.7	173.92	158.2	-179.2	343.6	333.0	10.67	32.210		
2,600.0	2,596.2	2,575.7	2,572.2	5.8	5.9	174.34	164.2	-182.6	357.2	346.1	11.12	32.140		
2,700.0	2,695.9	2,674.7	2,671.0	6.1	6.2	174.74	170.2	-186.1	370.9	359.3	11.56	32.075		
2,800.0	2,795.7	2,773.8	2,769.8	6.3	6.4	175.11	176.2	-189.5	384.5	372.5	12.01	32.015		
2,900.0	2,895.5	2,872.8	2,868.6	6.6	6.7	175.45	182.2	-193.0	398.2	385.7	12.46	31.958		
3,000.0	2,995.2	2,971.8	2,967.4	6.9	6.9	175.77	188.2	-196.4	411.9	399.0	12.91	31.906		
3,100.0	3,095.0	3,070.9	3,066.1	7.1	7.2	176.07	194.2	-199.8	425.6	412.2	13.36	31.857		
3,200.0	3,194.7	3,169.9	3,164.9	7.4	7.4	176.36	200.2	-203.3	439.3	425.5	13.81	31.811		
3,300.0	3,294.5	3,268.9	3,263.7	7.6	7.7	176.62	206.1	-206.7	453.0	438.7	14.26	31.768		
3,400.0	3,394.2	3,368.0	3,362.5	7.9	7.9	176.87	212.1	-210.1	466.7	452.0	14.71	31.727		
3,500.0	3,494.0	3,467.0	3,461.3	8.2	8.2	177.10	218.1	-213.6	480.4	465.3	15.16	31.689		
3,600.0	3,593.7	3,566.0	3,560.1	8.4	8.4	177.33	224.1	-217.0	494.2	478.6	15.61	31.653		
3,700.0	3,693.5	3,665.1	3,658.9	8.7	8.7	177.53	230.1	-220.5	507.9	491.9	16.06	31.619		
3,800.0	3,793.3	3,764.1	3,757.7	8.9	8.9	177.73	236.1	-223.9	521.7	505.2	16.52	31.587		
3,900.0	3,893.0	3,863.1	3,856.5	9.2	9.2	177.92	242.1	-227.3	535.4	518.5	16.97	31.556		
4,000.0	3,992.8	3,962.2	3,955.3	9.5	9.4	178.10	248.1	-230.8	549.2	531.8	17.42	31.527		
4,100.0	4,092.5	4,061.2	4,054.1	9.7	9.7	178.27	254.1	-234.2	563.0	545.1	17.87	31.499		
4,200.0	4,192.3	4,160.2	4,152.9	10.0	10.0	178.43	260.1	-237.7	576.7	558.4	18.33	31.473		
4,300.0	4,292.0	4,259.3	4,251.7	10.2	10.2	178.59	266.1	-241.1	590.5	571.7	18.78	31.448		
4,400.0	4,391.8	4,358.3	4,350.5	10.5	10.5	178.73	272.1	-244.5	604.3	585.1	19.23	31.424		
4,500.0	4,491.6	4,457.3	4,449.2	10.8	10.7	178.88	278.0	-248.0	618.1	598.4	19.68	31.401		
4,600.0	4,591.3	4,556.4	4,548.0	11.0	11.0	179.01	284.0	-251.4	631.9	611.7	20.14	31.379		
4,700.0	4,691.1	4,655.4	4,646.8	11.3	11.2	179.14	290.0	-254.8	645.7	625.1	20.59	31.358		
4,800.0	4,790.8	4,754.4	4,745.6	11.5	11.5	179.26	296.0	-258.3	659.5	638.4	21.04	31.338		
4,900.0	4,890.6	4,853.5	4,844.4	11.8	11.7	179.38	302.0	-261.7	673.3	651.8	21.50	31.319		
5,000.0	4,990.3	4,952.5	4,943.2	12.1	12.0	179.50	308.0	-265.2	687.1	665.1	21.95	31.300		
5,100.0	5,090.1	5,051.6	5,042.0	12.3	12.2	179.60	314.0	-268.6	700.9	678.4	22.40	31.283		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,150.6	5,140.8	12.6	12.5	179.71	320.0	-272.0	714.7	691.8	22.86	31.266		
5,300.0	5,289.6	5,249.6	5,239.6	12.9	12.7	179.81	326.0	-275.5	728.5	705.2	23.31	31.249 SF		
5,400.0	5,389.4	5,341.9	5,331.6	13.1	13.0	179.90	331.6	-278.7	742.3	718.6	23.75	31.256		
5,438.0	5,427.3	5,350.0	5,339.7	13.2	13.0	179.91	332.2	-279.0	748.6	724.7	23.86	31.378		
5,450.0	5,439.2	5,350.0	5,339.7	13.3	13.0	179.91	332.2	-279.0	751.0	727.2	23.84	31.497		
5,500.0	5,488.7	5,382.1	5,371.5	13.4	13.1	179.96	335.7	-281.0	764.4	740.7	23.75	32.190		
5,550.0	5,537.3	5,400.0	5,389.2	13.6	13.2	-179.99	338.4	-282.6	784.3	760.8	23.42	33.491		
5,600.0	5,584.5	5,417.8	5,406.6	13.9	13.2	-179.94	341.5	-284.4	809.9	787.0	22.89	35.377		
5,650.0	5,630.0	5,433.1	5,421.5	14.2	13.3	-179.87	344.7	-286.2	840.7	818.5	22.17	37.919		
5,700.0	5,673.2	5,450.0	5,437.8	14.5	13.4	-179.79	348.6	-288.5	876.2	854.9	21.27	41.194		
5,750.0	5,713.9	5,450.0	5,437.8	14.9	13.4	-179.76	348.6	-288.5	915.6	895.5	20.16	45.417		
5,800.0	5,751.6	5,467.3	5,454.2	15.4	13.4	-179.61	353.1	-291.0	958.2	939.3	18.93	50.622		
5,850.0	5,785.9	5,474.6	5,461.2	15.9	13.5	-179.47	355.1	-292.2	1,003.6	986.0	17.54	57.205		
5,900.0	5,816.7	5,480.1	5,466.4	16.4	13.5	-179.24	356.7	-293.1	1,050.9	1,034.8	16.04	65.498		
5,950.0	5,843.5	5,500.0	5,485.0	17.1	13.6	-178.59	362.9	-296.6	1,100.0	1,085.5	14.49	75.924		
6,000.0	5,866.1	5,500.0	5,485.0	17.7	13.6	-177.02	362.9	-296.6	1,149.5	1,136.6	12.95	88.751		
6,050.0	5,884.4	5,500.0	5,485.0	18.5	13.6	-17.28	362.9	-296.6	1,199.5	1,184.9	14.57	82.346		
6,100.0	5,898.1	5,500.0	5,485.0	19.3	13.6	-2.15	362.9	-296.6	1,249.4	1,239.4	9.98	125.139		
6,150.0	5,907.1	5,500.0	5,485.0	20.1	13.6	-1.13	362.9	-296.6	1,298.8	1,290.0	8.79	147.765		
6,200.0	5,911.4	5,479.0	5,465.3	20.9	13.5	-0.54	356.4	-292.9	1,346.7	1,338.6	8.10	166.206		
6,219.8	5,911.8	5,477.2	5,463.7	21.3	13.5	-0.46	355.9	-292.6	1,365.6	1,357.6	8.00	170.785		
6,300.0	5,911.8	5,470.2	5,457.0	22.6	13.4	6.59	353.9	-291.5	1,441.5	1,432.2	9.25	155.810		
6,400.0	5,911.8	5,450.0	5,437.8	24.2	13.4	15.01	348.6	-288.5	1,536.6	1,523.7	12.89	119.228		
6,500.0	5,911.8	5,450.0	5,437.8	25.9	13.4	23.46	348.6	-288.5	1,631.4	1,613.2	18.17	89.773		
6,600.0	5,911.8	5,450.0	5,437.8	27.7	13.4	31.37	348.6	-288.5	1,726.2	1,702.5	23.67	72.930		
6,700.0	5,911.8	5,450.0	5,437.8	29.4	13.4	38.48	348.6	-288.5	1,820.7	1,791.9	28.84	63.128		
6,800.0	5,911.8	5,450.0	5,437.8	31.2	13.4	44.68	348.6	-288.5	1,914.7	1,881.3	33.45	57.242		
6,900.0	5,911.8	5,450.0	5,437.8	32.9	13.4	49.99	348.6	-288.5	2,008.1	1,970.7	37.43	53.645		
7,000.0	5,911.8	5,425.8	5,414.4	34.6	13.3	53.11	343.1	-285.3	2,100.0	2,060.0	40.07	52.411		
7,100.0	5,911.8	5,421.4	5,410.1	36.3	13.2	56.75	342.2	-284.8	2,191.4	2,148.5	42.88	51.111		
7,200.0	5,911.8	5,400.0	5,389.2	37.9	13.2	58.99	338.4	-282.6	2,282.1	2,237.3	44.81	50.925		
7,300.0	5,911.8	5,400.0	5,389.2	39.6	13.2	61.88	338.4	-282.6	2,371.1	2,324.1	46.94	50.509		
7,400.0	5,911.8	5,400.0	5,389.2	41.1	13.2	64.36	338.4	-282.6	2,458.8	2,410.1	48.71	50.480		
7,500.0	5,911.8	5,400.0	5,389.2	42.7	13.2	66.50	338.4	-282.6	2,545.2	2,495.1	50.15	50.752		
7,549.3	5,911.8	5,400.0	5,389.2	43.4	13.2	67.45	338.4	-282.6	2,587.3	2,536.6	50.75	50.980		
7,600.0	5,911.8	5,400.0	5,389.2	44.2	13.2	67.45	338.4	-282.6	2,630.6	2,579.0	51.59	50.994		
7,700.0	5,911.8	5,400.0	5,389.2	45.7	13.2	67.45	338.4	-282.6	2,716.6	2,663.3	53.24	51.024		
7,800.0	5,911.8	5,400.0	5,389.2	47.3	13.2	67.45	338.4	-282.6	2,803.5	2,748.6	54.91	51.053		
7,900.0	5,911.8	5,400.0	5,389.2	48.8	13.2	67.45	338.4	-282.6	2,891.3	2,834.7	56.60	51.080		
8,000.0	5,911.8	5,400.0	5,389.2	50.4	13.2	67.45	338.4	-282.6	2,979.9	2,921.6	58.31	51.106		
8,100.0	5,911.8	5,400.0	5,389.2	52.1	13.2	67.45	338.4	-282.6	3,069.2	3,009.2	60.03	51.131		
8,200.0	5,911.8	5,400.0	5,389.2	53.7	13.2	67.45	338.4	-282.6	3,159.1	3,097.3	61.75	51.156		
8,300.0	5,911.8	5,400.0	5,389.2	55.3	13.2	67.45	338.4	-282.6	3,249.6	3,186.1	63.49	51.181		
8,400.0	5,911.9	5,400.0	5,389.2	57.0	13.2	67.45	338.4	-282.6	3,340.6	3,275.4	65.24	51.205		
8,500.0	5,911.9	5,400.0	5,389.2	58.7	13.2	67.45	338.4	-282.6	3,432.2	3,365.2	67.00	51.229		
8,600.0	5,911.9	5,400.0	5,389.2	60.4	13.2	67.45	338.4	-282.6	3,524.2	3,455.4	68.76	51.253		
8,700.0	5,911.9	5,400.0	5,389.2	62.1	13.2	67.45	338.4	-282.6	3,616.6	3,546.1	70.53	51.276		
8,800.0	5,911.9	5,400.0	5,389.2	63.9	13.2	67.45	338.4	-282.6	3,709.4	3,637.1	72.31	51.300		
8,900.0	5,911.9	5,376.9	5,366.4	65.6	13.1	66.54	335.0	-280.7	3,802.0	3,728.5	73.56	51.685		
9,000.0	5,911.9	5,375.3	5,364.9	67.3	13.1	66.48	334.8	-280.5	3,895.5	3,820.2	75.30	51.730		
9,100.0	5,911.9	5,373.9	5,363.4	69.1	13.1	66.42	334.6	-280.4	3,989.2	3,912.2	77.05	51.774		
9,200.0	5,911.9	5,372.5	5,362.0	70.9	13.1	66.37	334.5	-280.3	4,083.3	4,004.5	78.80	51.817		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	5,350.0	5,339.7	72.6	13.0	65.50	332.2	-279.0	4,178.1	4,098.1	80.03	52.208		
9,400.0	5,911.9	5,350.0	5,339.7	74.4	13.0	65.50	332.2	-279.0	4,272.6	4,190.8	81.81	52.226		
9,500.0	5,911.9	5,350.0	5,339.7	76.2	13.0	65.50	332.2	-279.0	4,367.4	4,283.8	83.60	52.244		
9,600.0	5,911.9	5,350.0	5,339.7	78.0	13.0	65.50	332.2	-279.0	4,462.4	4,377.0	85.39	52.262		
9,700.0	5,911.9	5,350.0	5,339.7	79.8	13.0	65.50	332.2	-279.0	4,557.6	4,470.4	87.18	52.279		
9,800.0	5,911.9	5,350.0	5,339.7	81.6	13.0	65.50	332.2	-279.0	4,653.0	4,564.0	88.97	52.297		
9,900.0	5,911.9	5,350.0	5,339.7	83.4	13.0	65.50	332.2	-279.0	4,748.6	4,657.8	90.77	52.315		
10,000.0	5,911.9	5,350.0	5,339.7	85.2	13.0	65.50	332.2	-279.0	4,844.4	4,751.8	92.57	52.332		
10,100.0	5,911.9	5,350.0	5,339.7	87.0	13.0	65.50	332.2	-279.0	4,940.3	4,845.9	94.37	52.350		
10,200.0	5,911.9	5,350.0	5,339.7	88.9	13.0	65.50	332.2	-279.0	5,036.4	4,940.2	96.17	52.367		
10,300.0	5,911.9	5,350.0	5,339.7	90.7	13.0	65.50	332.2	-279.0	5,132.7	5,034.7	97.98	52.385		
10,400.0	5,911.9	5,350.0	5,339.7	92.5	13.0	65.50	332.2	-279.0	5,229.0	5,129.3	99.79	52.402		
10,500.0	5,911.9	5,350.0	5,339.7	94.4	13.0	65.50	332.2	-279.0	5,325.6	5,224.0	101.60	52.419		
10,600.0	5,911.9	5,350.0	5,339.7	96.2	13.0	65.50	332.2	-279.0	5,422.2	5,318.8	103.41	52.435		
10,700.0	5,911.9	5,350.0	5,339.7	98.0	13.0	65.50	332.2	-279.0	5,519.0	5,413.8	105.22	52.452		
10,800.0	5,911.9	5,350.0	5,339.7	99.9	13.0	65.50	332.2	-279.0	5,615.9	5,508.8	107.03	52.468		
10,900.0	5,911.9	5,350.0	5,339.7	101.7	13.0	65.50	332.2	-279.0	5,712.9	5,604.0	108.85	52.485		
11,000.0	5,911.9	5,350.0	5,339.7	103.6	13.0	65.50	332.2	-279.0	5,810.0	5,699.3	110.66	52.501		
11,100.0	5,911.9	5,350.0	5,339.7	105.4	13.0	65.50	332.2	-279.0	5,907.1	5,794.7	112.48	52.516		
11,200.0	5,911.9	5,350.0	5,339.7	107.3	13.0	65.50	332.2	-279.0	6,004.4	5,890.1	114.30	52.532		
11,300.0	5,911.9	5,350.0	5,339.7	109.2	13.0	65.50	332.2	-279.0	6,101.8	5,985.7	116.12	52.547		
11,400.0	5,911.9	5,350.0	5,339.7	111.0	13.0	65.50	332.2	-279.0	6,199.2	6,081.3	117.94	52.562		
11,500.0	5,911.9	5,350.0	5,339.7	112.9	13.0	65.50	332.2	-279.0	6,296.8	6,177.0	119.76	52.577		
11,600.0	5,911.9	5,350.0	5,339.7	114.7	13.0	65.50	332.2	-279.0	6,394.4	6,272.8	121.58	52.592		
11,700.0	5,911.9	5,350.0	5,339.7	116.6	13.0	65.50	332.2	-279.0	6,492.1	6,368.7	123.41	52.607		
11,800.0	5,912.0	5,350.0	5,339.7	118.5	13.0	65.50	332.2	-279.0	6,589.8	6,464.6	125.23	52.621		
11,900.0	5,912.0	5,350.0	5,339.7	120.4	13.0	65.50	332.2	-279.0	6,687.6	6,560.6	127.06	52.635		
12,000.0	5,912.0	5,350.0	5,339.7	122.2	13.0	65.50	332.2	-279.0	6,785.5	6,656.6	128.88	52.649		
12,100.0	5,912.0	5,350.0	5,339.7	124.1	13.0	65.50	332.2	-279.0	6,883.5	6,752.8	130.71	52.663		
12,200.0	5,912.0	5,350.0	5,339.7	126.0	13.0	65.50	332.2	-279.0	6,981.5	6,848.9	132.54	52.676		
12,300.0	5,912.0	5,350.0	5,339.7	127.8	13.0	65.50	332.2	-279.0	7,079.5	6,945.2	134.36	52.689		
12,400.0	5,912.0	5,350.0	5,339.7	129.7	13.0	65.50	332.2	-279.0	7,177.6	7,041.4	136.19	52.702		
12,500.0	5,912.0	5,350.0	5,339.7	131.6	13.0	65.50	332.2	-279.0	7,275.8	7,137.8	138.02	52.715		
12,600.0	5,912.0	5,350.0	5,339.7	133.5	13.0	65.50	332.2	-279.0	7,374.0	7,234.2	139.85	52.728		
12,700.0	5,912.0	5,343.6	5,333.4	135.4	13.0	65.25	331.7	-278.8	7,472.2	7,330.8	141.42	52.837		
12,800.0	5,912.0	5,343.2	5,332.9	137.2	13.0	65.24	331.7	-278.7	7,570.5	7,427.3	143.23	52.856		
12,900.0	5,912.0	5,337.0	5,326.8	139.1	13.0	65.00	331.3	-278.5	7,668.9	7,524.1	144.80	52.962		
13,000.0	5,912.0	5,337.0	5,326.8	141.0	13.0	65.00	331.3	-278.5	7,767.3	7,620.6	146.62	52.974		
13,100.0	5,912.0	5,337.0	5,326.8	142.9	13.0	65.00	331.3	-278.5	7,865.7	7,717.2	148.45	52.986		
13,200.0	5,912.0	5,337.0	5,326.8	144.8	13.0	65.00	331.3	-278.5	7,964.1	7,813.9	150.28	52.997		
13,300.0	5,912.0	5,337.0	5,326.8	146.7	13.0	65.00	331.3	-278.5	8,062.6	7,910.5	152.10	53.008		
13,400.0	5,912.0	5,337.0	5,326.8	148.6	13.0	65.00	331.3	-278.5	8,161.2	8,007.2	153.93	53.019		
13,500.0	5,912.0	5,337.0	5,326.8	150.5	13.0	65.00	331.3	-278.5	8,259.7	8,104.0	155.76	53.030		
13,600.0	5,912.0	5,337.0	5,326.8	152.3	13.0	65.00	331.3	-278.5	8,358.3	8,200.8	157.58	53.040		
13,700.0	5,912.0	5,337.0	5,326.8	154.2	13.0	65.00	331.3	-278.5	8,457.0	8,297.6	159.41	53.051		
13,800.0	5,912.0	5,337.0	5,326.8	156.1	13.0	65.00	331.3	-278.5	8,555.7	8,394.4	161.24	53.061		
13,900.0	5,912.0	5,337.0	5,326.8	158.0	13.0	65.00	331.3	-278.5	8,654.3	8,491.3	163.07	53.071		
13,925.4	5,912.0	5,337.0	5,326.8	158.4	13.0	65.00	331.3	-278.5	8,679.5	8,516.0	163.45	53.102		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-164.4	164.4					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-164.4	164.4	164.3	0.19	879.383		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-164.4	164.4	163.8	0.64	258.350		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-164.4	164.4	163.4	1.09	151.417		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-164.4	164.4	162.9	1.54	107.091		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-164.4	164.4	162.5	1.99	82.840		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-164.4	164.4	162.0	2.43	67.545		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-164.4	164.4	161.6	2.88	57.017		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-164.4	164.4	161.1	3.33	49.329 CC, ES		
900.0	900.0	898.4	898.4	1.9	1.9	-89.43	1.7	-164.9	164.9	161.1	3.78	43.635		
1,000.0	1,000.0	996.5	996.4	2.1	2.1	132.52	6.5	-166.3	167.6	163.4	4.20	39.922		
1,100.0	1,099.8	1,095.7	1,095.3	2.3	2.3	135.86	13.2	-168.1	173.7	169.1	4.61	37.687		
1,200.0	1,199.6	1,194.8	1,194.2	2.5	2.6	139.42	19.8	-170.0	181.6	176.6	5.03	36.110		
1,300.0	1,299.4	1,293.9	1,293.0	2.7	2.8	142.66	26.5	-171.9	190.2	184.8	5.46	34.834		
1,400.0	1,399.1	1,392.9	1,391.8	2.9	3.0	145.62	33.1	-173.7	199.4	193.5	5.90	33.803		
1,500.0	1,498.9	1,492.0	1,490.6	3.1	3.3	148.32	39.8	-175.6	209.0	202.7	6.34	32.971		
1,600.0	1,598.6	1,591.1	1,589.5	3.4	3.5	150.77	46.4	-177.5	219.1	212.3	6.78	32.296		
1,700.0	1,698.4	1,690.1	1,688.3	3.6	3.8	153.01	53.1	-179.3	229.5	222.3	7.23	31.746		
1,800.0	1,798.1	1,789.2	1,787.1	3.8	4.0	155.05	59.7	-181.2	240.3	232.6	7.68	31.298		
1,900.0	1,897.9	1,888.3	1,886.0	4.1	4.3	156.92	66.4	-183.1	251.3	243.2	8.12	30.930		
2,000.0	1,997.6	1,987.4	1,984.8	4.3	4.5	158.62	73.1	-184.9	262.6	254.0	8.57	30.626		
2,100.0	2,097.4	2,086.4	2,083.6	4.6	4.8	160.19	79.7	-186.8	274.0	265.0	9.02	30.375		
2,200.0	2,197.2	2,185.5	2,182.4	4.8	5.0	161.63	86.4	-188.7	285.7	276.2	9.47	30.166		
2,300.0	2,296.9	2,284.6	2,281.3	5.1	5.3	162.96	93.0	-190.5	297.5	287.6	9.92	29.991		
2,400.0	2,396.7	2,383.6	2,380.1	5.3	5.5	164.19	99.7	-192.4	309.5	299.1	10.37	29.846		
2,500.0	2,496.4	2,482.7	2,478.9	5.6	5.8	165.32	106.3	-194.3	321.6	310.8	10.82	29.723		
2,600.0	2,596.2	2,581.8	2,577.8	5.8	6.0	166.37	113.0	-196.1	333.9	322.6	11.27	29.620		
2,700.0	2,695.9	2,680.8	2,676.6	6.1	6.3	167.35	119.6	-198.0	346.2	334.5	11.72	29.533		
2,800.0	2,795.7	2,779.9	2,775.4	6.3	6.5	168.26	126.3	-199.9	358.6	346.4	12.17	29.459		
2,900.0	2,895.5	2,879.0	2,874.2	6.6	6.8	169.11	132.9	-201.7	371.1	358.5	12.62	29.397		
3,000.0	2,995.2	2,978.0	2,973.1	6.9	7.0	169.90	139.6	-203.6	383.7	370.6	13.08	29.345		
3,100.0	3,095.0	3,077.1	3,071.9	7.1	7.3	170.65	146.3	-205.5	396.3	382.8	13.53	29.300		
3,200.0	3,194.7	3,176.2	3,170.7	7.4	7.5	171.34	152.9	-207.3	409.0	395.1	13.98	29.262		
3,300.0	3,294.5	3,275.3	3,269.6	7.6	7.8	172.00	159.6	-209.2	421.8	407.4	14.43	29.231		
3,400.0	3,394.2	3,374.3	3,368.4	7.9	8.0	172.62	166.2	-211.1	434.6	419.7	14.88	29.204		
3,500.0	3,494.0	3,473.4	3,467.2	8.2	8.3	173.20	172.9	-212.9	447.5	432.2	15.33	29.181		
3,600.0	3,593.7	3,572.5	3,566.0	8.4	8.5	173.75	179.5	-214.8	460.4	444.6	15.79	29.162		
3,700.0	3,693.5	3,671.5	3,664.9	8.7	8.8	174.27	186.2	-216.7	473.3	457.1	16.24	29.146		
3,800.0	3,793.3	3,770.6	3,763.7	8.9	9.0	174.76	192.8	-218.5	486.3	469.6	16.69	29.133		
3,900.0	3,893.0	3,869.7	3,862.5	9.2	9.3	175.22	199.5	-220.4	499.3	482.2	17.15	29.123		
4,000.0	3,992.8	3,968.7	3,961.4	9.5	9.6	175.67	206.1	-222.3	512.4	494.8	17.60	29.114		
4,100.0	4,092.5	4,067.8	4,060.2	9.7	9.8	176.09	212.8	-224.1	525.5	507.4	18.05	29.107		
4,200.0	4,192.3	4,166.9	4,159.0	10.0	10.1	176.49	219.4	-226.0	538.6	520.0	18.51	29.102		
4,300.0	4,292.0	4,266.0	4,257.8	10.2	10.3	176.87	226.1	-227.9	551.7	532.7	18.96	29.098		
4,400.0	4,391.8	4,365.0	4,356.7	10.5	10.6	177.23	232.8	-229.7	564.8	545.4	19.41	29.095		
4,500.0	4,491.6	4,464.1	4,455.5	10.8	10.8	177.58	239.4	-231.6	578.0	558.1	19.87	29.093		
4,600.0	4,591.3	4,563.2	4,554.3	11.0	11.1	177.91	246.1	-233.5	591.2	570.9	20.32	29.092		
4,700.0	4,691.1	4,662.2	4,653.1	11.3	11.3	178.23	252.7	-235.3	604.4	583.6	20.78	29.092 SF		
4,800.0	4,790.8	4,761.3	4,752.0	11.5	11.6	178.53	259.4	-237.2	617.6	596.4	21.23	29.092		
4,900.0	4,890.6	4,860.4	4,850.8	11.8	11.8	178.82	266.0	-239.1	630.9	609.2	21.68	29.093		
5,000.0	4,990.3	4,959.4	4,949.6	12.1	12.1	179.10	272.7	-240.9	644.1	622.0	22.14	29.095		
5,100.0	5,090.1	5,058.5	5,048.5	12.3	12.3	179.37	279.3	-242.8	657.4	634.8	22.59	29.097		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,157.6	5,147.3	12.6	12.6	179.62	286.0	-244.7	670.7	647.6	23.05	29.099		
5,300.0	5,289.6	5,256.6	5,246.1	12.9	12.8	179.87	292.6	-246.5	684.0	660.5	23.50	29.102		
5,400.0	5,389.4	5,355.7	5,344.9	13.1	13.1	-179.89	299.3	-248.4	697.3	673.3	23.96	29.105		
5,438.0	5,427.3	5,393.4	5,382.5	13.2	13.2	-179.81	301.8	-249.1	702.4	678.2	24.13	29.106		
5,450.0	5,439.2	5,405.2	5,394.3	13.3	13.2	-179.78	302.6	-249.3	704.1	679.9	24.14	29.161		
5,500.0	5,488.7	5,445.2	5,434.2	13.4	13.3	-179.68	305.3	-250.1	714.3	690.3	24.06	29.694		
5,550.0	5,537.3	5,466.0	5,454.9	13.6	13.4	-179.60	307.4	-250.7	730.6	706.9	23.73	30.793		
5,600.0	5,584.5	5,485.3	5,474.0	13.9	13.5	-179.48	310.1	-251.4	752.9	729.8	23.19	32.464		
5,650.0	5,630.0	5,500.0	5,488.5	14.2	13.5	-179.36	312.5	-252.1	780.8	758.4	22.45	34.775		
5,700.0	5,673.2	5,518.6	5,506.6	14.5	13.6	-179.16	316.2	-253.1	813.7	792.1	21.54	37.774		
5,750.0	5,713.9	5,532.0	5,519.7	14.9	13.6	-178.94	319.2	-254.0	850.9	830.4	20.44	41.628		
5,800.0	5,751.6	5,550.0	5,537.1	15.4	13.7	-178.59	323.8	-255.3	891.8	872.6	19.19	46.478		
5,850.0	5,785.9	5,550.0	5,537.1	15.9	13.7	-178.32	323.8	-255.3	935.6	917.8	17.76	52.671		
5,900.0	5,816.7	5,550.0	5,537.1	16.4	13.7	-177.86	323.8	-255.3	982.0	965.7	16.23	60.491		
5,950.0	5,843.5	5,550.0	5,537.1	17.1	13.7	-176.96	323.8	-255.3	1,030.1	1,015.5	14.64	70.342		
6,000.0	5,866.1	5,567.5	5,553.8	17.7	13.8	-174.27	328.8	-256.7	1,079.0	1,065.8	13.19	81.819		
6,050.0	5,884.4	5,568.8	5,555.0	18.5	13.8	-157.47	329.2	-256.8	1,128.8	1,113.0	15.80	71.457		
6,100.0	5,898.1	5,568.6	5,554.8	19.3	13.8	-10.28	329.1	-256.8	1,178.8	1,167.1	11.69	100.842		
6,150.0	5,907.1	5,550.0	5,537.1	20.1	13.7	-3.19	323.8	-255.3	1,228.8	1,219.7	9.09	135.160		
6,200.0	5,911.4	5,550.0	5,537.1	20.9	13.7	-2.05	323.8	-255.3	1,277.7	1,269.4	8.28	154.312		
6,219.8	5,911.8	5,550.0	5,537.1	21.3	13.7	-1.79	323.8	-255.3	1,296.7	1,288.6	8.15	159.196		
6,300.0	5,911.8	5,550.0	5,537.1	22.6	13.7	6.41	323.8	-255.3	1,373.7	1,364.5	9.20	149.270		
6,400.0	5,911.8	5,550.0	5,537.1	24.2	13.7	16.89	323.8	-255.3	1,470.0	1,456.0	13.97	105.241		
6,500.0	5,911.8	5,550.0	5,537.1	25.9	13.7	26.93	323.8	-255.3	1,566.4	1,546.0	20.32	77.083		
6,600.0	5,911.8	5,550.0	5,537.1	27.7	13.7	35.94	323.8	-255.3	1,662.6	1,636.0	26.53	62.669		
6,700.0	5,911.8	5,528.6	5,516.4	29.4	13.6	42.20	318.4	-253.8	1,757.8	1,726.7	31.14	56.448		
6,800.0	5,911.8	5,523.1	5,511.1	31.2	13.6	48.22	317.2	-253.4	1,852.8	1,817.2	35.58	52.074		
6,900.0	5,911.8	5,500.0	5,488.5	32.9	13.5	52.03	312.5	-252.1	1,947.3	1,908.7	38.68	50.350		
7,000.0	5,911.8	5,500.0	5,488.5	34.6	13.5	56.50	312.5	-252.1	2,040.5	1,998.4	42.02	48.555		
7,100.0	5,911.8	5,500.0	5,488.5	36.3	13.5	60.24	312.5	-252.1	2,132.6	2,087.8	44.82	47.577		
7,200.0	5,911.8	5,500.0	5,488.5	37.9	13.5	63.37	312.5	-252.1	2,223.7	2,176.6	47.16	47.152		
7,300.0	5,911.8	5,500.0	5,488.5	39.6	13.5	66.01	312.5	-252.1	2,313.7	2,264.6	49.10	47.122		
7,400.0	5,911.8	5,500.0	5,488.5	41.1	13.5	68.24	312.5	-252.1	2,402.3	2,351.6	50.69	47.390		
7,500.0	5,911.8	5,500.0	5,488.5	42.7	13.5	70.15	312.5	-252.1	2,489.6	2,437.6	51.98	47.894		
7,549.3	5,911.8	5,500.0	5,488.5	43.4	13.5	70.98	312.5	-252.1	2,532.1	2,479.6	52.51	48.217		
7,600.0	5,911.8	5,500.0	5,488.5	44.2	13.5	70.98	312.5	-252.1	2,575.7	2,522.4	53.37	48.266		
7,700.0	5,911.8	5,500.0	5,488.5	45.7	13.5	70.98	312.5	-252.1	2,662.6	2,607.5	55.05	48.364		
7,800.0	5,911.8	5,500.0	5,488.5	47.3	13.5	70.98	312.5	-252.1	2,750.3	2,693.5	56.76	48.456		
7,900.0	5,911.8	5,500.0	5,488.5	48.8	13.5	70.98	312.5	-252.1	2,838.8	2,780.3	58.48	48.543		
8,000.0	5,911.8	5,500.0	5,488.5	50.4	13.5	70.98	312.5	-252.1	2,928.1	2,867.9	60.22	48.625		
8,100.0	5,911.8	5,500.0	5,488.5	52.1	13.5	70.98	312.5	-252.1	3,018.0	2,956.1	61.97	48.703		
8,200.0	5,911.8	5,477.3	5,466.1	53.7	13.4	70.04	308.9	-251.1	3,108.0	3,044.7	63.30	49.097		
8,300.0	5,911.8	5,475.3	5,464.2	55.3	13.4	69.96	308.6	-251.0	3,199.1	3,134.0	65.03	49.193		
8,400.0	5,911.9	5,473.5	5,462.3	57.0	13.4	69.88	308.4	-250.9	3,290.6	3,223.8	66.77	49.285		
8,500.0	5,911.9	5,471.7	5,460.5	58.7	13.4	69.81	308.1	-250.9	3,382.6	3,314.1	68.51	49.373		
8,600.0	5,911.9	5,450.0	5,439.0	60.4	13.3	68.92	305.8	-250.2	3,475.5	3,405.6	69.84	49.762		
8,700.0	5,911.9	5,450.0	5,439.0	62.1	13.3	68.92	305.8	-250.2	3,568.3	3,496.6	71.63	49.816		
8,800.0	5,911.9	5,450.0	5,439.0	63.9	13.3	68.92	305.8	-250.2	3,661.4	3,588.0	73.42	49.869		
8,900.0	5,911.9	5,450.0	5,439.0	65.6	13.3	68.92	305.8	-250.2	3,754.9	3,679.7	75.22	49.920		
9,000.0	5,911.9	5,450.0	5,439.0	67.3	13.3	68.92	305.8	-250.2	3,848.8	3,771.7	77.02	49.970		
9,100.0	5,911.9	5,450.0	5,439.0	69.1	13.3	68.92	305.8	-250.2	3,942.9	3,864.1	78.83	50.018		
9,200.0	5,911.9	5,450.0	5,439.0	70.9	13.3	68.92	305.8	-250.2	4,037.3	3,956.7	80.64	50.065		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	5,450.0	5,439.0	72.6	13.3	68.92	305.8	-250.2	4,132.0	4,049.5	82.46	50.110		
9,400.0	5,911.9	5,450.0	5,439.0	74.4	13.3	68.92	305.8	-250.2	4,226.9	4,142.6	84.28	50.155		
9,500.0	5,911.9	5,450.0	5,439.0	76.2	13.3	68.92	305.8	-250.2	4,322.1	4,236.0	86.10	50.197		
9,600.0	5,911.9	5,450.0	5,439.0	78.0	13.3	68.92	305.8	-250.2	4,417.4	4,329.5	87.93	50.239		
9,700.0	5,911.9	5,450.0	5,439.0	79.8	13.3	68.92	305.8	-250.2	4,513.0	4,423.3	89.76	50.280		
9,800.0	5,911.9	5,450.0	5,439.0	81.6	13.3	68.92	305.8	-250.2	4,608.8	4,517.2	91.59	50.319		
9,900.0	5,911.9	5,450.0	5,439.0	83.4	13.3	68.92	305.8	-250.2	4,704.7	4,611.3	93.43	50.358		
10,000.0	5,911.9	5,450.0	5,439.0	85.2	13.3	68.92	305.8	-250.2	4,800.8	4,705.5	95.26	50.395		
10,100.0	5,911.9	5,450.0	5,439.0	87.0	13.3	68.92	305.8	-250.2	4,897.1	4,800.0	97.10	50.432		
10,200.0	5,911.9	5,450.0	5,439.0	88.9	13.3	68.92	305.8	-250.2	4,993.5	4,894.5	98.94	50.467		
10,300.0	5,911.9	5,450.0	5,439.0	90.7	13.3	68.92	305.8	-250.2	5,090.0	4,989.2	100.79	50.502		
10,400.0	5,911.9	5,450.0	5,439.0	92.5	13.3	68.92	305.8	-250.2	5,186.7	5,084.0	102.63	50.536		
10,500.0	5,911.9	5,450.0	5,439.0	94.4	13.3	68.92	305.8	-250.2	5,283.5	5,179.0	104.48	50.568		
10,600.0	5,911.9	5,450.0	5,439.0	96.2	13.3	68.92	305.8	-250.2	5,380.4	5,274.1	106.33	50.601		
10,700.0	5,911.9	5,450.0	5,439.0	98.0	13.3	68.92	305.8	-250.2	5,477.4	5,369.2	108.18	50.632		
10,800.0	5,911.9	5,450.0	5,439.0	99.9	13.3	68.92	305.8	-250.2	5,574.5	5,464.5	110.03	50.662		
10,900.0	5,911.9	5,450.0	5,439.0	101.7	13.3	68.92	305.8	-250.2	5,671.8	5,559.9	111.89	50.692		
11,000.0	5,911.9	5,450.0	5,439.0	103.6	13.3	68.92	305.8	-250.2	5,769.1	5,655.4	113.74	50.721		
11,100.0	5,911.9	5,444.3	5,433.3	105.4	13.3	68.68	305.3	-250.1	5,866.5	5,751.1	115.42	50.829		
11,200.0	5,911.9	5,443.6	5,432.7	107.3	13.3	68.66	305.2	-250.1	5,964.0	5,846.7	117.25	50.865		
11,300.0	5,911.9	5,438.0	5,427.0	109.2	13.3	68.43	304.8	-249.9	6,061.6	5,942.7	118.92	50.971		
11,400.0	5,911.9	5,438.0	5,427.0	111.0	13.3	68.43	304.8	-249.9	6,159.2	6,038.4	120.78	50.997		
11,500.0	5,911.9	5,438.0	5,427.0	112.9	13.3	68.43	304.8	-249.9	6,256.9	6,134.3	122.63	51.022		
11,600.0	5,911.9	5,438.0	5,427.0	114.7	13.3	68.43	304.8	-249.9	6,354.7	6,230.2	124.49	51.047		
11,700.0	5,911.9	5,438.0	5,427.0	116.6	13.3	68.43	304.8	-249.9	6,452.6	6,326.2	126.34	51.071		
11,800.0	5,912.0	5,438.0	5,427.0	118.5	13.3	68.43	304.8	-249.9	6,550.5	6,422.3	128.20	51.095		
11,900.0	5,912.0	5,438.0	5,427.0	120.4	13.3	68.43	304.8	-249.9	6,648.5	6,518.4	130.06	51.118		
12,000.0	5,912.0	5,438.0	5,427.0	122.2	13.3	68.43	304.8	-249.9	6,746.5	6,614.6	131.92	51.141		
12,100.0	5,912.0	5,438.0	5,427.0	124.1	13.3	68.43	304.8	-249.9	6,844.6	6,710.9	133.78	51.164		
12,200.0	5,912.0	5,438.0	5,427.0	126.0	13.3	68.43	304.8	-249.9	6,942.8	6,807.2	135.64	51.185		
12,300.0	5,912.0	5,434.1	5,423.2	127.8	13.3	68.27	304.6	-249.9	7,041.0	6,903.6	137.36	51.261		
12,400.0	5,912.0	5,427.4	5,416.5	129.7	13.3	68.00	304.1	-249.7	7,139.2	7,000.3	138.96	51.375		
12,500.0	5,912.0	5,420.7	5,409.8	131.6	13.3	67.73	303.7	-249.6	7,237.5	7,097.0	140.56	51.489		
12,600.0	5,912.0	5,414.0	5,403.1	133.5	13.3	67.46	303.2	-249.5	7,335.9	7,193.7	142.16	51.604		
12,700.0	5,912.0	5,407.3	5,396.4	135.4	13.2	67.19	302.8	-249.4	7,434.2	7,290.5	143.74	51.719		
12,800.0	5,912.0	5,400.6	5,389.7	137.2	13.2	66.92	302.3	-249.2	7,532.6	7,387.3	145.32	51.835		
12,900.0	5,912.0	5,393.8	5,383.0	139.1	13.2	66.65	301.9	-249.1	7,631.1	7,484.2	146.89	51.951		
13,000.0	5,912.0	5,387.1	5,376.3	141.0	13.2	66.39	301.4	-249.0	7,729.6	7,581.1	148.45	52.067		
13,100.0	5,912.0	5,380.4	5,369.6	142.9	13.2	66.12	300.9	-248.9	7,828.1	7,678.1	150.01	52.184		
13,200.0	5,912.0	5,373.7	5,362.9	144.8	13.1	65.86	300.5	-248.7	7,926.6	7,775.1	151.56	52.301		
13,300.0	5,912.0	5,367.0	5,356.2	146.7	13.1	65.60	300.0	-248.6	8,025.2	7,872.1	153.10	52.418		
13,400.0	5,912.0	5,360.3	5,349.5	148.6	13.1	65.34	299.6	-248.5	8,123.8	7,969.1	154.63	52.536		
13,500.0	5,912.0	5,353.6	5,342.8	150.5	13.1	65.08	299.1	-248.4	8,222.4	8,066.3	156.16	52.654		
13,600.0	5,912.0	5,346.9	5,336.1	152.3	13.1	64.82	298.7	-248.2	8,321.1	8,163.4	157.68	52.773		
13,700.0	5,912.0	5,340.1	5,329.4	154.2	13.1	64.56	298.2	-248.1	8,419.8	8,260.6	159.19	52.892		
13,800.0	5,912.0	5,333.4	5,322.7	156.1	13.0	64.30	297.8	-248.0	8,518.5	8,357.8	160.69	53.011		
13,900.0	5,912.0	5,326.7	5,316.0	158.0	13.0	64.04	297.3	-247.9	8,617.2	8,455.0	162.19	53.131		
13,925.4	5,912.0	5,325.0	5,314.3	158.4	13.0	63.98	297.2	-247.8	8,642.3	8,479.8	162.48	53.189		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2												Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-41.42	74.9	-66.1	99.9				
100.0	100.0	100.0	100.0	0.1	0.1	-41.42	74.9	-66.1	99.9	99.7	0.19	534.209	
200.0	200.0	200.0	200.0	0.3	0.3	-41.42	74.9	-66.1	99.9	99.3	0.64	156.943	
300.0	300.0	300.0	300.0	0.5	0.5	-41.42	74.9	-66.1	99.9	98.8	1.09	91.983	
400.0	400.0	400.0	400.0	0.8	0.8	-41.42	74.9	-66.1	99.9	98.4	1.54	65.056	
500.0	500.0	500.0	500.0	1.0	1.0	-41.42	74.9	-66.1	99.9	97.9	1.99	50.324	
600.0	600.0	600.0	600.0	1.2	1.2	-41.42	74.9	-66.1	99.9	97.5	2.43	41.032	
700.0	700.0	700.0	700.0	1.4	1.4	-41.42	74.9	-66.1	99.9	97.0	2.88	34.637	
800.0	800.0	800.0	800.0	1.7	1.7	-41.42	74.9	-66.1	99.9	96.6	3.33	29.966	
900.0	900.0	900.0	900.0	1.9	1.9	-41.42	74.9	-66.1	99.9	96.1	3.78	26.406 CC, ES	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	178.49	74.9	-66.1	101.6	97.4	4.21	24.157	
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	178.56	74.9	-66.1	106.9	102.3	4.61	23.176	
1,200.0	1,199.6	1,196.5	1,196.5	2.5	2.6	179.13	76.5	-66.2	115.2	110.2	5.02	22.953 SF	
1,300.0	1,299.4	1,292.6	1,292.4	2.7	2.8	-179.50	81.4	-66.6	126.2	120.8	5.43	23.232	
1,400.0	1,399.1	1,391.4	1,391.0	2.9	3.0	-177.88	88.2	-67.1	138.9	133.1	5.86	23.714	
1,500.0	1,498.9	1,490.5	1,489.9	3.1	3.2	-176.52	95.1	-67.6	151.8	145.5	6.29	24.135	
1,600.0	1,598.6	1,589.6	1,588.8	3.4	3.5	-175.37	102.0	-68.1	164.6	157.9	6.72	24.497	
1,700.0	1,698.4	1,688.8	1,687.7	3.6	3.7	-174.39	108.9	-68.6	177.6	170.4	7.16	24.810	
1,800.0	1,798.1	1,787.9	1,786.5	3.8	3.9	-173.55	115.8	-69.1	190.5	182.9	7.60	25.083	
1,900.0	1,897.9	1,887.0	1,885.4	4.1	4.2	-172.81	122.7	-69.6	203.5	195.5	8.04	25.322	
2,000.0	1,997.6	1,986.1	1,984.3	4.3	4.4	-172.16	129.6	-70.1	216.6	208.1	8.48	25.534	
2,100.0	2,097.4	2,085.2	2,083.2	4.6	4.7	-171.58	136.5	-70.6	229.7	220.7	8.93	25.723	
2,200.0	2,197.2	2,184.4	2,182.0	4.8	4.9	-171.07	143.4	-71.1	242.7	233.4	9.38	25.892	
2,300.0	2,296.9	2,283.5	2,280.9	5.1	5.1	-170.61	150.3	-71.6	255.8	246.0	9.82	26.043	
2,400.0	2,396.7	2,382.6	2,379.8	5.3	5.4	-170.19	157.2	-72.2	269.0	258.7	10.27	26.180	
2,500.0	2,496.4	2,481.7	2,478.7	5.6	5.6	-169.82	164.1	-72.7	282.1	271.4	10.72	26.304	
2,600.0	2,596.2	2,580.8	2,577.5	5.8	5.9	-169.47	171.0	-73.2	295.2	284.0	11.18	26.417	
2,700.0	2,695.9	2,679.9	2,676.4	6.1	6.1	-169.16	177.9	-73.7	308.4	296.7	11.63	26.521	
2,800.0	2,795.7	2,779.1	2,775.3	6.3	6.4	-168.87	184.8	-74.2	321.5	309.4	12.08	26.616	
2,900.0	2,895.5	2,878.2	2,874.2	6.6	6.6	-168.60	191.7	-74.7	334.7	322.2	12.53	26.703	
3,000.0	2,995.2	2,977.3	2,973.0	6.9	6.9	-168.36	198.6	-75.2	347.9	334.9	12.99	26.784	
3,100.0	3,095.0	3,076.4	3,071.9	7.1	7.1	-168.13	205.5	-75.7	361.0	347.6	13.44	26.859	
3,200.0	3,194.7	3,175.5	3,170.8	7.4	7.4	-167.92	212.4	-76.2	374.2	360.3	13.90	26.928	
3,300.0	3,294.5	3,274.7	3,269.7	7.6	7.6	-167.72	219.2	-76.7	387.4	373.1	14.35	26.993	
3,400.0	3,394.2	3,373.8	3,368.6	7.9	7.9	-167.53	226.1	-77.2	400.6	385.8	14.81	27.053	
3,500.0	3,494.0	3,472.9	3,467.4	8.2	8.1	-167.36	233.0	-77.8	413.8	398.5	15.26	27.109	
3,600.0	3,593.7	3,572.0	3,566.3	8.4	8.4	-167.20	239.9	-78.3	427.0	411.3	15.72	27.162	
3,700.0	3,693.5	3,671.1	3,665.2	8.7	8.6	-167.05	246.8	-78.8	440.2	424.0	16.18	27.211	
3,800.0	3,793.3	3,770.2	3,764.1	8.9	8.9	-166.90	253.7	-79.3	453.4	436.8	16.63	27.258	
3,900.0	3,893.0	3,869.4	3,862.9	9.2	9.1	-166.77	260.6	-79.8	466.6	449.5	17.09	27.302	
4,000.0	3,992.8	3,968.5	3,961.8	9.5	9.4	-166.64	267.5	-80.3	479.8	462.3	17.55	27.343	
4,100.0	4,092.5	4,067.6	4,060.7	9.7	9.6	-166.52	274.4	-80.8	493.0	475.0	18.01	27.382	
4,200.0	4,192.3	4,166.7	4,159.6	10.0	9.9	-166.40	281.3	-81.3	506.3	487.8	18.46	27.419	
4,300.0	4,292.0	4,265.8	4,258.4	10.2	10.1	-166.29	288.2	-81.8	519.5	500.6	18.92	27.455	
4,400.0	4,391.8	4,364.9	4,357.3	10.5	10.4	-166.19	295.1	-82.3	532.7	513.3	19.38	27.488	
4,500.0	4,491.6	4,464.1	4,456.2	10.8	10.7	-166.09	302.0	-82.8	545.9	526.1	19.84	27.519	
4,600.0	4,591.3	4,563.2	4,555.1	11.0	10.9	-166.00	308.9	-83.4	559.1	538.8	20.30	27.550	
4,700.0	4,691.1	4,662.3	4,654.0	11.3	11.2	-165.91	315.8	-83.9	572.4	551.6	20.75	27.578	
4,800.0	4,790.8	4,761.4	4,752.8	11.5	11.4	-165.82	322.7	-84.4	585.6	564.4	21.21	27.606	
4,900.0	4,890.6	4,860.5	4,851.7	11.8	11.7	-165.74	329.6	-84.9	598.8	577.1	21.67	27.632	
5,000.0	4,990.3	4,959.7	4,950.6	12.1	11.9	-165.66	336.5	-85.4	612.0	589.9	22.13	27.657	
5,100.0	5,090.1	5,058.8	5,049.5	12.3	12.2	-165.59	343.4	-85.9	625.3	602.7	22.59	27.681	

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: O-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,157.9	5,148.3	12.6	12.4	-165.52	350.3	-86.4	638.5	615.4	23.05	27.703		
5,300.0	5,289.6	5,257.0	5,247.2	12.9	12.7	-165.45	357.2	-86.9	651.7	628.2	23.51	27.725		
5,400.0	5,389.4	5,345.2	5,335.2	13.1	12.9	-165.39	363.4	-87.4	665.1	641.2	23.94	27.782		
5,438.0	5,427.3	5,350.0	5,340.0	13.2	12.9	-165.38	363.8	-87.4	671.6	647.5	24.04	27.936		
5,450.0	5,439.2	5,367.6	5,357.4	13.3	13.0	-165.28	365.8	-87.5	673.7	649.6	24.07	27.983		
5,500.0	5,488.7	5,400.0	5,389.4	13.4	13.1	-164.83	371.0	-87.9	687.5	663.5	24.00	28.644		
5,550.0	5,537.3	5,400.0	5,389.4	13.6	13.1	-164.19	371.0	-87.9	707.3	683.7	23.67	29.879		
5,600.0	5,584.5	5,428.4	5,417.1	13.9	13.2	-163.30	377.2	-88.4	732.7	709.4	23.25	31.510		
5,650.0	5,630.0	5,450.0	5,438.0	14.2	13.3	-162.10	382.9	-88.8	763.3	740.7	22.67	33.667		
5,700.0	5,673.2	5,450.0	5,438.0	14.5	13.3	-160.33	382.9	-88.8	798.6	776.6	21.95	36.375		
5,750.0	5,713.9	5,472.7	5,459.6	14.9	13.4	-158.13	389.8	-89.3	837.4	816.1	21.27	39.375		
5,800.0	5,751.6	5,483.2	5,469.5	15.4	13.4	-154.86	393.3	-89.6	879.5	858.8	20.71	42.465		
5,850.0	5,785.9	5,500.0	5,485.1	15.9	13.5	-150.35	399.3	-90.0	924.4	903.8	20.58	44.907		
5,900.0	5,816.7	5,500.0	5,485.1	16.4	13.5	-142.50	399.3	-90.0	971.0	949.4	21.60	44.954		
5,950.0	5,843.5	5,500.0	5,485.1	17.1	13.5	-129.09	399.3	-90.0	1,019.0	994.3	24.72	41.224		
6,000.0	5,866.1	5,500.0	5,485.1	17.7	13.5	-106.07	399.3	-90.0	1,067.9	1,038.3	29.70	35.962		
6,050.0	5,884.4	5,500.0	5,485.1	18.5	13.5	-75.19	399.3	-90.0	1,117.2	1,086.3	30.90	36.150		
6,100.0	5,898.1	5,500.0	5,485.1	19.3	13.5	-49.97	399.3	-90.0	1,166.3	1,140.3	26.02	44.824		
6,150.0	5,907.1	5,500.0	5,485.1	20.1	13.5	-34.90	399.3	-90.0	1,214.8	1,194.1	20.73	58.598		
6,200.0	5,911.4	5,500.0	5,485.1	20.9	13.5	-26.12	399.3	-90.0	1,262.5	1,245.5	17.00	74.245		
6,219.8	5,911.8	5,500.0	5,485.1	21.3	13.5	-23.66	399.3	-90.0	1,281.1	1,265.1	15.93	80.395		
6,300.0	5,911.8	5,500.0	5,485.1	22.6	13.5	-17.56	399.3	-90.0	1,356.3	1,342.5	13.76	98.544		
6,400.0	5,911.8	5,481.1	5,467.5	24.2	13.4	-7.92	392.6	-89.5	1,450.8	1,440.3	10.51	138.044		
6,500.0	5,911.8	5,473.0	5,459.8	25.9	13.4	1.82	389.9	-89.3	1,546.2	1,536.6	9.62	160.770		
6,600.0	5,911.8	5,450.0	5,438.0	27.7	13.3	11.59	382.9	-88.8	1,642.2	1,629.7	12.59	130.476		
6,700.0	5,911.8	5,450.0	5,438.0	29.4	13.3	20.99	382.9	-88.8	1,737.9	1,719.5	18.32	94.846		
6,800.0	5,911.8	5,450.0	5,438.0	31.2	13.3	29.78	382.9	-88.8	1,833.4	1,808.9	24.55	74.668		
6,900.0	5,911.8	5,450.0	5,438.0	32.9	13.3	37.61	382.9	-88.8	1,928.7	1,898.4	30.37	63.515		
7,000.0	5,911.8	5,450.0	5,438.0	34.6	13.3	44.35	382.9	-88.8	2,023.5	1,988.1	35.40	57.155		
7,100.0	5,911.8	5,450.0	5,438.0	36.3	13.3	50.02	382.9	-88.8	2,117.6	2,078.0	39.61	53.462		
7,200.0	5,911.8	5,428.3	5,417.1	37.9	13.2	53.62	377.2	-88.4	2,210.4	2,168.0	42.39	52.139		
7,300.0	5,911.8	5,423.5	5,412.4	39.6	13.2	57.39	376.0	-88.3	2,302.5	2,257.4	45.13	51.025		
7,400.0	5,911.8	5,400.0	5,389.4	41.1	13.1	59.66	371.0	-87.9	2,393.9	2,347.0	46.87	51.076		
7,500.0	5,911.8	5,400.0	5,389.4	42.7	13.1	62.58	371.0	-87.9	2,483.5	2,434.7	48.80	50.887		
7,549.3	5,911.8	5,400.0	5,389.4	43.4	13.1	63.85	371.0	-87.9	2,527.1	2,477.5	49.61	50.945		
7,600.0	5,911.8	5,400.0	5,389.4	44.2	13.1	63.85	371.0	-87.9	2,572.1	2,521.6	50.42	51.011		
7,700.0	5,911.8	5,400.0	5,389.4	45.7	13.1	63.85	371.0	-87.9	2,661.2	2,609.2	52.04	51.139		
7,800.0	5,911.8	5,400.0	5,389.4	47.3	13.1	63.85	371.0	-87.9	2,751.1	2,697.4	53.67	51.255		
7,900.0	5,911.8	5,400.0	5,389.4	48.8	13.1	63.85	371.0	-87.9	2,841.7	2,786.3	55.33	51.363		
8,000.0	5,911.8	5,400.0	5,389.4	50.4	13.1	63.85	371.0	-87.9	2,932.9	2,875.9	56.99	51.462		
8,100.0	5,911.8	5,400.0	5,389.4	52.1	13.1	63.85	371.0	-87.9	3,024.6	2,965.9	58.67	51.554		
8,200.0	5,911.8	5,400.0	5,389.4	53.7	13.1	63.85	371.0	-87.9	3,116.8	3,056.5	60.36	51.640		
8,300.0	5,911.8	5,400.0	5,389.4	55.3	13.1	63.85	371.0	-87.9	3,209.5	3,147.5	62.06	51.720		
8,400.0	5,911.9	5,400.0	5,389.4	57.0	13.1	63.85	371.0	-87.9	3,302.7	3,238.9	63.76	51.796		
8,500.0	5,911.9	5,400.0	5,389.4	58.7	13.1	63.85	371.0	-87.9	3,396.2	3,330.7	65.48	51.867		
8,600.0	5,911.9	5,400.0	5,389.4	60.4	13.1	63.85	371.0	-87.9	3,490.1	3,422.9	67.20	51.934		
8,700.0	5,911.9	5,400.0	5,389.4	62.1	13.1	63.85	371.0	-87.9	3,584.3	3,515.4	68.93	51.998		
8,800.0	5,911.9	5,400.0	5,389.4	63.9	13.1	63.85	371.0	-87.9	3,678.8	3,608.2	70.67	52.058		
8,900.0	5,911.9	5,376.9	5,366.7	65.6	13.0	62.87	367.1	-87.6	3,773.1	3,701.3	71.77	52.575		
9,000.0	5,911.9	5,375.1	5,364.9	67.3	13.0	62.79	366.8	-87.6	3,868.1	3,794.6	73.45	52.664		
9,100.0	5,911.9	5,373.4	5,363.2	69.1	13.0	62.72	366.6	-87.6	3,963.3	3,888.1	75.14	52.748		
9,200.0	5,911.9	5,350.0	5,340.0	70.9	12.9	61.73	363.8	-87.4	4,059.2	3,983.0	76.17	53.290		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	5,350.0	5,340.0	72.6	12.9	61.73	363.8	-87.4	4,154.8	4,076.9	77.90	53.332		
9,400.0	5,911.9	5,350.0	5,340.0	74.4	12.9	61.73	363.8	-87.4	4,250.6	4,170.9	79.64	53.372		
9,500.0	5,911.9	5,350.0	5,340.0	76.2	12.9	61.73	363.8	-87.4	4,346.6	4,265.2	81.38	53.411		
9,600.0	5,911.9	5,350.0	5,340.0	78.0	12.9	61.73	363.8	-87.4	4,442.7	4,359.6	83.12	53.449		
9,700.0	5,911.9	5,350.0	5,340.0	79.8	12.9	61.73	363.8	-87.4	4,539.0	4,454.2	84.87	53.485		
9,800.0	5,911.9	5,350.0	5,340.0	81.6	12.9	61.73	363.8	-87.4	4,635.5	4,548.9	86.61	53.520		
9,900.0	5,911.9	5,350.0	5,340.0	83.4	12.9	61.73	363.8	-87.4	4,732.1	4,643.8	88.36	53.554		
10,000.0	5,911.9	5,350.0	5,340.0	85.2	12.9	61.73	363.8	-87.4	4,828.9	4,738.8	90.11	53.586		
10,100.0	5,911.9	5,350.0	5,340.0	87.0	12.9	61.73	363.8	-87.4	4,925.8	4,833.9	91.87	53.618		
10,200.0	5,911.9	5,350.0	5,340.0	88.9	12.9	61.73	363.8	-87.4	5,022.8	4,929.1	93.62	53.648		
10,300.0	5,911.9	5,350.0	5,340.0	90.7	12.9	61.73	363.8	-87.4	5,119.9	5,024.5	95.38	53.678		
10,400.0	5,911.9	5,350.0	5,340.0	92.5	12.9	61.73	363.8	-87.4	5,217.1	5,120.0	97.14	53.707		
10,500.0	5,911.9	5,350.0	5,340.0	94.4	12.9	61.73	363.8	-87.4	5,314.5	5,215.6	98.90	53.735		
10,600.0	5,911.9	5,350.0	5,340.0	96.2	12.9	61.73	363.8	-87.4	5,411.9	5,311.2	100.66	53.761		
10,700.0	5,911.9	5,350.0	5,340.0	98.0	12.9	61.73	363.8	-87.4	5,509.4	5,407.0	102.43	53.788		
10,800.0	5,911.9	5,350.0	5,340.0	99.9	12.9	61.73	363.8	-87.4	5,607.0	5,502.8	104.19	53.813		
10,900.0	5,911.9	5,350.0	5,340.0	101.7	12.9	61.73	363.8	-87.4	5,704.7	5,598.8	105.96	53.838		
11,000.0	5,911.9	5,350.0	5,340.0	103.6	12.9	61.73	363.8	-87.4	5,802.5	5,694.8	107.73	53.862		
11,100.0	5,911.9	5,350.0	5,340.0	105.4	12.9	61.73	363.8	-87.4	5,900.3	5,790.8	109.50	53.885		
11,200.0	5,911.9	5,350.0	5,340.0	107.3	12.9	61.73	363.8	-87.4	5,998.3	5,887.0	111.27	53.908		
11,300.0	5,911.9	5,350.0	5,340.0	109.2	12.9	61.73	363.8	-87.4	6,096.3	5,983.2	113.04	53.930		
11,400.0	5,911.9	5,350.0	5,340.0	111.0	12.9	61.73	363.8	-87.4	6,194.3	6,079.5	114.81	53.952		
11,500.0	5,911.9	5,350.0	5,340.0	112.9	12.9	61.73	363.8	-87.4	6,292.4	6,175.8	116.58	53.973		
11,600.0	5,911.9	5,350.0	5,340.0	114.7	12.9	61.73	363.8	-87.4	6,390.6	6,272.2	118.36	53.994		
11,700.0	5,911.9	5,350.0	5,340.0	116.6	12.9	61.73	363.8	-87.4	6,488.8	6,368.7	120.13	54.014		
11,800.0	5,912.0	5,350.0	5,340.0	118.5	12.9	61.73	363.8	-87.4	6,587.1	6,465.2	121.91	54.033		
11,900.0	5,912.0	5,350.0	5,340.0	120.4	12.9	61.73	363.8	-87.4	6,685.4	6,561.7	123.68	54.052		
12,000.0	5,912.0	5,350.0	5,340.0	122.2	12.9	61.73	363.8	-87.4	6,783.8	6,658.3	125.46	54.071		
12,100.0	5,912.0	5,350.0	5,340.0	124.1	12.9	61.73	363.8	-87.4	6,882.2	6,755.0	127.24	54.089		
12,200.0	5,912.0	5,343.0	5,333.0	126.0	12.9	61.44	363.2	-87.4	6,980.6	6,852.0	128.69	54.244		
12,300.0	5,912.0	5,336.0	5,326.0	127.8	12.9	61.15	362.7	-87.3	7,079.2	6,949.1	130.13	54.401		
12,400.0	5,912.0	5,336.0	5,326.0	129.7	12.9	61.15	362.7	-87.3	7,177.7	7,045.8	131.90	54.417		
12,500.0	5,912.0	5,336.0	5,326.0	131.6	12.9	61.15	362.7	-87.3	7,276.3	7,142.6	133.67	54.434		
12,600.0	5,912.0	5,336.0	5,326.0	133.5	12.9	61.15	362.7	-87.3	7,374.9	7,239.5	135.45	54.449		
12,700.0	5,912.0	5,336.0	5,326.0	135.4	12.9	61.15	362.7	-87.3	7,473.6	7,336.4	137.22	54.465		
12,800.0	5,912.0	5,336.0	5,326.0	137.2	12.9	61.15	362.7	-87.3	7,572.3	7,433.3	138.99	54.480		
12,900.0	5,912.0	5,336.0	5,326.0	139.1	12.9	61.15	362.7	-87.3	7,671.0	7,530.2	140.77	54.495		
13,000.0	5,912.0	5,336.0	5,326.0	141.0	12.9	61.15	362.7	-87.3	7,769.8	7,627.2	142.54	54.509		
13,100.0	5,912.0	5,336.0	5,326.0	142.9	12.9	61.15	362.7	-87.3	7,868.5	7,724.2	144.32	54.523		
13,200.0	5,912.0	5,336.0	5,326.0	144.8	12.9	61.15	362.7	-87.3	7,967.4	7,821.3	146.09	54.537		
13,300.0	5,912.0	5,336.0	5,326.0	146.7	12.9	61.15	362.7	-87.3	8,066.2	7,918.3	147.87	54.551		
13,400.0	5,912.0	5,336.0	5,326.0	148.6	12.9	61.15	362.7	-87.3	8,165.1	8,015.4	149.64	54.564		
13,500.0	5,912.0	5,336.0	5,326.0	150.5	12.9	61.15	362.7	-87.3	8,264.0	8,112.6	151.42	54.577		
13,600.0	5,912.0	5,336.0	5,326.0	152.3	12.9	61.15	362.7	-87.3	8,362.9	8,209.7	153.20	54.590		
13,700.0	5,912.0	5,332.5	5,322.5	154.2	12.9	61.01	362.4	-87.3	8,461.9	8,307.1	154.78	54.671		
13,800.0	5,912.0	5,325.6	5,315.6	156.1	12.8	60.72	361.9	-87.3	8,560.8	8,404.7	156.16	54.821		
13,900.0	5,912.0	5,318.6	5,308.7	158.0	12.8	60.44	361.4	-87.2	8,659.8	8,502.3	157.53	54.971		
13,925.4	5,912.0	5,316.9	5,306.9	158.4	12.8	60.37	361.3	-87.2	8,685.0	8,527.2	157.80	55.039		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-98.4	98.4					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-98.4	98.4	98.2	0.19	525.986		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-98.4	98.4	97.7	0.64	154.527		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-98.4	98.4	97.3	1.09	90.567		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-98.4	98.4	96.8	1.54	64.055		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-98.4	98.4	96.4	1.99	49.549		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-98.4	98.4	95.9	2.43	40.401		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-98.4	98.4	95.5	2.88	34.104		
800.0	800.0	800.9	800.9	1.7	1.7	-88.99	1.7	-97.9	97.9	94.6	3.33	29.357		
900.0	900.0	901.5	901.4	1.9	1.9	-85.94	6.8	-96.5	96.7	92.9	3.79	25.532		
946.1	946.1	947.5	947.2	2.0	2.0	135.97	9.9	-95.6	96.4	92.4	3.98	24.195 CC, ES		
1,000.0	1,000.0	1,001.2	1,000.8	2.1	2.1	138.71	13.5	-94.6	96.9	92.6	4.21	22.982		
1,100.0	1,099.8	1,100.6	1,099.9	2.3	2.4	144.56	20.2	-92.7	100.5	95.9	4.63	21.709		
1,200.0	1,199.6	1,199.8	1,198.9	2.5	2.6	150.45	26.9	-90.9	106.7	101.6	5.06	21.087		
1,300.0	1,299.4	1,299.1	1,297.9	2.7	2.8	155.65	33.5	-89.0	113.8	108.3	5.50	20.712		
1,400.0	1,399.1	1,398.3	1,396.9	2.9	3.1	160.22	40.2	-87.1	121.8	115.9	5.94	20.514		
1,500.0	1,498.9	1,497.5	1,495.9	3.1	3.3	164.20	46.9	-85.3	130.5	124.1	6.38	20.440 SF		
1,600.0	1,598.6	1,596.8	1,594.9	3.4	3.6	167.68	53.6	-83.4	139.7	132.8	6.83	20.449		
1,700.0	1,698.4	1,696.0	1,693.9	3.6	3.8	170.72	60.2	-81.6	149.3	142.1	7.28	20.514		
1,800.0	1,798.1	1,795.3	1,792.9	3.8	4.1	173.38	66.9	-79.7	159.4	151.6	7.73	20.614		
1,900.0	1,897.9	1,894.5	1,891.9	4.1	4.3	175.73	73.6	-77.8	169.7	161.5	8.18	20.738		
2,000.0	1,997.6	1,993.7	1,990.9	4.3	4.6	177.81	80.2	-76.0	180.3	171.6	8.64	20.874		
2,100.0	2,097.4	2,093.0	2,089.9	4.6	4.8	179.65	86.9	-74.1	191.1	182.0	9.09	21.018		
2,200.0	2,197.2	2,192.2	2,188.9	4.8	5.1	-178.70	93.6	-72.2	202.0	192.5	9.55	21.164		
2,300.0	2,296.9	2,291.4	2,287.9	5.1	5.3	-177.23	100.2	-70.4	213.2	203.2	10.00	21.310		
2,400.0	2,396.7	2,390.7	2,386.9	5.3	5.6	-175.90	106.9	-68.5	224.4	213.9	10.46	21.453		
2,500.0	2,496.4	2,489.9	2,485.9	5.6	5.8	-174.69	113.6	-66.7	235.8	224.8	10.92	21.593		
2,600.0	2,596.2	2,589.2	2,584.9	5.8	6.1	-173.60	120.2	-64.8	247.2	235.8	11.38	21.728		
2,700.0	2,695.9	2,688.4	2,683.9	6.1	6.3	-172.61	126.9	-62.9	258.7	246.9	11.84	21.858		
2,800.0	2,795.7	2,787.6	2,782.9	6.3	6.6	-171.70	133.6	-61.1	270.3	258.0	12.30	21.983		
2,900.0	2,895.5	2,886.9	2,881.9	6.6	6.8	-170.86	140.2	-59.2	282.0	269.2	12.76	22.103		
3,000.0	2,995.2	2,986.1	2,980.9	6.9	7.1	-170.09	146.9	-57.4	293.7	280.5	13.22	22.218		
3,100.0	3,095.0	3,085.3	3,079.9	7.1	7.3	-169.38	153.6	-55.5	305.4	291.8	13.68	22.328		
3,200.0	3,194.7	3,184.6	3,178.9	7.4	7.6	-168.73	160.2	-53.6	317.3	303.1	14.14	22.433		
3,300.0	3,294.5	3,283.8	3,277.9	7.6	7.8	-168.12	166.9	-51.8	329.1	314.5	14.60	22.534		
3,400.0	3,394.2	3,383.1	3,376.8	7.9	8.1	-167.55	173.6	-49.9	341.0	325.9	15.07	22.630		
3,500.0	3,494.0	3,482.3	3,475.8	8.2	8.3	-167.02	180.2	-48.0	352.9	337.3	15.53	22.721		
3,600.0	3,593.7	3,581.5	3,574.8	8.4	8.6	-166.53	186.9	-46.2	364.8	348.8	15.99	22.809		
3,700.0	3,693.5	3,680.8	3,673.8	8.7	8.9	-166.06	193.6	-44.3	376.8	360.3	16.46	22.893		
3,800.0	3,793.3	3,780.0	3,772.8	8.9	9.1	-165.63	200.2	-42.5	388.7	371.8	16.92	22.973		
3,900.0	3,893.0	3,879.2	3,871.8	9.2	9.4	-165.22	206.9	-40.6	400.8	383.4	17.39	23.050		
4,000.0	3,992.8	3,978.5	3,970.8	9.5	9.6	-164.83	213.6	-38.7	412.8	394.9	17.85	23.123		
4,100.0	4,092.5	4,077.7	4,069.8	9.7	9.9	-164.47	220.2	-36.9	424.8	406.5	18.32	23.194		
4,200.0	4,192.3	4,177.0	4,168.8	10.0	10.1	-164.13	226.9	-35.0	436.9	418.1	18.78	23.261		
4,300.0	4,292.0	4,276.2	4,267.8	10.2	10.4	-163.80	233.6	-33.2	448.9	429.7	19.25	23.326		
4,400.0	4,391.8	4,375.4	4,366.8	10.5	10.6	-163.49	240.2	-31.3	461.0	441.3	19.71	23.388		
4,500.0	4,491.6	4,474.7	4,465.8	10.8	10.9	-163.20	246.9	-29.4	473.1	452.9	20.18	23.448		
4,600.0	4,591.3	4,573.9	4,564.8	11.0	11.1	-162.92	253.6	-27.6	485.2	464.6	20.64	23.505		
4,700.0	4,691.1	4,673.1	4,663.8	11.3	11.4	-162.66	260.2	-25.7	497.3	476.2	21.11	23.561		
4,800.0	4,790.8	4,772.4	4,762.8	11.5	11.6	-162.41	266.9	-23.8	509.5	487.9	21.57	23.614		
4,900.0	4,890.6	4,871.6	4,861.8	11.8	11.9	-162.17	273.6	-22.0	521.6	499.6	22.04	23.665		
5,000.0	4,990.3	4,970.9	4,960.8	12.1	12.1	-161.94	280.2	-20.1	533.7	511.2	22.51	23.714		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,090.1	5,070.1	5,059.8	12.3	12.4	-161.72	286.9	-18.3	545.9	522.9	22.97	23.762		
5,200.0	5,189.9	5,169.3	5,158.8	12.6	12.7	-161.51	293.6	-16.4	558.1	534.6	23.44	23.808		
5,300.0	5,289.6	5,268.6	5,257.8	12.9	12.9	-161.31	300.2	-14.5	570.2	546.3	23.91	23.852		
5,400.0	5,389.4	5,367.8	5,356.8	13.1	13.2	-161.12	306.9	-12.7	582.4	558.0	24.37	23.894		
5,438.0	5,427.3	5,405.5	5,394.4	13.2	13.3	-161.05	309.4	-12.0	587.0	562.5	24.55	23.910		
5,450.0	5,439.2	5,417.4	5,406.2	13.3	13.3	-160.97	310.2	-11.7	588.6	564.1	24.57	23.956		
5,500.0	5,488.7	5,450.0	5,438.7	13.4	13.4	-160.61	312.5	-11.1	598.3	573.8	24.50	24.422		
5,550.0	5,537.3	5,477.8	5,466.4	13.6	13.5	-160.01	315.7	-10.2	614.1	589.8	24.25	25.321		
5,600.0	5,584.5	5,500.0	5,488.2	13.9	13.5	-159.12	319.2	-9.2	635.7	611.9	23.83	26.680		
5,650.0	5,630.0	5,521.8	5,509.6	14.2	13.6	-157.89	323.5	-8.0	662.7	639.5	23.28	28.470		
5,700.0	5,673.2	5,550.0	5,536.9	14.5	13.7	-156.28	330.4	-6.1	694.7	672.1	22.66	30.658		
5,750.0	5,713.9	5,550.0	5,536.9	14.9	13.7	-153.86	330.4	-6.1	730.7	708.7	21.99	33.231		
5,800.0	5,751.6	5,571.2	5,557.1	15.4	13.8	-150.85	336.5	-4.4	770.3	748.8	21.50	35.820		
5,850.0	5,785.9	5,582.9	5,568.1	15.9	13.9	-146.49	340.2	-3.4	812.9	791.5	21.42	37.957		
5,900.0	5,816.7	5,600.0	5,584.1	16.4	14.0	-140.59	346.1	-1.7	857.9	835.8	22.07	38.873		
5,950.0	5,843.5	5,600.0	5,584.1	17.1	14.0	-130.68	346.1	-1.7	904.5	880.2	24.23	37.327		
6,000.0	5,866.1	5,600.0	5,584.1	17.7	14.0	-115.30	346.1	-1.7	952.4	924.3	28.02	33.990		
6,050.0	5,884.4	5,600.0	5,584.1	18.5	14.0	-93.41	346.1	-1.7	1,000.9	969.5	31.46	31.812		
6,100.0	5,898.1	5,600.0	5,584.1	19.3	14.0	-69.40	346.1	-1.7	1,049.7	1,018.9	30.79	34.089		
6,150.0	5,907.1	5,600.0	5,584.1	20.1	14.0	-50.32	346.1	-1.7	1,098.3	1,071.6	26.62	41.259		
6,200.0	5,911.4	5,600.0	5,584.1	20.9	14.0	-37.62	346.1	-1.7	1,146.1	1,123.9	22.22	51.589		
6,219.8	5,911.8	5,600.0	5,584.1	21.3	14.0	-33.94	346.1	-1.7	1,164.9	1,144.1	20.76	56.118		
6,300.0	5,911.8	5,600.0	5,584.1	22.6	14.0	-27.79	346.1	-1.7	1,240.9	1,222.1	18.75	66.164		
6,400.0	5,911.8	5,600.0	5,584.1	24.2	14.0	-18.22	346.1	-1.7	1,337.0	1,322.0	15.00	89.123		
6,500.0	5,911.8	5,580.8	5,566.1	25.9	13.9	-5.37	339.5	-3.6	1,433.6	1,423.0	10.53	136.131		
6,600.0	5,911.8	5,573.2	5,559.0	27.7	13.8	7.22	337.1	-4.2	1,530.7	1,519.7	11.08	138.157		
6,700.0	5,911.8	5,550.0	5,536.9	29.4	13.7	19.09	330.4	-6.1	1,628.3	1,611.0	17.29	94.178		
6,800.0	5,911.8	5,550.0	5,536.9	31.2	13.7	29.81	330.4	-6.1	1,725.2	1,700.5	24.66	69.955		
6,900.0	5,911.8	5,550.0	5,536.9	32.9	13.7	39.09	330.4	-6.1	1,821.8	1,790.4	31.39	58.032		
7,000.0	5,911.8	5,550.0	5,536.9	34.6	13.7	46.76	330.4	-6.1	1,918.0	1,881.0	36.96	51.887		
7,100.0	5,911.8	5,550.0	5,536.9	36.3	13.7	52.97	330.4	-6.1	2,013.4	1,972.0	41.40	48.631		
7,200.0	5,911.8	5,550.0	5,536.9	37.9	13.7	57.96	330.4	-6.1	2,108.1	2,063.2	44.90	46.950		
7,300.0	5,911.8	5,528.5	5,516.1	39.6	13.6	60.77	325.0	-7.6	2,201.4	2,154.3	47.04	46.798		
7,400.0	5,911.8	5,523.4	5,511.1	41.1	13.6	63.85	323.9	-7.9	2,293.8	2,244.6	49.16	46.656		
7,500.0	5,911.8	5,500.0	5,488.2	42.7	13.5	65.50	319.2	-9.2	2,385.3	2,334.9	50.42	47.305		
7,549.3	5,911.8	5,500.0	5,488.2	43.4	13.5	66.74	319.2	-9.2	2,429.7	2,378.5	51.19	47.463		
7,600.0	5,911.8	5,500.0	5,488.2	44.2	13.5	66.74	319.2	-9.2	2,475.3	2,423.3	52.02	47.581		
7,700.0	5,911.8	5,500.0	5,488.2	45.7	13.5	66.74	319.2	-9.2	2,565.8	2,512.1	53.67	47.806		
7,800.0	5,911.8	5,500.0	5,488.2	47.3	13.5	66.74	319.2	-9.2	2,656.9	2,601.6	55.34	48.014		
7,900.0	5,911.8	5,500.0	5,488.2	48.8	13.5	66.74	319.2	-9.2	2,748.7	2,691.7	57.02	48.207		
8,000.0	5,911.8	5,500.0	5,488.2	50.4	13.5	66.74	319.2	-9.2	2,841.1	2,782.4	58.72	48.386		
8,100.0	5,911.8	5,500.0	5,488.2	52.1	13.5	66.74	319.2	-9.2	2,933.9	2,873.5	60.43	48.554		
8,200.0	5,911.8	5,500.0	5,488.2	53.7	13.5	66.74	319.2	-9.2	3,027.2	2,965.1	62.15	48.711		
8,300.0	5,911.8	5,500.0	5,488.2	55.3	13.5	66.74	319.2	-9.2	3,120.9	3,057.1	63.88	48.857		
8,400.0	5,911.9	5,500.0	5,488.2	57.0	13.5	66.74	319.2	-9.2	3,215.0	3,149.4	65.62	48.996		
8,500.0	5,911.9	5,500.0	5,488.2	58.7	13.5	66.74	319.2	-9.2	3,309.5	3,242.1	67.37	49.126		
8,600.0	5,911.9	5,500.0	5,488.2	60.4	13.5	66.74	319.2	-9.2	3,404.2	3,335.1	69.12	49.248		
8,700.0	5,911.9	5,500.0	5,488.2	62.1	13.5	66.74	319.2	-9.2	3,499.3	3,428.4	70.89	49.364		
8,800.0	5,911.9	5,478.4	5,467.0	63.9	13.5	65.73	315.8	-10.2	3,594.2	3,522.1	72.06	49.879		
8,900.0	5,911.9	5,476.5	5,465.0	65.6	13.5	65.63	315.5	-10.3	3,689.6	3,615.9	73.76	50.019		
9,000.0	5,911.9	5,474.6	5,463.2	67.3	13.4	65.54	315.3	-10.3	3,785.3	3,709.9	75.48	50.152		
9,100.0	5,911.9	5,472.8	5,461.4	69.1	13.4	65.46	315.0	-10.4	3,881.3	3,804.1	77.20	50.279		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
9,200.0	5,911.9	5,450.0	5,438.7	70.9	13.4	64.40	312.5	-11.1	3,977.8	3,899.5	78.27	50.824		
9,300.0	5,911.9	5,450.0	5,438.7	72.6	13.4	64.40	312.5	-11.1	4,074.0	3,994.0	80.03	50.905		
9,400.0	5,911.9	5,450.0	5,438.7	74.4	13.4	64.40	312.5	-11.1	4,170.4	4,088.6	81.80	50.983		
9,500.0	5,911.9	5,450.0	5,438.7	76.2	13.4	64.40	312.5	-11.1	4,267.0	4,183.4	83.57	51.057		
9,600.0	5,911.9	5,450.0	5,438.7	78.0	13.4	64.40	312.5	-11.1	4,363.7	4,278.4	85.35	51.128		
9,700.0	5,911.9	5,450.0	5,438.7	79.8	13.4	64.40	312.5	-11.1	4,460.6	4,373.5	87.13	51.196		
9,800.0	5,911.9	5,450.0	5,438.7	81.6	13.4	64.40	312.5	-11.1	4,557.6	4,468.7	88.91	51.261		
9,900.0	5,911.9	5,450.0	5,438.7	83.4	13.4	64.40	312.5	-11.1	4,654.8	4,564.1	90.69	51.324		
10,000.0	5,911.9	5,450.0	5,438.7	85.2	13.4	64.40	312.5	-11.1	4,752.0	4,659.5	92.48	51.384		
10,100.0	5,911.9	5,450.0	5,438.7	87.0	13.4	64.40	312.5	-11.1	4,849.4	4,755.1	94.27	51.442		
10,200.0	5,911.9	5,450.0	5,438.7	88.9	13.4	64.40	312.5	-11.1	4,946.8	4,850.8	96.06	51.498		
10,300.0	5,911.9	5,450.0	5,438.7	90.7	13.4	64.40	312.5	-11.1	5,044.4	4,946.6	97.85	51.552		
10,400.0	5,911.9	5,450.0	5,438.7	92.5	13.4	64.40	312.5	-11.1	5,142.1	5,042.4	99.65	51.604		
10,500.0	5,911.9	5,450.0	5,438.7	94.4	13.4	64.40	312.5	-11.1	5,239.8	5,138.4	101.44	51.654		
10,600.0	5,911.9	5,450.0	5,438.7	96.2	13.4	64.40	312.5	-11.1	5,337.7	5,234.4	103.24	51.702		
10,700.0	5,911.9	5,450.0	5,438.7	98.0	13.4	64.40	312.5	-11.1	5,435.6	5,330.5	105.04	51.749		
10,800.0	5,911.9	5,450.0	5,438.7	99.9	13.4	64.40	312.5	-11.1	5,533.6	5,426.7	106.84	51.794		
10,900.0	5,911.9	5,450.0	5,438.7	101.7	13.4	64.40	312.5	-11.1	5,631.6	5,523.0	108.64	51.838		
11,000.0	5,911.9	5,450.0	5,438.7	103.6	13.4	64.40	312.5	-11.1	5,729.8	5,619.3	110.44	51.880		
11,100.0	5,911.9	5,450.0	5,438.7	105.4	13.4	64.40	312.5	-11.1	5,827.9	5,715.7	112.25	51.921		
11,200.0	5,911.9	5,450.0	5,438.7	107.3	13.4	64.40	312.5	-11.1	5,926.2	5,812.1	114.05	51.961		
11,300.0	5,911.9	5,450.0	5,438.7	109.2	13.4	64.40	312.5	-11.1	6,024.5	5,908.6	115.86	52.000		
11,400.0	5,911.9	5,450.0	5,438.7	111.0	13.4	64.40	312.5	-11.1	6,122.9	6,005.2	117.66	52.037		
11,500.0	5,911.9	5,450.0	5,438.7	112.9	13.4	64.40	312.5	-11.1	6,221.3	6,101.8	119.47	52.073		
11,600.0	5,911.9	5,450.0	5,438.7	114.7	13.4	64.40	312.5	-11.1	6,319.7	6,198.5	121.28	52.108		
11,700.0	5,911.9	5,450.0	5,438.7	116.6	13.4	64.40	312.5	-11.1	6,418.3	6,295.2	123.09	52.143		
11,800.0	5,912.0	5,444.6	5,433.4	118.5	13.4	64.15	312.1	-11.2	6,516.8	6,392.1	124.65	52.279		
11,900.0	5,912.0	5,439.0	5,427.8	120.4	13.3	63.89	311.7	-11.3	6,615.4	6,489.2	126.20	52.420		
12,000.0	5,912.0	5,439.0	5,427.8	122.2	13.3	63.89	311.7	-11.3	6,714.0	6,586.0	128.00	52.451		
12,100.0	5,912.0	5,439.0	5,427.8	124.1	13.3	63.89	311.7	-11.3	6,812.7	6,682.9	129.81	52.482		
12,200.0	5,912.0	5,439.0	5,427.8	126.0	13.3	63.89	311.7	-11.3	6,911.4	6,779.8	131.62	52.511		
12,300.0	5,912.0	5,439.0	5,427.8	127.8	13.3	63.89	311.7	-11.3	7,010.2	6,876.7	133.43	52.540		
12,400.0	5,912.0	5,439.0	5,427.8	129.7	13.3	63.89	311.7	-11.3	7,108.9	6,973.7	135.23	52.568		
12,500.0	5,912.0	5,439.0	5,427.8	131.6	13.3	63.89	311.7	-11.3	7,207.7	7,070.7	137.04	52.595		
12,600.0	5,912.0	5,439.0	5,427.8	133.5	13.3	63.89	311.7	-11.3	7,306.6	7,167.7	138.85	52.622		
12,700.0	5,912.0	5,439.0	5,427.8	135.4	13.3	63.89	311.7	-11.3	7,405.5	7,264.8	140.66	52.648		
12,800.0	5,912.0	5,439.0	5,427.8	137.2	13.3	63.89	311.7	-11.3	7,504.4	7,361.9	142.47	52.673		
12,900.0	5,912.0	5,435.1	5,423.9	139.1	13.3	63.71	311.4	-11.4	7,603.3	7,459.2	144.07	52.774		
13,000.0	5,912.0	5,428.3	5,417.2	141.0	13.3	63.40	311.0	-11.5	7,702.3	7,556.7	145.52	52.928		
13,100.0	5,912.0	5,421.6	5,410.5	142.9	13.3	63.09	310.5	-11.7	7,801.2	7,654.3	146.96	53.083		
13,200.0	5,912.0	5,414.9	5,403.8	144.8	13.3	62.78	310.1	-11.8	7,900.2	7,751.8	148.39	53.239		
13,300.0	5,912.0	5,408.2	5,397.1	146.7	13.3	62.48	309.6	-11.9	7,999.3	7,849.4	149.81	53.394		
13,400.0	5,912.0	5,401.5	5,390.4	148.6	13.2	62.18	309.2	-12.0	8,098.3	7,947.1	151.23	53.551		
13,500.0	5,912.0	5,394.8	5,383.7	150.5	13.2	61.88	308.7	-12.2	8,197.3	8,044.7	152.63	53.707		
13,600.0	5,912.0	5,388.0	5,377.0	152.3	13.2	61.58	308.3	-12.3	8,296.4	8,142.4	154.02	53.864		
13,700.0	5,912.0	5,381.3	5,370.3	154.2	13.2	61.29	307.8	-12.4	8,395.5	8,240.1	155.41	54.022		
13,800.0	5,912.0	5,374.6	5,363.6	156.1	13.2	60.99	307.4	-12.5	8,494.6	8,337.8	156.79	54.179		
13,900.0	5,912.0	5,367.9	5,356.9	158.0	13.2	60.70	306.9	-12.7	8,593.7	8,435.6	158.15	54.338		
13,925.4	5,912.0	5,366.2	5,355.2	158.4	13.2	60.62	306.8	-12.7	8,618.9	8,460.5	158.42	54.407		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	74.9	0.0	74.9	74.7	0.19	400.655		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.64	117.707		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.09	68.987		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.54	48.792		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.99	37.743		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	74.9	0.0	74.9	72.5	2.43	30.774		
700.0	700.0	700.0	700.0	1.4	1.4	0.00	74.9	0.0	74.9	72.0	2.88	25.978		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	74.9	0.0	74.9	71.6	3.33	22.475		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	74.9	0.0	74.9	71.1	3.78	19.804 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-140.94	74.9	0.0	76.3	72.1	4.21	18.124		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-143.24	74.9	0.0	80.4	75.8	4.62	17.420		
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	-146.02	74.9	0.0	86.1	81.1	5.03	17.108 SF		
1,300.0	1,299.4	1,296.7	1,296.7	2.7	2.8	-147.83	76.4	0.7	93.4	87.9	5.45	17.128		
1,400.0	1,399.1	1,393.4	1,393.3	2.9	3.0	-148.34	80.8	2.8	103.5	97.6	5.88	17.613		
1,500.0	1,498.9	1,492.6	1,492.2	3.1	3.2	-148.23	87.1	5.8	115.2	108.9	6.31	18.254		
1,600.0	1,598.6	1,591.9	1,591.2	3.4	3.5	-148.15	93.3	8.7	127.0	120.2	6.75	18.805		
1,700.0	1,698.4	1,691.2	1,690.3	3.6	3.7	-148.07	99.6	11.7	138.7	131.5	7.19	19.277		
1,800.0	1,798.1	1,790.5	1,789.4	3.8	3.9	-148.01	105.8	14.7	150.4	142.8	7.64	19.684		
1,900.0	1,897.9	1,889.8	1,888.4	4.1	4.2	-147.96	112.1	17.6	162.1	154.0	8.09	20.039		
2,000.0	1,997.6	1,989.1	1,987.5	4.3	4.4	-147.92	118.4	20.6	173.9	165.3	8.54	20.349		
2,100.0	2,097.4	2,088.4	2,086.6	4.6	4.6	-147.88	124.6	23.6	185.6	176.6	9.00	20.623		
2,200.0	2,197.2	2,187.7	2,185.6	4.8	4.9	-147.84	130.9	26.6	197.3	187.9	9.46	20.867		
2,300.0	2,296.9	2,287.0	2,284.7	5.1	5.1	-147.81	137.1	29.5	209.0	199.1	9.91	21.084		
2,400.0	2,396.7	2,386.3	2,383.8	5.3	5.4	-147.79	143.4	32.5	220.8	210.4	10.37	21.280		
2,500.0	2,496.4	2,485.7	2,482.9	5.6	5.6	-147.76	149.6	35.5	232.5	221.7	10.84	21.456		
2,600.0	2,596.2	2,585.0	2,581.9	5.8	5.9	-147.74	155.9	38.4	244.2	232.9	11.30	21.615		
2,700.0	2,695.9	2,684.3	2,681.0	6.1	6.1	-147.72	162.2	41.4	256.0	244.2	11.76	21.761		
2,800.0	2,795.7	2,783.6	2,780.1	6.3	6.4	-147.70	168.4	44.4	267.7	255.5	12.23	21.894		
2,900.0	2,895.5	2,882.9	2,879.1	6.6	6.6	-147.68	174.7	47.4	279.4	266.7	12.69	22.015		
3,000.0	2,995.2	2,982.2	2,978.2	6.9	6.8	-147.67	180.9	50.3	291.1	278.0	13.16	22.127		
3,100.0	3,095.0	3,081.5	3,077.3	7.1	7.1	-147.65	187.2	53.3	302.9	289.2	13.62	22.231		
3,200.0	3,194.7	3,180.8	3,176.3	7.4	7.3	-147.64	193.4	56.3	314.6	300.5	14.09	22.326		
3,300.0	3,294.5	3,280.1	3,275.4	7.6	7.6	-147.63	199.7	59.2	326.3	311.8	14.56	22.415		
3,400.0	3,394.2	3,379.4	3,374.5	7.9	7.8	-147.62	206.0	62.2	338.0	323.0	15.03	22.497		
3,500.0	3,494.0	3,478.8	3,473.5	8.2	8.1	-147.61	212.2	65.2	349.8	334.3	15.49	22.574		
3,600.0	3,593.7	3,578.1	3,572.6	8.4	8.3	-147.60	218.5	68.2	361.5	345.5	15.96	22.646		
3,700.0	3,693.5	3,677.4	3,671.7	8.7	8.6	-147.59	224.7	71.1	373.2	356.8	16.43	22.713		
3,800.0	3,793.3	3,776.7	3,770.7	8.9	8.8	-147.58	231.0	74.1	385.0	368.1	16.90	22.776		
3,900.0	3,893.0	3,876.0	3,869.8	9.2	9.1	-147.57	237.2	77.1	396.7	379.3	17.37	22.836		
4,000.0	3,992.8	3,975.3	3,968.9	9.5	9.4	-147.56	243.5	80.0	408.4	390.6	17.84	22.892		
4,100.0	4,092.5	4,074.6	4,067.9	9.7	9.6	-147.55	249.8	83.0	420.1	401.8	18.31	22.944		
4,200.0	4,192.3	4,173.9	4,167.0	10.0	9.9	-147.55	256.0	86.0	431.9	413.1	18.78	22.994		
4,300.0	4,292.0	4,273.2	4,266.1	10.2	10.1	-147.54	262.3	89.0	443.6	424.3	19.25	23.041		
4,400.0	4,391.8	4,372.5	4,365.1	10.5	10.4	-147.53	268.5	91.9	455.3	435.6	19.72	23.086		
4,500.0	4,491.6	4,471.9	4,464.2	10.8	10.6	-147.53	274.8	94.9	467.0	446.9	20.19	23.128		
4,600.0	4,591.3	4,571.2	4,563.3	11.0	10.9	-147.52	281.1	97.9	478.8	458.1	20.67	23.168		
4,700.0	4,691.1	4,670.5	4,662.3	11.3	11.1	-147.52	287.3	100.8	490.5	469.4	21.14	23.207		
4,800.0	4,790.8	4,769.8	4,761.4	11.5	11.4	-147.51	293.6	103.8	502.2	480.6	21.61	23.243		
4,900.0	4,890.6	4,869.1	4,860.5	11.8	11.6	-147.51	299.8	106.8	514.0	491.9	22.08	23.278		
5,000.0	4,990.3	4,968.4	4,959.6	12.1	11.9	-147.50	306.1	109.8	525.7	503.1	22.55	23.311		
5,100.0	5,090.1	5,067.7	5,058.6	12.3	12.1	-147.50	312.3	112.7	537.4	514.4	23.02	23.343		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
5,200.0	5,189.9	5,167.0	5,157.7	12.6	12.4	-147.49	318.6	115.7	549.1	525.6	23.49	23.373		
5,300.0	5,289.6	5,266.3	5,256.8	12.9	12.6	-147.49	324.9	118.7	560.9	536.9	23.97	23.402		
5,400.0	5,389.4	5,350.0	5,340.2	13.1	12.9	-147.48	330.3	121.3	573.0	548.6	24.40	23.479		
5,438.0	5,427.3	5,370.9	5,360.9	13.2	12.9	-147.42	332.5	122.3	578.9	554.4	24.55	23.583		
5,450.0	5,439.2	5,376.9	5,366.9	13.3	12.9	-147.27	333.3	122.7	581.2	556.6	24.57	23.658		
5,500.0	5,488.7	5,400.0	5,389.7	13.4	13.0	-146.41	336.8	124.4	594.2	569.7	24.56	24.198		
5,550.0	5,537.3	5,425.2	5,414.2	13.6	13.1	-145.20	341.7	126.7	612.9	588.4	24.45	25.063		
5,600.0	5,584.5	5,450.0	5,438.2	13.9	13.2	-143.60	347.6	129.5	636.7	612.5	24.27	26.232		
5,650.0	5,630.0	5,467.0	5,454.4	14.2	13.3	-141.44	352.2	131.6	665.3	641.3	24.06	27.656		
5,700.0	5,673.2	5,484.8	5,471.2	14.5	13.4	-138.67	357.5	134.2	698.1	674.2	23.91	29.196		
5,750.0	5,713.9	5,500.0	5,485.4	14.9	13.4	-135.05	362.5	136.5	734.5	710.5	23.95	30.668		
5,800.0	5,751.6	5,513.9	5,498.2	15.4	13.5	-130.37	367.3	138.9	773.9	749.5	24.33	31.806		
5,850.0	5,785.9	5,525.1	5,508.4	15.9	13.6	-124.24	371.5	140.8	815.7	790.5	25.22	32.338		
5,900.0	5,816.7	5,534.1	5,516.5	16.4	13.6	-116.28	375.0	142.5	859.5	832.8	26.71	32.177		
5,950.0	5,843.5	5,550.0	5,530.8	17.1	13.7	-107.15	381.4	145.5	904.8	876.3	28.51	31.734		
6,000.0	5,866.1	5,550.0	5,530.8	17.7	13.7	-94.49	381.4	145.5	950.8	920.5	30.30	31.376		
6,050.0	5,884.4	5,550.0	5,530.8	18.5	13.7	-80.60	381.4	145.5	997.3	966.3	30.97	32.206		
6,100.0	5,898.1	5,550.0	5,530.8	19.3	13.7	-67.14	381.4	145.5	1,043.8	1,013.8	30.02	34.771		
6,150.0	5,907.1	5,550.0	5,530.8	20.1	13.7	-55.50	381.4	145.5	1,090.0	1,062.2	27.87	39.108		
6,200.0	5,911.4	5,550.0	5,530.8	20.9	13.7	-46.17	381.4	145.5	1,135.5	1,110.2	25.31	44.865		
6,219.8	5,911.8	5,550.0	5,530.8	21.3	13.7	-43.07	381.4	145.5	1,153.3	1,129.0	24.32	47.414		
6,300.0	5,911.8	5,550.0	5,530.8	22.6	13.7	-39.23	381.4	145.5	1,225.8	1,202.1	23.73	51.660		
6,400.0	5,911.8	5,532.3	5,514.9	24.2	13.6	-31.42	374.3	142.1	1,318.3	1,297.0	21.23	62.086		
6,500.0	5,911.8	5,524.4	5,507.7	25.9	13.5	-23.07	371.2	140.7	1,412.6	1,394.6	18.05	78.251		
6,600.0	5,911.8	5,500.0	5,485.4	27.7	13.4	-12.07	362.5	136.5	1,508.4	1,494.9	13.53	111.514		
6,700.0	5,911.8	5,500.0	5,485.4	29.4	13.4	-1.73	362.5	136.5	1,604.5	1,593.5	11.05	145.208		
6,800.0	5,911.8	5,500.0	5,485.4	31.2	13.4	9.42	362.5	136.5	1,701.1	1,688.1	13.00	130.883		
6,900.0	5,911.8	5,500.0	5,485.4	32.9	13.4	20.49	362.5	136.5	1,797.9	1,778.4	19.50	92.205		
7,000.0	5,911.8	5,500.0	5,485.4	34.6	13.4	30.66	362.5	136.5	1,894.5	1,867.7	26.77	70.774		
7,100.0	5,911.8	5,477.3	5,464.2	36.3	13.3	38.48	355.2	133.1	1,990.4	1,957.8	32.59	61.064		
7,200.0	5,911.8	5,470.2	5,457.4	37.9	13.3	45.30	353.1	132.1	2,085.8	2,048.2	37.64	55.417		
7,300.0	5,911.8	5,450.0	5,438.2	39.6	13.2	50.19	347.6	129.5	2,180.6	2,139.4	41.23	52.894		
7,400.0	5,911.8	5,450.0	5,438.2	41.1	13.2	55.04	347.6	129.5	2,274.3	2,229.7	44.60	50.996		
7,500.0	5,911.8	5,450.0	5,438.2	42.7	13.2	59.06	347.6	129.5	2,366.9	2,319.7	47.24	50.099		
7,549.3	5,911.8	5,450.0	5,438.2	43.4	13.2	60.78	347.6	129.5	2,412.2	2,363.8	48.32	49.916		
7,600.0	5,911.8	5,450.0	5,438.2	44.2	13.2	60.78	347.6	129.5	2,458.7	2,409.6	49.12	50.052		
7,700.0	5,911.8	5,450.0	5,438.2	45.7	13.2	60.78	347.6	129.5	2,550.9	2,500.2	50.70	50.309		
7,800.0	5,911.8	5,450.0	5,438.2	47.3	13.2	60.78	347.6	129.5	2,643.7	2,591.3	52.30	50.545		
7,900.0	5,911.8	5,429.2	5,418.2	48.8	13.1	59.83	342.6	127.1	2,736.5	2,683.2	53.36	51.287		
8,000.0	5,911.8	5,424.8	5,413.9	50.4	13.1	59.62	341.6	126.6	2,830.1	2,775.2	54.85	51.597		
8,100.0	5,911.8	5,420.6	5,409.8	52.1	13.1	59.43	340.7	126.2	2,924.0	2,867.7	56.36	51.885		
8,200.0	5,911.8	5,400.0	5,389.7	53.7	13.0	58.49	336.8	124.4	3,018.6	2,961.2	57.38	52.606		
8,300.0	5,911.8	5,400.0	5,389.7	55.3	13.0	58.49	336.8	124.4	3,113.1	3,054.1	59.01	52.755		
8,400.0	5,911.9	5,400.0	5,389.7	57.0	13.0	58.49	336.8	124.4	3,208.0	3,147.4	60.65	52.894		
8,500.0	5,911.9	5,400.0	5,389.7	58.7	13.0	58.49	336.8	124.4	3,303.2	3,240.9	62.30	53.025		
8,600.0	5,911.9	5,400.0	5,389.7	60.4	13.0	58.49	336.8	124.4	3,398.6	3,334.7	63.95	53.147		
8,700.0	5,911.9	5,400.0	5,389.7	62.1	13.0	58.49	336.8	124.4	3,494.3	3,428.7	65.61	53.262		
8,800.0	5,911.9	5,400.0	5,389.7	63.9	13.0	58.49	336.8	124.4	3,590.3	3,523.0	67.27	53.370		
8,900.0	5,911.9	5,400.0	5,389.7	65.6	13.0	58.49	336.8	124.4	3,686.4	3,617.5	68.94	53.472		
9,000.0	5,911.9	5,400.0	5,389.7	67.3	13.0	58.49	336.8	124.4	3,782.8	3,712.2	70.62	53.568		
9,100.0	5,911.9	5,400.0	5,389.7	69.1	13.0	58.49	336.8	124.4	3,879.3	3,807.0	72.30	53.659		
9,200.0	5,911.9	5,400.0	5,389.7	70.9	13.0	58.49	336.8	124.4	3,976.0	3,902.1	73.98	53.745		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	5,400.0	5,389.7	72.6	13.0	58.49	336.8	124.4	4,072.9	3,997.2	75.67	53.828		
9,400.0	5,911.9	5,400.0	5,389.7	74.4	13.0	58.49	336.8	124.4	4,169.9	4,092.6	77.36	53.906		
9,500.0	5,911.9	5,400.0	5,389.7	76.2	13.0	58.49	336.8	124.4	4,267.1	4,188.0	79.05	53.980		
9,600.0	5,911.9	5,400.0	5,389.7	78.0	13.0	58.49	336.8	124.4	4,364.4	4,283.6	80.75	54.051		
9,700.0	5,911.9	5,400.0	5,389.7	79.8	13.0	58.49	336.8	124.4	4,461.8	4,379.3	82.45	54.118		
9,800.0	5,911.9	5,376.9	5,366.9	81.6	12.9	57.44	333.3	122.7	4,558.8	4,475.6	83.22	54.779		
9,900.0	5,911.9	5,375.3	5,365.3	83.4	12.9	57.37	333.1	122.6	4,656.4	4,571.5	84.84	54.881		
10,000.0	5,911.9	5,373.7	5,363.7	85.2	12.9	57.30	332.9	122.5	4,754.0	4,667.5	86.47	54.979		
10,100.0	5,911.9	5,372.2	5,362.3	87.0	12.9	57.23	332.7	122.4	4,851.8	4,763.7	88.10	55.074		
10,200.0	5,911.9	5,350.0	5,340.2	88.9	12.9	56.23	330.3	121.3	4,950.0	4,861.1	88.82	55.730		
10,300.0	5,911.9	5,350.0	5,340.2	90.7	12.9	56.23	330.3	121.3	5,047.8	4,957.3	90.50	55.778		
10,400.0	5,911.9	5,350.0	5,340.2	92.5	12.9	56.23	330.3	121.3	5,145.8	5,053.6	92.18	55.825		
10,500.0	5,911.9	5,350.0	5,340.2	94.4	12.9	56.23	330.3	121.3	5,243.8	5,149.9	93.86	55.870		
10,600.0	5,911.9	5,350.0	5,340.2	96.2	12.9	56.23	330.3	121.3	5,341.9	5,246.3	95.54	55.913		
10,700.0	5,911.9	5,350.0	5,340.2	98.0	12.9	56.23	330.3	121.3	5,440.1	5,342.8	97.22	55.955		
10,800.0	5,911.9	5,350.0	5,340.2	99.9	12.9	56.23	330.3	121.3	5,538.3	5,439.4	98.91	55.995		
10,900.0	5,911.9	5,350.0	5,340.2	101.7	12.9	56.23	330.3	121.3	5,636.6	5,536.0	100.59	56.034		
11,000.0	5,911.9	5,350.0	5,340.2	103.6	12.9	56.23	330.3	121.3	5,734.9	5,632.6	102.28	56.071		
11,100.0	5,911.9	5,350.0	5,340.2	105.4	12.9	56.23	330.3	121.3	5,833.3	5,729.4	103.97	56.108		
11,200.0	5,911.9	5,350.0	5,340.2	107.3	12.9	56.23	330.3	121.3	5,931.8	5,826.1	105.66	56.143		
11,300.0	5,911.9	5,350.0	5,340.2	109.2	12.9	56.23	330.3	121.3	6,030.3	5,923.0	107.35	56.177		
11,400.0	5,911.9	5,350.0	5,340.2	111.0	12.9	56.23	330.3	121.3	6,128.9	6,019.8	109.04	56.210		
11,500.0	5,911.9	5,350.0	5,340.2	112.9	12.9	56.23	330.3	121.3	6,227.5	6,116.7	110.73	56.241		
11,600.0	5,911.9	5,350.0	5,340.2	114.7	12.9	56.23	330.3	121.3	6,326.1	6,213.7	112.42	56.272		
11,700.0	5,911.9	5,350.0	5,340.2	116.6	12.9	56.23	330.3	121.3	6,424.8	6,310.7	114.11	56.302		
11,800.0	5,912.0	5,350.0	5,340.2	118.5	12.9	56.23	330.3	121.3	6,523.5	6,407.7	115.81	56.331		
11,900.0	5,912.0	5,350.0	5,340.2	120.4	12.9	56.23	330.3	121.3	6,622.3	6,504.8	117.50	56.360		
12,000.0	5,912.0	5,350.0	5,340.2	122.2	12.9	56.23	330.3	121.3	6,721.1	6,601.9	119.20	56.387		
12,100.0	5,912.0	5,350.0	5,340.2	124.1	12.9	56.23	330.3	121.3	6,819.9	6,699.1	120.89	56.414		
12,200.0	5,912.0	5,350.0	5,340.2	126.0	12.9	56.23	330.3	121.3	6,918.8	6,796.2	122.59	56.440		
12,300.0	5,912.0	5,350.0	5,340.2	127.8	12.9	56.23	330.3	121.3	7,017.7	6,893.4	124.29	56.465		
12,400.0	5,912.0	5,350.0	5,340.2	129.7	12.9	56.23	330.3	121.3	7,116.7	6,990.7	125.98	56.489		
12,500.0	5,912.0	5,350.0	5,340.2	131.6	12.9	56.23	330.3	121.3	7,215.6	7,087.9	127.68	56.513		
12,600.0	5,912.0	5,350.0	5,340.2	133.5	12.9	56.23	330.3	121.3	7,314.6	7,185.2	129.38	56.536		
12,700.0	5,912.0	5,350.0	5,340.2	135.4	12.9	56.23	330.3	121.3	7,413.6	7,282.6	131.08	56.559		
12,800.0	5,912.0	5,350.0	5,340.2	137.2	12.9	56.23	330.3	121.3	7,512.7	7,379.9	132.78	56.581		
12,900.0	5,912.0	5,350.0	5,340.2	139.1	12.9	56.23	330.3	121.3	7,611.8	7,477.3	134.48	56.602		
13,000.0	5,912.0	5,350.0	5,340.2	141.0	12.9	56.23	330.3	121.3	7,710.9	7,574.7	136.18	56.623		
13,100.0	5,912.0	5,350.0	5,340.2	142.9	12.9	56.23	330.3	121.3	7,810.0	7,672.1	137.88	56.644		
13,200.0	5,912.0	5,350.0	5,340.2	144.8	12.9	56.23	330.3	121.3	7,909.1	7,769.5	139.58	56.664		
13,300.0	5,912.0	5,350.0	5,340.2	146.7	12.9	56.23	330.3	121.3	8,008.3	7,867.0	141.28	56.683		
13,400.0	5,912.0	5,343.2	5,333.5	148.6	12.8	55.93	329.8	121.0	8,107.4	7,964.9	142.53	56.881		
13,500.0	5,912.0	5,342.7	5,332.9	150.5	12.8	55.90	329.7	121.0	8,206.6	8,062.4	144.20	56.913		
13,600.0	5,912.0	5,336.0	5,326.3	152.3	12.8	55.61	329.3	120.8	8,305.9	8,160.4	145.44	57.110		
13,700.0	5,912.0	5,336.0	5,326.3	154.2	12.8	55.61	329.3	120.8	8,405.1	8,258.0	147.13	57.127		
13,800.0	5,912.0	5,336.0	5,326.3	156.1	12.8	55.61	329.3	120.8	8,504.3	8,355.5	148.82	57.144		
13,900.0	5,912.0	5,336.0	5,326.3	158.0	12.8	55.61	329.3	120.8	8,603.6	8,453.1	150.52	57.161		
13,925.4	5,912.0	5,336.0	5,326.3	158.4	12.8	55.61	329.3	120.8	8,628.8	8,478.0	150.86	57.196		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-33.0	33.0	32.9	0.19	176.698		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-33.0	33.0	32.4	0.64	51.911		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-33.0	33.0	31.5	1.54	21.518		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-33.0	33.0	31.1	1.99	16.646		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-33.0	33.0	30.6	2.43	13.572		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-33.0	33.0	30.2	2.88	11.457		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-33.0	33.0	29.7	3.33	9.912		
900.0	900.0	900.7	900.6	1.9	1.9	-87.48	1.4	-32.0	32.0	28.2	3.78	8.465		
1,000.0	1,000.0	1,001.0	1,000.9	2.1	2.1	143.00	5.6	-28.8	30.7	26.5	4.20	7.309		
1,001.2	1,001.1	1,002.2	1,002.0	2.1	2.1	143.18	5.7	-28.7	30.7	26.5	4.21	7.300 CC, ES		
1,100.0	1,099.8	1,100.6	1,100.1	2.3	2.3	159.44	11.2	-24.6	33.4	28.8	4.61	7.253 SF		
1,200.0	1,199.6	1,200.0	1,199.3	2.5	2.6	172.87	16.7	-20.4	40.2	35.1	5.03	7.978		
1,300.0	1,299.4	1,299.4	1,298.5	2.7	2.8	-177.87	22.2	-16.2	48.4	43.0	5.47	8.857		
1,400.0	1,399.1	1,398.8	1,397.6	2.9	3.1	-171.42	27.7	-12.0	57.6	51.7	5.91	9.745		
1,500.0	1,498.9	1,498.2	1,496.8	3.1	3.3	-166.78	33.3	-7.9	67.2	60.9	6.35	10.585		
1,600.0	1,598.6	1,597.6	1,596.0	3.4	3.5	-163.32	38.8	-3.7	77.2	70.4	6.80	11.355		
1,700.0	1,698.4	1,697.0	1,695.1	3.6	3.8	-160.66	44.3	0.5	87.5	80.2	7.26	12.054		
1,800.0	1,798.1	1,796.4	1,794.3	3.8	4.0	-158.55	49.9	4.7	97.8	90.1	7.71	12.684		
1,900.0	1,897.9	1,895.8	1,893.4	4.1	4.3	-156.86	55.4	8.9	108.3	100.1	8.17	13.252		
2,000.0	1,997.6	1,995.2	1,992.6	4.3	4.5	-155.46	60.9	13.1	118.8	110.2	8.63	13.764		
2,100.0	2,097.4	2,094.6	2,091.8	4.6	4.8	-154.29	66.4	17.3	129.5	120.4	9.10	14.228		
2,200.0	2,197.2	2,194.0	2,190.9	4.8	5.0	-153.30	72.0	21.4	140.1	130.5	9.56	14.649		
2,300.0	2,296.9	2,293.4	2,290.1	5.1	5.3	-152.44	77.5	25.6	150.8	140.8	10.03	15.033		
2,400.0	2,396.7	2,392.8	2,389.2	5.3	5.5	-151.71	83.0	29.8	161.5	151.0	10.50	15.383		
2,500.0	2,496.4	2,492.2	2,488.4	5.6	5.8	-151.06	88.6	34.0	172.2	161.3	10.97	15.703		
2,600.0	2,596.2	2,591.6	2,587.6	5.8	6.0	-150.49	94.1	38.2	183.0	171.6	11.44	15.998		
2,700.0	2,695.9	2,691.0	2,686.7	6.1	6.3	-149.98	99.6	42.4	193.8	181.9	11.91	16.269		
2,800.0	2,795.7	2,790.4	2,785.9	6.3	6.5	-149.53	105.1	46.6	204.6	192.2	12.38	16.520		
2,900.0	2,895.5	2,889.8	2,885.1	6.6	6.8	-149.12	110.7	50.7	215.4	202.5	12.86	16.752		
3,000.0	2,995.2	2,989.2	2,984.2	6.9	7.0	-148.75	116.2	54.9	226.2	212.8	13.33	16.968		
3,100.0	3,095.0	3,088.6	3,083.4	7.1	7.3	-148.41	121.7	59.1	237.0	223.2	13.80	17.169		
3,200.0	3,194.7	3,188.0	3,182.5	7.4	7.5	-148.11	127.3	63.3	247.8	233.5	14.28	17.356		
3,300.0	3,294.5	3,287.4	3,281.7	7.6	7.8	-147.82	132.8	67.5	258.7	243.9	14.75	17.531		
3,400.0	3,394.2	3,386.8	3,380.9	7.9	8.1	-147.57	138.3	71.7	269.5	254.3	15.23	17.696		
3,500.0	3,494.0	3,486.2	3,480.0	8.2	8.3	-147.33	143.8	75.9	280.3	264.6	15.70	17.850		
3,600.0	3,593.7	3,585.7	3,579.2	8.4	8.6	-147.11	149.4	80.0	291.2	275.0	16.18	17.995		
3,700.0	3,693.5	3,685.1	3,678.4	8.7	8.8	-146.90	154.9	84.2	302.0	285.4	16.66	18.131		
3,800.0	3,793.3	3,784.5	3,777.5	8.9	9.1	-146.71	160.4	88.4	312.9	295.7	17.13	18.260		
3,900.0	3,893.0	3,883.9	3,876.7	9.2	9.3	-146.53	165.9	92.6	323.7	306.1	17.61	18.382		
4,000.0	3,992.8	3,983.3	3,975.8	9.5	9.6	-146.37	171.5	96.8	334.6	316.5	18.09	18.497		
4,100.0	4,092.5	4,082.7	4,075.0	9.7	9.8	-146.21	177.0	101.0	345.5	326.9	18.57	18.607		
4,200.0	4,192.3	4,182.1	4,174.2	10.0	10.1	-146.07	182.5	105.2	356.3	337.3	19.04	18.710		
4,300.0	4,292.0	4,281.5	4,273.3	10.2	10.3	-145.93	188.1	109.3	367.2	347.7	19.52	18.809		
4,400.0	4,391.8	4,380.9	4,372.5	10.5	10.6	-145.80	193.6	113.5	378.1	358.1	20.00	18.903		
4,500.0	4,491.6	4,480.3	4,471.6	10.8	10.9	-145.68	199.1	117.7	388.9	368.5	20.48	18.992		
4,600.0	4,591.3	4,579.7	4,570.8	11.0	11.1	-145.56	204.6	121.9	399.8	378.8	20.96	19.077		
4,700.0	4,691.1	4,679.1	4,670.0	11.3	11.4	-145.45	210.2	126.1	410.7	389.2	21.44	19.159		
4,800.0	4,790.8	4,778.5	4,769.1	11.5	11.6	-145.35	215.7	130.3	421.6	399.6	21.91	19.236		
4,900.0	4,890.6	4,877.9	4,868.3	11.8	11.9	-145.25	221.2	134.5	432.4	410.0	22.39	19.311		
5,000.0	4,990.3	4,977.3	4,967.5	12.1	12.1	-145.15	226.8	138.6	443.3	420.4	22.87	19.382		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,090.1	5,076.7	5,066.6	12.3	12.4	-145.07	232.3	142.8	454.2	430.8	23.35	19.450		
5,200.0	5,189.9	5,176.1	5,165.8	12.6	12.6	-144.98	237.8	147.0	465.1	441.2	23.83	19.516		
5,300.0	5,289.6	5,275.5	5,264.9	12.9	12.9	-144.90	243.3	151.2	475.9	451.6	24.31	19.579		
5,400.0	5,389.4	5,374.9	5,364.1	13.1	13.1	-144.82	248.9	155.4	486.8	462.0	24.79	19.639		
5,438.0	5,427.3	5,412.7	5,401.8	13.2	13.2	-144.79	251.0	157.0	491.0	466.0	24.97	19.661		
5,450.0	5,439.2	5,424.6	5,413.7	13.3	13.3	-144.70	251.6	157.5	492.4	467.4	25.00	19.695		
5,500.0	5,488.7	5,450.0	5,439.0	13.4	13.3	-144.18	253.2	158.6	501.4	476.4	24.99	20.059		
5,550.0	5,537.3	5,486.7	5,475.3	13.6	13.5	-143.39	256.9	161.5	515.7	490.8	24.92	20.699		
5,600.0	5,584.5	5,512.9	5,501.1	13.9	13.5	-142.17	260.8	164.4	535.7	510.9	24.73	21.658		
5,650.0	5,630.0	5,537.2	5,524.7	14.2	13.6	-140.49	265.4	167.9	560.6	536.1	24.51	22.868		
5,700.0	5,673.2	5,550.0	5,537.1	14.5	13.7	-138.06	268.1	169.9	590.2	565.9	24.31	24.273		
5,750.0	5,713.9	5,579.3	5,564.9	14.9	13.8	-135.36	275.3	175.4	623.4	599.2	24.27	25.692		
5,800.0	5,751.6	5,600.0	5,584.3	15.4	13.9	-131.72	281.1	179.8	660.3	635.8	24.46	26.995		
5,850.0	5,785.9	5,600.0	5,584.3	15.9	13.9	-126.06	281.1	179.8	700.1	675.0	25.16	27.831		
5,900.0	5,816.7	5,624.3	5,606.6	16.4	14.1	-120.41	288.7	185.6	741.9	715.7	26.23	28.288		
5,950.0	5,843.5	5,634.5	5,615.8	17.1	14.1	-112.35	292.2	188.2	785.7	757.8	27.90	28.162		
6,000.0	5,866.1	5,650.0	5,629.8	17.7	14.2	-103.25	297.7	192.3	830.8	801.1	29.72	27.953		
6,050.0	5,884.4	5,650.0	5,629.8	18.5	14.2	-90.78	297.7	192.3	876.6	845.3	31.29	28.014		
6,100.0	5,898.1	5,650.0	5,629.8	19.3	14.2	-77.46	297.7	192.3	922.9	891.3	31.58	29.221		
6,150.0	5,907.1	5,650.0	5,629.8	20.1	14.2	-64.79	297.7	192.3	969.1	938.8	30.35	31.934		
6,200.0	5,911.4	5,650.0	5,629.8	20.9	14.2	-53.91	297.7	192.3	1,015.0	986.9	28.11	36.102		
6,219.8	5,911.8	5,650.0	5,629.8	21.3	14.2	-50.19	297.7	192.3	1,033.0	1,005.8	27.13	38.080		
6,300.0	5,911.8	5,650.0	5,629.8	22.6	14.2	-46.51	297.7	192.3	1,106.5	1,079.7	26.86	41.199		
6,400.0	5,911.8	5,650.0	5,629.8	24.2	14.2	-40.45	297.7	192.3	1,200.6	1,175.0	25.59	46.910		
6,500.0	5,911.8	5,634.8	5,616.2	25.9	14.1	-30.11	292.3	188.3	1,296.3	1,274.5	21.79	59.504		
6,600.0	5,911.8	5,627.7	5,609.7	27.7	14.1	-18.39	289.9	186.4	1,393.3	1,376.6	16.69	83.479		
6,700.0	5,911.8	5,620.2	5,602.9	29.4	14.0	-4.42	287.4	184.6	1,490.9	1,479.2	11.64	128.053		
6,800.0	5,911.8	5,600.0	5,584.3	31.2	13.9	10.70	281.1	179.8	1,588.9	1,575.2	13.66	116.351		
6,900.0	5,911.8	5,600.0	5,584.3	32.9	13.9	23.99	281.1	179.8	1,686.7	1,664.9	21.76	77.515		
7,000.0	5,911.8	5,600.0	5,584.3	34.6	13.9	35.59	281.1	179.8	1,784.3	1,754.2	30.05	59.382		
7,100.0	5,911.8	5,600.0	5,584.3	36.3	13.9	45.02	281.1	179.8	1,881.4	1,844.6	36.80	51.126		
7,200.0	5,911.8	5,581.0	5,566.5	37.9	13.8	51.25	275.7	175.7	1,977.8	1,936.5	41.23	47.967		
7,300.0	5,911.8	5,573.4	5,559.4	39.6	13.8	56.55	273.7	174.2	2,073.4	2,028.5	44.86	46.217		
7,400.0	5,911.8	5,550.0	5,537.1	41.1	13.7	59.78	268.1	169.9	2,168.2	2,121.0	47.13	46.008		
7,500.0	5,911.8	5,550.0	5,537.1	42.7	13.7	63.50	268.1	169.9	2,261.6	2,212.1	49.47	45.714		
7,549.3	5,911.8	5,550.0	5,537.1	43.4	13.7	65.07	268.1	169.9	2,307.2	2,256.8	50.42	45.763		
7,600.0	5,911.8	5,550.0	5,537.1	44.2	13.7	65.07	268.1	169.9	2,354.1	2,302.8	51.24	45.943		
7,700.0	5,911.8	5,550.0	5,537.1	45.7	13.7	65.07	268.1	169.9	2,447.0	2,394.1	52.87	46.283		
7,800.0	5,911.8	5,550.0	5,537.1	47.3	13.7	65.07	268.1	169.9	2,540.4	2,485.9	54.52	46.597		
7,900.0	5,911.8	5,550.0	5,537.1	48.8	13.7	65.07	268.1	169.9	2,634.3	2,578.1	56.18	46.887		
8,000.0	5,911.8	5,530.1	5,517.9	50.4	13.6	64.05	263.9	166.8	2,728.3	2,671.0	57.32	47.601		
8,100.0	5,911.8	5,525.5	5,513.4	52.1	13.6	63.81	263.1	166.1	2,822.9	2,764.1	58.87	47.955		
8,200.0	5,911.8	5,521.2	5,509.3	53.7	13.6	63.59	262.3	165.5	2,917.8	2,857.4	60.43	48.285		
8,300.0	5,911.8	5,500.0	5,488.5	55.3	13.5	62.50	258.8	162.9	3,013.3	2,951.8	61.48	49.011		
8,400.0	5,911.9	5,500.0	5,488.5	57.0	13.5	62.50	258.8	162.9	3,108.7	3,045.5	63.17	49.209		
8,500.0	5,911.9	5,500.0	5,488.5	58.7	13.5	62.50	258.8	162.9	3,204.4	3,139.5	64.87	49.396		
8,600.0	5,911.9	5,500.0	5,488.5	60.4	13.5	62.50	258.8	162.9	3,300.3	3,233.7	66.58	49.571		
8,700.0	5,911.9	5,500.0	5,488.5	62.1	13.5	62.50	258.8	162.9	3,396.5	3,328.2	68.29	49.735		
8,800.0	5,911.9	5,500.0	5,488.5	63.9	13.5	62.50	258.8	162.9	3,492.9	3,422.9	70.01	49.891		
8,900.0	5,911.9	5,500.0	5,488.5	65.6	13.5	62.50	258.8	162.9	3,589.5	3,517.7	71.73	50.038		
9,000.0	5,911.9	5,500.0	5,488.5	67.3	13.5	62.50	258.8	162.9	3,686.3	3,612.8	73.46	50.177		
9,100.0	5,911.9	5,500.0	5,488.5	69.1	13.5	62.50	258.8	162.9	3,783.2	3,708.0	75.20	50.310		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,200.0	5,911.9	5,500.0	5,488.5	70.9	13.5	62.50	258.8	162.9	3,880.3	3,803.3	76.94	50.435		
9,300.0	5,911.9	5,500.0	5,488.5	72.6	13.5	62.50	258.8	162.9	3,977.5	3,898.8	78.68	50.554		
9,400.0	5,911.9	5,500.0	5,488.5	74.4	13.5	62.50	258.8	162.9	4,074.9	3,994.5	80.42	50.668		
9,500.0	5,911.9	5,500.0	5,488.5	76.2	13.5	62.50	258.8	162.9	4,172.4	4,090.2	82.17	50.776		
9,600.0	5,911.9	5,500.0	5,488.5	78.0	13.5	62.50	258.8	162.9	4,270.0	4,186.1	83.92	50.879		
9,700.0	5,911.9	5,500.0	5,488.5	79.8	13.5	62.50	258.8	162.9	4,367.7	4,282.0	85.68	50.977		
9,800.0	5,911.9	5,478.5	5,467.3	81.6	13.4	61.40	255.9	160.7	4,465.2	4,378.6	86.57	51.580		
9,900.0	5,911.9	5,476.8	5,465.6	83.4	13.4	61.32	255.7	160.5	4,563.1	4,474.8	88.24	51.710		
10,000.0	5,911.9	5,475.2	5,464.0	85.2	13.4	61.24	255.5	160.4	4,661.0	4,571.1	89.92	51.834		
10,100.0	5,911.9	5,473.7	5,462.5	87.0	13.4	61.16	255.3	160.3	4,759.0	4,667.4	91.60	51.954		
10,200.0	5,911.9	5,472.2	5,461.0	88.9	13.4	61.08	255.2	160.2	4,857.1	4,763.9	93.28	52.068		
10,300.0	5,911.9	5,450.0	5,439.0	90.7	13.3	59.96	253.2	158.6	4,955.6	4,861.6	94.03	52.704		
10,400.0	5,911.9	5,450.0	5,439.0	92.5	13.3	59.96	253.2	158.6	5,053.8	4,958.1	95.76	52.775		
10,500.0	5,911.9	5,450.0	5,439.0	94.4	13.3	59.96	253.2	158.6	5,152.1	5,054.6	97.50	52.843		
10,600.0	5,911.9	5,450.0	5,439.0	96.2	13.3	59.96	253.2	158.6	5,250.5	5,151.2	99.24	52.909		
10,700.0	5,911.9	5,450.0	5,439.0	98.0	13.3	59.96	253.2	158.6	5,348.9	5,247.9	100.98	52.972		
10,800.0	5,911.9	5,450.0	5,439.0	99.9	13.3	59.96	253.2	158.6	5,447.3	5,344.6	102.72	53.033		
10,900.0	5,911.9	5,450.0	5,439.0	101.7	13.3	59.96	253.2	158.6	5,545.8	5,441.4	104.46	53.091		
11,000.0	5,911.9	5,450.0	5,439.0	103.6	13.3	59.96	253.2	158.6	5,644.4	5,538.2	106.20	53.148		
11,100.0	5,911.9	5,450.0	5,439.0	105.4	13.3	59.96	253.2	158.6	5,743.0	5,635.1	107.95	53.203		
11,200.0	5,911.9	5,450.0	5,439.0	107.3	13.3	59.96	253.2	158.6	5,841.7	5,732.0	109.69	53.256		
11,300.0	5,911.9	5,450.0	5,439.0	109.2	13.3	59.96	253.2	158.6	5,940.4	5,828.9	111.44	53.307		
11,400.0	5,911.9	5,450.0	5,439.0	111.0	13.3	59.96	253.2	158.6	6,039.1	5,925.9	113.18	53.357		
11,500.0	5,911.9	5,450.0	5,439.0	112.9	13.3	59.96	253.2	158.6	6,137.9	6,023.0	114.93	53.405		
11,600.0	5,911.9	5,450.0	5,439.0	114.7	13.3	59.96	253.2	158.6	6,236.7	6,120.1	116.68	53.452		
11,700.0	5,911.9	5,450.0	5,439.0	116.6	13.3	59.96	253.2	158.6	6,335.6	6,217.2	118.43	53.497		
11,800.0	5,912.0	5,450.0	5,439.0	118.5	13.3	59.96	253.2	158.6	6,434.5	6,314.3	120.18	53.540		
11,900.0	5,912.0	5,450.0	5,439.0	120.4	13.3	59.96	253.2	158.6	6,533.4	6,411.5	121.93	53.583		
12,000.0	5,912.0	5,450.0	5,439.0	122.2	13.3	59.96	253.2	158.6	6,632.4	6,508.7	123.68	53.624		
12,100.0	5,912.0	5,450.0	5,439.0	124.1	13.3	59.96	253.2	158.6	6,731.4	6,606.0	125.44	53.664		
12,200.0	5,912.0	5,450.0	5,439.0	126.0	13.3	59.96	253.2	158.6	6,830.4	6,703.2	127.19	53.703		
12,300.0	5,912.0	5,450.0	5,439.0	127.8	13.3	59.96	253.2	158.6	6,929.5	6,800.5	128.94	53.741		
12,400.0	5,912.0	5,450.0	5,439.0	129.7	13.3	59.96	253.2	158.6	7,028.6	6,897.9	130.70	53.777		
12,500.0	5,912.0	5,450.0	5,439.0	131.6	13.3	59.96	253.2	158.6	7,127.7	6,995.2	132.45	53.813		
12,600.0	5,912.0	5,450.0	5,439.0	133.5	13.3	59.96	253.2	158.6	7,226.8	7,092.6	134.21	53.848		
12,700.0	5,912.0	5,450.0	5,439.0	135.4	13.3	59.96	253.2	158.6	7,326.0	7,190.0	135.96	53.882		
12,800.0	5,912.0	5,450.0	5,439.0	137.2	13.3	59.96	253.2	158.6	7,425.1	7,287.4	137.72	53.915		
12,900.0	5,912.0	5,450.0	5,439.0	139.1	13.3	59.96	253.2	158.6	7,524.3	7,384.9	139.48	53.947		
13,000.0	5,912.0	5,450.0	5,439.0	141.0	13.3	59.96	253.2	158.6	7,623.5	7,482.3	141.23	53.978		
13,100.0	5,912.0	5,450.0	5,439.0	142.9	13.3	59.96	253.2	158.6	7,722.8	7,579.8	142.99	54.009		
13,200.0	5,912.0	5,450.0	5,439.0	144.8	13.3	59.96	253.2	158.6	7,822.0	7,677.3	144.75	54.038		
13,300.0	5,912.0	5,450.0	5,439.0	146.7	13.3	59.96	253.2	158.6	7,921.3	7,774.8	146.51	54.067		
13,400.0	5,912.0	5,444.1	5,433.1	148.6	13.3	59.66	252.8	158.3	8,020.6	7,872.7	147.87	54.242		
13,500.0	5,912.0	5,443.6	5,432.6	150.5	13.3	59.63	252.7	158.3	8,119.9	7,970.3	149.59	54.283		
13,600.0	5,912.0	5,438.0	5,427.0	152.3	13.3	59.35	252.4	158.0	8,219.2	8,068.3	150.95	54.451		
13,700.0	5,912.0	5,438.0	5,427.0	154.2	13.3	59.35	252.4	158.0	8,318.6	8,165.9	152.70	54.478		
13,800.0	5,912.0	5,438.0	5,427.0	156.1	13.3	59.35	252.4	158.0	8,417.9	8,263.5	154.45	54.503		
13,900.0	5,912.0	5,438.0	5,427.0	158.0	13.3	59.35	252.4	158.0	8,517.3	8,361.1	156.20	54.528		
13,925.4	5,912.0	5,438.0	5,427.0	158.4	13.3	59.35	252.4	158.0	8,542.6	8,386.0	156.56	54.564		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-72.00	74.9	-230.5	242.4					
100.0	100.0	100.0	100.0	0.1	0.1	-72.00	74.9	-230.5	242.4	242.2	0.19	1,296.204		
200.0	200.0	200.0	200.0	0.3	0.3	-72.00	74.9	-230.5	242.4	241.8	0.64	380.816		
300.0	300.0	300.0	300.0	0.5	0.5	-72.00	74.9	-230.5	242.4	241.3	1.09	223.192		
400.0	400.0	400.0	400.0	0.8	0.8	-72.00	74.9	-230.5	242.4	240.9	1.54	157.854		
500.0	500.0	500.0	500.0	1.0	1.0	-72.00	74.9	-230.5	242.4	240.4	1.99	122.108		
600.0	600.0	600.0	600.0	1.2	1.2	-72.00	74.9	-230.5	242.4	240.0	2.43	99.562		
700.0	700.0	700.0	700.0	1.4	1.4	-72.00	74.9	-230.5	242.4	239.5	2.88	84.044		
800.0	800.0	800.0	800.0	1.7	1.7	-72.00	74.9	-230.5	242.4	239.1	3.33	72.711		
900.0	900.0	900.0	900.0	1.9	1.9	-72.00	74.9	-230.5	242.4	238.6	3.78	64.072 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	148.08	74.9	-230.5	243.9	239.7	4.21	57.966		
1,100.0	1,099.8	1,096.2	1,096.2	2.3	2.3	148.31	73.7	-231.7	249.1	244.5	4.58	54.371		
1,200.0	1,199.6	1,192.2	1,192.1	2.5	2.5	148.12	70.3	-235.0	257.2	252.2	4.95	51.951		
1,300.0	1,299.4	1,291.5	1,291.1	2.7	2.7	147.56	65.3	-239.8	266.1	260.8	5.34	49.810		
1,400.0	1,399.1	1,391.1	1,390.4	2.9	2.9	147.04	60.3	-244.7	275.1	269.4	5.75	47.833		
1,500.0	1,498.9	1,490.6	1,489.8	3.1	3.1	146.55	55.3	-249.5	284.1	277.9	6.17	46.022		
1,600.0	1,598.6	1,590.2	1,589.1	3.4	3.3	146.09	50.3	-254.3	293.2	286.5	6.61	44.372		
1,700.0	1,698.4	1,689.8	1,688.4	3.6	3.6	145.65	45.3	-259.1	302.2	295.1	7.05	42.874		
1,800.0	1,798.1	1,789.3	1,787.7	3.8	3.8	145.25	40.3	-264.0	311.3	303.8	7.50	41.513		
1,900.0	1,897.9	1,888.9	1,887.0	4.1	4.0	144.86	35.4	-268.8	320.3	312.4	7.95	40.278		
2,000.0	1,997.6	1,988.5	1,986.4	4.3	4.3	144.50	30.4	-273.6	329.4	321.0	8.41	39.154		
2,100.0	2,097.4	2,088.0	2,085.7	4.6	4.5	144.15	25.4	-278.5	338.5	329.7	8.88	38.129		
2,200.0	2,197.2	2,187.6	2,185.0	4.8	4.8	143.83	20.4	-283.3	347.6	338.3	9.35	37.193		
2,300.0	2,296.9	2,287.1	2,284.3	5.1	5.0	143.52	15.4	-288.1	356.8	347.0	9.82	36.336		
2,400.0	2,396.7	2,386.7	2,383.7	5.3	5.2	143.23	10.4	-293.0	365.9	355.6	10.29	35.549		
2,500.0	2,496.4	2,486.3	2,483.0	5.6	5.5	142.95	5.4	-297.8	375.0	364.3	10.77	34.825		
2,600.0	2,596.2	2,585.8	2,582.3	5.8	5.7	142.68	0.4	-302.6	384.2	373.0	11.25	34.156		
2,700.0	2,695.9	2,685.4	2,681.6	6.1	6.0	142.43	-4.6	-307.4	393.4	381.6	11.73	33.537		
2,800.0	2,795.7	2,785.0	2,780.9	6.3	6.3	142.18	-9.6	-312.3	402.5	390.3	12.21	32.964		
2,900.0	2,895.5	2,884.5	2,880.3	6.6	6.5	141.95	-14.6	-317.1	411.7	399.0	12.69	32.431		
3,000.0	2,995.2	2,984.1	2,979.6	6.9	6.8	141.73	-19.5	-321.9	420.9	407.7	13.18	31.934		
3,100.0	3,095.0	3,083.7	3,078.9	7.1	7.0	141.52	-24.5	-326.8	430.1	416.4	13.67	31.471		
3,200.0	3,194.7	3,183.2	3,178.2	7.4	7.3	141.32	-29.5	-331.6	439.3	425.1	14.15	31.037		
3,300.0	3,294.5	3,282.8	3,277.6	7.6	7.5	141.12	-34.5	-336.4	448.5	433.8	14.64	30.631		
3,400.0	3,394.2	3,382.4	3,376.9	7.9	7.8	140.93	-39.5	-341.3	457.7	442.5	15.13	30.250		
3,500.0	3,494.0	3,481.9	3,476.2	8.2	8.0	140.75	-44.5	-346.1	466.9	451.3	15.62	29.891		
3,600.0	3,593.7	3,581.5	3,575.5	8.4	8.3	140.58	-49.5	-350.9	476.1	460.0	16.11	29.553		
3,700.0	3,693.5	3,681.1	3,674.8	8.7	8.6	140.42	-54.5	-355.7	485.3	468.7	16.60	29.235		
3,800.0	3,793.3	3,780.6	3,774.2	8.9	8.8	140.26	-59.5	-360.6	494.5	477.4	17.09	28.934		
3,900.0	3,893.0	3,880.2	3,873.5	9.2	9.1	140.10	-64.5	-365.4	503.7	486.2	17.58	28.649		
4,000.0	3,992.8	3,979.7	3,972.8	9.5	9.3	139.95	-69.5	-370.2	513.0	494.9	18.08	28.379		
4,100.0	4,092.5	4,079.3	4,072.1	9.7	9.6	139.81	-74.4	-375.1	522.2	503.6	18.57	28.123		
4,200.0	4,192.3	4,178.9	4,171.5	10.0	9.9	139.67	-79.4	-379.9	531.4	512.4	19.06	27.880		
4,300.0	4,292.0	4,278.4	4,270.8	10.2	10.1	139.54	-84.4	-384.7	540.7	521.1	19.56	27.648		
4,400.0	4,391.8	4,378.0	4,370.1	10.5	10.4	139.41	-89.4	-389.6	549.9	529.9	20.05	27.428		
4,500.0	4,491.6	4,477.6	4,469.4	10.8	10.6	139.28	-94.4	-394.4	559.2	538.6	20.54	27.218		
4,600.0	4,591.3	4,577.1	4,568.7	11.0	10.9	139.16	-99.4	-399.2	568.4	547.4	21.04	27.018		
4,700.0	4,691.1	4,676.7	4,668.1	11.3	11.2	139.05	-104.4	-404.0	577.6	556.1	21.53	26.826		
4,800.0	4,790.8	4,776.3	4,767.4	11.5	11.4	138.93	-109.4	-408.9	586.9	564.9	22.03	26.643		
4,900.0	4,890.6	4,875.8	4,866.7	11.8	11.7	138.82	-114.4	-413.7	596.1	573.6	22.52	26.468		
5,000.0	4,990.3	4,975.4	4,966.0	12.1	11.9	138.72	-119.4	-418.5	605.4	582.4	23.02	26.300		
5,100.0	5,090.1	5,075.0	5,065.4	12.3	12.2	138.61	-124.4	-423.4	614.7	591.1	23.51	26.139		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
5,200.0	5,189.9	5,174.5	5,164.7	12.6	12.5	138.51	-129.3	-428.2	623.9	599.9	24.01	25.985		
5,300.0	5,289.6	5,274.1	5,264.0	12.9	12.7	138.42	-134.3	-433.0	633.2	608.7	24.51	25.837		
5,400.0	5,389.4	5,350.0	5,339.7	13.1	12.9	138.33	-138.3	-436.8	643.0	618.0	24.94	25.776		
5,438.0	5,427.3	5,380.2	5,369.7	13.2	13.0	138.19	-140.9	-439.4	647.7	622.6	25.13	25.777		
5,450.0	5,439.2	5,387.0	5,376.4	13.3	13.0	138.00	-141.7	-440.2	649.6	624.4	25.16	25.820		
5,500.0	5,488.7	5,415.1	5,403.9	13.4	13.1	137.03	-145.6	-443.9	660.4	635.1	25.23	26.169		
5,550.0	5,537.3	5,450.0	5,437.8	13.6	13.3	135.67	-151.9	-450.0	676.1	650.9	25.27	26.755		
5,600.0	5,584.5	5,467.7	5,454.7	13.9	13.4	133.94	-155.7	-453.7	696.3	671.1	25.21	27.617		
5,650.0	5,630.0	5,500.0	5,485.0	14.2	13.5	131.79	-163.7	-461.4	720.9	695.7	25.22	28.590		
5,700.0	5,673.2	5,514.3	5,498.1	14.5	13.6	129.04	-167.6	-465.2	749.2	724.0	25.23	29.694		
5,750.0	5,713.9	5,534.9	5,516.9	14.9	13.7	125.72	-173.8	-471.2	780.9	755.5	25.41	30.730		
5,800.0	5,751.6	5,550.0	5,530.4	15.4	13.8	121.60	-178.7	-475.9	815.6	789.8	25.87	31.525		
5,850.0	5,785.9	5,570.3	5,548.2	15.9	14.0	116.85	-185.6	-482.7	852.8	826.1	26.67	31.972		
5,900.0	5,816.7	5,585.1	5,561.0	16.4	14.1	111.09	-191.0	-487.9	892.0	864.2	27.79	32.099		
5,950.0	5,843.5	5,600.0	5,573.6	17.1	14.2	104.47	-196.7	-493.4	932.9	903.8	29.13	32.022		
6,000.0	5,866.1	5,600.0	5,573.6	17.7	14.2	96.01	-196.7	-493.4	975.0	944.5	30.54	31.930		
6,050.0	5,884.4	5,617.8	5,588.4	18.5	14.3	88.26	-203.8	-500.3	1,017.8	986.2	31.63	32.177		
6,100.0	5,898.1	5,624.9	5,594.1	19.3	14.4	79.45	-206.8	-503.1	1,061.1	1,028.9	32.18	32.977		
6,150.0	5,907.1	5,630.1	5,598.3	20.1	14.4	70.71	-209.0	-505.3	1,104.4	1,072.4	32.00	34.517		
6,200.0	5,911.4	5,633.4	5,601.0	20.9	14.4	62.45	-210.4	-506.6	1,147.5	1,116.4	31.14	36.850		
6,219.8	5,911.8	5,634.1	5,601.6	21.3	14.4	59.38	-210.7	-506.9	1,164.5	1,133.8	30.66	37.980		
6,300.0	5,911.8	5,637.2	5,604.0	22.6	14.5	61.58	-212.0	-508.2	1,232.8	1,200.1	32.73	37.661		
6,400.0	5,911.8	5,650.0	5,614.2	24.2	14.6	64.83	-217.7	-513.7	1,317.8	1,282.4	35.43	37.195		
6,500.0	5,911.8	5,650.0	5,614.2	25.9	14.6	66.77	-217.7	-513.7	1,402.4	1,364.6	37.74	37.158		
6,600.0	5,911.8	5,650.0	5,614.2	27.7	14.6	68.54	-217.7	-513.7	1,486.4	1,446.4	39.98	37.177		
6,700.0	5,911.8	5,670.0	5,629.6	29.4	14.7	71.34	-226.8	-522.5	1,569.5	1,527.0	42.50	36.932		
6,800.0	5,911.8	5,683.7	5,639.9	31.2	14.9	73.42	-233.3	-528.8	1,651.7	1,607.0	44.73	36.927		
6,900.0	5,911.8	5,700.0	5,651.8	32.9	15.0	75.36	-241.3	-536.5	1,732.8	1,685.9	46.84	36.995		
7,000.0	5,911.8	5,719.8	5,665.8	34.6	15.2	77.19	-251.4	-546.3	1,812.6	1,763.7	48.83	37.117		
7,100.0	5,911.8	5,750.0	5,686.1	36.3	15.5	79.14	-267.4	-561.8	1,890.9	1,840.1	50.78	37.239		
7,200.0	5,911.8	5,770.8	5,699.3	37.9	15.7	80.48	-279.0	-573.0	1,967.5	1,915.1	52.45	37.512		
7,300.0	5,911.8	5,800.0	5,716.7	39.6	16.1	81.87	-295.8	-589.3	2,042.3	1,988.2	54.05	37.783		
7,400.0	5,911.8	5,841.5	5,739.2	41.1	16.6	83.31	-320.9	-613.5	2,114.8	2,059.2	55.64	38.007		
7,500.0	5,911.8	5,885.9	5,760.1	42.7	17.1	84.51	-349.0	-640.8	2,185.0	2,127.9	57.14	38.240		
7,549.3	5,911.8	5,910.3	5,770.1	43.4	17.5	85.04	-365.0	-656.2	2,218.6	2,160.7	57.86	38.343		
7,600.0	5,911.8	5,936.7	5,779.8	44.2	17.8	85.43	-382.7	-673.3	2,252.9	2,193.8	59.06	38.147		
7,700.0	5,911.8	7,760.3	5,811.3	45.7	45.8	87.51	-2,011.8	-1,334.8	2,312.9	2,225.5	87.37	26.472		
7,800.0	5,911.8	7,860.3	5,811.3	47.3	47.3	87.51	-2,111.8	-1,334.8	2,312.9	2,222.2	90.72	25.495		
7,900.0	5,911.8	7,960.3	5,811.3	48.8	48.8	87.51	-2,211.8	-1,334.8	2,312.9	2,218.8	94.11	24.577		
8,000.0	5,911.8	8,060.3	5,811.3	50.4	50.3	87.51	-2,311.8	-1,334.8	2,312.9	2,215.4	97.53	23.714		
8,100.0	5,911.8	8,160.3	5,811.2	52.1	51.8	87.51	-2,411.8	-1,334.8	2,312.9	2,211.9	100.99	22.903		
8,200.0	5,911.8	8,260.3	5,811.2	53.7	53.4	87.51	-2,511.8	-1,334.8	2,312.9	2,208.4	104.47	22.139		
8,300.0	5,911.8	8,360.3	5,811.2	55.3	55.0	87.51	-2,611.8	-1,334.8	2,312.8	2,204.9	107.98	21.420		
8,400.0	5,911.9	8,460.3	5,811.2	57.0	56.6	87.51	-2,711.8	-1,334.8	2,312.8	2,201.3	111.51	20.741		
8,500.0	5,911.9	8,560.3	5,811.2	58.7	58.2	87.51	-2,811.8	-1,334.8	2,312.8	2,197.8	115.06	20.101		
8,600.0	5,911.9	8,660.3	5,811.2	60.4	59.9	87.51	-2,911.8	-1,334.8	2,312.8	2,194.2	118.63	19.496		
8,700.0	5,911.9	8,760.3	5,811.2	62.1	61.5	87.51	-3,011.8	-1,334.8	2,312.8	2,190.6	122.22	18.923		
8,800.0	5,911.9	8,860.3	5,811.2	63.9	63.2	87.51	-3,111.8	-1,334.8	2,312.8	2,187.0	125.82	18.381		
8,900.0	5,911.9	8,960.3	5,811.2	65.6	64.9	87.51	-3,211.8	-1,334.8	2,312.8	2,183.3	129.44	17.867		
9,000.0	5,911.9	9,060.3	5,811.2	67.3	66.6	87.51	-3,311.8	-1,334.8	2,312.8	2,179.7	133.07	17.380		
9,100.0	5,911.9	9,160.3	5,811.2	69.1	68.3	87.51	-3,411.8	-1,334.8	2,312.8	2,176.0	136.72	16.916		
9,200.0	5,911.9	9,260.3	5,811.2	70.9	70.0	87.51	-3,511.8	-1,334.7	2,312.7	2,172.4	140.37	16.476		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty	Separation Factor		
9,300.0	5,911.9	9,360.3	5,811.2	72.6	71.8	87.51	-3,611.8	-1,334.7	2,312.7	2,168.7	144.03	16.057		
9,400.0	5,911.9	9,460.3	5,811.2	74.4	73.5	87.51	-3,711.8	-1,334.7	2,312.7	2,165.0	147.71	15.657		
9,500.0	5,911.9	9,560.3	5,811.2	76.2	75.3	87.50	-3,811.8	-1,334.7	2,312.7	2,161.3	151.39	15.277		
9,600.0	5,911.9	9,660.3	5,811.2	78.0	77.0	87.50	-3,911.8	-1,334.7	2,312.7	2,157.6	155.08	14.913		
9,700.0	5,911.9	9,760.3	5,811.2	79.8	78.8	87.50	-4,011.8	-1,334.7	2,312.7	2,153.9	158.78	14.566		
9,800.0	5,911.9	9,860.3	5,811.2	81.6	80.6	87.50	-4,111.8	-1,334.7	2,312.7	2,150.2	162.48	14.234		
9,900.0	5,911.9	9,960.3	5,811.2	83.4	82.4	87.50	-4,211.8	-1,334.7	2,312.7	2,146.5	166.19	13.916		
10,000.0	5,911.9	10,060.3	5,811.2	85.2	84.1	87.50	-4,311.8	-1,334.7	2,312.6	2,142.7	169.91	13.611		
10,100.0	5,911.9	10,160.3	5,811.2	87.0	85.9	87.50	-4,411.8	-1,334.7	2,312.6	2,139.0	173.63	13.319		
10,200.0	5,911.9	10,260.3	5,811.2	88.9	87.7	87.50	-4,511.8	-1,334.7	2,312.6	2,135.3	177.36	13.039		
10,300.0	5,911.9	10,360.3	5,811.2	90.7	89.5	87.50	-4,611.8	-1,334.7	2,312.6	2,131.5	181.09	12.771		
10,400.0	5,911.9	10,460.3	5,811.2	92.5	91.4	87.50	-4,711.8	-1,334.7	2,312.6	2,127.8	184.82	12.512		
10,500.0	5,911.9	10,560.3	5,811.1	94.4	93.2	87.50	-4,811.8	-1,334.7	2,312.6	2,124.0	188.56	12.264		
10,600.0	5,911.9	10,660.3	5,811.1	96.2	95.0	87.50	-4,911.8	-1,334.7	2,312.6	2,120.3	192.31	12.025		
10,700.0	5,911.9	10,760.3	5,811.1	98.0	96.8	87.50	-5,011.8	-1,334.7	2,312.6	2,116.5	196.06	11.795		
10,800.0	5,911.9	10,860.3	5,811.1	99.9	98.6	87.50	-5,111.8	-1,334.7	2,312.6	2,112.7	199.81	11.574		
10,900.0	5,911.9	10,960.3	5,811.1	101.7	100.5	87.50	-5,211.8	-1,334.7	2,312.5	2,109.0	203.57	11.360		
11,000.0	5,911.9	11,060.3	5,811.1	103.6	102.3	87.50	-5,311.8	-1,334.6	2,312.5	2,105.2	207.32	11.154		
11,100.0	5,911.9	11,160.3	5,811.1	105.4	104.2	87.50	-5,411.8	-1,334.6	2,312.5	2,101.4	211.09	10.955		
11,200.0	5,911.9	11,260.3	5,811.1	107.3	106.0	87.50	-5,511.8	-1,334.6	2,312.5	2,097.7	214.85	10.763		
11,300.0	5,911.9	11,360.3	5,811.1	109.2	107.8	87.50	-5,611.8	-1,334.6	2,312.5	2,093.9	218.62	10.578		
11,400.0	5,911.9	11,460.3	5,811.1	111.0	109.7	87.50	-5,711.8	-1,334.6	2,312.5	2,090.1	222.39	10.398		
11,500.0	5,911.9	11,560.3	5,811.1	112.9	111.5	87.50	-5,811.8	-1,334.6	2,312.5	2,086.3	226.16	10.225		
11,600.0	5,911.9	11,660.3	5,811.1	114.7	113.4	87.50	-5,911.8	-1,334.6	2,312.5	2,082.5	229.93	10.057		
11,700.0	5,911.9	11,760.3	5,811.1	116.6	115.2	87.50	-6,011.8	-1,334.6	2,312.5	2,078.7	233.71	9.894		
11,800.0	5,912.0	11,860.3	5,811.1	118.5	117.1	87.50	-6,111.8	-1,334.6	2,312.4	2,074.9	237.49	9.737		
11,900.0	5,912.0	11,960.3	5,811.1	120.4	119.0	87.50	-6,211.8	-1,334.6	2,312.4	2,071.2	241.27	9.584		
12,000.0	5,912.0	12,060.3	5,811.1	122.2	120.8	87.50	-6,311.8	-1,334.6	2,312.4	2,067.4	245.05	9.436		
12,100.0	5,912.0	12,160.3	5,811.1	124.1	122.7	87.50	-6,411.8	-1,334.6	2,312.4	2,063.6	248.84	9.293		
12,200.0	5,912.0	12,260.3	5,811.1	126.0	124.5	87.50	-6,511.8	-1,334.6	2,312.4	2,059.8	252.62	9.153		
12,300.0	5,912.0	12,360.3	5,811.1	127.8	126.4	87.50	-6,611.8	-1,334.6	2,312.4	2,056.0	256.41	9.018		
12,400.0	5,912.0	12,460.3	5,811.1	129.7	128.3	87.50	-6,711.8	-1,334.6	2,312.4	2,052.2	260.20	8.887		
12,500.0	5,912.0	12,560.3	5,811.1	131.6	130.1	87.50	-6,811.8	-1,334.6	2,312.4	2,048.4	263.99	8.759		
12,600.0	5,912.0	12,660.3	5,811.1	133.5	132.0	87.50	-6,911.8	-1,334.6	2,312.3	2,044.6	267.78	8.635		
12,700.0	5,912.0	12,760.3	5,811.1	135.4	133.9	87.50	-7,011.8	-1,334.6	2,312.3	2,040.8	271.58	8.514		
12,800.0	5,912.0	12,860.3	5,811.0	137.2	135.8	87.50	-7,111.8	-1,334.5	2,312.3	2,036.9	275.37	8.397		
12,900.0	5,912.0	12,960.3	5,811.0	139.1	137.6	87.50	-7,211.8	-1,334.5	2,312.3	2,033.1	279.17	8.283		
13,000.0	5,912.0	13,060.3	5,811.0	141.0	139.5	87.50	-7,311.8	-1,334.5	2,312.3	2,029.3	282.97	8.172		
13,100.0	5,912.0	13,160.3	5,811.0	142.9	141.4	87.50	-7,411.8	-1,334.5	2,312.3	2,025.5	286.77	8.063		
13,200.0	5,912.0	13,260.3	5,811.0	144.8	143.3	87.50	-7,511.8	-1,334.5	2,312.3	2,021.7	290.57	7.958		
13,300.0	5,912.0	13,360.3	5,811.0	146.7	145.2	87.50	-7,611.8	-1,334.5	2,312.3	2,017.9	294.37	7.855		
13,400.0	5,912.0	13,460.3	5,811.0	148.6	147.0	87.50	-7,711.8	-1,334.5	2,312.3	2,014.1	298.17	7.755		
13,500.0	5,912.0	13,560.3	5,811.0	150.5	148.9	87.50	-7,811.8	-1,334.5	2,312.2	2,010.3	301.97	7.657		
13,600.0	5,912.0	13,660.3	5,811.0	152.3	150.8	87.50	-7,911.8	-1,334.5	2,312.2	2,006.5	305.77	7.562		
13,700.0	5,912.0	13,760.3	5,811.0	154.2	152.7	87.50	-8,011.8	-1,334.5	2,312.2	2,002.6	309.58	7.469		
13,800.0	5,912.0	13,860.3	5,811.0	156.1	154.6	87.50	-8,111.8	-1,334.5	2,312.2	1,998.8	313.38	7.378		
13,900.0	5,912.0	13,960.3	5,811.0	158.0	156.5	87.50	-8,211.8	-1,334.5	2,312.2	1,995.0	317.19	7.290		
13,925.4	5,912.0	13,985.8	5,811.0	158.4	156.9	87.50	-8,237.3	-1,334.5	2,312.2	1,994.1	318.07	7.269 SF		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-197.5	197.5					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-197.5	197.5	197.3	0.19	1,056.081		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-197.5	197.5	196.9	0.64	310.261		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-197.5	197.5	196.4	1.09	181.842		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-197.5	197.5	196.0	1.54	128.609		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-197.5	197.5	195.5	1.99	99.486		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-197.5	197.5	195.1	2.43	81.117		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-197.5	197.5	194.6	2.88	68.474		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-197.5	197.5	194.2	3.33	59.241		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-197.5	197.5	193.7	3.78	52.202 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	130.26	0.0	-197.5	198.6	194.4	4.21	47.207		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	131.34	0.0	-197.5	202.0	197.4	4.61	43.796		
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	132.79	0.0	-197.5	206.7	201.7	5.03	41.093		
1,300.0	1,299.4	1,295.7	1,295.7	2.7	2.8	133.75	-1.3	-198.4	212.4	207.0	5.42	39.153		
1,400.0	1,399.1	1,391.7	1,391.6	2.9	2.9	133.94	-5.2	-201.2	219.8	214.0	5.81	37.843		
1,500.0	1,498.9	1,491.0	1,490.7	3.1	3.1	133.70	-10.9	-205.1	228.2	222.0	6.21	36.741		
1,600.0	1,598.6	1,590.7	1,590.1	3.4	3.3	133.47	-16.6	-209.1	236.6	230.0	6.63	35.702		
1,700.0	1,698.4	1,690.3	1,689.5	3.6	3.5	133.26	-22.3	-213.1	245.0	238.0	7.06	34.730		
1,800.0	1,798.1	1,790.0	1,788.9	3.8	3.7	133.06	-28.0	-217.1	253.5	246.0	7.49	33.826		
1,900.0	1,897.9	1,889.6	1,888.3	4.1	4.0	132.88	-33.7	-221.1	261.9	254.0	7.94	32.988		
2,000.0	1,997.6	1,989.2	1,987.6	4.3	4.2	132.70	-39.4	-225.0	270.3	261.9	8.39	32.213		
2,100.0	2,097.4	2,088.9	2,087.0	4.6	4.4	132.54	-45.1	-229.0	278.8	269.9	8.85	31.498		
2,200.0	2,197.2	2,188.5	2,186.4	4.8	4.7	132.39	-50.8	-233.0	287.2	277.9	9.31	30.837		
2,300.0	2,296.9	2,288.2	2,285.8	5.1	4.9	132.24	-56.5	-237.0	295.6	285.8	9.78	30.225		
2,400.0	2,396.7	2,387.8	2,385.2	5.3	5.1	132.11	-62.2	-241.0	304.1	293.8	10.25	29.659		
2,500.0	2,496.4	2,487.5	2,484.6	5.6	5.4	131.98	-67.9	-244.9	312.5	301.8	10.73	29.134		
2,600.0	2,596.2	2,587.1	2,584.0	5.8	5.6	131.86	-73.6	-248.9	321.0	309.7	11.20	28.647		
2,700.0	2,695.9	2,686.7	2,683.4	6.1	5.9	131.74	-79.3	-252.9	329.4	317.7	11.68	28.193		
2,800.0	2,795.7	2,786.4	2,782.8	6.3	6.1	131.63	-85.0	-256.9	337.8	325.7	12.17	27.771		
2,900.0	2,895.5	2,886.0	2,882.2	6.6	6.4	131.53	-90.7	-260.9	346.3	333.6	12.65	27.377		
3,000.0	2,995.2	2,985.7	2,981.6	6.9	6.6	131.43	-96.4	-264.9	354.7	341.6	13.13	27.009		
3,100.0	3,095.0	3,085.3	3,081.0	7.1	6.9	131.33	-102.0	-268.8	363.2	349.6	13.62	26.664		
3,200.0	3,194.7	3,184.9	3,180.4	7.4	7.1	131.24	-107.7	-272.8	371.6	357.5	14.11	26.340		
3,300.0	3,294.5	3,284.6	3,279.8	7.6	7.4	131.15	-113.4	-276.8	380.1	365.5	14.60	26.036		
3,400.0	3,394.2	3,384.2	3,379.2	7.9	7.6	131.07	-119.1	-280.8	388.5	373.4	15.09	25.750		
3,500.0	3,494.0	3,483.9	3,478.6	8.2	7.9	130.99	-124.8	-284.8	397.0	381.4	15.58	25.480		
3,600.0	3,593.7	3,583.5	3,578.0	8.4	8.1	130.92	-130.5	-288.7	405.4	389.4	16.07	25.225		
3,700.0	3,693.5	3,683.1	3,677.4	8.7	8.4	130.84	-136.2	-292.7	413.9	397.3	16.57	24.985		
3,800.0	3,793.3	3,782.8	3,776.8	8.9	8.6	130.77	-141.9	-296.7	422.3	405.3	17.06	24.757		
3,900.0	3,893.0	3,882.4	3,876.2	9.2	8.9	130.71	-147.6	-300.7	430.8	413.2	17.55	24.541		
4,000.0	3,992.8	3,982.1	3,975.6	9.5	9.1	130.64	-153.3	-304.7	439.3	421.2	18.05	24.336		
4,100.0	4,092.5	4,081.7	4,075.0	9.7	9.4	130.58	-159.0	-308.7	447.7	429.2	18.55	24.141		
4,200.0	4,192.3	4,181.3	4,174.4	10.0	9.7	130.52	-164.7	-312.6	456.2	437.1	19.04	23.956		
4,300.0	4,292.0	4,281.0	4,273.8	10.2	9.9	130.46	-170.4	-316.6	464.6	445.1	19.54	23.780		
4,400.0	4,391.8	4,380.6	4,373.2	10.5	10.2	130.41	-176.1	-320.6	473.1	453.0	20.04	23.612		
4,500.0	4,491.6	4,480.3	4,472.6	10.8	10.4	130.35	-181.8	-324.6	481.5	461.0	20.53	23.452		
4,600.0	4,591.3	4,579.9	4,572.0	11.0	10.7	130.30	-187.5	-328.6	490.0	469.0	21.03	23.298		
4,700.0	4,691.1	4,679.5	4,671.4	11.3	11.0	130.25	-193.2	-332.5	498.4	476.9	21.53	23.152		
4,800.0	4,790.8	4,779.2	4,770.8	11.5	11.2	130.20	-198.9	-336.5	506.9	484.9	22.03	23.012		
4,900.0	4,890.6	4,878.8	4,870.2	11.8	11.5	130.15	-204.6	-340.5	515.4	492.8	22.53	22.877		
5,000.0	4,990.3	4,978.5	4,969.6	12.1	11.7	130.11	-210.3	-344.5	523.8	500.8	23.03	22.749		
5,100.0	5,090.1	5,078.1	5,069.0	12.3	12.0	130.07	-216.0	-348.5	532.3	508.8	23.53	22.625		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2												Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis		Separation Factor
5,200.0	5,189.9	5,177.8	5,168.4	12.6	12.2	130.02	-221.7	-352.5	540.7	516.7	24.03	22.507	
5,300.0	5,289.6	5,277.4	5,267.8	12.9	12.5	129.98	-227.4	-356.4	549.2	524.7	24.53	22.393	
5,400.0	5,389.4	5,377.0	5,367.2	13.1	12.8	129.94	-233.1	-360.4	557.7	532.6	25.03	22.283	
5,438.0	5,427.3	5,414.9	5,405.0	13.2	12.9	129.93	-235.2	-361.9	560.9	535.7	25.22	22.242	
5,450.0	5,439.2	5,426.8	5,416.9	13.3	12.9	129.84	-235.9	-362.4	562.0	536.7	25.26	22.247	
5,500.0	5,488.7	5,461.7	5,451.6	13.4	13.0	129.36	-238.4	-364.1	569.0	543.6	25.38	22.417	
5,550.0	5,537.3	5,500.0	5,489.4	13.6	13.1	128.61	-243.1	-367.4	580.6	555.2	25.47	22.792	
5,600.0	5,584.5	5,520.4	5,509.4	13.9	13.2	127.36	-246.6	-369.9	596.5	571.0	25.51	23.384	
5,650.0	5,630.0	5,550.0	5,538.0	14.2	13.3	125.82	-252.7	-374.1	616.6	591.1	25.58	24.102	
5,700.0	5,673.2	5,574.1	5,561.0	14.5	13.4	123.78	-258.7	-378.3	640.6	614.9	25.71	24.913	
5,750.0	5,713.9	5,600.0	5,585.3	14.9	13.6	121.32	-266.1	-383.5	668.1	642.1	25.96	25.739	
5,800.0	5,751.6	5,621.2	5,604.8	15.4	13.7	118.24	-272.9	-388.2	698.7	672.3	26.41	26.453	
5,850.0	5,785.9	5,650.0	5,630.7	15.9	13.9	114.90	-283.1	-395.4	732.0	704.9	27.12	26.991	
5,900.0	5,816.7	5,660.7	5,640.2	16.4	13.9	110.25	-287.2	-398.3	767.6	739.5	28.10	27.313	
5,950.0	5,843.5	5,677.5	5,654.8	17.1	14.0	105.19	-294.0	-403.0	805.1	775.9	29.28	27.494	
6,000.0	5,866.1	5,700.0	5,674.0	17.7	14.2	99.93	-303.7	-409.8	844.3	813.7	30.56	27.630	
6,050.0	5,884.4	5,700.0	5,674.0	18.5	14.2	92.51	-303.7	-409.8	884.6	852.7	31.82	27.803	
6,100.0	5,898.1	5,715.7	5,687.1	19.3	14.3	85.89	-310.8	-414.8	925.6	892.8	32.80	28.221	
6,150.0	5,907.1	5,724.4	5,694.2	20.1	14.4	78.52	-314.9	-417.6	967.2	933.9	33.33	29.017	
6,200.0	5,911.4	5,730.9	5,699.5	20.9	14.4	71.10	-318.0	-419.8	1,009.0	975.7	33.31	30.286	
6,219.8	5,911.8	5,732.9	5,701.1	21.3	14.4	68.21	-319.0	-420.5	1,025.5	992.3	33.15	30.930	
6,300.0	5,911.8	5,750.0	5,714.6	22.6	14.6	71.05	-327.5	-426.4	1,092.3	1,057.0	35.34	30.906	
6,400.0	5,911.8	5,750.0	5,714.6	24.2	14.6	72.45	-327.5	-426.4	1,175.5	1,138.0	37.51	31.337	
6,500.0	5,911.8	5,768.8	5,729.1	25.9	14.7	75.12	-337.2	-433.2	1,258.3	1,218.3	39.97	31.477	
6,600.0	5,911.8	5,787.3	5,743.1	27.7	14.9	77.39	-347.3	-440.2	1,340.4	1,298.1	42.32	31.675	
6,700.0	5,911.8	5,809.8	5,759.3	29.4	15.1	79.55	-360.0	-449.1	1,421.6	1,377.0	44.58	31.885	
6,800.0	5,911.8	5,836.8	5,778.0	31.2	15.3	81.58	-376.1	-460.3	1,501.6	1,454.8	46.77	32.107	
6,900.0	5,911.8	5,869.4	5,799.0	32.9	15.7	83.49	-396.4	-474.6	1,580.1	1,531.2	48.86	32.337	
7,000.0	5,911.8	5,908.4	5,822.2	34.6	16.1	85.25	-422.2	-492.6	1,656.8	1,606.0	50.88	32.564	
7,100.0	5,911.8	5,955.0	5,846.7	36.3	16.7	86.83	-454.7	-515.3	1,731.4	1,678.6	52.84	32.765	
7,200.0	5,911.8	6,010.1	5,870.9	37.9	17.4	88.17	-495.2	-543.6	1,803.4	1,748.6	54.79	32.916	
7,300.0	5,911.8	6,074.0	5,892.3	39.6	18.2	89.19	-544.5	-578.1	1,872.3	1,815.6	56.76	32.987	
7,400.0	5,911.8	6,146.2	5,907.4	41.1	19.3	89.83	-602.3	-618.5	1,937.7	1,878.9	58.79	32.960	
7,500.0	5,911.8	7,440.1	5,912.5	42.7	38.9	90.02	-1,811.8	-1,005.0	1,980.2	1,901.7	78.58	25.199	
7,549.3	5,911.8	7,489.4	5,912.5	43.4	39.6	90.02	-1,861.1	-1,005.0	1,980.9	1,900.8	80.10	24.729	
7,600.0	5,911.8	7,540.1	5,912.5	44.2	40.4	90.02	-1,911.8	-1,005.0	1,980.9	1,899.1	81.80	24.217	
7,700.0	5,911.8	7,640.1	5,912.5	45.7	41.9	90.02	-2,011.8	-1,005.0	1,980.9	1,895.7	85.16	23.260	
7,800.0	5,911.8	7,740.1	5,912.5	47.3	43.5	90.02	-2,111.8	-1,005.0	1,980.8	1,892.3	88.57	22.366	
7,900.0	5,911.8	7,840.1	5,912.5	48.8	45.1	90.02	-2,211.8	-1,004.9	1,980.8	1,888.8	92.01	21.529	
8,000.0	5,911.8	7,940.1	5,912.5	50.4	46.8	90.02	-2,311.8	-1,004.9	1,980.8	1,885.3	95.48	20.746	
8,100.0	5,911.8	8,040.1	5,912.5	52.1	48.4	90.02	-2,411.8	-1,004.9	1,980.8	1,881.8	98.98	20.012	
8,200.0	5,911.8	8,140.1	5,912.4	53.7	50.1	90.02	-2,511.8	-1,004.9	1,980.8	1,878.3	102.51	19.323	
8,300.0	5,911.8	8,240.1	5,912.4	55.3	51.8	90.02	-2,611.8	-1,004.9	1,980.8	1,874.7	106.06	18.676	
8,400.0	5,911.9	8,340.1	5,912.4	57.0	53.5	90.02	-2,711.8	-1,004.9	1,980.8	1,871.2	109.63	18.068	
8,500.0	5,911.9	8,440.1	5,912.4	58.7	55.2	90.02	-2,811.8	-1,004.9	1,980.8	1,867.6	113.22	17.495	
8,600.0	5,911.9	8,540.1	5,912.4	60.4	56.9	90.02	-2,911.8	-1,004.9	1,980.8	1,863.9	116.83	16.954	
8,700.0	5,911.9	8,640.1	5,912.4	62.1	58.7	90.02	-3,011.8	-1,004.9	1,980.8	1,860.3	120.45	16.445	
8,800.0	5,911.9	8,740.1	5,912.4	63.9	60.4	90.02	-3,111.8	-1,004.9	1,980.7	1,856.7	124.09	15.963	
8,900.0	5,911.9	8,840.1	5,912.4	65.6	62.2	90.02	-3,211.8	-1,004.9	1,980.7	1,853.0	127.73	15.507	
9,000.0	5,911.9	8,940.1	5,912.4	67.3	64.0	90.01	-3,311.8	-1,004.9	1,980.7	1,849.3	131.39	15.075	
9,100.0	5,911.9	9,040.1	5,912.4	69.1	65.8	90.01	-3,411.8	-1,004.9	1,980.7	1,845.6	135.07	14.665	
9,200.0	5,911.9	9,140.1	5,912.4	70.9	67.5	90.01	-3,511.8	-1,004.9	1,980.7	1,842.0	138.75	14.276	

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	9,240.1	5,912.4	72.6	69.3	90.01	-3,611.8	-1,004.9	1,980.7	1,838.3	142.43	13.906		
9,400.0	5,911.9	9,340.1	5,912.4	74.4	71.1	90.01	-3,711.8	-1,004.9	1,980.7	1,834.5	146.13	13.554		
9,500.0	5,911.9	9,440.1	5,912.3	76.2	73.0	90.01	-3,811.8	-1,004.9	1,980.7	1,830.8	149.84	13.219		
9,600.0	5,911.9	9,540.1	5,912.3	78.0	74.8	90.01	-3,911.8	-1,004.9	1,980.7	1,827.1	153.55	12.899		
9,700.0	5,911.9	9,640.1	5,912.3	79.8	76.6	90.01	-4,011.8	-1,004.9	1,980.6	1,823.4	157.27	12.594		
9,800.0	5,911.9	9,740.1	5,912.3	81.6	78.4	90.01	-4,111.8	-1,004.9	1,980.6	1,819.6	160.99	12.303		
9,900.0	5,911.9	9,840.1	5,912.3	83.4	80.2	90.01	-4,211.8	-1,004.9	1,980.6	1,815.9	164.72	12.024		
10,000.0	5,911.9	9,940.1	5,912.3	85.2	82.1	90.01	-4,311.8	-1,004.9	1,980.6	1,812.2	168.46	11.757		
10,100.0	5,911.9	10,040.1	5,912.3	87.0	83.9	90.01	-4,411.8	-1,004.9	1,980.6	1,808.4	172.20	11.502		
10,200.0	5,911.9	10,140.1	5,912.3	88.9	85.8	90.01	-4,511.8	-1,004.9	1,980.6	1,804.7	175.94	11.257		
10,300.0	5,911.9	10,240.1	5,912.3	90.7	87.6	90.01	-4,611.8	-1,004.9	1,980.6	1,800.9	179.69	11.022		
10,400.0	5,911.9	10,340.1	5,912.3	92.5	89.5	90.01	-4,711.8	-1,004.8	1,980.6	1,797.1	183.45	10.797		
10,500.0	5,911.9	10,440.1	5,912.3	94.4	91.3	90.01	-4,811.8	-1,004.8	1,980.6	1,793.4	187.20	10.580		
10,600.0	5,911.9	10,540.1	5,912.3	96.2	93.2	90.01	-4,911.8	-1,004.8	1,980.6	1,789.6	190.96	10.371		
10,700.0	5,911.9	10,640.1	5,912.3	98.0	95.0	90.01	-5,011.8	-1,004.8	1,980.5	1,785.8	194.73	10.171		
10,800.0	5,911.9	10,740.1	5,912.2	99.9	96.9	90.01	-5,111.8	-1,004.8	1,980.5	1,782.0	198.49	9.978		
10,900.0	5,911.9	10,840.1	5,912.2	101.7	98.7	90.01	-5,211.8	-1,004.8	1,980.5	1,778.3	202.26	9.792		
11,000.0	5,911.9	10,940.1	5,912.2	103.6	100.6	90.01	-5,311.8	-1,004.8	1,980.5	1,774.5	206.04	9.612		
11,100.0	5,911.9	11,040.1	5,912.2	105.4	102.5	90.01	-5,411.8	-1,004.8	1,980.5	1,770.7	209.81	9.439		
11,200.0	5,911.9	11,140.1	5,912.2	107.3	104.3	90.01	-5,511.8	-1,004.8	1,980.5	1,766.9	213.59	9.272		
11,300.0	5,911.9	11,240.1	5,912.2	109.2	106.2	90.01	-5,611.8	-1,004.8	1,980.5	1,763.1	217.37	9.111		
11,400.0	5,911.9	11,340.1	5,912.2	111.0	108.1	90.01	-5,711.8	-1,004.8	1,980.5	1,759.3	221.15	8.955		
11,500.0	5,911.9	11,440.1	5,912.2	112.9	110.0	90.01	-5,811.8	-1,004.8	1,980.5	1,755.5	224.93	8.805		
11,600.0	5,911.9	11,540.1	5,912.2	114.7	111.8	90.01	-5,911.8	-1,004.8	1,980.4	1,751.7	228.72	8.659		
11,700.0	5,911.9	11,640.1	5,912.2	116.6	113.7	90.01	-6,011.8	-1,004.8	1,980.4	1,747.9	232.51	8.518		
11,800.0	5,912.0	11,740.1	5,912.2	118.5	115.6	90.01	-6,111.8	-1,004.8	1,980.4	1,744.1	236.30	8.381		
11,900.0	5,912.0	11,840.1	5,912.2	120.4	117.5	90.01	-6,211.8	-1,004.8	1,980.4	1,740.3	240.09	8.249		
12,000.0	5,912.0	11,940.1	5,912.2	122.2	119.4	90.01	-6,311.8	-1,004.8	1,980.4	1,736.5	243.88	8.120		
12,100.0	5,912.0	12,040.1	5,912.2	124.1	121.2	90.01	-6,411.8	-1,004.8	1,980.4	1,732.7	247.68	7.996		
12,200.0	5,912.0	12,140.1	5,912.1	126.0	123.1	90.01	-6,511.8	-1,004.8	1,980.4	1,728.9	251.48	7.875		
12,300.0	5,912.0	12,240.1	5,912.1	127.8	125.0	90.00	-6,611.8	-1,004.8	1,980.4	1,725.1	255.27	7.758		
12,400.0	5,912.0	12,340.1	5,912.1	129.7	126.9	90.00	-6,711.8	-1,004.8	1,980.4	1,721.3	259.07	7.644		
12,500.0	5,912.0	12,440.1	5,912.1	131.6	128.8	90.00	-6,811.8	-1,004.8	1,980.4	1,717.5	262.87	7.533		
12,600.0	5,912.0	12,540.1	5,912.1	133.5	130.7	90.00	-6,911.8	-1,004.8	1,980.3	1,713.7	266.68	7.426		
12,700.0	5,912.0	12,640.1	5,912.1	135.4	132.6	90.00	-7,011.8	-1,004.8	1,980.3	1,709.9	270.48	7.322		
12,800.0	5,912.0	12,740.1	5,912.1	137.2	134.5	90.00	-7,111.8	-1,004.8	1,980.3	1,706.0	274.28	7.220		
12,900.0	5,912.0	12,840.1	5,912.1	139.1	136.3	90.00	-7,211.8	-1,004.7	1,980.3	1,702.2	278.09	7.121		
13,000.0	5,912.0	12,940.1	5,912.1	141.0	138.2	90.00	-7,311.8	-1,004.7	1,980.3	1,698.4	281.90	7.025		
13,100.0	5,912.0	13,040.1	5,912.1	142.9	140.1	90.00	-7,411.8	-1,004.7	1,980.3	1,694.6	285.70	6.931		
13,200.0	5,912.0	13,140.1	5,912.1	144.8	142.0	90.00	-7,511.8	-1,004.7	1,980.3	1,690.8	289.51	6.840		
13,300.0	5,912.0	13,240.1	5,912.1	146.7	143.9	90.00	-7,611.8	-1,004.7	1,980.3	1,687.0	293.32	6.751		
13,400.0	5,912.0	13,340.1	5,912.1	148.6	145.8	90.00	-7,711.8	-1,004.7	1,980.3	1,683.1	297.13	6.665		
13,500.0	5,912.0	13,440.1	5,912.0	150.5	147.7	90.00	-7,811.8	-1,004.7	1,980.2	1,679.3	300.94	6.580		
13,600.0	5,912.0	13,540.1	5,912.0	152.3	149.6	90.00	-7,911.8	-1,004.7	1,980.2	1,675.5	304.75	6.498		
13,700.0	5,912.0	13,640.1	5,912.0	154.2	151.5	90.00	-8,011.8	-1,004.7	1,980.2	1,671.7	308.57	6.418		
13,800.0	5,912.0	13,740.1	5,912.0	156.1	153.4	90.00	-8,111.8	-1,004.7	1,980.2	1,667.8	312.38	6.339		
13,900.0	5,912.0	13,840.1	5,912.0	158.0	155.2	90.00	-8,211.8	-1,004.7	1,980.2	1,664.2	316.06	6.265		
13,925.4	5,912.0	13,865.5	5,912.0	158.4	155.6	90.00	-8,237.2	-1,004.7	1,980.2	1,663.4	316.85	6.250 SF		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-65.51	74.9	-164.4	180.7					
100.0	100.0	100.0	100.0	0.1	0.1	-65.51	74.9	-164.4	180.7	180.5	0.19	966.316		
200.0	200.0	200.0	200.0	0.3	0.3	-65.51	74.9	-164.4	180.7	180.1	0.64	283.897		
300.0	300.0	300.0	300.0	0.5	0.5	-65.51	74.9	-164.4	180.7	179.6	1.09	166.389		
400.0	400.0	400.0	400.0	0.8	0.8	-65.51	74.9	-164.4	180.7	179.2	1.54	117.680		
500.0	500.0	500.0	500.0	1.0	1.0	-65.51	74.9	-164.4	180.7	178.7	1.99	91.031		
600.0	600.0	600.0	600.0	1.2	1.2	-66.06	73.3	-165.2	180.7	178.3	2.41	74.998		
603.3	603.3	603.3	603.3	1.2	1.2	-66.10	73.2	-165.2	180.7	178.3	2.42	74.571 CC		
700.0	700.0	699.8	699.6	1.4	1.4	-67.72	68.5	-167.3	180.8	177.9	2.82	64.011		
800.0	800.0	799.6	799.1	1.7	1.6	-69.92	62.2	-170.1	181.1	177.8	3.26	55.637 ES		
900.0	900.0	899.3	898.7	1.9	1.8	-72.11	55.8	-172.9	181.7	178.0	3.70	49.140		
1,000.0	1,000.0	999.1	998.2	2.1	2.0	145.88	49.5	-175.7	184.0	179.9	4.14	44.466		
1,100.0	1,099.8	1,098.9	1,097.7	2.3	2.3	144.62	43.1	-178.5	189.3	184.8	4.56	41.543		
1,200.0	1,199.6	1,198.6	1,197.2	2.5	2.5	143.78	36.7	-181.4	196.2	191.2	4.99	39.291		
1,300.0	1,299.4	1,298.3	1,296.7	2.7	2.8	143.01	30.4	-184.2	203.0	197.6	5.44	37.325		
1,400.0	1,399.1	1,398.1	1,396.2	2.9	3.0	142.28	24.0	-187.0	209.9	204.0	5.90	35.605		
1,500.0	1,498.9	1,497.8	1,495.7	3.1	3.3	141.60	17.7	-189.8	216.8	210.5	6.36	34.096		
1,600.0	1,598.6	1,597.5	1,595.2	3.4	3.5	140.96	11.3	-192.6	223.8	216.9	6.83	32.763		
1,700.0	1,698.4	1,697.2	1,694.7	3.6	3.8	140.36	4.9	-195.5	230.7	223.4	7.31	31.584		
1,800.0	1,798.1	1,797.0	1,794.1	3.8	4.1	139.80	-1.4	-198.3	237.7	229.9	7.79	30.535		
1,900.0	1,897.9	1,896.7	1,893.6	4.1	4.3	139.27	-7.8	-201.1	244.7	236.5	8.27	29.598		
2,000.0	1,997.6	1,996.4	1,993.1	4.3	4.6	138.76	-14.1	-203.9	251.8	243.0	8.76	28.756		
2,100.0	2,097.4	2,096.2	2,092.6	4.6	4.8	138.29	-20.5	-206.7	258.8	249.6	9.25	27.997		
2,200.0	2,197.2	2,195.9	2,192.1	4.8	5.1	137.84	-26.9	-209.6	265.9	256.2	9.74	27.310		
2,300.0	2,296.9	2,295.6	2,291.6	5.1	5.3	137.41	-33.2	-212.4	273.0	262.8	10.23	26.686		
2,400.0	2,396.7	2,395.3	2,391.1	5.3	5.6	137.01	-39.6	-215.2	280.1	269.4	10.73	26.116		
2,500.0	2,496.4	2,495.1	2,490.5	5.6	5.9	136.62	-45.9	-218.0	287.2	276.0	11.22	25.595		
2,600.0	2,596.2	2,594.8	2,590.0	5.8	6.1	136.26	-52.3	-220.8	294.4	282.6	11.72	25.116		
2,700.0	2,695.9	2,694.5	2,689.5	6.1	6.4	135.91	-58.7	-223.6	301.5	289.3	12.22	24.675		
2,800.0	2,795.7	2,794.3	2,789.0	6.3	6.7	135.58	-65.0	-226.5	308.6	295.9	12.72	24.267		
2,900.0	2,895.5	2,894.0	2,888.5	6.6	6.9	135.26	-71.4	-229.3	315.8	302.6	13.22	23.889		
3,000.0	2,995.2	2,993.7	2,988.0	6.9	7.2	134.96	-77.7	-232.1	323.0	309.2	13.72	23.538		
3,100.0	3,095.0	3,093.4	3,087.4	7.1	7.4	134.67	-84.1	-234.9	330.1	315.9	14.22	23.212		
3,200.0	3,194.7	3,193.2	3,186.9	7.4	7.7	134.39	-90.5	-237.7	337.3	322.6	14.73	22.907		
3,300.0	3,294.5	3,292.9	3,286.4	7.6	8.0	134.12	-96.8	-240.6	344.5	329.3	15.23	22.622		
3,400.0	3,394.2	3,392.6	3,385.9	7.9	8.2	133.87	-103.2	-243.4	351.7	336.0	15.73	22.355		
3,500.0	3,494.0	3,492.4	3,485.4	8.2	8.5	133.62	-109.5	-246.2	358.9	342.7	16.24	22.104		
3,600.0	3,593.7	3,592.1	3,584.9	8.4	8.8	133.38	-115.9	-249.0	366.1	349.4	16.74	21.868		
3,700.0	3,693.5	3,691.8	3,684.4	8.7	9.0	133.16	-122.3	-251.8	373.4	356.1	17.25	21.646		
3,800.0	3,793.3	3,791.5	3,783.8	8.9	9.3	132.94	-128.6	-254.6	380.6	362.8	17.75	21.436		
3,900.0	3,893.0	3,891.3	3,883.3	9.2	9.5	132.73	-135.0	-257.5	387.8	369.6	18.26	21.238		
4,000.0	3,992.8	3,991.0	3,982.8	9.5	9.8	132.53	-141.3	-260.3	395.1	376.3	18.77	21.050		
4,100.0	4,092.5	4,090.7	4,082.3	9.7	10.1	132.33	-147.7	-263.1	402.3	383.0	19.27	20.873		
4,200.0	4,192.3	4,190.5	4,181.8	10.0	10.3	132.15	-154.1	-265.9	409.5	389.8	19.78	20.704		
4,300.0	4,292.0	4,290.2	4,281.3	10.2	10.6	131.96	-160.4	-268.7	416.8	396.5	20.29	20.544		
4,400.0	4,391.8	4,389.9	4,380.8	10.5	10.9	131.79	-166.8	-271.6	424.0	403.3	20.80	20.391		
4,500.0	4,491.6	4,489.6	4,480.2	10.8	11.1	131.62	-173.2	-274.4	431.3	410.0	21.30	20.246		
4,600.0	4,591.3	4,589.4	4,579.7	11.0	11.4	131.46	-179.5	-277.2	438.6	416.8	21.81	20.107		
4,700.0	4,691.1	4,689.1	4,679.2	11.3	11.6	131.30	-185.9	-280.0	445.8	423.5	22.32	19.975		
4,800.0	4,790.8	4,788.8	4,778.7	11.5	11.9	131.15	-192.2	-282.8	453.1	430.3	22.83	19.849		
4,900.0	4,890.6	4,888.6	4,878.2	11.8	12.2	131.00	-198.6	-285.7	460.4	437.0	23.34	19.728		
5,000.0	4,990.3	4,988.3	4,977.7	12.1	12.4	130.85	-205.0	-288.5	467.6	443.8	23.84	19.612		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,090.1	5,088.0	5,077.2	12.3	12.7	130.71	-211.3	-291.3	474.9	450.6	24.35	19.501		
5,200.0	5,189.9	5,187.7	5,176.6	12.6	13.0	130.58	-217.7	-294.1	482.2	457.3	24.86	19.395		
5,300.0	5,289.6	5,287.5	5,276.1	12.9	13.2	130.45	-224.0	-296.9	489.5	464.1	25.37	19.293		
5,400.0	5,389.4	5,373.6	5,361.9	13.1	13.5	130.21	-230.6	-299.9	497.4	471.6	25.86	19.235		
5,438.0	5,427.3	5,400.0	5,388.0	13.2	13.6	129.92	-234.6	-301.6	501.6	475.6	26.04	19.264		
5,450.0	5,439.2	5,409.2	5,397.0	13.3	13.6	129.65	-236.2	-302.3	503.2	477.1	26.09	19.287		
5,500.0	5,488.7	5,450.0	5,436.6	13.4	13.8	128.33	-245.3	-306.4	512.6	486.4	26.28	19.504		
5,550.0	5,537.3	5,477.6	5,462.8	13.6	13.9	126.82	-253.0	-309.8	526.2	499.8	26.40	19.930		
5,600.0	5,584.5	5,510.0	5,493.0	13.9	14.1	124.89	-263.7	-314.5	543.9	517.4	26.54	20.492		
5,650.0	5,630.0	5,540.9	5,521.1	14.2	14.3	122.61	-275.4	-319.8	565.3	538.6	26.71	21.164		
5,700.0	5,673.2	5,570.1	5,547.0	14.5	14.5	119.94	-287.9	-325.3	590.1	563.2	26.95	21.896		
5,750.0	5,713.9	5,600.0	5,572.5	14.9	14.7	116.89	-302.1	-331.6	618.0	590.7	27.31	22.631		
5,800.0	5,751.6	5,623.6	5,592.1	15.4	14.9	113.35	-314.2	-337.0	648.5	620.6	27.87	23.270		
5,850.0	5,785.9	5,650.0	5,613.2	15.9	15.1	109.43	-328.6	-343.4	681.3	652.7	28.63	23.795		
5,900.0	5,816.7	5,670.2	5,628.8	16.4	15.2	104.94	-340.4	-348.7	716.1	686.5	29.57	24.219		
5,950.0	5,843.5	5,700.0	5,650.9	17.1	15.5	100.41	-358.6	-356.8	752.5	721.9	30.64	24.562		
6,000.0	5,866.1	5,710.1	5,658.1	17.7	15.6	94.73	-365.1	-359.7	790.0	758.3	31.72	24.904		
6,050.0	5,884.4	5,727.7	5,670.3	18.5	15.8	89.09	-376.6	-364.8	828.5	795.8	32.74	25.302		
6,100.0	5,898.1	5,750.0	5,685.2	19.3	16.0	83.67	-391.8	-371.5	867.7	834.0	33.63	25.804		
6,150.0	5,907.1	5,750.0	5,685.2	20.1	16.0	76.70	-391.8	-371.5	907.1	873.1	34.02	26.664		
6,200.0	5,911.4	5,770.9	5,698.5	20.9	16.2	71.47	-406.5	-378.1	946.6	912.2	34.37	27.544		
6,219.8	5,911.8	5,775.6	5,701.4	21.3	16.3	69.21	-409.9	-379.6	962.2	927.9	34.38	27.990		
6,300.0	5,911.8	5,800.0	5,715.9	22.6	16.6	72.04	-427.8	-387.6	1,025.4	988.7	36.69	27.947		
6,400.0	5,911.8	5,824.1	5,729.4	24.2	16.8	74.67	-446.1	-395.7	1,103.8	1,064.5	39.30	28.084		
6,500.0	5,911.8	5,857.9	5,746.6	25.9	17.2	77.35	-472.6	-407.5	1,181.3	1,139.4	41.97	28.145		
6,600.0	5,911.8	5,900.0	5,765.4	27.7	17.8	79.82	-507.1	-422.8	1,257.5	1,212.9	44.64	28.172		
6,700.0	5,911.8	5,942.5	5,781.2	29.4	18.4	81.71	-543.1	-438.9	1,331.9	1,284.7	47.21	28.215		
6,800.0	5,911.8	5,994.0	5,796.0	31.2	19.1	83.29	-588.1	-458.9	1,404.1	1,354.3	49.78	28.205		
6,900.0	5,911.8	6,050.0	5,806.4	32.9	19.9	84.40	-638.4	-481.3	1,473.5	1,421.1	52.33	28.158		
7,000.0	5,911.8	6,113.0	5,811.0	34.6	20.9	85.08	-695.8	-506.8	1,539.8	1,484.9	54.89	28.051		
7,100.0	5,911.8	6,540.9	5,811.1	36.3	27.0	86.01	-1,102.4	-637.2	1,594.8	1,533.2	61.64	25.874		
7,200.0	5,911.8	6,954.8	5,811.1	37.9	33.3	86.38	-1,513.8	-674.6	1,621.8	1,552.4	69.33	23.391		
7,300.0	5,911.8	7,053.5	5,811.1	39.6	34.9	86.44	-1,612.5	-674.5	1,637.3	1,564.7	72.66	22.535		
7,400.0	5,911.8	7,153.0	5,811.1	41.1	36.5	86.48	-1,712.0	-674.5	1,647.7	1,571.9	75.85	21.724		
7,500.0	5,911.8	7,252.8	5,811.1	42.7	38.2	86.50	-1,811.8	-674.5	1,652.9	1,574.0	78.86	20.959		
7,549.3	5,911.8	7,302.1	5,811.1	43.4	39.0	86.51	-1,861.1	-674.5	1,653.5	1,573.2	80.27	20.598		
7,600.0	5,911.8	7,352.8	5,811.1	44.2	39.9	86.51	-1,911.8	-674.5	1,653.5	1,571.5	82.01	20.161		
7,700.0	5,911.8	7,452.8	5,811.1	45.7	41.6	86.51	-2,011.8	-674.5	1,653.5	1,568.0	85.46	19.348		
7,800.0	5,911.8	7,552.8	5,811.1	47.3	43.3	86.51	-2,111.8	-674.5	1,653.5	1,564.5	88.94	18.591		
7,900.0	5,911.8	7,652.8	5,811.1	48.8	45.1	86.51	-2,211.8	-674.5	1,653.5	1,561.0	92.45	17.885		
8,000.0	5,911.8	7,752.8	5,811.1	50.4	46.8	86.51	-2,311.8	-674.5	1,653.5	1,557.5	95.98	17.227		
8,100.0	5,911.8	7,852.8	5,811.1	52.1	48.6	86.51	-2,411.8	-674.5	1,653.4	1,553.9	99.54	16.611		
8,200.0	5,911.8	7,952.8	5,811.1	53.7	50.4	86.51	-2,511.8	-674.5	1,653.4	1,550.3	103.12	16.034		
8,300.0	5,911.8	8,052.8	5,811.1	55.3	52.2	86.51	-2,611.8	-674.5	1,653.4	1,546.7	106.72	15.494		
8,400.0	5,911.9	8,152.8	5,811.1	57.0	54.0	86.51	-2,711.8	-674.5	1,653.4	1,543.1	110.33	14.986		
8,500.0	5,911.9	8,252.8	5,811.1	58.7	55.8	86.51	-2,811.8	-674.5	1,653.4	1,539.4	113.96	14.509		
8,600.0	5,911.9	8,352.8	5,811.1	60.4	57.6	86.51	-2,911.8	-674.5	1,653.4	1,535.8	117.60	14.059		
8,700.0	5,911.9	8,452.8	5,811.1	62.1	59.4	86.51	-3,011.8	-674.5	1,653.4	1,532.1	121.26	13.635		
8,800.0	5,911.9	8,552.8	5,811.1	63.9	61.3	86.51	-3,111.8	-674.5	1,653.4	1,528.4	124.92	13.235		
8,900.0	5,911.9	8,652.8	5,811.1	65.6	63.1	86.50	-3,211.8	-674.5	1,653.4	1,524.8	128.60	12.856		
9,000.0	5,911.9	8,752.8	5,811.1	67.3	64.9	86.50	-3,311.8	-674.4	1,653.3	1,521.1	132.29	12.498		
9,100.0	5,911.9	8,852.8	5,811.1	69.1	66.8	86.50	-3,411.8	-674.4	1,653.3	1,517.3	135.98	12.158		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,200.0	5,911.9	8,952.8	5,811.1	70.9	68.6	86.50	-3,511.8	-674.4	1,653.3	1,513.6	139.68	11.836		
9,300.0	5,911.9	9,052.8	5,811.1	72.6	70.5	86.50	-3,611.8	-674.4	1,653.3	1,509.9	143.39	11.530		
9,400.0	5,911.9	9,152.8	5,811.1	74.4	72.3	86.50	-3,711.8	-674.4	1,653.3	1,506.2	147.11	11.238		
9,500.0	5,911.9	9,252.8	5,811.1	76.2	74.2	86.50	-3,811.8	-674.4	1,653.3	1,502.4	150.83	10.961		
9,600.0	5,911.9	9,352.8	5,811.1	78.0	76.1	86.50	-3,911.8	-674.4	1,653.3	1,498.7	154.56	10.697		
9,700.0	5,911.9	9,452.8	5,811.1	79.8	77.9	86.50	-4,011.8	-674.4	1,653.3	1,495.0	158.29	10.444		
9,800.0	5,911.9	9,552.8	5,811.1	81.6	79.8	86.50	-4,111.8	-674.4	1,653.2	1,491.2	162.03	10.203		
9,900.0	5,911.9	9,652.8	5,811.0	83.4	81.7	86.50	-4,211.8	-674.4	1,653.2	1,487.5	165.78	9.973		
10,000.0	5,911.9	9,752.8	5,811.0	85.2	83.5	86.50	-4,311.8	-674.4	1,653.2	1,483.7	169.52	9.752		
10,100.0	5,911.9	9,852.8	5,811.0	87.0	85.4	86.50	-4,411.8	-674.4	1,653.2	1,479.9	173.28	9.541		
10,200.0	5,911.9	9,952.8	5,811.0	88.9	87.3	86.50	-4,511.8	-674.4	1,653.2	1,476.2	177.03	9.338		
10,300.0	5,911.9	10,052.8	5,811.0	90.7	89.2	86.50	-4,611.8	-674.4	1,653.2	1,472.4	180.79	9.144		
10,400.0	5,911.9	10,152.8	5,811.0	92.5	91.1	86.50	-4,711.8	-674.4	1,653.2	1,468.6	184.55	8.958		
10,500.0	5,911.9	10,252.8	5,811.0	94.4	92.9	86.50	-4,811.8	-674.4	1,653.2	1,464.8	188.32	8.779		
10,600.0	5,911.9	10,352.8	5,811.0	96.2	94.8	86.50	-4,911.8	-674.4	1,653.1	1,461.1	192.08	8.606		
10,700.0	5,911.9	10,452.8	5,811.0	98.0	96.7	86.50	-5,011.8	-674.3	1,653.1	1,457.3	195.86	8.441		
10,800.0	5,911.9	10,552.8	5,811.0	99.9	98.6	86.50	-5,111.8	-674.3	1,653.1	1,453.5	199.63	8.281		
10,900.0	5,911.9	10,652.8	5,811.0	101.7	100.5	86.50	-5,211.8	-674.3	1,653.1	1,449.7	203.40	8.127		
11,000.0	5,911.9	10,752.8	5,811.0	103.6	102.4	86.50	-5,311.8	-674.3	1,653.1	1,445.9	207.18	7.979		
11,100.0	5,911.9	10,852.8	5,811.0	105.4	104.3	86.50	-5,411.8	-674.3	1,653.1	1,442.1	210.96	7.836		
11,200.0	5,911.9	10,952.8	5,811.0	107.3	106.2	86.50	-5,511.8	-674.3	1,653.1	1,438.3	214.74	7.698		
11,300.0	5,911.9	11,052.8	5,811.0	109.2	108.1	86.50	-5,611.8	-674.3	1,653.1	1,434.5	218.53	7.565		
11,400.0	5,911.9	11,152.8	5,811.0	111.0	110.0	86.50	-5,711.8	-674.3	1,653.1	1,430.7	222.32	7.436		
11,500.0	5,911.9	11,252.8	5,811.0	112.9	111.8	86.50	-5,811.8	-674.3	1,653.0	1,426.9	226.10	7.311		
11,600.0	5,911.9	11,352.8	5,811.0	114.7	113.7	86.50	-5,911.8	-674.3	1,653.0	1,423.1	229.89	7.190		
11,700.0	5,911.9	11,452.8	5,811.0	116.6	115.6	86.50	-6,011.8	-674.3	1,653.0	1,419.3	233.68	7.074		
11,800.0	5,912.0	11,552.8	5,811.0	118.5	117.5	86.50	-6,111.8	-674.3	1,653.0	1,415.5	237.48	6.961		
11,900.0	5,912.0	11,652.8	5,811.0	120.4	119.4	86.50	-6,211.8	-674.3	1,653.0	1,411.7	241.27	6.851		
12,000.0	5,912.0	11,752.8	5,811.0	122.2	121.3	86.50	-6,311.8	-674.3	1,653.0	1,407.9	245.07	6.745		
12,100.0	5,912.0	11,852.8	5,811.0	124.1	123.2	86.50	-6,411.8	-674.3	1,653.0	1,404.1	248.86	6.642		
12,200.0	5,912.0	11,952.8	5,811.0	126.0	125.1	86.50	-6,511.8	-674.3	1,653.0	1,400.3	252.66	6.542		
12,300.0	5,912.0	12,052.8	5,811.0	127.8	127.0	86.50	-6,611.8	-674.3	1,652.9	1,396.5	256.46	6.445		
12,400.0	5,912.0	12,152.8	5,811.0	129.7	128.9	86.50	-6,711.8	-674.3	1,652.9	1,392.7	260.26	6.351		
12,500.0	5,912.0	12,252.8	5,811.0	131.6	130.8	86.50	-6,811.8	-674.2	1,652.9	1,388.9	264.06	6.260		
12,600.0	5,912.0	12,352.8	5,811.0	133.5	132.7	86.50	-6,911.8	-674.2	1,652.9	1,385.0	267.86	6.171		
12,700.0	5,912.0	12,452.8	5,811.0	135.4	134.6	86.50	-7,011.8	-674.2	1,652.9	1,381.2	271.67	6.084		
12,800.0	5,912.0	12,552.8	5,811.0	137.2	136.6	86.50	-7,111.8	-674.2	1,652.9	1,377.4	275.47	6.000		
12,900.0	5,912.0	12,652.8	5,811.0	139.1	138.5	86.50	-7,211.8	-674.2	1,652.9	1,373.6	279.27	5.918		
13,000.0	5,912.0	12,752.8	5,811.0	141.0	140.4	86.50	-7,311.8	-674.2	1,652.9	1,369.8	283.08	5.839		
13,100.0	5,912.0	12,852.8	5,811.0	142.9	142.3	86.50	-7,411.8	-674.2	1,652.8	1,366.0	286.89	5.761		
13,200.0	5,912.0	12,952.8	5,811.0	144.8	144.2	86.50	-7,511.8	-674.2	1,652.8	1,362.1	290.70	5.686		
13,300.0	5,912.0	13,052.8	5,811.0	146.7	146.1	86.50	-7,611.8	-674.2	1,652.8	1,358.3	294.50	5.612		
13,400.0	5,912.0	13,152.8	5,811.0	148.6	148.0	86.50	-7,711.8	-674.2	1,652.8	1,354.5	298.31	5.541		
13,500.0	5,912.0	13,252.8	5,811.0	150.5	149.9	86.50	-7,811.8	-674.2	1,652.8	1,350.7	302.12	5.471		
13,600.0	5,912.0	13,352.8	5,811.0	152.3	151.8	86.50	-7,911.8	-674.2	1,652.8	1,346.9	305.93	5.402		
13,700.0	5,912.0	13,452.8	5,811.0	154.2	153.7	86.50	-8,011.8	-674.2	1,652.8	1,343.0	309.74	5.336		
13,800.0	5,912.0	13,552.8	5,811.0	156.1	155.6	86.50	-8,111.8	-674.2	1,652.8	1,339.2	313.56	5.271		
13,900.0	5,912.0	13,652.8	5,811.0	158.0	157.5	86.50	-8,211.8	-674.2	1,652.8	1,335.4	317.37	5.208		
13,925.4	5,912.0	13,678.2	5,811.0	158.4	158.0	86.50	-8,237.2	-674.2	1,652.7	1,334.5	318.25	5.193 SF		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-131.4	131.4					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-131.4	131.4	131.2	0.19	702.684		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-131.4	131.4	130.8	0.64	206.438		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-131.4	131.4	130.3	1.09	120.992		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-131.4	131.4	129.9	1.54	85.573		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-131.4	131.4	129.4	1.99	66.195		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-131.4	131.4	129.0	2.43	53.973		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-131.4	131.4	128.5	2.88	45.561		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-131.4	131.4	128.1	3.33	39.417		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-131.4	131.4	127.6	3.78	34.733 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	130.45	0.0	-131.4	132.5	128.3	4.21	31.500		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	132.07	0.0	-131.4	136.0	131.4	4.61	29.479		
1,200.0	1,199.6	1,198.9	1,198.9	2.5	2.5	133.48	-1.7	-131.8	141.0	136.0	5.00	28.199		
1,300.0	1,299.4	1,298.0	1,297.9	2.7	2.7	133.45	-6.7	-132.8	146.6	141.2	5.38	27.259		
1,400.0	1,399.1	1,397.8	1,397.4	2.9	2.9	132.76	-13.5	-134.3	152.4	146.6	5.77	26.393		
1,500.0	1,498.9	1,497.6	1,497.0	3.1	3.1	132.12	-20.3	-135.8	158.3	152.1	6.19	25.571		
1,600.0	1,598.6	1,597.4	1,596.6	3.4	3.3	131.53	-27.1	-137.2	164.1	157.5	6.62	24.801		
1,700.0	1,698.4	1,697.3	1,696.1	3.6	3.5	130.97	-33.9	-138.7	170.0	163.0	7.06	24.086		
1,800.0	1,798.1	1,797.1	1,795.7	3.8	3.7	130.46	-40.7	-140.1	175.9	168.4	7.51	23.428		
1,900.0	1,897.9	1,896.9	1,895.3	4.1	4.0	129.98	-47.5	-141.6	181.9	173.9	7.97	22.822		
2,000.0	1,997.6	1,996.7	1,994.8	4.3	4.2	129.52	-54.3	-143.1	187.8	179.4	8.43	22.266		
2,100.0	2,097.4	2,096.5	2,094.4	4.6	4.4	129.10	-61.1	-144.5	193.8	184.8	8.91	21.755		
2,200.0	2,197.2	2,196.3	2,194.0	4.8	4.7	128.70	-67.9	-146.0	199.7	190.3	9.38	21.285		
2,300.0	2,296.9	2,296.1	2,293.5	5.1	4.9	128.32	-74.8	-147.4	205.7	195.8	9.86	20.853		
2,400.0	2,396.7	2,396.0	2,393.1	5.3	5.2	127.97	-81.6	-148.9	211.6	201.3	10.35	20.454		
2,500.0	2,496.4	2,495.8	2,492.7	5.6	5.4	127.63	-88.4	-150.4	217.6	206.8	10.83	20.087		
2,600.0	2,596.2	2,595.6	2,592.3	5.8	5.6	127.32	-95.2	-151.8	223.6	212.3	11.32	19.746		
2,700.0	2,695.9	2,695.4	2,691.8	6.1	5.9	127.01	-102.0	-153.3	229.6	217.8	11.82	19.431		
2,800.0	2,795.7	2,795.2	2,791.4	6.3	6.1	126.73	-108.8	-154.7	235.6	223.3	12.31	19.138		
2,900.0	2,895.5	2,895.0	2,891.0	6.6	6.4	126.46	-115.6	-156.2	241.6	228.8	12.81	18.865		
3,000.0	2,995.2	2,994.8	2,990.5	6.9	6.6	126.20	-122.4	-157.7	247.6	234.3	13.31	18.611		
3,100.0	3,095.0	3,094.6	3,090.1	7.1	6.9	125.95	-129.2	-159.1	253.6	239.8	13.80	18.373		
3,200.0	3,194.7	3,194.5	3,189.7	7.4	7.2	125.72	-136.0	-160.6	259.7	245.4	14.31	18.151		
3,300.0	3,294.5	3,294.3	3,289.2	7.6	7.4	125.50	-142.8	-162.0	265.7	250.9	14.81	17.943		
3,400.0	3,394.2	3,394.1	3,388.8	7.9	7.7	125.28	-149.6	-163.5	271.7	256.4	15.31	17.747		
3,500.0	3,494.0	3,493.9	3,488.4	8.2	7.9	125.08	-156.4	-164.9	277.7	261.9	15.81	17.563		
3,600.0	3,593.7	3,593.7	3,588.0	8.4	8.2	124.88	-163.3	-166.4	283.8	267.5	16.32	17.389		
3,700.0	3,693.5	3,693.5	3,687.5	8.7	8.4	124.69	-170.1	-167.9	289.8	273.0	16.82	17.226		
3,800.0	3,793.3	3,793.3	3,787.1	8.9	8.7	124.51	-176.9	-169.3	295.9	278.5	17.33	17.071		
3,900.0	3,893.0	3,893.1	3,886.7	9.2	8.9	124.34	-183.7	-170.8	301.9	284.1	17.84	16.925		
4,000.0	3,992.8	3,993.0	3,986.2	9.5	9.2	124.17	-190.5	-172.2	308.0	289.6	18.35	16.786		
4,100.0	4,092.5	4,092.8	4,085.8	9.7	9.5	124.01	-197.3	-173.7	314.0	295.1	18.85	16.655		
4,200.0	4,192.3	4,192.6	4,185.4	10.0	9.7	123.86	-204.1	-175.2	320.1	300.7	19.36	16.530		
4,300.0	4,292.0	4,292.4	4,284.9	10.2	10.0	123.71	-210.9	-176.6	326.1	306.2	19.87	16.411		
4,400.0	4,391.8	4,392.2	4,384.5	10.5	10.2	123.57	-217.7	-178.1	332.2	311.8	20.38	16.298		
4,500.0	4,491.6	4,492.0	4,484.1	10.8	10.5	123.43	-224.5	-179.5	338.2	317.3	20.89	16.190		
4,600.0	4,591.3	4,591.8	4,583.7	11.0	10.8	123.30	-231.3	-181.0	344.3	322.9	21.40	16.087		
4,700.0	4,691.1	4,691.7	4,683.2	11.3	11.0	123.17	-238.1	-182.5	350.3	328.4	21.91	15.989		
4,800.0	4,790.8	4,791.5	4,782.8	11.5	11.3	123.05	-244.9	-183.9	356.4	334.0	22.42	15.895		
4,900.0	4,890.6	4,891.3	4,882.4	11.8	11.5	122.93	-251.8	-185.4	362.5	339.5	22.93	15.805		
5,000.0	4,990.3	4,991.1	4,981.9	12.1	11.8	122.81	-258.6	-186.8	368.5	345.1	23.44	15.719		
5,100.0	5,090.1	5,090.9	5,081.5	12.3	12.1	122.70	-265.4	-188.3	374.6	350.6	23.96	15.637		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,190.7	5,181.1	12.6	12.3	122.59	-272.2	-189.8	380.7	356.2	24.47	15.558		
5,300.0	5,289.6	5,290.5	5,280.6	12.9	12.6	122.49	-279.0	-191.2	386.7	361.8	24.98	15.482		
5,400.0	5,389.4	5,390.3	5,380.2	13.1	12.8	122.38	-285.8	-192.7	392.8	367.3	25.49	15.409		
5,438.0	5,427.3	5,428.3	5,418.1	13.2	12.9	122.35	-288.4	-193.2	395.1	369.4	25.69	15.382		
5,450.0	5,439.2	5,439.8	5,429.5	13.3	13.0	122.28	-289.2	-193.4	395.9	370.2	25.74	15.382		
5,500.0	5,488.7	5,479.4	5,468.9	13.4	13.1	121.83	-293.5	-194.3	401.5	375.6	25.93	15.484		
5,550.0	5,537.3	5,518.4	5,507.2	13.6	13.2	121.08	-300.5	-195.8	410.9	384.8	26.13	15.728		
5,600.0	5,584.5	5,556.6	5,544.1	13.9	13.4	120.02	-310.2	-197.9	423.9	397.5	26.34	16.095		
5,650.0	5,630.0	5,593.8	5,579.3	14.2	13.6	118.65	-322.1	-200.5	440.2	413.7	26.59	16.560		
5,700.0	5,673.2	5,629.8	5,612.4	14.5	13.8	116.96	-335.9	-203.4	459.8	432.9	26.90	17.094		
5,750.0	5,713.9	5,664.5	5,643.3	14.9	14.0	114.95	-351.3	-206.7	482.4	455.1	27.31	17.667		
5,800.0	5,751.6	5,700.0	5,673.7	15.4	14.2	112.66	-369.1	-210.5	507.7	479.8	27.89	18.202		
5,850.0	5,785.9	5,729.8	5,698.3	15.9	14.4	109.94	-385.6	-214.1	535.3	506.7	28.64	18.694		
5,900.0	5,816.7	5,760.2	5,722.4	16.4	14.7	106.93	-403.8	-218.0	565.1	535.6	29.54	19.130		
5,950.0	5,843.5	5,789.3	5,744.3	17.1	14.9	103.59	-422.5	-222.0	596.8	566.2	30.59	19.507		
6,000.0	5,866.1	5,817.0	5,764.1	17.7	15.2	99.92	-441.3	-226.0	630.0	598.2	31.75	19.839		
6,050.0	5,884.4	5,843.3	5,782.1	18.5	15.4	95.97	-460.2	-230.1	664.5	631.5	32.97	20.153		
6,100.0	5,898.1	5,868.5	5,798.2	19.3	15.7	91.78	-479.0	-234.1	699.9	665.8	34.18	20.478		
6,150.0	5,907.1	5,892.4	5,812.7	20.1	15.9	87.41	-497.6	-238.1	736.2	700.9	35.31	20.847		
6,200.0	5,911.4	5,915.2	5,825.8	20.9	16.2	82.94	-516.0	-242.0	773.0	736.7	36.32	21.283		
6,219.8	5,911.8	5,924.0	5,830.5	21.3	16.3	81.16	-523.1	-243.6	787.6	751.0	36.67	21.478		
6,300.0	5,911.8	5,961.7	5,849.6	22.6	16.7	83.80	-554.9	-250.4	846.8	807.9	38.84	21.800		
6,400.0	5,911.8	6,016.1	5,873.0	24.2	17.4	86.54	-603.0	-260.7	919.2	877.7	41.48	22.160		
6,500.0	5,911.8	6,079.3	5,893.5	25.9	18.2	88.54	-661.3	-273.2	989.2	945.0	44.18	22.392		
6,600.0	5,911.8	6,150.5	5,907.7	27.7	19.2	89.71	-729.5	-287.8	1,056.0	1,009.1	46.97	22.482		
6,700.0	5,911.8	6,238.9	5,912.3	29.4	20.5	90.03	-815.8	-306.2	1,119.0	1,069.0	49.99	22.387		
6,800.0	5,911.8	6,450.2	5,912.3	31.2	23.4	90.03	-1,024.8	-336.9	1,172.6	1,118.3	54.26	21.611		
6,900.0	5,911.8	6,649.9	5,912.3	32.9	26.4	90.02	-1,224.2	-344.7	1,211.4	1,152.6	58.76	20.616		
7,000.0	5,911.8	6,745.0	5,912.3	34.6	27.9	90.02	-1,319.3	-344.7	1,242.2	1,180.1	62.12	19.999		
7,100.0	5,911.8	6,841.6	5,912.3	36.3	29.5	90.02	-1,415.9	-344.7	1,268.1	1,202.6	65.45	19.376		
7,200.0	5,911.8	6,939.4	5,912.3	37.9	31.2	90.02	-1,513.7	-344.7	1,288.8	1,220.1	68.69	18.763		
7,300.0	5,911.8	7,038.2	5,912.3	39.6	32.9	90.02	-1,612.5	-344.7	1,304.4	1,232.6	71.81	18.165		
7,400.0	5,911.8	7,137.7	5,912.3	41.1	34.6	90.02	-1,711.9	-344.7	1,314.8	1,240.0	74.78	17.583		
7,500.0	5,911.8	7,237.5	5,912.3	42.7	36.4	90.02	-1,811.8	-344.7	1,320.0	1,242.4	77.56	17.018		
7,549.3	5,911.8	7,286.8	5,912.3	43.4	37.3	90.02	-1,861.1	-344.7	1,320.6	1,241.7	78.86	16.746		
7,600.0	5,911.8	7,337.5	5,912.3	44.2	38.2	90.02	-1,911.8	-344.7	1,320.6	1,240.0	80.62	16.380		
7,700.0	5,911.8	7,437.5	5,912.3	45.7	40.0	90.02	-2,011.8	-344.7	1,320.6	1,236.5	84.11	15.700		
7,800.0	5,911.8	7,537.5	5,912.3	47.3	41.8	90.02	-2,111.8	-344.7	1,320.6	1,232.9	87.63	15.069		
7,900.0	5,911.8	7,637.5	5,912.3	48.8	43.6	90.02	-2,211.8	-344.7	1,320.6	1,229.4	91.18	14.483		
8,000.0	5,911.8	7,737.5	5,912.3	50.4	45.4	90.02	-2,311.8	-344.7	1,320.6	1,225.8	94.75	13.937		
8,100.0	5,911.8	7,837.5	5,912.2	52.1	47.2	90.02	-2,411.8	-344.7	1,320.5	1,222.2	98.34	13.428		
8,200.0	5,911.8	7,937.5	5,912.2	53.7	49.1	90.02	-2,511.8	-344.7	1,320.5	1,218.6	101.96	12.952		
8,300.0	5,911.8	8,037.5	5,912.2	55.3	50.9	90.02	-2,611.8	-344.7	1,320.5	1,214.9	105.58	12.507		
8,400.0	5,911.9	8,137.5	5,912.2	57.0	52.8	90.02	-2,711.8	-344.7	1,320.5	1,211.3	109.23	12.090		
8,500.0	5,911.9	8,237.5	5,912.2	58.7	54.6	90.02	-2,811.8	-344.7	1,320.5	1,207.6	112.88	11.698		
8,600.0	5,911.9	8,337.5	5,912.2	60.4	56.5	90.02	-2,911.8	-344.6	1,320.5	1,203.9	116.55	11.330		
8,700.0	5,911.9	8,437.5	5,912.2	62.1	58.3	90.02	-3,011.8	-344.6	1,320.5	1,200.2	120.23	10.983		
8,800.0	5,911.9	8,537.5	5,912.2	63.9	60.2	90.02	-3,111.8	-344.6	1,320.5	1,196.5	123.92	10.656		
8,900.0	5,911.9	8,637.5	5,912.2	65.6	62.1	90.02	-3,211.8	-344.6	1,320.5	1,192.8	127.62	10.347		
9,000.0	5,911.9	8,737.5	5,912.2	67.3	64.0	90.01	-3,311.8	-344.6	1,320.4	1,189.1	131.33	10.055		
9,100.0	5,911.9	8,837.5	5,912.2	69.1	65.8	90.01	-3,411.8	-344.6	1,320.4	1,185.4	135.04	9.778		
9,200.0	5,911.9	8,937.5	5,912.2	70.9	67.7	90.01	-3,511.8	-344.6	1,320.4	1,181.7	138.76	9.516		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	9,037.5	5,912.2	72.6	69.6	90.01	-3,611.8	-344.6	1,320.4	1,177.9	142.49	9.266		
9,400.0	5,911.9	9,137.5	5,912.2	74.4	71.5	90.01	-3,711.8	-344.6	1,320.4	1,174.2	146.23	9.030		
9,500.0	5,911.9	9,237.5	5,912.2	76.2	73.4	90.01	-3,811.8	-344.6	1,320.4	1,170.4	149.97	8.804		
9,600.0	5,911.9	9,337.5	5,912.2	78.0	75.2	90.01	-3,911.8	-344.6	1,320.4	1,166.7	153.71	8.590		
9,700.0	5,911.9	9,437.5	5,912.2	79.8	77.1	90.01	-4,011.8	-344.6	1,320.4	1,162.9	157.47	8.385		
9,800.0	5,911.9	9,537.5	5,912.2	81.6	79.0	90.01	-4,111.8	-344.6	1,320.4	1,159.1	161.22	8.190		
9,900.0	5,911.9	9,637.5	5,912.2	83.4	80.9	90.01	-4,211.8	-344.6	1,320.3	1,155.4	164.98	8.003		
10,000.0	5,911.9	9,737.5	5,912.2	85.2	82.8	90.01	-4,311.8	-344.6	1,320.3	1,151.6	168.74	7.825		
10,100.0	5,911.9	9,837.5	5,912.2	87.0	84.7	90.01	-4,411.8	-344.6	1,320.3	1,147.8	172.51	7.654		
10,200.0	5,911.9	9,937.5	5,912.2	88.9	86.6	90.01	-4,511.8	-344.6	1,320.3	1,144.0	176.28	7.490		
10,300.0	5,911.9	10,037.5	5,912.2	90.7	88.5	90.01	-4,611.8	-344.6	1,320.3	1,140.2	180.05	7.333		
10,400.0	5,911.9	10,137.5	5,912.2	92.5	90.4	90.01	-4,711.8	-344.6	1,320.3	1,136.5	183.83	7.182		
10,500.0	5,911.9	10,237.5	5,912.2	94.4	92.3	90.01	-4,811.8	-344.6	1,320.3	1,132.7	187.61	7.037		
10,600.0	5,911.9	10,337.5	5,912.1	96.2	94.2	90.01	-4,911.8	-344.5	1,320.3	1,128.9	191.39	6.898		
10,700.0	5,911.9	10,437.5	5,912.1	98.0	96.1	90.01	-5,011.8	-344.5	1,320.2	1,125.1	195.17	6.765		
10,800.0	5,911.9	10,537.5	5,912.1	99.9	98.0	90.01	-5,111.8	-344.5	1,320.2	1,121.3	198.96	6.636		
10,900.0	5,911.9	10,637.5	5,912.1	101.7	99.9	90.01	-5,211.8	-344.5	1,320.2	1,117.5	202.75	6.512		
11,000.0	5,911.9	10,737.5	5,912.1	103.6	101.8	90.01	-5,311.8	-344.5	1,320.2	1,113.7	206.54	6.392		
11,100.0	5,911.9	10,837.5	5,912.1	105.4	103.7	90.01	-5,411.8	-344.5	1,320.2	1,109.9	210.33	6.277		
11,200.0	5,911.9	10,937.5	5,912.1	107.3	105.6	90.01	-5,511.8	-344.5	1,320.2	1,106.1	214.12	6.166		
11,300.0	5,911.9	11,037.5	5,912.1	109.2	107.5	90.01	-5,611.8	-344.5	1,320.2	1,102.3	217.92	6.058		
11,400.0	5,911.9	11,137.5	5,912.1	111.0	109.4	90.01	-5,711.8	-344.5	1,320.2	1,098.5	221.72	5.954		
11,500.0	5,911.9	11,237.5	5,912.1	112.9	111.3	90.01	-5,811.8	-344.5	1,320.2	1,094.6	225.52	5.854		
11,600.0	5,911.9	11,337.5	5,912.1	114.7	113.2	90.01	-5,911.8	-344.5	1,320.1	1,090.8	229.32	5.757		
11,700.0	5,911.9	11,437.5	5,912.1	116.6	115.1	90.01	-6,011.8	-344.5	1,320.1	1,087.0	233.12	5.663		
11,800.0	5,912.0	11,537.5	5,912.1	118.5	117.0	90.01	-6,111.8	-344.5	1,320.1	1,083.2	236.92	5.572		
11,900.0	5,912.0	11,637.5	5,912.1	120.4	119.0	90.01	-6,211.8	-344.5	1,320.1	1,079.4	240.73	5.484		
12,000.0	5,912.0	11,737.5	5,912.1	122.2	120.9	90.01	-6,311.8	-344.5	1,320.1	1,075.6	244.53	5.398		
12,100.0	5,912.0	11,837.5	5,912.1	124.1	122.8	90.01	-6,411.8	-344.5	1,320.1	1,071.8	248.34	5.316		
12,200.0	5,912.0	11,937.5	5,912.1	126.0	124.7	90.01	-6,511.8	-344.5	1,320.1	1,067.9	252.15	5.235		
12,300.0	5,912.0	12,037.5	5,912.1	127.8	126.6	90.00	-6,611.8	-344.5	1,320.1	1,064.1	255.96	5.157		
12,400.0	5,912.0	12,137.5	5,912.1	129.7	128.5	90.00	-6,711.8	-344.5	1,320.1	1,060.3	259.77	5.082		
12,500.0	5,912.0	12,237.5	5,912.1	131.6	130.4	90.00	-6,811.8	-344.5	1,320.0	1,056.5	263.58	5.008		
12,600.0	5,912.0	12,337.5	5,912.1	133.5	132.3	90.00	-6,911.8	-344.4	1,320.0	1,052.6	267.39	4.937		
12,700.0	5,912.0	12,437.5	5,912.1	135.4	134.2	90.00	-7,011.8	-344.4	1,320.0	1,048.8	271.20	4.867		
12,800.0	5,912.0	12,537.5	5,912.1	137.2	136.1	90.00	-7,111.8	-344.4	1,320.0	1,045.0	275.02	4.800		
12,900.0	5,912.0	12,637.5	5,912.1	139.1	138.1	90.00	-7,211.8	-344.4	1,320.0	1,041.2	278.83	4.734		
13,000.0	5,912.0	12,737.5	5,912.0	141.0	140.0	90.00	-7,311.8	-344.4	1,320.0	1,037.3	282.65	4.670		
13,100.0	5,912.0	12,837.5	5,912.0	142.9	141.9	90.00	-7,411.8	-344.4	1,320.0	1,033.5	286.46	4.608		
13,200.0	5,912.0	12,937.5	5,912.0	144.8	143.8	90.00	-7,511.8	-344.4	1,320.0	1,029.7	290.28	4.547		
13,300.0	5,912.0	13,037.5	5,912.0	146.7	145.7	90.00	-7,611.8	-344.4	1,320.0	1,025.9	294.10	4.488		
13,400.0	5,912.0	13,137.5	5,912.0	148.6	147.6	90.00	-7,711.8	-344.4	1,319.9	1,022.0	297.92	4.431		
13,500.0	5,912.0	13,237.5	5,912.0	150.5	149.5	90.00	-7,811.8	-344.4	1,319.9	1,018.2	301.74	4.374		
13,600.0	5,912.0	13,337.5	5,912.0	152.3	151.4	90.00	-7,911.8	-344.4	1,319.9	1,014.4	305.55	4.320		
13,700.0	5,912.0	13,437.5	5,912.0	154.2	153.4	90.00	-8,011.8	-344.4	1,319.9	1,010.5	309.38	4.266		
13,800.0	5,912.0	13,537.5	5,912.0	156.1	155.3	90.00	-8,111.8	-344.4	1,319.9	1,006.7	313.20	4.214		
13,900.0	5,912.0	13,637.5	5,912.0	158.0	157.2	90.00	-8,211.8	-344.4	1,319.9	1,002.9	317.02	4.163		
13,925.4	5,912.0	13,662.9	5,912.0	158.4	157.7	90.00	-8,237.2	-344.4	1,319.9	1,002.0	317.90	4.152 SF		

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



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-52.71	74.9	-98.4	123.6					
100.0	100.0	100.0	100.0	0.1	0.1	-52.71	74.9	-98.4	123.6	123.4	0.19	661.129		
200.0	200.0	200.0	200.0	0.3	0.3	-52.71	74.9	-98.4	123.6	123.0	0.64	194.235		
300.0	300.0	300.0	300.0	0.5	0.5	-52.71	74.9	-98.4	123.6	122.5	1.09	113.839		
400.0	400.0	400.0	400.0	0.8	0.8	-52.71	74.9	-98.4	123.6	122.1	1.54	80.514		
500.0	500.0	500.0	500.0	1.0	1.0	-52.71	74.9	-98.4	123.6	121.7	1.99	62.281		
600.0	600.0	600.0	600.0	1.2	1.2	-52.71	74.9	-98.4	123.6	121.2	2.43	50.782		
700.0	700.0	700.0	700.0	1.4	1.4	-52.71	74.9	-98.4	123.6	120.8	2.88	42.867		
800.0	800.0	800.0	800.0	1.7	1.7	-52.71	74.9	-98.4	123.6	120.3	3.33	37.087		
900.0	900.0	900.0	900.0	1.9	1.9	-52.71	74.9	-98.4	123.6	119.9	3.78	32.680 CC, ES		
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	166.72	73.1	-98.2	124.1	119.9	4.18	29.671		
1,100.0	1,099.8	1,105.7	1,105.6	2.3	2.3	165.41	67.6	-97.7	125.6	121.1	4.54	27.662		
1,200.0	1,199.6	1,205.6	1,205.2	2.5	2.5	163.83	60.6	-97.0	127.9	123.0	4.92	25.991		
1,300.0	1,299.4	1,305.6	1,304.9	2.7	2.7	162.31	53.7	-96.4	130.2	124.9	5.32	24.489		
1,400.0	1,399.1	1,405.5	1,404.6	2.9	2.9	160.84	46.7	-95.8	132.6	126.9	5.73	23.150		
1,500.0	1,498.9	1,505.4	1,504.2	3.1	3.1	159.42	39.8	-95.1	135.2	129.0	6.15	21.958		
1,600.0	1,598.6	1,605.3	1,603.9	3.4	3.3	158.06	32.9	-94.5	137.7	131.1	6.59	20.898		
1,700.0	1,698.4	1,705.2	1,703.6	3.6	3.6	156.75	25.9	-93.9	140.4	133.4	7.04	19.954		
1,800.0	1,798.1	1,805.1	1,803.3	3.8	3.8	155.48	19.0	-93.2	143.1	135.6	7.49	19.110		
1,900.0	1,897.9	1,905.0	1,902.9	4.1	4.0	154.27	12.0	-92.6	145.9	138.0	7.95	18.355		
2,000.0	1,997.6	2,005.0	2,002.6	4.3	4.3	153.10	5.1	-91.9	148.8	140.4	8.42	17.678		
2,100.0	2,097.4	2,104.9	2,102.3	4.6	4.5	151.98	-1.8	-91.3	151.7	142.8	8.89	17.067		
2,200.0	2,197.2	2,204.8	2,201.9	4.8	4.8	150.90	-8.8	-90.7	154.7	145.3	9.37	16.516		
2,300.0	2,296.9	2,304.7	2,301.6	5.1	5.0	149.86	-15.7	-90.0	157.7	147.9	9.85	16.016		
2,400.0	2,396.7	2,404.6	2,401.3	5.3	5.3	148.86	-22.7	-89.4	160.8	150.5	10.33	15.562		
2,500.0	2,496.4	2,504.5	2,500.9	5.6	5.5	147.89	-29.6	-88.8	163.9	153.1	10.82	15.148		
2,600.0	2,596.2	2,604.4	2,600.6	5.8	5.8	146.97	-36.5	-88.1	167.1	155.8	11.32	14.770		
2,700.0	2,695.9	2,704.4	2,700.3	6.1	6.0	146.08	-43.5	-87.5	170.3	158.5	11.81	14.423		
2,800.0	2,795.7	2,804.3	2,800.0	6.3	6.3	145.22	-50.4	-86.8	173.6	161.3	12.31	14.105		
2,900.0	2,895.5	2,904.2	2,899.6	6.6	6.6	144.39	-57.4	-86.2	176.9	164.1	12.81	13.812		
3,000.0	2,995.2	3,004.1	2,999.3	6.9	6.8	143.59	-64.3	-85.6	180.2	166.9	13.31	13.541		
3,100.0	3,095.0	3,104.0	3,099.0	7.1	7.1	142.83	-71.3	-84.9	183.6	169.8	13.81	13.291		
3,200.0	3,194.7	3,203.9	3,198.6	7.4	7.3	142.09	-78.2	-84.3	187.0	172.7	14.32	13.059		
3,300.0	3,294.5	3,303.8	3,298.3	7.6	7.6	141.37	-85.1	-83.7	190.4	175.6	14.83	12.843		
3,400.0	3,394.2	3,403.8	3,398.0	7.9	7.8	140.69	-92.1	-83.0	193.9	178.5	15.33	12.642		
3,500.0	3,494.0	3,503.7	3,497.6	8.2	8.1	140.02	-99.0	-82.4	197.3	181.5	15.84	12.455		
3,600.0	3,593.7	3,603.6	3,597.3	8.4	8.4	139.38	-106.0	-81.7	200.8	184.5	16.35	12.280		
3,700.0	3,693.5	3,703.5	3,697.0	8.7	8.6	138.76	-112.9	-81.1	204.4	187.5	16.87	12.116		
3,800.0	3,793.3	3,803.4	3,796.7	8.9	8.9	138.17	-119.8	-80.5	207.9	190.5	17.38	11.963		
3,900.0	3,893.0	3,903.3	3,896.3	9.2	9.1	137.59	-126.8	-79.8	211.5	193.6	17.89	11.819		
4,000.0	3,992.8	4,003.2	3,996.0	9.5	9.4	137.03	-133.7	-79.2	215.1	196.7	18.41	11.684		
4,100.0	4,092.5	4,103.1	4,095.7	9.7	9.7	136.49	-140.7	-78.6	218.7	199.8	18.92	11.557		
4,200.0	4,192.3	4,203.1	4,195.3	10.0	9.9	135.97	-147.6	-77.9	222.3	202.9	19.44	11.437		
4,300.0	4,292.0	4,303.0	4,295.0	10.2	10.2	135.46	-154.5	-77.3	226.0	206.0	19.96	11.323		
4,400.0	4,391.8	4,402.9	4,394.7	10.5	10.5	134.98	-161.5	-76.6	229.7	209.2	20.48	11.216		
4,500.0	4,491.6	4,502.8	4,494.4	10.8	10.7	134.50	-168.4	-76.0	233.3	212.3	20.99	11.115		
4,600.0	4,591.3	4,602.7	4,594.0	11.0	11.0	134.04	-175.4	-75.4	237.0	215.5	21.51	11.019		
4,700.0	4,691.1	4,702.6	4,693.7	11.3	11.2	133.60	-182.3	-74.7	240.8	218.7	22.03	10.928		
4,800.0	4,790.8	4,802.5	4,793.4	11.5	11.5	133.17	-189.2	-74.1	244.5	221.9	22.55	10.841		
4,900.0	4,890.6	4,902.5	4,893.0	11.8	11.8	132.75	-196.2	-73.5	248.2	225.2	23.07	10.759		
5,000.0	4,990.3	5,002.4	4,992.7	12.1	12.0	132.34	-203.1	-72.8	252.0	228.4	23.59	10.681		
5,100.0	5,090.1	5,102.3	5,092.4	12.3	12.3	131.95	-210.1	-72.2	255.7	231.6	24.11	10.607		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,202.2	5,192.0	12.6	12.5	131.57	-217.0	-71.5	259.5	234.9	24.63	10.536		
5,300.0	5,289.6	5,302.1	5,291.7	12.9	12.8	131.19	-223.9	-70.9	263.3	238.2	25.15	10.468		
5,400.0	5,389.4	5,405.5	5,394.3	13.1	13.1	129.86	-235.6	-69.8	266.7	240.9	25.75	10.357		
5,438.0	5,427.3	5,444.4	5,432.2	13.2	13.3	128.33	-244.7	-69.0	267.6	241.6	26.04	10.277		
5,450.0	5,439.2	5,456.5	5,443.8	13.3	13.3	127.73	-248.2	-68.7	268.0	241.9	26.13	10.256		
5,500.0	5,488.7	5,506.0	5,490.2	13.4	13.6	124.97	-264.9	-67.1	271.6	245.1	26.51	10.244		
5,550.0	5,537.3	5,553.9	5,533.6	13.6	13.9	121.92	-285.2	-65.3	278.3	251.4	26.92	10.341		
5,600.0	5,584.5	5,600.0	5,573.3	13.9	14.2	118.66	-308.4	-63.1	288.2	260.9	27.37	10.531		
5,650.0	5,630.0	5,644.9	5,609.9	14.2	14.5	115.24	-334.3	-60.8	301.1	273.2	27.90	10.791		
5,700.0	5,673.2	5,688.0	5,642.8	14.5	14.9	111.74	-362.0	-58.2	316.8	288.2	28.53	11.104		
5,750.0	5,713.9	5,729.6	5,672.3	14.9	15.3	108.20	-391.3	-55.5	334.9	305.7	29.24	11.452		
5,800.0	5,751.6	5,769.9	5,698.5	15.4	15.7	104.65	-421.7	-52.7	355.3	325.2	30.05	11.820		
5,850.0	5,785.9	5,808.8	5,721.5	15.9	16.1	101.11	-453.0	-49.9	377.5	346.5	30.95	12.196		
5,900.0	5,816.7	5,850.0	5,743.2	16.4	16.6	97.58	-487.8	-46.7	401.3	369.2	32.01	12.534		
5,950.0	5,843.5	5,883.5	5,758.8	17.1	17.0	94.18	-517.3	-43.9	426.3	393.2	33.08	12.885		
6,000.0	5,866.1	5,919.5	5,773.4	17.7	17.5	90.82	-550.1	-40.9	452.2	418.0	34.21	13.218		
6,050.0	5,884.4	5,954.8	5,785.5	18.5	18.0	87.57	-583.1	-37.9	478.9	443.6	35.36	13.544		
6,100.0	5,898.1	5,989.6	5,795.1	19.3	18.4	84.45	-616.4	-34.8	506.1	469.6	36.51	13.861		
6,150.0	5,907.1	6,024.0	5,802.5	20.1	18.9	81.47	-649.9	-31.8	533.5	495.8	37.65	14.167		
6,200.0	5,911.4	6,058.3	5,807.5	20.9	19.4	78.67	-683.6	-28.7	560.9	522.1	38.79	14.459		
6,219.8	5,911.8	6,071.8	5,808.9	21.3	19.6	77.60	-697.0	-27.4	571.7	532.5	39.24	14.569		
6,300.0	5,911.8	6,118.8	5,811.1	22.6	20.4	78.77	-743.8	-23.1	614.9	573.2	41.69	14.750		
6,400.0	5,911.8	6,200.0	5,811.1	24.2	21.5	79.94	-824.7	-17.4	667.1	622.3	44.85	14.875		
6,500.0	5,911.8	6,253.9	5,811.1	25.9	22.2	80.68	-878.6	-15.5	717.7	670.0	47.68	15.053		
6,600.0	5,911.8	6,325.7	5,811.1	27.7	23.3	81.43	-950.4	-15.1	766.6	715.9	50.75	15.106		
6,700.0	5,911.8	6,414.8	5,811.1	29.4	24.7	82.11	-1,039.5	-15.1	811.6	757.5	54.11	15.000		
6,800.0	5,911.8	6,506.1	5,811.1	31.2	26.3	82.66	-1,130.8	-15.1	851.9	794.5	57.47	14.824		
6,900.0	5,911.8	6,599.5	5,811.1	32.9	27.9	83.09	-1,224.2	-15.1	887.5	826.7	60.80	14.596		
7,000.0	5,911.8	6,694.6	5,811.1	34.6	29.5	83.43	-1,319.3	-15.1	918.1	854.1	64.08	14.329		
7,100.0	5,911.8	6,791.2	5,811.1	36.3	31.2	83.70	-1,415.9	-15.1	943.8	876.6	67.26	14.033		
7,200.0	5,911.8	6,889.0	5,811.1	37.9	32.9	83.90	-1,513.7	-15.1	964.4	894.1	70.32	13.715		
7,300.0	5,911.8	6,987.8	5,811.1	39.6	34.7	84.05	-1,612.5	-15.1	980.0	906.7	73.24	13.381		
7,400.0	5,911.8	7,087.2	5,811.1	41.1	36.5	84.14	-1,711.9	-15.1	990.3	914.3	75.97	13.035		
7,500.0	5,911.8	7,187.1	5,811.1	42.7	38.3	84.19	-1,811.8	-15.1	995.5	916.9	78.51	12.680		
7,549.3	5,911.8	7,236.4	5,811.1	43.4	39.2	84.19	-1,861.1	-15.1	996.1	916.4	79.68	12.502		
7,600.0	5,911.8	7,287.1	5,811.1	44.2	40.1	84.19	-1,911.8	-15.1	996.1	914.6	81.44	12.230		
7,700.0	5,911.8	7,387.1	5,811.1	45.7	41.9	84.19	-2,011.8	-15.0	996.1	911.1	84.95	11.726		
7,800.0	5,911.8	7,487.1	5,811.1	47.3	43.8	84.19	-2,111.8	-15.0	996.0	907.6	88.48	11.258		
7,900.0	5,911.8	7,587.1	5,811.1	48.8	45.6	84.19	-2,211.8	-15.0	996.0	904.0	92.03	10.823		
8,000.0	5,911.8	7,687.1	5,811.1	50.4	47.5	84.19	-2,311.8	-15.0	996.0	900.4	95.60	10.418		
8,100.0	5,911.8	7,787.1	5,811.1	52.1	49.3	84.19	-2,411.8	-15.0	996.0	896.8	99.20	10.041		
8,200.0	5,911.8	7,887.1	5,811.0	53.7	51.2	84.19	-2,511.8	-15.0	996.0	893.2	102.81	9.688		
8,300.0	5,911.8	7,987.1	5,811.0	55.3	53.0	84.19	-2,611.8	-15.0	996.0	889.5	106.44	9.358		
8,400.0	5,911.9	8,087.1	5,811.0	57.0	54.9	84.19	-2,711.8	-15.0	996.0	885.9	110.08	9.048		
8,500.0	5,911.9	8,187.1	5,811.0	58.7	56.8	84.19	-2,811.8	-15.0	996.0	882.2	113.73	8.757		
8,600.0	5,911.9	8,287.1	5,811.0	60.4	58.7	84.19	-2,911.8	-15.0	995.9	878.5	117.39	8.484		
8,700.0	5,911.9	8,387.1	5,811.0	62.1	60.5	84.19	-3,011.8	-15.0	995.9	874.9	121.07	8.226		
8,800.0	5,911.9	8,487.1	5,811.0	63.9	62.4	84.19	-3,111.8	-15.0	995.9	871.2	124.75	7.983		
8,900.0	5,911.9	8,587.1	5,811.0	65.6	64.3	84.19	-3,211.8	-15.0	995.9	867.5	128.44	7.754		
9,000.0	5,911.9	8,687.1	5,811.0	67.3	66.2	84.19	-3,311.8	-15.0	995.9	863.7	132.14	7.536		
9,100.0	5,911.9	8,787.1	5,811.0	69.1	68.1	84.19	-3,411.8	-14.9	995.9	860.0	135.85	7.331		
9,200.0	5,911.9	8,887.1	5,811.0	70.9	70.0	84.19	-3,511.8	-14.9	995.9	856.3	139.56	7.136		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2												Offset Site Error:	0.0 ft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,911.9	8,987.1	5,811.0	72.6	71.9	84.19	-3,611.8	-14.9	995.9	852.6	143.28	6.950	
9,400.0	5,911.9	9,087.1	5,811.0	74.4	73.7	84.19	-3,711.8	-14.9	995.8	848.8	147.01	6.774	
9,500.0	5,911.9	9,187.1	5,811.0	76.2	75.6	84.19	-3,811.8	-14.9	995.8	845.1	150.74	6.606	
9,600.0	5,911.9	9,287.1	5,811.0	78.0	77.5	84.19	-3,911.8	-14.9	995.8	841.3	154.47	6.446	
9,700.0	5,911.9	9,387.1	5,811.0	79.8	79.4	84.19	-4,011.8	-14.9	995.8	837.6	158.21	6.294	
9,800.0	5,911.9	9,487.1	5,811.0	81.6	81.3	84.19	-4,111.8	-14.9	995.8	833.8	161.96	6.148	
9,900.0	5,911.9	9,587.1	5,811.0	83.4	83.2	84.19	-4,211.8	-14.9	995.8	830.1	165.71	6.009	
10,000.0	5,911.9	9,687.1	5,811.0	85.2	85.1	84.19	-4,311.8	-14.9	995.8	826.3	169.46	5.876	
10,100.0	5,911.9	9,787.1	5,811.0	87.0	87.0	84.19	-4,411.8	-14.9	995.7	822.5	173.21	5.749	
10,200.0	5,911.9	9,887.1	5,811.0	88.9	88.9	84.19	-4,511.8	-14.9	995.7	818.8	176.97	5.627	
10,300.0	5,911.9	9,987.1	5,811.0	90.7	90.8	84.19	-4,611.8	-14.9	995.7	815.0	180.73	5.509	
10,400.0	5,911.9	10,087.1	5,811.0	92.5	92.7	84.19	-4,711.8	-14.9	995.7	811.2	184.49	5.397	
10,500.0	5,911.9	10,187.1	5,811.0	94.4	94.6	84.19	-4,811.8	-14.8	995.7	807.4	188.26	5.289	
10,600.0	5,911.9	10,287.1	5,811.0	96.2	96.5	84.19	-4,911.8	-14.8	995.7	803.7	192.03	5.185	
10,700.0	5,911.9	10,387.1	5,811.0	98.0	98.5	84.18	-5,011.8	-14.8	995.7	799.9	195.80	5.085	
10,800.0	5,911.9	10,487.1	5,811.0	99.9	100.4	84.18	-5,111.8	-14.8	995.7	796.1	199.57	4.989	
10,900.0	5,911.9	10,587.1	5,811.0	101.7	102.3	84.18	-5,211.8	-14.8	995.6	792.3	203.34	4.896	
11,000.0	5,911.9	10,687.1	5,811.0	103.6	104.2	84.18	-5,311.8	-14.8	995.6	788.5	207.12	4.807	
11,100.0	5,911.9	10,787.1	5,811.0	105.4	106.1	84.18	-5,411.8	-14.8	995.6	784.7	210.90	4.721	
11,200.0	5,911.9	10,887.1	5,811.0	107.3	108.0	84.18	-5,511.8	-14.8	995.6	780.9	214.68	4.638	
11,300.0	5,911.9	10,987.1	5,811.0	109.2	109.9	84.18	-5,611.8	-14.8	995.6	777.1	218.46	4.557	
11,400.0	5,911.9	11,087.1	5,811.0	111.0	111.8	84.18	-5,711.8	-14.8	995.6	773.3	222.24	4.480	
11,500.0	5,911.9	11,187.1	5,811.0	112.9	113.7	84.18	-5,811.8	-14.8	995.6	769.5	226.03	4.405	
11,600.0	5,911.9	11,287.1	5,811.0	114.7	115.6	84.18	-5,911.8	-14.8	995.5	765.7	229.81	4.332	
11,700.0	5,911.9	11,387.1	5,811.0	116.6	117.5	84.18	-6,011.8	-14.8	995.5	761.9	233.60	4.262	
11,800.0	5,912.0	11,487.1	5,811.0	118.5	119.4	84.18	-6,111.8	-14.8	995.5	758.1	237.39	4.194	
11,900.0	5,912.0	11,587.1	5,811.0	120.4	121.4	84.18	-6,211.8	-14.8	995.5	754.3	241.18	4.128	
12,000.0	5,912.0	11,687.1	5,811.0	122.2	123.3	84.18	-6,311.8	-14.7	995.5	750.5	244.97	4.064	
12,100.0	5,912.0	11,787.1	5,811.0	124.1	125.2	84.18	-6,411.8	-14.7	995.5	746.7	248.76	4.002	
12,200.0	5,912.0	11,887.1	5,811.0	126.0	127.1	84.18	-6,511.8	-14.7	995.5	742.9	252.56	3.942	
12,300.0	5,912.0	11,987.1	5,811.0	127.8	129.0	84.18	-6,611.8	-14.7	995.5	739.1	256.35	3.883	
12,400.0	5,912.0	12,087.1	5,811.0	129.7	130.9	84.18	-6,711.8	-14.7	995.4	735.3	260.14	3.826	
12,500.0	5,912.0	12,187.1	5,811.0	131.6	132.8	84.18	-6,811.8	-14.7	995.4	731.5	263.94	3.771	
12,600.0	5,912.0	12,287.1	5,811.0	133.5	134.7	84.18	-6,911.8	-14.7	995.4	727.7	267.74	3.718	
12,700.0	5,912.0	12,387.1	5,811.0	135.4	136.7	84.18	-7,011.8	-14.7	995.4	723.9	271.54	3.666	
12,800.0	5,912.0	12,487.1	5,811.0	137.2	138.6	84.18	-7,111.8	-14.7	995.4	720.1	275.33	3.615	
12,900.0	5,912.0	12,587.1	5,811.0	139.1	140.5	84.18	-7,211.8	-14.7	995.4	716.2	279.13	3.566	
13,000.0	5,912.0	12,687.1	5,811.0	141.0	142.4	84.18	-7,311.8	-14.7	995.4	712.4	282.93	3.518	
13,100.0	5,912.0	12,787.1	5,811.0	142.9	144.3	84.18	-7,411.8	-14.7	995.3	708.6	286.73	3.471	
13,200.0	5,912.0	12,887.1	5,811.0	144.8	146.2	84.18	-7,511.8	-14.7	995.3	704.8	290.53	3.426	
13,300.0	5,912.0	12,987.1	5,811.0	146.7	148.1	84.18	-7,611.8	-14.7	995.3	701.0	294.34	3.382	
13,400.0	5,912.0	13,087.1	5,811.0	148.6	150.1	84.18	-7,711.8	-14.6	995.3	697.2	298.14	3.338	
13,500.0	5,912.0	13,187.1	5,811.0	150.5	152.0	84.18	-7,811.8	-14.6	995.3	693.4	301.94	3.296	
13,600.0	5,912.0	13,287.1	5,811.0	152.3	153.9	84.18	-7,911.8	-14.6	995.3	689.5	305.75	3.255	
13,700.0	5,912.0	13,387.1	5,811.0	154.2	155.8	84.18	-8,011.8	-14.6	995.3	685.7	309.55	3.215	
13,800.0	5,912.0	13,487.1	5,811.0	156.1	157.7	84.18	-8,111.8	-14.6	995.3	681.9	313.35	3.176	
13,900.0	5,912.0	13,587.1	5,811.0	158.0	159.6	84.18	-8,211.8	-14.6	995.2	678.1	317.16	3.138	
13,925.4	5,912.0	13,612.5	5,811.0	158.4	160.1	84.18	-8,237.2	-14.6	995.2	677.2	318.04	3.129 SF	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-66.1	66.1	65.9	0.19	353.397		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-66.1	66.1	65.5	0.64	103.823		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-66.1	66.1	65.0	1.09	60.850		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-66.1	66.1	64.6	1.54	43.037		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-66.1	66.1	64.1	1.99	33.291		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-66.1	66.1	63.7	2.43	27.144		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-66.1	66.1	63.2	2.88	22.914		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-66.1	66.1	62.8	3.33	19.824		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-66.1	66.1	62.3	3.78	17.468 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	131.01	0.0	-66.1	67.2	63.0	4.21	15.977		
1,100.0	1,099.8	1,100.8	1,100.8	2.3	2.3	132.87	-1.7	-65.5	70.1	65.5	4.59	15.281		
1,200.0	1,199.6	1,201.7	1,201.5	2.5	2.5	133.06	-6.7	-63.7	72.8	67.9	4.96	14.689		
1,300.0	1,299.4	1,301.7	1,301.3	2.7	2.7	132.03	-13.3	-61.4	74.9	69.6	5.35	14.000		
1,400.0	1,399.1	1,401.7	1,401.0	2.9	2.9	131.05	-19.8	-59.1	77.0	71.3	5.76	13.364		
1,500.0	1,498.9	1,501.6	1,500.7	3.1	3.1	130.13	-26.4	-56.8	79.2	73.0	6.19	12.783		
1,600.0	1,598.6	1,601.6	1,600.5	3.4	3.3	129.26	-33.0	-54.5	81.3	74.7	6.64	12.256		
1,700.0	1,698.4	1,701.6	1,700.2	3.6	3.5	128.44	-39.6	-52.1	83.5	76.4	7.09	11.780		
1,800.0	1,798.1	1,801.5	1,799.9	3.8	3.8	127.65	-46.2	-49.8	85.7	78.1	7.55	11.349		
1,900.0	1,897.9	1,901.5	1,899.6	4.1	4.0	126.91	-52.7	-47.5	87.9	79.9	8.02	10.959		
2,000.0	1,997.6	2,001.5	1,999.4	4.3	4.3	126.20	-59.3	-45.2	90.1	81.6	8.50	10.606		
2,100.0	2,097.4	2,101.4	2,099.1	4.6	4.5	125.53	-65.9	-42.9	92.4	83.4	8.98	10.285		
2,200.0	2,197.2	2,201.4	2,198.8	4.8	4.7	124.88	-72.5	-40.6	94.6	85.1	9.47	9.994		
2,300.0	2,296.9	2,301.4	2,298.5	5.1	5.0	124.27	-79.0	-38.3	96.9	86.9	9.96	9.728		
2,400.0	2,396.7	2,401.3	2,398.3	5.3	5.2	123.69	-85.6	-35.9	99.1	88.7	10.45	9.485		
2,500.0	2,496.4	2,501.3	2,498.0	5.6	5.5	123.13	-92.2	-33.6	101.4	90.5	10.95	9.262		
2,600.0	2,596.2	2,601.3	2,597.7	5.8	5.7	122.60	-98.8	-31.3	103.7	92.3	11.45	9.057		
2,700.0	2,695.9	2,701.3	2,697.4	6.1	6.0	122.09	-105.4	-29.0	106.0	94.1	11.95	8.868		
2,800.0	2,795.7	2,801.2	2,797.2	6.3	6.2	121.60	-111.9	-26.7	108.3	95.9	12.46	8.693		
2,900.0	2,895.5	2,901.2	2,896.9	6.6	6.5	121.13	-118.5	-24.4	110.6	97.7	12.97	8.532		
3,000.0	2,995.2	3,001.2	2,996.6	6.9	6.7	120.68	-125.1	-22.0	112.9	99.5	13.47	8.382		
3,100.0	3,095.0	3,101.1	3,096.3	7.1	7.0	120.25	-131.7	-19.7	115.3	101.3	13.99	8.243		
3,200.0	3,194.7	3,201.1	3,196.1	7.4	7.3	119.84	-138.2	-17.4	117.6	103.1	14.50	8.113		
3,300.0	3,294.5	3,301.1	3,295.8	7.6	7.5	119.44	-144.8	-15.1	119.9	104.9	15.01	7.991		
3,400.0	3,394.2	3,401.0	3,395.5	7.9	7.8	119.05	-151.4	-12.8	122.3	106.8	15.52	7.878		
3,500.0	3,494.0	3,501.0	3,495.2	8.2	8.0	118.69	-158.0	-10.5	124.6	108.6	16.04	7.771		
3,600.0	3,593.7	3,601.0	3,595.0	8.4	8.3	118.33	-164.5	-8.1	127.0	110.4	16.55	7.672		
3,700.0	3,693.5	3,700.9	3,694.7	8.7	8.5	117.99	-171.1	-5.8	129.4	112.3	17.07	7.578		
3,800.0	3,793.3	3,800.9	3,794.4	8.9	8.8	117.66	-177.7	-3.5	131.7	114.1	17.59	7.489		
3,900.0	3,893.0	3,900.9	3,894.1	9.2	9.1	117.34	-184.3	-1.2	134.1	116.0	18.11	7.406		
4,000.0	3,992.8	4,000.9	3,993.9	9.5	9.3	117.04	-190.9	1.1	136.5	117.8	18.62	7.327		
4,100.0	4,092.5	4,100.8	4,093.6	9.7	9.6	116.74	-197.4	3.4	138.8	119.7	19.14	7.252		
4,200.0	4,192.3	4,200.8	4,193.3	10.0	9.8	116.45	-204.0	5.8	141.2	121.5	19.66	7.181		
4,300.0	4,292.0	4,300.8	4,293.0	10.2	10.1	116.18	-210.6	8.1	143.6	123.4	20.18	7.114		
4,400.0	4,391.8	4,400.7	4,392.8	10.5	10.4	115.91	-217.2	10.4	146.0	125.3	20.70	7.051		
4,500.0	4,491.6	4,500.7	4,492.5	10.8	10.6	115.65	-223.7	12.7	148.4	127.1	21.23	6.990		
4,600.0	4,591.3	4,600.7	4,592.2	11.0	10.9	115.40	-230.3	15.0	150.8	129.0	21.75	6.933		
4,700.0	4,691.1	4,700.6	4,691.9	11.3	11.2	115.16	-236.9	17.3	153.2	130.9	22.27	6.878		
4,800.0	4,790.8	4,800.6	4,791.7	11.5	11.4	114.92	-243.5	19.7	155.6	132.8	22.79	6.825		
4,900.0	4,890.6	4,900.6	4,891.4	11.8	11.7	114.69	-250.1	22.0	158.0	134.6	23.31	6.775		
5,000.0	4,990.3	5,000.5	4,991.1	12.1	11.9	114.47	-256.6	24.3	160.4	136.5	23.84	6.727		
5,100.0	5,090.1	5,100.5	5,090.9	12.3	12.2	114.26	-263.2	26.6	162.8	138.4	24.36	6.682		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.9	5,200.5	5,190.6	12.6	12.5	114.05	-269.8	28.9	165.2	140.3	24.88	6.638		
5,300.0	5,289.6	5,300.5	5,290.3	12.9	12.7	113.85	-276.4	31.2	167.6	142.2	25.41	6.596		
5,400.0	5,389.4	5,400.4	5,390.0	13.1	13.0	113.65	-282.9	33.6	170.0	144.1	25.93	6.556		
5,438.0	5,427.3	5,438.4	5,427.9	13.2	13.1	113.58	-285.4	34.4	170.9	144.8	26.13	6.541		
5,450.0	5,439.2	5,450.6	5,440.1	13.3	13.1	113.51	-286.4	34.8	171.2	145.1	26.19	6.538		
5,500.0	5,488.7	5,501.4	5,490.4	13.4	13.3	113.04	-293.2	37.2	173.7	147.2	26.49	6.557		
5,550.0	5,537.3	5,552.1	5,539.5	13.6	13.5	112.27	-304.6	41.2	177.7	150.9	26.84	6.621		
5,600.0	5,584.5	5,602.4	5,587.0	13.9	13.7	111.22	-320.3	46.7	183.4	156.1	27.27	6.726		
5,650.0	5,630.0	5,652.5	5,632.4	14.2	14.0	109.95	-340.1	53.7	190.6	162.8	27.78	6.862		
5,700.0	5,673.2	5,702.1	5,675.2	14.5	14.4	108.50	-363.7	62.0	199.3	170.9	28.38	7.023		
5,750.0	5,713.9	5,751.3	5,715.1	14.9	14.8	106.89	-390.8	71.5	209.5	180.4	29.10	7.198		
5,800.0	5,751.6	5,800.0	5,751.8	15.4	15.2	105.18	-421.0	82.2	221.0	191.0	29.94	7.380		
5,850.0	5,785.9	5,848.3	5,785.1	15.9	15.7	103.40	-454.1	93.8	233.7	202.8	30.91	7.560		
5,900.0	5,816.7	5,896.2	5,814.7	16.4	16.2	101.56	-489.5	106.3	247.5	215.4	32.03	7.727		
5,950.0	5,843.5	5,943.7	5,840.6	17.1	16.7	99.70	-527.1	119.5	262.2	229.0	33.26	7.884		
6,000.0	5,866.1	5,990.9	5,862.5	17.7	17.3	97.84	-566.4	133.4	277.8	243.2	34.61	8.028		
6,050.0	5,884.4	6,037.8	5,880.6	18.5	18.0	95.99	-607.3	147.8	294.1	258.1	36.04	8.160		
6,100.0	5,898.1	6,084.5	5,894.6	19.3	18.6	94.16	-649.3	162.6	310.9	273.4	37.55	8.280		
6,150.0	5,907.1	6,131.2	5,904.5	20.1	19.3	92.37	-692.3	177.7	328.1	289.0	39.12	8.387		
6,200.0	5,911.4	6,177.8	5,910.4	20.9	20.0	90.63	-735.9	193.1	345.5	304.8	40.73	8.484		
6,219.8	5,911.8	6,196.4	5,911.5	21.3	20.3	89.95	-753.4	199.2	352.4	311.1	41.37	8.519		
6,300.0	5,911.8	6,263.4	5,912.1	22.6	21.3	90.04	-816.8	221.0	379.5	335.6	43.93	8.638		
6,400.0	5,911.8	6,341.7	5,912.1	24.2	22.5	90.04	-891.7	243.8	412.2	365.2	46.97	8.776		
6,500.0	5,911.8	6,419.2	5,912.1	25.9	23.6	90.03	-966.7	263.3	443.7	393.7	49.98	8.879		
6,600.0	5,911.8	6,500.0	5,912.1	27.7	24.8	90.03	-1,045.6	280.4	474.2	421.1	53.02	8.943		
6,700.0	5,911.8	6,572.1	5,912.1	29.4	25.9	90.03	-1,116.7	292.8	503.4	447.5	55.92	9.002		
6,800.0	5,911.8	6,647.7	5,912.1	31.2	27.0	90.03	-1,191.5	302.9	531.4	472.6	58.77	9.042		
6,900.0	5,911.8	6,722.6	5,912.1	32.9	28.2	90.03	-1,266.2	310.0	558.2	496.7	61.52	9.073		
7,000.0	5,911.8	6,800.0	5,912.1	34.6	29.4	90.03	-1,343.4	314.3	583.7	519.5	64.17	9.096		
7,100.0	5,911.8	6,872.4	5,912.1	36.3	30.5	90.02	-1,415.8	315.5	607.9	541.3	66.62	9.125		
7,200.0	5,911.8	6,970.2	5,912.1	37.9	32.2	90.02	-1,513.6	315.4	628.6	559.3	69.36	9.063		
7,300.0	5,911.8	7,069.0	5,912.1	39.6	33.8	90.02	-1,612.4	315.4	644.2	572.3	71.98	8.950		
7,400.0	5,911.8	7,168.4	5,912.1	41.1	35.5	90.02	-1,711.8	315.4	654.7	580.2	74.43	8.796		
7,500.0	5,911.8	7,268.3	5,912.1	42.7	37.3	90.02	-1,811.7	315.4	659.8	583.2	76.68	8.605		
7,549.3	5,911.8	7,317.6	5,912.1	43.4	38.1	90.02	-1,861.0	315.4	660.5	582.8	77.72	8.498		
7,600.0	5,911.8	7,368.3	5,912.1	44.2	39.0	90.02	-1,911.7	315.4	660.5	581.0	79.48	8.310		
7,700.0	5,911.8	7,468.3	5,912.1	45.7	40.8	90.02	-2,011.7	315.4	660.5	577.5	82.96	7.961		
7,800.0	5,911.8	7,568.3	5,912.1	47.3	42.5	90.02	-2,111.7	315.4	660.5	574.0	86.48	7.638		
7,900.0	5,911.8	7,668.3	5,912.1	48.8	44.3	90.02	-2,211.7	315.4	660.5	570.5	90.02	7.337		
8,000.0	5,911.8	7,768.3	5,912.1	50.4	46.1	90.02	-2,311.7	315.4	660.5	566.9	93.58	7.058		
8,100.0	5,911.8	7,868.3	5,912.1	52.1	47.9	90.02	-2,411.7	315.4	660.5	563.3	97.17	6.797		
8,200.0	5,911.8	7,968.3	5,912.1	53.7	49.8	90.02	-2,511.7	315.4	660.5	559.7	100.77	6.554		
8,300.0	5,911.8	8,068.3	5,912.1	55.3	51.6	90.02	-2,611.7	315.4	660.5	556.1	104.40	6.326		
8,400.0	5,911.9	8,168.3	5,912.1	57.0	53.4	90.02	-2,711.7	315.4	660.5	552.4	108.04	6.113		
8,500.0	5,911.9	8,268.3	5,912.1	58.7	55.3	90.02	-2,811.7	315.4	660.5	548.8	111.69	5.913		
8,600.0	5,911.9	8,368.3	5,912.0	60.4	57.1	90.02	-2,911.7	315.4	660.5	545.1	115.35	5.725		
8,700.0	5,911.9	8,468.3	5,912.0	62.1	59.0	90.02	-3,011.7	315.4	660.5	541.4	119.03	5.549		
8,800.0	5,911.9	8,568.3	5,912.0	63.9	60.8	90.02	-3,111.7	315.4	660.4	537.7	122.72	5.382		
8,900.0	5,911.9	8,668.3	5,912.0	65.6	62.7	90.02	-3,211.7	315.4	660.4	534.0	126.41	5.225		
9,000.0	5,911.9	8,768.3	5,912.0	67.3	64.5	90.02	-3,311.7	315.4	660.4	530.3	130.12	5.076		
9,100.0	5,911.9	8,868.3	5,912.0	69.1	66.4	90.02	-3,411.7	315.4	660.4	526.6	133.83	4.935		
9,200.0	5,911.9	8,968.3	5,912.0	70.9	68.3	90.01	-3,511.7	315.4	660.4	522.9	137.55	4.802		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,300.0	5,911.9	9,068.3	5,912.0	72.6	70.1	90.01	-3,611.7	315.4	660.4	519.2	141.27	4.675		
9,400.0	5,911.9	9,168.3	5,912.0	74.4	72.0	90.01	-3,711.7	315.4	660.4	515.4	145.01	4.554		
9,500.0	5,911.9	9,268.3	5,912.0	76.2	73.9	90.01	-3,811.7	315.4	660.4	511.7	148.75	4.440		
9,600.0	5,911.9	9,368.3	5,912.0	78.0	75.8	90.01	-3,911.7	315.3	660.4	507.9	152.49	4.331		
9,700.0	5,911.9	9,468.3	5,912.0	79.8	77.6	90.01	-4,011.7	315.3	660.4	504.2	156.24	4.227		
9,800.0	5,911.9	9,568.3	5,912.0	81.6	79.5	90.01	-4,111.7	315.3	660.4	500.4	159.99	4.128		
9,900.0	5,911.9	9,668.3	5,912.0	83.4	81.4	90.01	-4,211.7	315.3	660.4	496.7	163.75	4.033		
10,000.0	5,911.9	9,768.3	5,912.0	85.2	83.3	90.01	-4,311.7	315.3	660.4	492.9	167.51	3.943		
10,100.0	5,911.9	9,868.3	5,912.0	87.0	85.2	90.01	-4,411.7	315.3	660.4	489.1	171.27	3.856		
10,200.0	5,911.9	9,968.3	5,912.0	88.9	87.1	90.01	-4,511.7	315.3	660.4	485.4	175.04	3.773		
10,300.0	5,911.9	10,068.3	5,912.0	90.7	89.0	90.01	-4,611.7	315.3	660.4	481.6	178.81	3.693		
10,400.0	5,911.9	10,168.3	5,912.0	92.5	90.9	90.01	-4,711.7	315.3	660.4	477.8	182.59	3.617		
10,500.0	5,911.9	10,268.3	5,912.0	94.4	92.8	90.01	-4,811.7	315.3	660.4	474.0	186.36	3.544		
10,600.0	5,911.9	10,368.3	5,912.0	96.2	94.6	90.01	-4,911.7	315.3	660.4	470.3	190.14	3.473		
10,700.0	5,911.9	10,468.3	5,912.0	98.0	96.5	90.01	-5,011.7	315.3	660.4	466.5	193.93	3.405		
10,800.0	5,911.9	10,568.3	5,912.0	99.9	98.4	90.01	-5,111.7	315.3	660.4	462.7	197.71	3.340		
10,900.0	5,911.9	10,668.3	5,912.0	101.7	100.3	90.01	-5,211.7	315.3	660.4	458.9	201.50	3.277		
11,000.0	5,911.9	10,768.3	5,912.0	103.6	102.2	90.01	-5,311.7	315.3	660.4	455.1	205.29	3.217		
11,100.0	5,911.9	10,868.3	5,912.0	105.4	104.1	90.01	-5,411.7	315.3	660.4	451.3	209.08	3.159		
11,200.0	5,911.9	10,968.3	5,912.0	107.3	106.0	90.01	-5,511.7	315.3	660.4	447.5	212.87	3.102		
11,300.0	5,911.9	11,068.3	5,912.0	109.2	107.9	90.01	-5,611.7	315.3	660.4	443.7	216.67	3.048		
11,400.0	5,911.9	11,168.3	5,912.0	111.0	109.8	90.01	-5,711.7	315.3	660.4	439.9	220.46	2.995		
11,500.0	5,911.9	11,268.3	5,912.0	112.9	111.7	90.01	-5,811.7	315.3	660.4	436.1	224.26	2.945		
11,600.0	5,911.9	11,368.3	5,912.0	114.7	113.6	90.01	-5,911.7	315.3	660.4	432.3	228.06	2.896		
11,700.0	5,911.9	11,468.3	5,912.0	116.6	115.5	90.01	-6,011.7	315.3	660.4	428.5	231.86	2.848		
11,800.0	5,912.0	11,568.3	5,912.0	118.5	117.5	90.01	-6,111.7	315.3	660.4	424.7	235.66	2.802		
11,900.0	5,912.0	11,668.3	5,912.0	120.4	119.4	90.01	-6,211.7	315.3	660.4	420.9	239.47	2.758		
12,000.0	5,912.0	11,768.3	5,912.0	122.2	121.3	90.01	-6,311.7	315.3	660.4	417.1	243.27	2.715		
12,100.0	5,912.0	11,868.3	5,912.0	124.1	123.2	90.01	-6,411.7	315.2	660.4	413.3	247.08	2.673		
12,200.0	5,912.0	11,968.3	5,912.0	126.0	125.1	90.01	-6,511.7	315.2	660.4	409.5	250.89	2.632		
12,300.0	5,912.0	12,068.3	5,912.0	127.8	127.0	90.01	-6,611.7	315.2	660.4	405.7	254.70	2.593		
12,400.0	5,912.0	12,168.3	5,912.0	129.7	128.9	90.00	-6,711.7	315.2	660.4	401.9	258.50	2.555		
12,500.0	5,912.0	12,268.3	5,912.0	131.6	130.8	90.00	-6,811.7	315.2	660.4	398.0	262.32	2.517		
12,600.0	5,912.0	12,368.3	5,912.0	133.5	132.7	90.00	-6,911.7	315.2	660.4	394.2	266.13	2.481		
12,700.0	5,912.0	12,468.3	5,912.0	135.4	134.6	90.00	-7,011.7	315.2	660.4	390.4	269.94	2.446		
12,800.0	5,912.0	12,568.3	5,912.0	137.2	136.5	90.00	-7,111.7	315.2	660.4	386.6	273.75	2.412		
12,900.0	5,912.0	12,668.3	5,912.0	139.1	138.4	90.00	-7,211.7	315.2	660.3	382.8	277.57	2.379		
13,000.0	5,912.0	12,768.3	5,912.0	141.0	140.3	90.00	-7,311.7	315.2	660.3	379.0	281.38	2.347		
13,100.0	5,912.0	12,868.3	5,912.0	142.9	142.2	90.00	-7,411.7	315.2	660.3	375.1	285.20	2.315		
13,200.0	5,912.0	12,968.3	5,912.0	144.8	144.2	90.00	-7,511.7	315.2	660.3	371.3	289.01	2.285		
13,300.0	5,912.0	13,068.3	5,912.0	146.7	146.1	90.00	-7,611.7	315.2	660.3	367.5	292.83	2.255		
13,400.0	5,912.0	13,168.3	5,912.0	148.6	148.0	90.00	-7,711.7	315.2	660.3	363.7	296.65	2.226		
13,500.0	5,912.0	13,268.3	5,912.0	150.5	149.9	90.00	-7,811.7	315.2	660.3	359.9	300.47	2.198		
13,600.0	5,912.0	13,368.3	5,912.0	152.3	151.8	90.00	-7,911.7	315.2	660.3	356.0	304.29	2.170		
13,700.0	5,912.0	13,468.3	5,912.0	154.2	153.7	90.00	-8,011.7	315.2	660.3	352.2	308.10	2.143		
13,800.0	5,912.0	13,568.3	5,912.0	156.1	155.6	90.00	-8,111.7	315.2	660.3	348.4	311.93	2.117		
13,900.0	5,912.0	13,668.3	5,912.0	158.0	157.3	90.00	-8,211.7	315.2	660.3	344.8	315.51	2.093		
13,925.4	5,912.0	13,693.7	5,912.0	158.4	157.7	90.00	-8,237.1	315.2	660.3	344.0	316.30	2.088 SF		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-23.81	74.9	-33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	-23.81	74.9	-33.0	81.9	81.7	0.19	437.711		
200.0	200.0	200.0	200.0	0.3	0.3	-23.81	74.9	-33.0	81.9	81.2	0.64	128.597		
300.0	300.0	300.0	300.0	0.5	0.5	-23.81	74.9	-33.0	81.9	80.8	1.09	75.369		
400.0	400.0	400.0	400.0	0.8	0.8	-23.81	74.9	-33.0	81.9	80.3	1.54	53.305		
500.0	500.0	502.9	502.8	1.0	1.0	-23.67	73.3	-32.1	80.1	78.1	1.97	40.700		
600.0	600.0	605.3	605.2	1.2	1.2	-23.22	68.5	-29.4	74.7	72.3	2.39	31.211		
700.0	700.0	705.1	704.7	1.4	1.4	-22.54	62.5	-25.9	67.8	65.0	2.83	23.948		
800.0	800.0	804.9	804.2	1.7	1.6	-21.71	56.4	-22.5	60.9	57.6	3.28	18.581		
900.0	900.0	904.6	903.7	1.9	1.9	-20.67	50.4	-19.0	54.0	50.3	3.73	14.473		
1,000.0	1,000.0	1,004.5	1,003.3	2.1	2.1	-160.20	44.4	-15.6	48.8	44.6	4.12	11.846		
1,100.0	1,099.8	1,104.4	1,103.1	2.3	2.4	-160.94	38.3	-12.1	46.8	42.3	4.51	10.366		
1,200.0	1,199.6	1,204.4	1,202.8	2.5	2.6	-162.41	32.2	-8.6	46.5	41.6	4.93	9.442		
1,300.0	1,299.4	1,304.4	1,302.5	2.7	2.9	-163.89	26.2	-5.2	46.3	40.9	5.35	8.654		
1,400.0	1,399.1	1,404.4	1,402.3	2.9	3.1	-165.39	20.1	-1.7	46.0	40.3	5.77	7.979		
1,500.0	1,498.9	1,504.4	1,502.0	3.1	3.4	-166.90	14.1	1.8	45.9	39.7	6.20	7.395		
1,600.0	1,598.6	1,604.4	1,601.8	3.4	3.6	-168.42	8.0	5.2	45.7	39.1	6.63	6.889		
1,700.0	1,698.4	1,704.4	1,701.5	3.6	3.9	-169.95	2.0	8.7	45.6	38.5	7.07	6.446		
1,800.0	1,798.1	1,804.4	1,801.3	3.8	4.2	-171.49	-4.1	12.2	45.5	38.0	7.51	6.056		
1,900.0	1,897.9	1,904.4	1,901.0	4.1	4.4	-173.03	-10.1	15.6	45.4	37.5	7.95	5.712		
2,000.0	1,997.6	2,004.4	2,000.8	4.3	4.7	-174.57	-16.2	19.1	45.4	37.0	8.40	5.406		
2,025.7	2,023.3	2,030.1	2,026.4	4.4	4.8	-174.97	-17.7	20.0	45.4	36.9	8.51	5.333 CC		
2,100.0	2,097.4	2,104.4	2,100.5	4.6	5.0	-176.12	-22.2	22.6	45.4	36.6	8.85	5.133		
2,200.0	2,197.2	2,204.4	2,200.3	4.8	5.2	-177.67	-28.3	26.0	45.5	36.2	9.30	4.888		
2,300.0	2,296.9	2,304.4	2,300.0	5.1	5.5	-179.21	-34.3	29.5	45.5	35.8	9.75	4.668		
2,400.0	2,396.7	2,404.3	2,399.8	5.3	5.7	179.26	-40.4	33.0	45.6	35.4	10.21	4.470		
2,500.0	2,496.4	2,504.3	2,499.5	5.6	6.0	177.73	-46.4	36.4	45.8	35.1	10.67	4.290		
2,600.0	2,596.2	2,604.3	2,599.3	5.8	6.3	176.22	-52.5	39.9	45.9	34.8	11.13	4.126		
2,700.0	2,695.9	2,704.3	2,699.0	6.1	6.5	174.71	-58.5	43.4	46.2	34.5	11.60	3.978		
2,800.0	2,795.7	2,804.3	2,798.8	6.3	6.8	173.22	-64.6	46.8	46.4	34.3	12.07	3.842		
2,900.0	2,895.5	2,904.3	2,898.5	6.6	7.1	171.75	-70.7	50.3	46.7	34.1	12.55	3.718		
3,000.0	2,995.2	3,004.3	2,998.3	6.9	7.3	170.29	-76.7	53.8	46.9	33.9	13.03	3.604		
3,100.0	3,095.0	3,104.3	3,098.0	7.1	7.6	168.86	-82.8	57.2	47.3	33.8	13.51	3.500		
3,200.0	3,194.7	3,204.3	3,197.8	7.4	7.8	167.44	-88.8	60.7	47.6	33.6	13.99	3.404		
3,300.0	3,294.5	3,304.3	3,297.5	7.6	8.1	166.05	-94.9	64.2	48.0	33.5	14.48	3.316		
3,400.0	3,394.2	3,404.3	3,397.3	7.9	8.4	164.68	-100.9	67.6	48.4	33.5	14.97	3.235		
3,500.0	3,494.0	3,504.3	3,497.0	8.2	8.6	163.33	-107.0	71.1	48.9	33.4	15.47	3.160		
3,600.0	3,593.7	3,604.3	3,596.8	8.4	8.9	162.01	-113.0	74.6	49.3	33.4	15.96	3.090		
3,700.0	3,693.5	3,704.2	3,696.5	8.7	9.2	160.71	-119.1	78.0	49.8	33.4	16.47	3.026		
3,800.0	3,793.3	3,804.2	3,796.3	8.9	9.4	159.44	-125.1	81.5	50.3	33.4	16.97	2.966		
3,900.0	3,893.0	3,904.2	3,896.0	9.2	9.7	158.19	-131.2	85.0	50.9	33.4	17.48	2.911		
4,000.0	3,992.8	4,004.2	3,995.8	9.5	10.0	156.98	-137.2	88.4	51.5	33.5	17.99	2.860		
4,100.0	4,092.5	4,104.2	4,095.5	9.7	10.2	155.78	-143.3	91.9	52.0	33.5	18.50	2.812		
4,200.0	4,192.3	4,204.2	4,195.3	10.0	10.5	154.62	-149.3	95.4	52.6	33.6	19.02	2.768		
4,300.0	4,292.0	4,304.2	4,295.0	10.2	10.7	153.48	-155.4	98.8	53.3	33.7	19.54	2.727		
4,400.0	4,391.8	4,404.2	4,394.8	10.5	11.0	152.37	-161.4	102.3	53.9	33.9	20.06	2.689		
4,500.0	4,491.6	4,504.2	4,494.5	10.8	11.3	151.29	-167.5	105.8	54.6	34.0	20.58	2.653		
4,600.0	4,591.3	4,604.2	4,594.3	11.0	11.5	150.24	-173.5	109.2	55.3	34.2	21.10	2.620		
4,700.0	4,691.1	4,704.2	4,694.0	11.3	11.8	149.21	-179.6	112.7	56.0	34.4	21.63	2.589		
4,800.0	4,790.8	4,804.2	4,793.8	11.5	12.1	148.20	-185.7	116.2	56.7	34.6	22.16	2.560		
4,900.0	4,890.6	4,904.2	4,893.5	11.8	12.3	147.22	-191.7	119.6	57.5	34.8	22.69	2.533		
5,000.0	4,990.3	5,004.2	4,993.3	12.1	12.6	146.27	-197.8	123.1	58.2	35.0	23.22	2.508		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,100.0	5,090.1	5,104.1	5,093.0	12.3	12.9	145.34	-203.8	126.6	59.0	35.3	23.75	2.484		
5,200.0	5,189.9	5,204.1	5,192.8	12.6	13.1	144.44	-209.9	130.0	59.8	35.5	24.28	2.462		
5,300.0	5,289.6	5,304.1	5,292.5	12.9	13.4	143.56	-215.9	133.5	60.6	35.8	24.82	2.442		
5,400.0	5,389.4	5,409.4	5,397.0	13.1	13.7	139.12	-226.5	139.6	58.4	32.9	25.58	2.285		
5,438.0	5,427.3	5,449.4	5,435.8	13.2	13.9	133.06	-234.9	144.4	54.8	28.7	26.12	2.099		
5,450.0	5,439.2	5,461.8	5,447.6	13.3	13.9	130.66	-238.1	146.2	53.6	27.3	26.31	2.037		
5,500.0	5,488.7	5,512.8	5,495.4	13.4	14.2	119.31	-253.5	155.0	50.0	22.9	27.16	1.842		
5,533.5	5,521.4	5,546.3	5,525.8	13.6	14.4	110.85	-265.8	162.1	49.3	21.6	27.73	1.777		
5,550.0	5,537.3	5,562.7	5,540.2	13.6	14.5	106.59	-272.5	165.9	49.5	21.5	28.00	1.766 ES		
5,600.0	5,584.5	5,611.5	5,581.8	13.9	14.9	94.20	-294.5	178.5	52.2	23.5	28.72	1.817		
5,650.0	5,630.0	5,659.2	5,620.1	14.2	15.3	83.55	-319.3	192.7	57.7	28.5	29.19	1.977		
5,700.0	5,673.2	5,706.0	5,654.9	14.5	15.7	75.14	-346.4	208.2	65.4	35.9	29.47	2.220		
5,750.0	5,713.9	5,751.9	5,686.2	14.9	16.2	68.80	-375.5	224.9	74.5	44.9	29.62	2.516		
5,800.0	5,751.6	5,797.1	5,714.0	15.4	16.7	64.10	-406.4	242.6	84.5	54.8	29.74	2.842		
5,850.0	5,785.9	5,841.4	5,738.2	15.9	17.3	60.63	-438.6	261.1	95.0	65.2	29.88	3.181		
5,900.0	5,816.7	5,885.2	5,758.9	16.4	17.9	58.07	-472.0	280.2	105.8	75.7	30.08	3.516		
5,950.0	5,843.5	5,928.3	5,776.0	17.1	18.5	56.19	-506.4	299.9	116.6	86.2	30.39	3.836		
6,000.0	5,866.1	5,970.9	5,789.7	17.7	19.1	54.82	-541.4	319.9	127.2	96.4	30.83	4.128		
6,050.0	5,884.4	6,013.1	5,799.9	18.5	19.8	53.85	-576.9	340.2	137.7	106.3	31.42	4.383		
6,100.0	5,898.1	6,054.9	5,806.8	19.3	20.4	53.19	-612.6	360.7	147.9	115.7	32.19	4.594		
6,150.0	5,907.1	6,100.0	5,810.5	20.1	21.2	52.83	-651.7	383.1	157.7	124.5	33.21	4.750		
6,200.0	5,911.4	6,139.6	5,810.8	20.9	21.8	52.74	-686.1	402.7	166.9	132.6	34.35	4.859		
6,219.8	5,911.8	6,157.8	5,810.8	21.3	22.1	53.08	-702.0	411.5	170.2	135.2	35.01	4.860		
6,300.0	5,911.8	6,230.9	5,810.8	22.6	23.2	55.99	-766.8	445.3	182.8	144.5	38.31	4.772		
6,400.0	5,911.8	6,321.5	5,810.8	24.2	24.6	59.04	-848.8	483.7	198.8	156.6	42.24	4.708		
6,500.0	5,911.8	6,411.3	5,810.8	25.9	26.1	61.57	-931.8	517.9	214.9	168.8	46.01	4.669		
6,600.0	5,911.8	6,500.0	5,810.8	27.7	27.5	63.69	-1,015.3	547.9	230.7	181.1	49.63	4.649		
6,700.0	5,911.8	6,588.9	5,810.8	29.4	28.9	65.49	-1,100.3	574.0	246.3	193.2	53.11	4.638		
6,800.0	5,911.8	6,676.8	5,810.8	31.2	30.4	67.02	-1,185.4	595.8	261.6	205.2	56.40	4.638		
6,900.0	5,911.8	6,764.1	5,810.8	32.9	31.8	68.33	-1,270.9	613.6	276.4	216.9	59.51	4.645		
7,000.0	5,911.8	6,850.9	5,810.8	34.6	33.2	69.46	-1,356.6	627.5	290.7	228.3	62.41	4.658		
7,100.0	5,911.8	6,937.2	5,810.8	36.3	34.6	70.45	-1,442.3	637.4	304.4	239.3	65.11	4.676		
7,200.0	5,911.8	7,023.0	5,810.8	37.9	36.0	71.30	-1,527.9	643.3	317.6	250.0	67.60	4.698		
7,300.0	5,911.8	7,108.4	5,810.8	39.6	37.3	72.05	-1,613.2	645.4	330.1	260.2	69.86	4.725		
7,400.0	5,911.8	7,207.0	5,810.8	41.1	38.9	72.67	-1,711.9	645.4	340.0	267.9	72.12	4.714		
7,500.0	5,911.8	7,306.8	5,810.8	42.7	40.5	72.97	-1,811.7	645.4	344.9	270.9	74.10	4.655		
7,549.3	5,911.8	7,356.1	5,810.9	43.4	41.3	73.01	-1,861.0	645.4	345.6	270.6	74.96	4.610		
7,600.0	5,911.8	7,406.8	5,810.9	44.2	42.1	73.01	-1,911.7	645.4	345.6	268.9	76.63	4.509		
7,700.0	5,911.8	7,506.8	5,810.9	45.7	43.8	73.01	-2,011.7	645.4	345.6	265.6	79.95	4.322		
7,800.0	5,911.8	7,606.8	5,810.9	47.3	45.5	73.01	-2,111.7	645.4	345.6	262.3	83.31	4.148		
7,900.0	5,911.8	7,706.8	5,810.9	48.8	47.2	73.01	-2,211.7	645.4	345.6	258.9	86.69	3.986		
8,000.0	5,911.8	7,806.8	5,810.9	50.4	49.0	73.01	-2,311.7	645.4	345.6	255.5	90.10	3.835		
8,100.0	5,911.8	7,906.8	5,810.9	52.1	50.7	73.01	-2,411.7	645.4	345.6	252.0	93.53	3.695		
8,200.0	5,911.8	8,006.8	5,810.9	53.7	52.5	73.01	-2,511.7	645.4	345.6	248.6	96.98	3.563		
8,300.0	5,911.8	8,106.8	5,810.9	55.3	54.2	73.01	-2,611.7	645.4	345.6	245.1	100.44	3.440		
8,400.0	5,911.9	8,206.8	5,810.9	57.0	56.0	73.01	-2,711.7	645.4	345.6	241.6	103.93	3.325		
8,500.0	5,911.9	8,306.8	5,810.9	58.7	57.8	73.01	-2,811.7	645.4	345.6	238.1	107.43	3.217		
8,600.0	5,911.9	8,406.8	5,810.9	60.4	59.6	73.01	-2,911.7	645.4	345.6	234.6	110.94	3.115		
8,700.0	5,911.9	8,506.8	5,810.9	62.1	61.4	73.01	-3,011.7	645.3	345.6	231.1	114.46	3.019		
8,800.0	5,911.9	8,606.8	5,810.9	63.9	63.2	73.01	-3,111.7	645.3	345.6	227.6	118.00	2.929		
8,900.0	5,911.9	8,706.8	5,810.9	65.6	65.0	73.01	-3,211.7	645.3	345.6	224.0	121.54	2.843		
9,000.0	5,911.9	8,806.8	5,810.9	67.3	66.8	73.01	-3,311.7	645.3	345.6	220.5	125.09	2.763		

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 Federal#12F-1308B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4953.6ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal#12F-1308B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #2												Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)			
9,100.0	5,911.9	8,906.8	5,810.9	69.1	68.6	73.01	-3,411.7	645.3	345.6	216.9	128.65	2.686	
9,200.0	5,911.9	9,006.8	5,810.9	70.9	70.5	73.01	-3,511.7	645.3	345.6	213.4	132.22	2.614	
9,300.0	5,911.9	9,106.8	5,810.9	72.6	72.3	73.01	-3,611.7	645.3	345.6	209.8	135.80	2.545	
9,400.0	5,911.9	9,206.8	5,810.9	74.4	74.2	73.01	-3,711.7	645.3	345.6	206.2	139.38	2.479	
9,500.0	5,911.9	9,306.8	5,810.9	76.2	76.0	73.01	-3,811.7	645.3	345.6	202.6	142.97	2.417	
9,600.0	5,911.9	9,406.8	5,810.9	78.0	77.8	73.01	-3,911.7	645.3	345.6	199.0	146.57	2.358	
9,700.0	5,911.9	9,506.8	5,810.9	79.8	79.7	73.01	-4,011.7	645.3	345.6	195.4	150.17	2.301	
9,800.0	5,911.9	9,606.8	5,810.9	81.6	81.6	73.01	-4,111.7	645.3	345.6	191.8	153.77	2.247	
9,900.0	5,911.9	9,706.8	5,810.9	83.4	83.4	73.01	-4,211.7	645.3	345.6	188.2	157.38	2.196	
10,000.0	5,911.9	9,806.8	5,810.9	85.2	85.3	73.01	-4,311.7	645.2	345.6	184.6	160.99	2.147	
10,100.0	5,911.9	9,906.8	5,810.9	87.0	87.1	73.01	-4,411.7	645.2	345.6	181.0	164.61	2.099	
10,200.0	5,911.9	10,006.8	5,810.9	88.9	89.0	73.01	-4,511.7	645.2	345.6	177.4	168.23	2.054	
10,300.0	5,911.9	10,106.8	5,810.9	90.7	90.9	73.01	-4,611.7	645.2	345.6	173.7	171.85	2.011	
10,400.0	5,911.9	10,206.8	5,810.9	92.5	92.7	73.01	-4,711.7	645.2	345.6	170.1	175.48	1.969	
10,500.0	5,911.9	10,306.8	5,810.9	94.4	94.6	73.01	-4,811.7	645.2	345.6	166.5	179.11	1.930	
10,600.0	5,911.9	10,406.8	5,810.9	96.2	96.5	73.01	-4,911.7	645.2	345.6	162.9	182.74	1.891	
10,700.0	5,911.9	10,506.8	5,810.9	98.0	98.4	73.01	-5,011.7	645.2	345.6	159.2	186.38	1.854	
10,800.0	5,911.9	10,606.8	5,810.9	99.9	100.2	73.01	-5,111.7	645.2	345.6	155.6	190.02	1.819	
10,900.0	5,911.9	10,706.8	5,810.9	101.7	102.1	73.01	-5,211.7	645.2	345.6	151.9	193.66	1.785	
11,000.0	5,911.9	10,806.8	5,810.9	103.6	104.0	73.01	-5,311.7	645.2	345.6	148.3	197.30	1.752	
11,100.0	5,911.9	10,906.8	5,810.9	105.4	105.9	73.01	-5,411.7	645.2	345.6	144.7	200.94	1.720	
11,200.0	5,911.9	11,006.8	5,810.9	107.3	107.8	73.01	-5,511.7	645.2	345.6	141.0	204.59	1.689	
11,300.0	5,911.9	11,106.8	5,810.9	109.2	109.7	73.01	-5,611.7	645.1	345.6	137.4	208.24	1.660	
11,400.0	5,911.9	11,206.8	5,810.9	111.0	111.5	73.01	-5,711.7	645.1	345.6	133.7	211.89	1.631	
11,500.0	5,911.9	11,306.8	5,810.9	112.9	113.4	73.01	-5,811.7	645.1	345.6	130.1	215.54	1.603	
11,600.0	5,911.9	11,406.8	5,810.9	114.7	115.3	73.01	-5,911.7	645.1	345.6	126.4	219.19	1.577	
11,700.0	5,911.9	11,506.8	5,810.9	116.6	117.2	73.01	-6,011.7	645.1	345.6	122.8	222.85	1.551	
11,800.0	5,912.0	11,606.8	5,811.0	118.5	119.1	73.01	-6,111.7	645.1	345.6	119.1	226.50	1.526	
11,900.0	5,912.0	11,706.8	5,811.0	120.4	121.0	73.01	-6,211.7	645.1	345.6	115.4	230.16	1.502	
12,000.0	5,912.0	11,806.8	5,811.0	122.2	122.9	73.01	-6,311.7	645.1	345.6	111.8	233.82	1.478 Level 3	
12,100.0	5,912.0	11,906.8	5,811.0	124.1	124.8	73.01	-6,411.7	645.1	345.6	108.1	237.48	1.455 Level 3	
12,200.0	5,912.0	12,006.8	5,811.0	126.0	126.7	73.01	-6,511.7	645.1	345.6	104.5	241.14	1.433 Level 3	
12,300.0	5,912.0	12,106.8	5,811.0	127.8	128.6	73.01	-6,611.7	645.1	345.6	100.8	244.81	1.412 Level 3	
12,400.0	5,912.0	12,206.8	5,811.0	129.7	130.5	73.01	-6,711.7	645.1	345.6	97.1	248.47	1.391 Level 3	
12,500.0	5,912.0	12,306.8	5,811.0	131.6	132.4	73.01	-6,811.7	645.1	345.6	93.5	252.14	1.371 Level 3	
12,600.0	5,912.0	12,406.8	5,811.0	133.5	134.3	73.01	-6,911.7	645.1	345.6	89.8	255.80	1.351 Level 3	
12,700.0	5,912.0	12,506.8	5,811.0	135.4	136.2	73.01	-7,011.7	645.0	345.6	86.1	259.47	1.332 Level 3	
12,800.0	5,912.0	12,606.8	5,811.0	137.2	138.1	73.01	-7,111.7	645.0	345.6	82.5	263.14	1.313 Level 3	
12,900.0	5,912.0	12,706.8	5,811.0	139.1	140.0	73.01	-7,211.7	645.0	345.6	78.8	266.81	1.295 Level 3	
13,000.0	5,912.0	12,806.8	5,811.0	141.0	141.9	73.01	-7,311.7	645.0	345.6	75.1	270.47	1.278 Level 3	
13,100.0	5,912.0	12,906.8	5,811.0	142.9	143.8	73.01	-7,411.7	645.0	345.6	71.5	274.15	1.261 Level 3	
13,200.0	5,912.0	13,006.8	5,811.0	144.8	145.7	73.01	-7,511.7	645.0	345.6	67.8	277.82	1.244 Level 2	
13,300.0	5,912.0	13,106.8	5,811.0	146.7	147.6	73.01	-7,611.7	645.0	345.6	64.1	281.49	1.228 Level 2	
13,400.0	5,912.0	13,206.8	5,811.0	148.6	149.5	73.01	-7,711.7	645.0	345.6	60.5	285.16	1.212 Level 2	
13,500.0	5,912.0	13,306.8	5,811.0	150.5	151.4	73.01	-7,811.7	645.0	345.6	56.8	288.83	1.197 Level 2	
13,600.0	5,912.0	13,406.8	5,811.0	152.3	153.3	73.01	-7,911.7	645.0	345.6	53.1	292.51	1.182 Level 2	
13,700.0	5,912.0	13,506.8	5,811.0	154.2	155.2	73.01	-8,011.7	645.0	345.6	49.4	296.18	1.167 Level 2	
13,800.0	5,912.0	13,606.8	5,811.0	156.1	157.1	73.01	-8,111.7	645.0	345.6	45.8	299.86	1.153 Level 2	
13,900.0	5,912.0	13,706.8	5,811.0	158.0	159.0	73.01	-8,211.7	645.0	345.6	42.1	303.53	1.139 Level 2	
13,925.4	5,912.0	13,732.3	5,811.0	158.4	159.5	73.01	-8,237.1	645.0	345.6	41.3	304.38	1.136 Level 2, SF	

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

# Cathedral Energy Services

## Anticollision Report

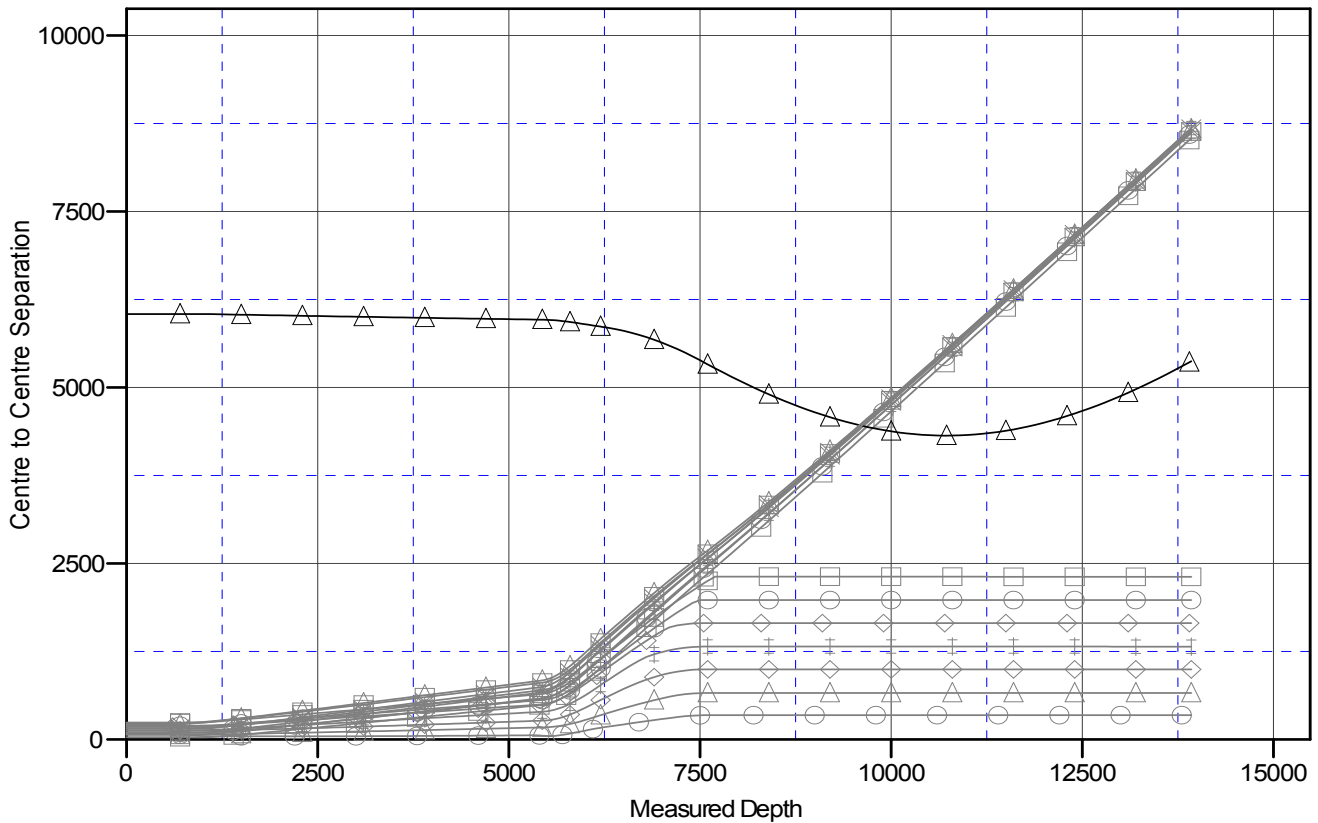
**Company:** Whiting Petroleum Corporation  
**Project:** Weld County, CO  
**Reference Site:** S12-T10N-R58W  
**Site Error:** 0.0ft  
**Reference Well:** Razor Federal#12F-1308B  
**Well Error:** 0.0ft  
**Reference Wellbore:** HZ  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well Razor Federal#12F-1308B  
**TVD Reference:** WELL @ 4953.6ft (Original Well Elev)  
**MD Reference:** WELL @ 4953.6ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** USA EDM 5000 Multi Users DB  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to WELL @ 4953.6ft (Original Well Elev)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor Federal#12F-1308B  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 1.09°

### Ladder Plot



### LEGEND

razor#12F-1306B, HZ, Plan #2 V0	✱ Razor#12F-0107A, HZ, Plan #2 V0	✱ Razor#12F-0103A, HZ, Plan #2 V0
razor#12F-1304B, HZ, Plan #2 V0	✱ Razor Federal#12F-1301A, HZ, Plan #2 V0	▲ ALLAN 1 (EXISTING), DAVIS OIL WELL N
razor#12F-1308B, HZ, Plan #2 V0	○ Razor Federal#12F-1302B, HZ, Plan #2 V0	▲ Razor#12F-0101A, HZ, Plan #2 V0
razor#12F-1306B, HZ, Plan #2 V0	✱ Razor#12F-0102B, HZ, Plan #2 V0	✱ Razor#12F-0105A, HZ, Plan #2 V0
razor#12F-1305A, HZ, Plan #2 V0	◆ Razor Federal#12F-1303A, HZ, Plan #2 V0	
razor#12F-1307A, HZ, Plan #2 V0	✱ Razor#12F-0104B, HZ, Plan #2 V0	