

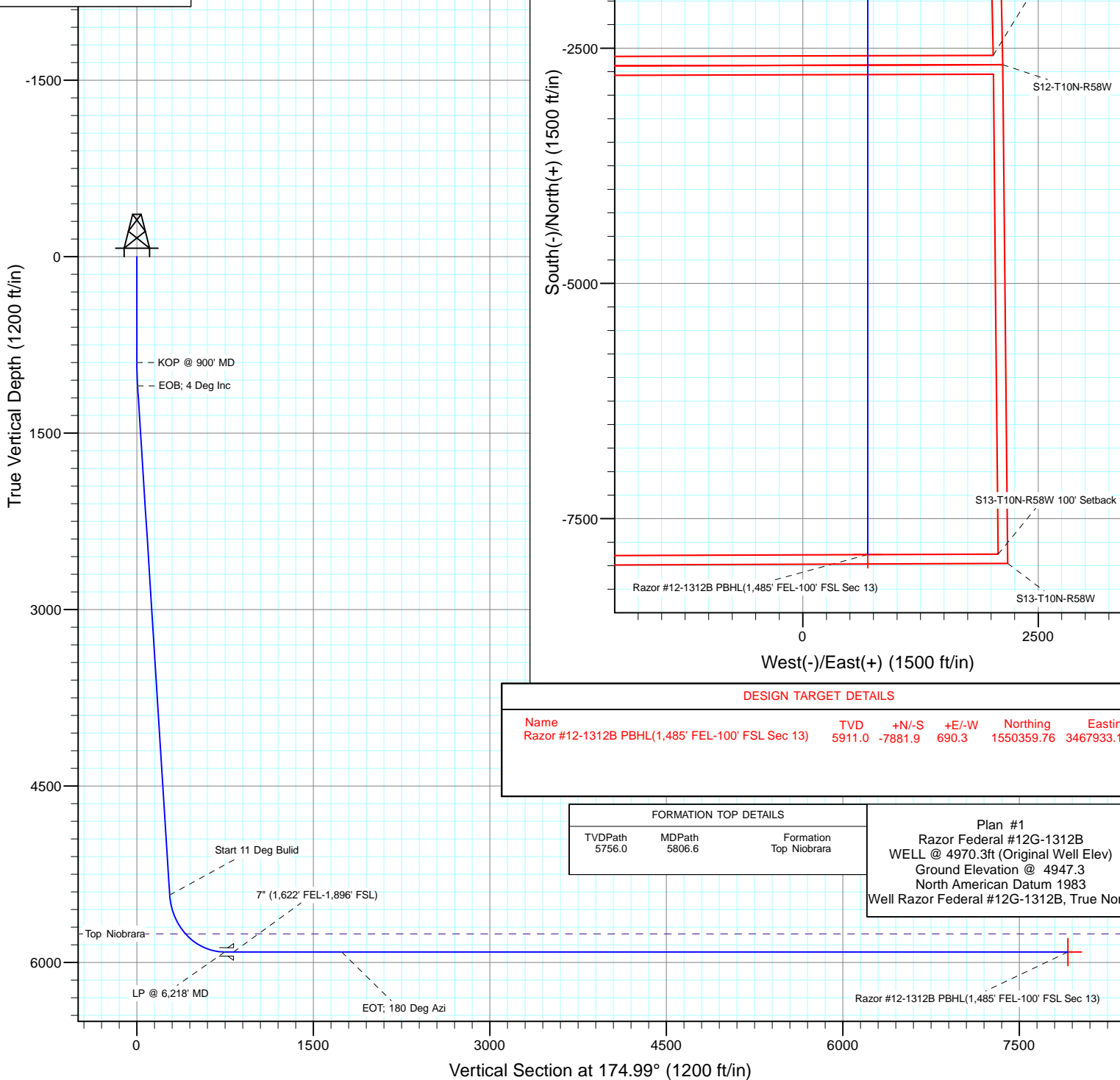
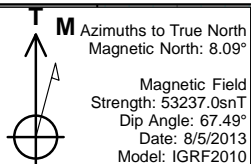


Project: Weld County, CO  
Site: S12-T10N-R58W  
Well: Razor Federal #12G-1312B  
Wellbore: HZ  
Design: Plan #1



#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	KOP @ 900' MD
2	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0	EOB; 4 Deg Inc
3	1100.0	4.00	149.33	1099.8	-6.0	3.6	2.00	149.33	6.3	Start 11 Deg Build
4	5437.0	4.00	149.33	5426.3	-266.2	157.9	0.00	0.00	279.0	LP @ 6,218' MD
5	6218.8	90.00	149.33	5910.8	-713.1	422.9	11.00	0.00	747.3	EOT; 180 Deg Azi
6	7241.1	90.00	180.00	5910.8	-1687.3	690.1	3.00	90.00	1741.0	PBHL @ 13,435' MD
7	13435.7	90.00	180.00	5911.0	-7881.9	690.3	0.00	0.00	7912.1	



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor #12-1312B PBHL(1,485' FEL-100' FSL Sec 13)	5911.0	-7881.9	690.3	1550359.76	3467933.12

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5756.0	5806.6	Top Niobrara

Plan #1  
Razor Federal #12G-1312B  
WELL @ 4970.3ft (Original Well Elev)  
Ground Elevation @ 4947.3  
North American Datum 1983  
Well Razor Federal #12G-1312B, 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 #12G-1312B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1312B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

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

Site		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 #12G-1312B					
Well Position	+N/-S	0.0 ft	Northing:	1,558,227.11 ft	Latitude:	40.853494
	+E/-W	0.0 ft	Easting:	3,467,092.87 ft	Longitude:	-103.811517
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,947.3 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	8/5/2013	8.08	67.49	53,237

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	174.99

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
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	149.33	1,099.8	-6.0	3.6	2.00	2.00	0.00	149.33	
5,437.0	4.00	149.33	5,426.3	-266.2	157.9	0.00	0.00	0.00	0.00	
6,218.8	90.00	149.33	5,910.8	-713.1	422.9	11.00	11.00	0.00	0.00	
7,241.1	90.00	180.00	5,910.8	-1,687.3	690.1	3.00	0.00	3.00	90.00	
13,435.7	90.00	180.00	5,911.0	-7,881.9	690.3	0.00	0.00	0.00	0.00	Razor #12-1312B PBI

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1312B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
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	149.33	1,000.0	-1.5	0.9	1.6	2.00	2.00	
1,100.0	4.00	149.33	1,099.8	-6.0	3.6	6.3	2.00	2.00	EOB; 4 Deg Inc
1,200.0	4.00	149.33	1,199.6	-12.0	7.1	12.6	0.00	0.00	
1,300.0	4.00	149.33	1,299.4	-18.0	10.7	18.9	0.00	0.00	
1,400.0	4.00	149.33	1,399.1	-24.0	14.2	25.2	0.00	0.00	
1,500.0	4.00	149.33	1,498.9	-30.0	17.8	31.4	0.00	0.00	
1,600.0	4.00	149.33	1,598.6	-36.0	21.4	37.7	0.00	0.00	
1,700.0	4.00	149.33	1,698.4	-42.0	24.9	44.0	0.00	0.00	
1,800.0	4.00	149.33	1,798.1	-48.0	28.5	50.3	0.00	0.00	
1,900.0	4.00	149.33	1,897.9	-54.0	32.0	56.6	0.00	0.00	
2,000.0	4.00	149.33	1,997.6	-60.0	35.6	62.9	0.00	0.00	
2,100.0	4.00	149.33	2,097.4	-66.0	39.1	69.2	0.00	0.00	
2,200.0	4.00	149.33	2,197.2	-72.0	42.7	75.5	0.00	0.00	
2,300.0	4.00	149.33	2,296.9	-78.0	46.3	81.7	0.00	0.00	
2,400.0	4.00	149.33	2,396.7	-84.0	49.8	88.0	0.00	0.00	
2,500.0	4.00	149.33	2,496.4	-90.0	53.4	94.3	0.00	0.00	
2,600.0	4.00	149.33	2,596.2	-96.0	56.9	100.6	0.00	0.00	
2,700.0	4.00	149.33	2,695.9	-102.0	60.5	106.9	0.00	0.00	
2,800.0	4.00	149.33	2,795.7	-108.0	64.0	113.2	0.00	0.00	
2,900.0	4.00	149.33	2,895.5	-114.0	67.6	119.5	0.00	0.00	
3,000.0	4.00	149.33	2,995.2	-120.0	71.2	125.8	0.00	0.00	
3,100.0	4.00	149.33	3,095.0	-126.0	74.7	132.0	0.00	0.00	
3,200.0	4.00	149.33	3,194.7	-132.0	78.3	138.3	0.00	0.00	
3,300.0	4.00	149.33	3,294.5	-138.0	81.8	144.6	0.00	0.00	
3,400.0	4.00	149.33	3,394.2	-144.0	85.4	150.9	0.00	0.00	
3,500.0	4.00	149.33	3,494.0	-150.0	89.0	157.2	0.00	0.00	
3,600.0	4.00	149.33	3,593.7	-156.0	92.5	163.5	0.00	0.00	
3,700.0	4.00	149.33	3,693.5	-162.0	96.1	169.8	0.00	0.00	
3,800.0	4.00	149.33	3,793.3	-168.0	99.6	176.1	0.00	0.00	
3,900.0	4.00	149.33	3,893.0	-174.0	103.2	182.3	0.00	0.00	
4,000.0	4.00	149.33	3,992.8	-180.0	106.7	188.6	0.00	0.00	
4,100.0	4.00	149.33	4,092.5	-186.0	110.3	194.9	0.00	0.00	
4,200.0	4.00	149.33	4,192.3	-192.0	113.9	201.2	0.00	0.00	
4,300.0	4.00	149.33	4,292.0	-198.0	117.4	207.5	0.00	0.00	
4,400.0	4.00	149.33	4,391.8	-204.0	121.0	213.8	0.00	0.00	
4,500.0	4.00	149.33	4,491.6	-210.0	124.5	220.1	0.00	0.00	
4,600.0	4.00	149.33	4,591.3	-216.0	128.1	226.4	0.00	0.00	
4,700.0	4.00	149.33	4,691.1	-222.0	131.7	232.6	0.00	0.00	
4,800.0	4.00	149.33	4,790.8	-228.0	135.2	238.9	0.00	0.00	
4,900.0	4.00	149.33	4,890.6	-234.0	138.8	245.2	0.00	0.00	
5,000.0	4.00	149.33	4,990.3	-240.0	142.3	251.5	0.00	0.00	
5,100.0	4.00	149.33	5,090.1	-246.0	145.9	257.8	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1312B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	149.33	5,189.9	-252.0	149.4	264.1	0.00	0.00	
5,300.0	4.00	149.33	5,289.6	-258.0	153.0	270.4	0.00	0.00	
5,400.0	4.00	149.33	5,389.4	-264.0	156.6	276.7	0.00	0.00	
5,437.0	4.00	149.33	5,426.3	-266.2	157.9	279.0	0.00	0.00	Start 11 Deg Bulid
5,450.0	5.43	149.33	5,439.2	-267.1	158.4	279.9	11.00	11.00	
5,500.0	10.93	149.33	5,488.7	-273.3	162.1	286.3	11.00	11.00	
5,550.0	16.43	149.33	5,537.3	-283.4	168.1	297.0	11.00	11.00	
5,600.0	21.93	149.33	5,584.5	-297.5	176.5	311.8	11.00	11.00	
5,650.0	27.43	149.33	5,629.9	-315.5	187.1	330.6	11.00	11.00	
5,700.0	32.93	149.33	5,673.1	-337.1	199.9	353.3	11.00	11.00	
5,750.0	38.43	149.33	5,713.7	-362.2	214.8	379.5	11.00	11.00	
5,800.0	43.93	149.33	5,751.3	-390.5	231.6	409.2	11.00	11.00	
5,806.6	44.65	149.33	5,756.0	-394.4	233.9	413.3	11.00	11.00	Top Niobrara
5,850.0	49.43	149.33	5,785.6	-421.8	250.1	442.0	11.00	11.00	
5,900.0	54.93	149.33	5,816.3	-455.7	270.3	477.6	11.00	11.00	
5,950.0	60.43	149.33	5,843.0	-492.0	291.8	515.6	11.00	11.00	
6,000.0	65.93	149.33	5,865.5	-530.4	314.6	555.8	11.00	11.00	
6,050.0	71.43	149.33	5,883.7	-570.5	338.3	597.8	11.00	11.00	
6,100.0	76.93	149.33	5,897.3	-611.8	362.8	641.1	11.00	11.00	
6,150.0	82.43	149.33	5,906.3	-654.1	387.9	685.5	11.00	11.00	
6,200.0	87.93	149.33	5,910.5	-696.9	413.3	730.3	11.00	11.00	
6,218.8	90.00	149.33	5,910.8	-713.1	422.9	747.3	11.00	11.00	LP @ 6,218' MD
6,300.0	90.00	151.77	5,910.8	-783.8	462.8	821.2	3.00	0.00	7" (1,622' FEL-1,896' FSL)
6,400.0	90.00	154.77	5,910.8	-873.1	507.8	914.1	3.00	0.00	
6,500.0	90.00	157.77	5,910.8	-964.6	548.1	1,008.8	3.00	0.00	
6,600.0	90.00	160.77	5,910.8	-1,058.2	583.5	1,105.0	3.00	0.00	
6,700.0	90.00	163.77	5,910.8	-1,153.4	613.9	1,202.6	3.00	0.00	
6,800.0	90.00	166.77	5,910.8	-1,250.1	639.4	1,301.1	3.00	0.00	
6,900.0	90.00	169.77	5,910.8	-1,348.0	659.7	1,400.4	3.00	0.00	
7,000.0	90.00	172.77	5,910.8	-1,446.8	674.9	1,500.2	3.00	0.00	
7,100.0	90.00	175.77	5,910.8	-1,546.3	684.9	1,600.2	3.00	0.00	
7,200.0	90.00	178.77	5,910.8	-1,646.2	689.6	1,700.1	3.00	0.00	
7,241.1	90.00	180.00	5,910.8	-1,687.3	690.1	1,741.0	3.00	0.00	EOT; 180 Deg Azi
7,300.0	90.00	180.00	5,910.8	-1,746.2	690.1	1,799.7	0.00	0.00	
7,400.0	90.00	180.00	5,910.8	-1,846.2	690.1	1,899.3	0.00	0.00	
7,500.0	90.00	180.00	5,910.8	-1,946.2	690.1	1,999.0	0.00	0.00	
7,600.0	90.00	180.00	5,910.8	-2,046.2	690.1	2,098.6	0.00	0.00	
7,700.0	90.00	180.00	5,910.8	-2,146.2	690.1	2,198.2	0.00	0.00	
7,800.0	90.00	180.00	5,910.9	-2,246.2	690.1	2,297.8	0.00	0.00	
7,900.0	90.00	180.00	5,910.9	-2,346.2	690.1	2,397.4	0.00	0.00	
8,000.0	90.00	180.00	5,910.9	-2,446.2	690.1	2,497.1	0.00	0.00	
8,100.0	90.00	180.00	5,910.9	-2,546.2	690.1	2,596.7	0.00	0.00	
8,200.0	90.00	180.00	5,910.9	-2,646.2	690.1	2,696.3	0.00	0.00	
8,300.0	90.00	180.00	5,910.9	-2,746.2	690.1	2,795.9	0.00	0.00	
8,400.0	90.00	180.00	5,910.9	-2,846.2	690.1	2,895.5	0.00	0.00	
8,500.0	90.00	180.00	5,910.9	-2,946.2	690.1	2,995.2	0.00	0.00	
8,600.0	90.00	180.00	5,910.9	-3,046.2	690.1	3,094.8	0.00	0.00	
8,700.0	90.00	180.00	5,910.9	-3,146.2	690.1	3,194.4	0.00	0.00	
8,800.0	90.00	180.00	5,910.9	-3,246.2	690.1	3,294.0	0.00	0.00	
8,900.0	90.00	180.00	5,910.9	-3,346.2	690.1	3,393.6	0.00	0.00	
9,000.0	90.00	180.00	5,910.9	-3,446.2	690.1	3,493.3	0.00	0.00	
9,100.0	90.00	180.00	5,910.9	-3,546.2	690.1	3,592.9	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1312B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,200.0	90.00	180.00	5,910.9	-3,646.2	690.1	3,692.5	0.00	0.00	
9,300.0	90.00	180.00	5,910.9	-3,746.2	690.2	3,792.1	0.00	0.00	
9,400.0	90.00	180.00	5,910.9	-3,846.2	690.2	3,891.7	0.00	0.00	
9,500.0	90.00	180.00	5,910.9	-3,946.2	690.2	3,991.3	0.00	0.00	
9,600.0	90.00	180.00	5,910.9	-4,046.2	690.2	4,091.0	0.00	0.00	
9,700.0	90.00	180.00	5,910.9	-4,146.2	690.2	4,190.6	0.00	0.00	
9,800.0	90.00	180.00	5,910.9	-4,246.2	690.2	4,290.2	0.00	0.00	
9,900.0	90.00	180.00	5,910.9	-4,346.2	690.2	4,389.8	0.00	0.00	
10,000.0	90.00	180.00	5,910.9	-4,446.2	690.2	4,489.4	0.00	0.00	
10,100.0	90.00	180.00	5,910.9	-4,546.2	690.2	4,589.1	0.00	0.00	
10,200.0	90.00	180.00	5,910.9	-4,646.2	690.2	4,688.7	0.00	0.00	
10,300.0	90.00	180.00	5,910.9	-4,746.2	690.2	4,788.3	0.00	0.00	
10,400.0	90.00	180.00	5,910.9	-4,846.2	690.2	4,887.9	0.00	0.00	
10,500.0	90.00	180.00	5,910.9	-4,946.2	690.2	4,987.5	0.00	0.00	
10,600.0	90.00	180.00	5,910.9	-5,046.2	690.2	5,087.2	0.00	0.00	
10,700.0	90.00	180.00	5,910.9	-5,146.2	690.2	5,186.8	0.00	0.00	
10,800.0	90.00	180.00	5,910.9	-5,246.2	690.2	5,286.4	0.00	0.00	
10,900.0	90.00	180.00	5,910.9	-5,346.2	690.2	5,386.0	0.00	0.00	
11,000.0	90.00	180.00	5,910.9	-5,446.2	690.2	5,485.6	0.00	0.00	
11,100.0	90.00	180.00	5,910.9	-5,546.2	690.2	5,585.3	0.00	0.00	
11,200.0	90.00	180.00	5,910.9	-5,646.2	690.2	5,684.9	0.00	0.00	
11,300.0	90.00	180.00	5,911.0	-5,746.2	690.2	5,784.5	0.00	0.00	
11,400.0	90.00	180.00	5,911.0	-5,846.2	690.2	5,884.1	0.00	0.00	
11,500.0	90.00	180.00	5,911.0	-5,946.2	690.2	5,983.7	0.00	0.00	
11,600.0	90.00	180.00	5,911.0	-6,046.2	690.2	6,083.3	0.00	0.00	
11,700.0	90.00	180.00	5,911.0	-6,146.2	690.2	6,183.0	0.00	0.00	
11,800.0	90.00	180.00	5,911.0	-6,246.2	690.2	6,282.6	0.00	0.00	
11,900.0	90.00	180.00	5,911.0	-6,346.2	690.2	6,382.2	0.00	0.00	
12,000.0	90.00	180.00	5,911.0	-6,446.2	690.3	6,481.8	0.00	0.00	
12,100.0	90.00	180.00	5,911.0	-6,546.2	690.3	6,581.4	0.00	0.00	
12,200.0	90.00	180.00	5,911.0	-6,646.2	690.3	6,681.1	0.00	0.00	
12,300.0	90.00	180.00	5,911.0	-6,746.2	690.3	6,780.7	0.00	0.00	
12,400.0	90.00	180.00	5,911.0	-6,846.2	690.3	6,880.3	0.00	0.00	
12,500.0	90.00	180.00	5,911.0	-6,946.2	690.3	6,979.9	0.00	0.00	
12,600.0	90.00	180.00	5,911.0	-7,046.2	690.3	7,079.5	0.00	0.00	
12,700.0	90.00	180.00	5,911.0	-7,146.2	690.3	7,179.2	0.00	0.00	
12,800.0	90.00	180.00	5,911.0	-7,246.2	690.3	7,278.8	0.00	0.00	
12,900.0	90.00	180.00	5,911.0	-7,346.2	690.3	7,378.4	0.00	0.00	
13,000.0	90.00	180.00	5,911.0	-7,446.2	690.3	7,478.0	0.00	0.00	
13,100.0	90.00	180.00	5,911.0	-7,546.2	690.3	7,577.6	0.00	0.00	
13,200.0	90.00	180.00	5,911.0	-7,646.2	690.3	7,677.2	0.00	0.00	
13,300.0	90.00	180.00	5,911.0	-7,746.2	690.3	7,776.9	0.00	0.00	
13,400.0	90.00	180.00	5,911.0	-7,846.2	690.3	7,876.5	0.00	0.00	
13,435.7	90.00	180.00	5,911.0	-7,881.9	690.3	7,912.1	0.00	0.00	PBHL @ 13,435' MD

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site:</b>	S12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1312B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

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 #12-1312B PBHL	0.00	0.00	5,911.0	-7,881.9	690.3	1,550,359.76	3,467,933.12	40.831861	-103.809022
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name		
(ft)	(ft)			
		Casing Diameter	Hole Diameter	
		(in)	(in)	
6,300.0	5,910.8	7" (1,622' FEL-1,896' FSL)	7.000	7.500

Formations				
Measured Depth	Vertical Depth	Name		
(ft)	(ft)			
		Lithology	Dip	Dip Direction
			(°)	(°)
5,806.6	5,756.0	Top Niobrara	0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		
(ft)	(ft)	+N/-S	+E/-W	
		(ft)	(ft)	Comment
900.0	900.0	0.0	0.0	KOP @ 900' MD
1,100.0	1,099.8	-6.0	3.6	EOB; 4 Deg Inc
5,437.0	5,426.3	-266.2	157.9	Start 11 Deg Bulid
6,218.8	5,910.8	-713.1	422.9	LP @ 6,218' MD
7,241.1	5,910.8	-1,687.3	690.1	EOT; 180 Deg Azi
13,435.7	5,911.0	-7,881.9	690.3	PBHL @ 13,435' MD

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S12-T10N-R58W**

**Razor Federal #12G-1312B**

**HZ**

**Plan #1**

## **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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #1		
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	10/15/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,434.9	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
Offset Well - Wellbore - Design						
S12-T10N-R58W						
Razor #12G-0109A - HZ - Plan #1	900.0	900.0	123.6	119.9	32.804	CC, ES
Razor #12G-0109A - HZ - Plan #1	1,100.0	1,092.2	135.8	131.2	29.647	SF
Razor #12G-0110B - HZ - Plan #1	900.0	900.0	99.9	96.1	26.503	CC, ES
Razor #12G-0110B - HZ - Plan #1	1,100.0	1,096.9	108.1	103.5	23.564	SF
Razor #12G-0111A - HZ - Plan #1	900.0	900.0	81.9	78.1	21.719	CC, ES
Razor #12G-0111A - HZ - Plan #1	1,100.0	1,099.8	88.8	84.2	19.327	SF
Razor #12G-0112B - HZ - Plan #1	900.0	900.0	74.9	71.1	19.869	CC, ES
Razor #12G-0112B - HZ - Plan #1	1,200.0	1,199.6	87.2	82.2	17.402	SF
Razor Federal #12G-1309A - HZ - Plan #1	900.0	900.0	99.1	95.4	26.251	CC, ES
Razor Federal #12G-1309A - HZ - Plan #1	13,435.8	13,218.5	995.0	692.8	3.292	SF
Razor Federal #12G-1310B - HZ - Plan #1	900.0	900.0	66.1	62.3	17.501	CC, ES
Razor Federal #12G-1310B - HZ - Plan #1	13,435.8	13,290.5	660.3	356.8	2.175	SF
Razor Federal #12G-1311A - HZ - Plan #1	900.0	900.0	33.0	29.3	8.750	CC, ES
Razor Federal #12G-1311A - HZ - Plan #1	13,435.8	13,249.1	344.3	53.6	1.184	Level 2, SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0109A - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-ISCWSA 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	-52.70	74.9	-98.4	123.6					
100.0	100.0	100.0	100.0	0.1	0.1	-52.70	74.9	-98.4	123.6	123.5	0.17	714.521		
200.0	200.0	200.0	200.0	0.3	0.3	-52.70	74.9	-98.4	123.6	123.0	0.62	198.603		
300.0	300.0	300.0	300.0	0.5	0.5	-52.70	74.9	-98.4	123.6	122.6	1.07	115.330		
400.0	400.0	400.0	400.0	0.8	0.8	-52.70	74.9	-98.4	123.6	122.1	1.52	81.258		
500.0	500.0	500.0	500.0	1.0	1.0	-52.70	74.9	-98.4	123.6	121.7	1.97	62.727		
600.0	600.0	600.0	600.0	1.2	1.2	-52.70	74.9	-98.4	123.6	121.2	2.42	51.079		
700.0	700.0	700.0	700.0	1.4	1.4	-52.70	74.9	-98.4	123.6	120.8	2.87	43.079		
800.0	800.0	800.0	800.0	1.7	1.7	-52.70	74.9	-98.4	123.6	120.3	3.32	37.245		
900.0	900.0	900.0	900.0	1.9	1.9	-52.70	74.9	-98.4	123.6	119.9	3.77	32.804 CC, ES		
1,000.0	1,000.0	996.4	996.4	2.1	2.1	158.64	76.5	-98.9	126.7	122.5	4.18	30.273		
1,100.0	1,099.8	1,092.2	1,092.1	2.3	2.3	160.47	81.0	-100.4	135.8	131.2	4.58	29.647 SF		
1,200.0	1,199.6	1,190.9	1,190.5	2.5	2.5	162.76	87.5	-102.6	148.5	143.5	4.99	29.734		
1,300.0	1,299.4	1,290.0	1,289.3	2.7	2.8	164.70	94.1	-104.9	161.3	155.9	5.41	29.818		
1,400.0	1,399.1	1,389.0	1,388.1	2.9	3.0	166.35	100.6	-107.1	174.3	168.4	5.83	29.886		
1,500.0	1,498.9	1,488.0	1,486.9	3.1	3.2	167.77	107.2	-109.3	187.4	181.1	6.26	29.940		
1,600.0	1,598.6	1,587.1	1,585.7	3.3	3.5	169.00	113.7	-111.5	200.6	193.9	6.69	29.984		
1,700.0	1,698.4	1,686.1	1,684.5	3.6	3.7	170.08	120.2	-113.8	213.9	206.8	7.12	30.020		
1,800.0	1,798.1	1,785.1	1,783.3	3.8	4.0	171.04	126.8	-116.0	227.2	219.7	7.56	30.051		
1,900.0	1,897.9	1,884.2	1,882.1	4.1	4.2	171.89	133.3	-118.2	240.6	232.6	8.00	30.079		
2,000.0	1,997.6	1,983.2	1,980.9	4.3	4.5	172.64	139.9	-120.4	254.1	245.7	8.44	30.102		
2,100.0	2,097.4	2,082.3	2,079.7	4.6	4.7	173.33	146.4	-122.6	267.6	258.7	8.88	30.122		
2,200.0	2,197.2	2,181.3	2,178.5	4.8	5.0	173.94	152.9	-124.9	281.1	271.8	9.33	30.140		
2,300.0	2,296.9	2,280.3	2,277.3	5.1	5.2	174.51	159.5	-127.1	294.7	284.9	9.77	30.155		
2,400.0	2,396.7	2,379.4	2,376.1	5.3	5.5	175.02	166.0	-129.3	308.3	298.0	10.22	30.169		
2,500.0	2,496.4	2,478.4	2,474.9	5.6	5.7	175.48	172.6	-131.5	321.9	311.2	10.66	30.182		
2,600.0	2,596.2	2,577.4	2,573.7	5.8	6.0	175.91	179.1	-133.8	335.5	324.4	11.11	30.193		
2,700.0	2,695.9	2,676.5	2,672.5	6.1	6.2	176.31	185.7	-136.0	349.1	337.6	11.56	30.203		
2,800.0	2,795.7	2,775.5	2,771.3	6.3	6.5	176.68	192.2	-138.2	362.8	350.8	12.01	30.212		
2,900.0	2,895.5	2,874.6	2,870.1	6.6	6.7	177.02	198.7	-140.4	376.5	364.0	12.46	30.220		
3,000.0	2,995.2	2,973.6	2,968.9	6.8	7.0	177.33	205.3	-142.6	390.1	377.2	12.91	30.227		
3,100.0	3,095.0	3,072.6	3,067.7	7.1	7.2	177.63	211.8	-144.9	403.8	390.5	13.36	30.234		
3,200.0	3,194.7	3,171.7	3,166.5	7.4	7.5	177.90	218.4	-147.1	417.5	403.7	13.81	30.240		
3,300.0	3,294.5	3,270.7	3,265.3	7.6	7.7	178.16	224.9	-149.3	431.3	417.0	14.26	30.246		
3,400.0	3,394.2	3,369.7	3,364.1	7.9	8.0	178.40	231.4	-151.5	445.0	430.3	14.71	30.251		
3,500.0	3,494.0	3,468.8	3,462.9	8.1	8.2	178.63	238.0	-153.7	458.7	443.5	15.16	30.256		
3,600.0	3,593.8	3,567.8	3,561.6	8.4	8.5	178.85	244.5	-156.0	472.4	456.8	15.61	30.261		
3,700.0	3,693.5	3,666.9	3,660.4	8.7	8.7	179.05	251.1	-158.2	486.2	470.1	16.06	30.265		
3,800.0	3,793.3	3,765.9	3,759.2	8.9	9.0	179.24	257.6	-160.4	499.9	483.4	16.52	30.269		
3,900.0	3,893.0	3,864.9	3,858.0	9.2	9.2	179.42	264.2	-162.6	513.7	496.7	16.97	30.272		
4,000.0	3,992.8	3,964.0	3,956.8	9.4	9.5	179.59	270.7	-164.9	527.4	510.0	17.42	30.275		
4,100.0	4,092.5	4,063.0	4,055.6	9.7	9.7	179.76	277.2	-167.1	541.2	523.3	17.87	30.278		
4,200.0	4,192.3	4,162.0	4,154.4	10.0	10.0	179.91	283.8	-169.3	555.0	536.6	18.33	30.281		
4,300.0	4,292.1	4,261.1	4,253.2	10.2	10.2	-179.94	290.3	-171.5	568.7	549.9	18.78	30.284		
4,400.0	4,391.8	4,360.1	4,352.0	10.5	10.5	-179.80	296.9	-173.7	582.5	563.3	19.23	30.287		
4,500.0	4,491.6	4,459.2	4,450.8	10.7	10.8	-179.67	303.4	-176.0	596.3	576.6	19.69	30.289		
4,600.0	4,591.3	4,558.2	4,549.6	11.0	11.0	-179.54	309.9	-178.2	610.1	589.9	20.14	30.291		
4,700.0	4,691.1	4,657.2	4,648.4	11.3	11.3	-179.42	316.5	-180.4	623.8	603.2	20.59	30.293		
4,800.0	4,790.8	4,756.3	4,747.2	11.5	11.5	-179.30	323.0	-182.6	637.6	616.6	21.05	30.295		
4,900.0	4,890.6	4,855.3	4,846.0	11.8	11.8	-179.19	329.6	-184.9	651.4	629.9	21.50	30.297		
5,000.0	4,990.3	4,954.3	4,944.8	12.0	12.0	-179.08	336.1	-187.1	665.2	643.2	21.95	30.299		
5,100.0	5,090.1	5,053.4	5,043.6	12.3	12.3	-178.98	342.7	-189.3	679.0	656.6	22.41	30.300		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0109A - HZ - Plan #1													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	5,152.4	5,142.4	12.6	12.5	-178.88	349.2	-191.5	692.8	669.9	22.86	30.302		
5,300.0	5,289.6	5,251.5	5,241.2	12.8	12.8	-178.79	355.7	-193.7	706.6	683.3	23.32	30.303		
5,400.0	5,389.4	5,343.3	5,332.8	13.1	13.0	-178.70	361.8	-195.8	720.4	696.7	23.75	30.328		
5,437.0	5,426.3	5,350.0	5,339.5	13.2	13.0	-178.69	362.4	-196.0	726.6	702.7	23.86	30.457		
5,450.0	5,439.2	5,350.0	5,339.5	13.2	13.0	-178.69	362.4	-196.0	729.3	705.4	23.84	30.590		
5,500.0	5,488.7	5,384.2	5,373.4	13.4	13.1	-178.59	366.4	-197.4	742.8	719.0	23.74	31.282		
5,550.0	5,537.3	5,400.0	5,389.0	13.6	13.2	-178.50	369.0	-198.3	762.8	739.4	23.40	32.594		
5,600.0	5,584.5	5,420.5	5,409.0	13.9	13.3	-178.36	373.0	-199.6	788.6	765.7	22.88	34.466		
5,650.0	5,629.9	5,450.0	5,437.5	14.1	13.4	-178.14	380.1	-202.0	819.9	797.8	22.19	36.955		
5,700.0	5,673.1	5,450.0	5,437.5	14.5	13.4	-177.95	380.1	-202.0	855.3	834.0	21.24	40.262		
5,750.0	5,713.7	5,450.0	5,437.5	14.9	13.4	-177.67	380.1	-202.0	895.0	874.9	20.13	44.457		
5,800.0	5,751.3	5,470.5	5,457.1	15.3	13.5	-177.20	386.0	-204.0	937.6	918.7	18.91	49.586		
5,850.0	5,785.6	5,477.9	5,464.1	15.8	13.5	-176.52	388.2	-204.8	983.0	965.5	17.54	56.053		
5,900.0	5,816.3	5,483.4	5,469.3	16.4	13.5	-175.34	390.0	-205.4	1,030.4	1,014.4	16.09	64.037		
5,950.0	5,843.0	5,500.0	5,484.8	17.0	13.6	-172.98	395.6	-207.3	1,079.5	1,064.8	14.73	73.278		
6,000.0	5,865.5	5,500.0	5,484.8	17.7	13.6	-164.68	395.6	-207.3	1,129.0	1,114.3	14.70	76.784		
6,050.0	5,883.7	5,500.0	5,484.8	18.4	13.6	-43.34	395.6	-207.3	1,179.0	1,155.4	23.63	49.888		
6,100.0	5,897.3	5,500.0	5,484.8	19.1	13.6	-9.52	395.6	-207.3	1,228.9	1,217.6	11.25	109.215		
6,150.0	5,906.3	5,500.0	5,484.8	19.9	13.6	-5.19	395.6	-207.3	1,278.2	1,268.9	9.28	137.736		
6,200.0	5,910.5	5,481.9	5,467.9	20.8	13.5	-3.20	389.5	-205.2	1,326.2	1,317.9	8.33	159.125		
6,218.8	5,910.8	5,480.2	5,466.3	21.1	13.5	-2.84	389.0	-205.0	1,344.1	1,335.9	8.19	164.016		
6,300.0	5,910.8	5,472.9	5,459.4	22.3	13.5	4.30	386.7	-204.3	1,420.9	1,412.1	8.77	162.085		
6,400.0	5,910.8	5,450.0	5,437.5	23.9	13.4	12.83	380.1	-202.0	1,516.1	1,504.2	11.90	127.368		
6,500.0	5,910.8	5,450.0	5,437.5	25.5	13.4	21.40	380.1	-202.0	1,610.9	1,594.2	16.72	96.319		
6,600.0	5,910.8	5,450.0	5,437.5	27.1	13.4	29.51	380.1	-202.0	1,705.8	1,683.7	22.09	77.234		
6,700.0	5,910.8	5,450.0	5,437.5	28.7	13.4	36.85	380.1	-202.0	1,800.4	1,773.2	27.19	66.220		
6,800.0	5,910.8	5,450.0	5,437.5	30.4	13.4	43.29	380.1	-202.0	1,894.6	1,862.9	31.74	59.688		
6,900.0	5,910.8	5,450.0	5,437.5	32.0	13.4	48.82	380.1	-202.0	1,988.2	1,952.5	35.66	55.750		
7,000.0	5,910.8	5,427.6	5,415.9	33.6	13.3	52.23	374.6	-200.1	2,080.4	2,042.2	38.28	54.342		
7,100.0	5,910.8	5,423.1	5,411.5	35.2	13.3	56.01	373.6	-199.8	2,172.1	2,131.1	40.99	52.987		
7,200.0	5,910.8	5,400.0	5,389.0	36.8	13.2	58.28	369.0	-198.3	2,263.1	2,220.3	42.79	52.890		
7,241.1	5,910.8	5,400.0	5,389.0	37.4	13.2	59.57	369.0	-198.3	2,300.0	2,256.3	43.67	52.665		
7,300.0	5,910.8	5,400.0	5,389.0	38.4	13.2	59.57	369.0	-198.3	2,352.8	2,308.2	44.59	52.764		
7,400.0	5,910.8	5,400.0	5,389.0	40.0	13.2	59.57	369.0	-198.3	2,443.1	2,396.9	46.18	52.906		
7,500.0	5,910.8	5,400.0	5,389.0	41.6	13.2	59.57	369.0	-198.3	2,534.1	2,486.3	47.78	53.035		
7,600.0	5,910.8	5,400.0	5,389.0	43.3	13.2	59.57	369.0	-198.3	2,625.8	2,576.4	49.40	53.154		
7,700.0	5,910.8	5,400.0	5,389.0	45.0	13.2	59.57	369.0	-198.3	2,718.1	2,667.0	51.03	53.262		
7,800.0	5,910.9	5,400.0	5,389.0	46.7	13.2	59.57	369.0	-198.3	2,810.8	2,758.2	52.67	53.362		
7,900.0	5,910.9	5,400.0	5,389.0	48.4	13.2	59.57	369.0	-198.3	2,904.1	2,849.8	54.33	53.455		
8,000.0	5,910.9	5,400.0	5,389.0	50.1	13.2	59.57	369.0	-198.3	2,997.8	2,941.8	55.99	53.542		
8,100.0	5,910.9	5,400.0	5,389.0	51.9	13.2	59.57	369.0	-198.3	3,091.9	3,034.3	57.66	53.624		
8,200.0	5,910.9	5,400.0	5,389.0	53.6	13.2	59.57	369.0	-198.3	3,186.4	3,127.1	59.34	53.700		
8,300.0	5,910.9	5,400.0	5,389.0	55.4	13.2	59.57	369.0	-198.3	3,281.2	3,220.2	61.02	53.772		
8,400.0	5,910.9	5,400.0	5,389.0	57.1	13.2	59.57	369.0	-198.3	3,376.3	3,313.6	62.71	53.840		
8,500.0	5,910.9	5,400.0	5,389.0	58.9	13.2	59.57	369.0	-198.3	3,471.6	3,407.2	64.40	53.904		
8,600.0	5,910.9	5,400.0	5,389.0	60.7	13.2	59.57	369.0	-198.3	3,567.3	3,501.2	66.10	53.965		
8,700.0	5,910.9	5,400.0	5,389.0	62.5	13.2	59.57	369.0	-198.3	3,663.1	3,595.3	67.81	54.023		
8,800.0	5,910.9	5,377.6	5,366.9	64.3	13.1	58.48	365.5	-197.1	3,758.6	3,689.9	68.74	54.678		
8,900.0	5,910.9	5,375.9	5,365.2	66.2	13.1	58.41	365.3	-197.0	3,854.8	3,784.4	70.38	54.772		
9,000.0	5,910.9	5,374.4	5,363.7	68.0	13.1	58.33	365.0	-196.9	3,951.2	3,879.2	72.02	54.863		
9,100.0	5,910.9	5,372.9	5,362.2	69.8	13.1	58.26	364.9	-196.8	4,047.7	3,974.1	73.66	54.949		
9,200.0	5,910.9	5,350.0	5,339.5	71.6	13.0	57.19	362.4	-196.0	4,144.9	4,070.4	74.51	55.630		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0109A - HZ - Plan #1												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	5,910.9	5,350.0	5,339.5	73.5	13.0	57.19	362.4	-196.0	4,241.7	4,165.5	76.20	55.669	
9,400.0	5,910.9	5,350.0	5,339.5	75.3	13.0	57.19	362.4	-196.0	4,338.6	4,260.8	77.88	55.706	
9,500.0	5,910.9	5,350.0	5,339.5	77.1	13.0	57.19	362.4	-196.0	4,435.7	4,356.1	79.58	55.742	
9,600.0	5,910.9	5,350.0	5,339.5	79.0	13.0	57.19	362.4	-196.0	4,532.9	4,451.6	81.27	55.777	
9,700.0	5,910.9	5,350.0	5,339.5	80.8	13.0	57.19	362.4	-196.0	4,630.2	4,547.3	82.96	55.810	
9,800.0	5,910.9	5,350.0	5,339.5	82.7	13.0	57.19	362.4	-196.0	4,727.7	4,643.0	84.66	55.843	
9,900.0	5,910.9	5,350.0	5,339.5	84.6	13.0	57.19	362.4	-196.0	4,825.2	4,738.8	86.36	55.874	
10,000.0	5,910.9	5,350.0	5,339.5	86.4	13.0	57.19	362.4	-196.0	4,922.8	4,834.8	88.06	55.904	
10,100.0	5,910.9	5,350.0	5,339.5	88.3	13.0	57.19	362.4	-196.0	5,020.6	4,930.8	89.76	55.934	
10,200.0	5,910.9	5,350.0	5,339.5	90.1	13.0	57.19	362.4	-196.0	5,118.4	5,026.9	91.46	55.962	
10,300.0	5,910.9	5,350.0	5,339.5	92.0	13.0	57.19	362.4	-196.0	5,216.3	5,123.1	93.17	55.990	
10,400.0	5,910.9	5,350.0	5,339.5	93.9	13.0	57.19	362.4	-196.0	5,314.2	5,219.4	94.87	56.016	
10,500.0	5,910.9	5,350.0	5,339.5	95.8	13.0	57.19	362.4	-196.0	5,412.3	5,315.7	96.58	56.042	
10,600.0	5,910.9	5,350.0	5,339.5	97.6	13.0	57.19	362.4	-196.0	5,510.4	5,412.1	98.28	56.067	
10,700.0	5,910.9	5,350.0	5,339.5	99.5	13.0	57.19	362.4	-196.0	5,608.6	5,508.6	99.99	56.092	
10,800.0	5,910.9	5,350.0	5,339.5	101.4	13.0	57.19	362.4	-196.0	5,706.8	5,605.1	101.70	56.116	
10,900.0	5,910.9	5,350.0	5,339.5	103.3	13.0	57.19	362.4	-196.0	5,805.2	5,701.7	103.41	56.139	
11,000.0	5,910.9	5,350.0	5,339.5	105.1	13.0	57.19	362.4	-196.0	5,903.5	5,798.4	105.12	56.161	
11,100.0	5,910.9	5,350.0	5,339.5	107.0	13.0	57.19	362.4	-196.0	6,001.9	5,895.1	106.83	56.183	
11,200.0	5,910.9	5,350.0	5,339.5	108.9	13.0	57.19	362.4	-196.0	6,100.4	5,991.9	108.54	56.204	
11,300.0	5,911.0	5,350.0	5,339.5	110.8	13.0	57.19	362.4	-196.0	6,198.9	6,088.7	110.25	56.225	
11,400.0	5,911.0	5,350.0	5,339.5	112.7	13.0	57.19	362.4	-196.0	6,297.5	6,185.5	111.97	56.245	
11,500.0	5,911.0	5,350.0	5,339.5	114.6	13.0	57.19	362.4	-196.0	6,396.1	6,282.4	113.68	56.265	
11,600.0	5,911.0	5,350.0	5,339.5	116.5	13.0	57.19	362.4	-196.0	6,494.8	6,379.4	115.39	56.284	
11,700.0	5,911.0	5,350.0	5,339.5	118.3	13.0	57.19	362.4	-196.0	6,593.5	6,476.3	117.11	56.303	
11,800.0	5,911.0	5,350.0	5,339.5	120.2	13.0	57.19	362.4	-196.0	6,692.2	6,573.4	118.82	56.321	
11,900.0	5,911.0	5,350.0	5,339.5	122.1	13.0	57.19	362.4	-196.0	6,791.0	6,670.4	120.54	56.339	
12,000.0	5,911.0	5,350.0	5,339.5	124.0	13.0	57.19	362.4	-196.0	6,889.8	6,767.5	122.25	56.356	
12,100.0	5,911.0	5,350.0	5,339.5	125.9	13.0	57.19	362.4	-196.0	6,988.6	6,864.6	123.97	56.373	
12,200.0	5,911.0	5,350.0	5,339.5	127.8	13.0	57.19	362.4	-196.0	7,087.5	6,961.8	125.69	56.390	
12,300.0	5,911.0	5,344.4	5,333.9	129.7	13.0	56.93	361.9	-195.8	7,186.3	7,059.3	127.07	56.553	
12,400.0	5,911.0	5,343.9	5,333.4	131.6	13.0	56.90	361.9	-195.8	7,285.3	7,156.5	128.75	56.583	
12,500.0	5,911.0	5,338.0	5,327.5	133.5	13.0	56.63	361.5	-195.7	7,384.3	7,254.1	130.11	56.754	
12,600.0	5,911.0	5,338.0	5,327.5	135.4	13.0	56.63	361.5	-195.7	7,483.2	7,351.4	131.82	56.768	
12,700.0	5,911.0	5,338.0	5,327.5	137.3	13.0	56.63	361.5	-195.7	7,582.2	7,448.7	133.53	56.783	
12,800.0	5,911.0	5,338.0	5,327.5	139.2	13.0	56.63	361.5	-195.7	7,681.3	7,546.0	135.24	56.797	
12,900.0	5,911.0	5,338.0	5,327.5	141.1	13.0	56.63	361.5	-195.7	7,780.3	7,643.4	136.95	56.811	
13,000.0	5,911.0	5,338.0	5,327.5	143.0	13.0	56.63	361.5	-195.7	7,879.4	7,740.7	138.66	56.824	
13,100.0	5,911.0	5,338.0	5,327.5	144.9	13.0	56.63	361.5	-195.7	7,978.5	7,838.1	140.37	56.837	
13,200.0	5,911.0	5,338.0	5,327.5	146.8	13.0	56.63	361.5	-195.7	8,077.6	7,935.5	142.09	56.850	
13,300.0	5,911.0	5,338.0	5,327.5	148.7	13.0	56.63	361.5	-195.7	8,176.8	8,033.0	143.80	56.863	
13,400.0	5,911.0	5,338.0	5,327.5	150.6	13.0	56.63	361.5	-195.7	8,275.9	8,130.4	145.51	56.875	
13,435.8	5,911.0	5,338.0	5,327.5	151.2	13.0	56.63	361.5	-195.7	8,311.4	8,165.4	146.00	56.926	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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	0.17	577.282		
200.0	200.0	200.0	200.0	0.3	0.3	-41.42	74.9	-66.1	99.9	99.3	0.62	160.457		
300.0	300.0	300.0	300.0	0.5	0.5	-41.42	74.9	-66.1	99.9	98.8	1.07	93.178		
400.0	400.0	400.0	400.0	0.8	0.8	-41.42	74.9	-66.1	99.9	98.4	1.52	65.651		
500.0	500.0	500.0	500.0	1.0	1.0	-41.42	74.9	-66.1	99.9	97.9	1.97	50.679		
600.0	600.0	600.0	600.0	1.2	1.2	-41.42	74.9	-66.1	99.9	97.5	2.42	41.268		
700.0	700.0	700.0	700.0	1.4	1.4	-41.42	74.9	-66.1	99.9	97.0	2.87	34.805		
800.0	800.0	800.0	800.0	1.7	1.7	-41.42	74.9	-66.1	99.9	96.6	3.32	30.092		
900.0	900.0	900.0	900.0	1.9	1.9	-41.42	74.9	-66.1	99.9	96.1	3.77	26.503 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	169.43	74.9	-66.1	101.6	97.4	4.19	24.238		
1,100.0	1,099.8	1,096.9	1,096.9	2.3	2.3	170.42	76.5	-66.2	108.1	103.5	4.59	23.564 SF		
1,200.0	1,199.6	1,193.1	1,192.9	2.5	2.5	172.34	81.4	-66.6	119.2	114.2	5.00	23.851		
1,300.0	1,299.4	1,291.9	1,291.5	2.7	2.8	174.43	88.3	-67.1	131.9	126.5	5.42	24.363		
1,400.0	1,399.1	1,391.0	1,390.4	2.9	3.0	176.15	95.2	-67.6	144.8	139.0	5.84	24.811		
1,500.0	1,498.9	1,490.1	1,489.2	3.1	3.2	177.59	102.0	-68.2	157.9	151.6	6.27	25.196		
1,600.0	1,598.6	1,589.1	1,588.0	3.3	3.5	178.81	108.9	-68.7	171.0	164.3	6.70	25.528		
1,700.0	1,698.4	1,688.2	1,686.9	3.6	3.7	179.85	115.8	-69.2	184.1	177.0	7.13	25.817		
1,800.0	1,798.1	1,787.3	1,785.7	3.8	3.9	-179.24	122.7	-69.8	197.4	189.8	7.57	26.069		
1,900.0	1,897.9	1,886.4	1,884.5	4.1	4.2	-178.45	129.6	-70.3	210.6	202.6	8.01	26.292		
2,000.0	1,997.6	1,985.5	1,983.4	4.3	4.4	-177.75	136.5	-70.8	223.9	215.5	8.45	26.490		
2,100.0	2,097.4	2,084.5	2,082.2	4.6	4.7	-177.13	143.4	-71.4	237.2	228.3	8.90	26.666		
2,200.0	2,197.2	2,183.6	2,181.0	4.8	4.9	-176.58	150.3	-71.9	250.6	241.3	9.34	26.824		
2,300.0	2,296.9	2,282.7	2,279.9	5.1	5.2	-176.08	157.2	-72.4	264.0	254.2	9.79	26.967		
2,400.0	2,396.7	2,381.8	2,378.7	5.3	5.4	-175.63	164.1	-72.9	277.4	267.1	10.24	27.096		
2,500.0	2,496.4	2,480.8	2,477.6	5.6	5.7	-175.22	171.0	-73.5	290.8	280.1	10.68	27.213		
2,600.0	2,596.2	2,579.9	2,576.4	5.8	5.9	-174.85	177.8	-74.0	304.2	293.1	11.13	27.320		
2,700.0	2,695.9	2,679.0	2,675.2	6.1	6.2	-174.51	184.7	-74.5	317.6	306.0	11.58	27.418		
2,800.0	2,795.7	2,778.1	2,774.1	6.3	6.4	-174.20	191.6	-75.1	331.1	319.0	12.03	27.508		
2,900.0	2,895.5	2,877.1	2,872.9	6.6	6.7	-173.91	198.5	-75.6	344.5	332.0	12.49	27.591		
3,000.0	2,895.2	2,876.2	2,871.7	6.8	6.9	-173.64	205.4	-76.1	358.0	345.0	12.94	27.667		
3,100.0	3,095.0	3,075.3	3,070.6	7.1	7.2	-173.39	212.3	-76.7	371.4	358.0	13.39	27.739		
3,200.0	3,194.7	3,174.4	3,169.4	7.4	7.4	-173.16	219.2	-77.2	384.9	371.1	13.84	27.805		
3,300.0	3,294.5	3,273.5	3,268.2	7.6	7.7	-172.95	226.1	-77.7	398.4	384.1	14.30	27.866		
3,400.0	3,394.2	3,372.5	3,367.1	7.9	7.9	-172.75	233.0	-78.2	411.9	397.1	14.75	27.924		
3,500.0	3,494.0	3,471.6	3,465.9	8.1	8.2	-172.56	239.9	-78.8	425.3	410.1	15.20	27.977		
3,600.0	3,593.8	3,570.7	3,564.8	8.4	8.4	-172.38	246.8	-79.3	438.8	423.2	15.66	28.028		
3,700.0	3,693.5	3,669.8	3,663.6	8.7	8.7	-172.21	253.6	-79.8	452.3	436.2	16.11	28.075		
3,800.0	3,793.3	3,768.8	3,762.4	8.9	8.9	-172.06	260.5	-80.4	465.8	449.3	16.57	28.120		
3,900.0	3,893.0	3,867.9	3,861.3	9.2	9.2	-171.91	267.4	-80.9	479.3	462.3	17.02	28.162		
4,000.0	3,992.8	3,967.0	3,960.1	9.4	9.4	-171.77	274.3	-81.4	492.8	475.4	17.48	28.201		
4,100.0	4,092.5	4,066.1	4,058.9	9.7	9.7	-171.64	281.2	-82.0	506.3	488.4	17.93	28.239		
4,200.0	4,192.3	4,165.2	4,157.8	10.0	9.9	-171.51	288.1	-82.5	519.8	501.5	18.39	28.274		
4,300.0	4,292.1	4,264.2	4,256.6	10.2	10.2	-171.40	295.0	-83.0	533.4	514.5	18.84	28.308		
4,400.0	4,391.8	4,363.3	4,355.4	10.5	10.4	-171.28	301.9	-83.6	546.9	527.6	19.30	28.340		
4,500.0	4,491.6	4,462.4	4,454.3	10.7	10.7	-171.18	308.8	-84.1	560.4	540.6	19.75	28.370		
4,600.0	4,591.3	4,561.5	4,553.1	11.0	10.9	-171.07	315.7	-84.6	573.9	553.7	20.21	28.399		
4,700.0	4,691.1	4,660.5	4,651.9	11.3	11.2	-170.98	322.6	-85.1	587.4	566.8	20.66	28.427		
4,800.0	4,790.8	4,759.6	4,750.8	11.5	11.4	-170.88	329.4	-85.7	600.9	579.8	21.12	28.453		
4,900.0	4,890.6	4,858.7	4,849.6	11.8	11.7	-170.79	336.3	-86.2	614.5	592.9	21.58	28.478		
5,000.0	4,990.3	4,957.8	4,948.5	12.0	12.0	-170.71	343.2	-86.7	628.0	606.0	22.03	28.502		
5,100.0	5,090.1	5,056.8	5,047.3	12.3	12.2	-170.63	350.1	-87.3	641.5	619.0	22.49	28.525		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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	5,155.9	5,146.1	12.6	12.5	-170.55	357.0	-87.8	655.0	632.1	22.95	28.547		
5,300.0	5,289.6	5,255.0	5,245.0	12.8	12.7	-170.47	363.9	-88.3	668.6	645.2	23.40	28.568		
5,400.0	5,389.4	5,354.1	5,343.8	13.1	13.0	-170.40	370.8	-88.9	682.1	658.2	23.86	28.589		
5,437.0	5,426.3	5,390.7	5,380.4	13.2	13.1	-170.37	373.3	-89.0	687.1	663.1	24.03	28.596		
5,450.0	5,439.2	5,403.6	5,393.2	13.2	13.1	-170.33	374.2	-89.1	689.0	665.0	24.04	28.656		
5,500.0	5,488.7	5,443.8	5,433.3	13.4	13.2	-170.14	377.1	-89.3	699.4	675.5	23.96	29.188		
5,550.0	5,537.3	5,464.3	5,453.7	13.6	13.3	-169.83	379.2	-89.5	715.8	692.1	23.65	30.270		
5,600.0	5,584.5	5,483.4	5,472.6	13.9	13.3	-169.36	381.8	-89.7	738.2	715.0	23.14	31.899		
5,650.0	5,629.9	5,500.0	5,488.9	14.1	13.4	-168.70	384.7	-89.9	766.1	743.6	22.46	34.113		
5,700.0	5,673.1	5,516.3	5,504.9	14.5	13.4	-167.79	388.0	-90.2	798.9	777.3	21.62	36.946		
5,750.0	5,713.7	5,529.6	5,517.9	14.9	13.5	-166.52	391.1	-90.4	836.1	815.4	20.67	40.439		
5,800.0	5,751.3	5,550.0	5,537.5	15.3	13.6	-164.82	396.5	-90.8	876.9	857.2	19.69	44.530		
5,850.0	5,785.6	5,550.0	5,537.5	15.8	13.6	-162.02	396.5	-90.8	920.5	901.7	18.81	48.943		
5,900.0	5,816.3	5,550.0	5,537.5	16.4	13.6	-157.45	396.5	-90.8	966.6	948.2	18.44	52.431		
5,950.0	5,843.0	5,550.0	5,537.5	17.0	13.6	-149.15	396.5	-90.8	1,014.5	995.0	19.56	51.878		
6,000.0	5,865.5	5,550.0	5,537.5	17.7	13.6	-131.55	396.5	-90.8	1,063.5	1,039.1	24.40	43.590		
6,050.0	5,883.7	5,550.0	5,537.5	18.4	13.6	-92.96	396.5	-90.8	1,113.1	1,081.4	31.71	35.107		
6,100.0	5,897.3	5,550.0	5,537.5	19.1	13.6	-50.58	396.5	-90.8	1,162.8	1,136.5	26.21	44.367		
6,150.0	5,906.3	5,550.0	5,537.5	19.9	13.6	-30.07	396.5	-90.8	1,212.0	1,193.3	18.67	64.912		
6,200.0	5,910.5	5,550.0	5,537.5	20.8	13.6	-20.64	396.5	-90.8	1,260.5	1,246.0	14.50	86.948		
6,218.8	5,910.8	5,550.0	5,537.5	21.1	13.6	-18.39	396.5	-90.8	1,278.5	1,265.0	13.51	94.637		
6,300.0	5,910.8	5,550.0	5,537.5	22.3	13.6	-10.71	396.5	-90.8	1,356.1	1,345.3	10.85	124.974		
6,400.0	5,910.8	5,550.0	5,537.5	23.9	13.6	0.04	396.5	-90.8	1,452.5	1,443.4	9.05	160.538		
6,500.0	5,910.8	5,550.0	5,537.5	25.5	13.6	11.56	396.5	-90.8	1,549.3	1,537.3	11.98	129.293		
6,600.0	5,910.8	5,550.0	5,537.5	27.1	13.6	22.87	396.5	-90.8	1,646.2	1,627.8	18.47	89.116		
6,700.0	5,910.8	5,527.3	5,515.6	28.7	13.5	31.75	390.6	-90.4	1,742.4	1,718.1	24.39	71.444		
6,800.0	5,910.8	5,521.8	5,510.3	30.4	13.4	39.90	389.3	-90.3	1,838.6	1,808.6	30.00	61.280		
6,900.0	5,910.8	5,500.0	5,488.9	32.0	13.4	45.54	384.7	-89.9	1,934.5	1,900.5	34.02	56.855		
7,000.0	5,910.8	5,500.0	5,488.9	33.6	13.4	51.38	384.7	-89.9	2,029.2	1,991.1	38.04	53.341		
7,100.0	5,910.8	5,500.0	5,488.9	35.2	13.4	56.20	384.7	-89.9	2,123.0	2,081.7	41.30	51.405		
7,200.0	5,910.8	5,500.0	5,488.9	36.8	13.4	60.17	384.7	-89.9	2,215.9	2,172.0	43.93	50.440		
7,241.1	5,910.8	5,500.0	5,488.9	37.4	13.4	61.59	384.7	-89.9	2,253.8	2,208.9	44.86	50.241		
7,300.0	5,910.8	5,500.0	5,488.9	38.4	13.4	61.59	384.7	-89.9	2,308.1	2,262.3	45.79	50.401		
7,400.0	5,910.8	5,500.0	5,488.9	40.0	13.4	61.59	384.7	-89.9	2,400.7	2,353.3	47.41	50.641		
7,500.0	5,910.8	5,500.0	5,488.9	41.6	13.4	61.59	384.7	-89.9	2,493.9	2,444.9	49.04	50.858		
7,600.0	5,910.8	5,500.0	5,488.9	43.3	13.4	61.59	384.7	-89.9	2,587.6	2,536.9	50.68	51.057		
7,700.0	5,910.8	5,500.0	5,488.9	45.0	13.4	61.59	384.7	-89.9	2,681.8	2,629.4	52.34	51.238		
7,800.0	5,910.9	5,500.0	5,488.9	46.7	13.4	61.59	384.7	-89.9	2,776.3	2,722.3	54.01	51.405		
7,900.0	5,910.9	5,500.0	5,488.9	48.4	13.4	61.59	384.7	-89.9	2,871.3	2,815.6	55.69	51.559		
8,000.0	5,910.9	5,500.0	5,488.9	50.1	13.4	61.59	384.7	-89.9	2,966.6	2,909.2	57.38	51.702		
8,100.0	5,910.9	5,477.7	5,467.0	51.9	13.3	60.35	381.0	-89.6	3,061.6	3,003.2	58.35	52.467		
8,200.0	5,910.9	5,475.6	5,464.9	53.6	13.3	60.23	380.7	-89.6	3,157.3	3,097.4	59.97	52.648		
8,300.0	5,910.9	5,473.6	5,462.9	55.4	13.3	60.12	380.4	-89.6	3,253.3	3,191.7	61.59	52.818		
8,400.0	5,910.9	5,471.7	5,461.0	57.1	13.3	60.02	380.1	-89.6	3,349.5	3,286.3	63.22	52.978		
8,500.0	5,910.9	5,450.0	5,439.5	58.9	13.2	58.84	377.6	-89.4	3,446.4	3,382.2	64.14	53.729		
8,600.0	5,910.9	5,450.0	5,439.5	60.7	13.2	58.84	377.6	-89.4	3,542.9	3,477.1	65.83	53.817		
8,700.0	5,910.9	5,450.0	5,439.5	62.5	13.2	58.84	377.6	-89.4	3,639.7	3,572.1	67.53	53.901		
8,800.0	5,910.9	5,450.0	5,439.5	64.3	13.2	58.84	377.6	-89.4	3,736.6	3,667.3	69.22	53.979		
8,900.0	5,910.9	5,450.0	5,439.5	66.2	13.2	58.84	377.6	-89.4	3,833.6	3,762.7	70.92	54.054		
9,000.0	5,910.9	5,450.0	5,439.5	68.0	13.2	58.84	377.6	-89.4	3,930.8	3,858.2	72.63	54.125		
9,100.0	5,910.9	5,450.0	5,439.5	69.8	13.2	58.84	377.6	-89.4	4,028.2	3,953.9	74.33	54.192		
9,200.0	5,910.9	5,450.0	5,439.5	71.6	13.2	58.84	377.6	-89.4	4,125.7	4,049.6	76.04	54.256		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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	5,910.9	5,450.0	5,439.5	73.5	13.2	58.84	377.6	-89.4	4,223.2	4,145.5	77.75	54.316		
9,400.0	5,910.9	5,450.0	5,439.5	75.3	13.2	58.84	377.6	-89.4	4,320.9	4,241.5	79.47	54.374		
9,500.0	5,910.9	5,450.0	5,439.5	77.1	13.2	58.84	377.6	-89.4	4,418.8	4,337.6	81.18	54.430		
9,600.0	5,910.9	5,450.0	5,439.5	79.0	13.2	58.84	377.6	-89.4	4,516.7	4,433.8	82.90	54.483		
9,700.0	5,910.9	5,450.0	5,439.5	80.8	13.2	58.84	377.6	-89.4	4,614.6	4,530.0	84.62	54.533		
9,800.0	5,910.9	5,450.0	5,439.5	82.7	13.2	58.84	377.6	-89.4	4,712.7	4,626.4	86.34	54.582		
9,900.0	5,910.9	5,450.0	5,439.5	84.6	13.2	58.84	377.6	-89.4	4,810.9	4,722.8	88.07	54.628		
10,000.0	5,910.9	5,450.0	5,439.5	86.4	13.2	58.84	377.6	-89.4	4,909.1	4,819.3	89.79	54.673		
10,100.0	5,910.9	5,450.0	5,439.5	88.3	13.2	58.84	377.6	-89.4	5,007.4	4,915.9	91.52	54.716		
10,200.0	5,910.9	5,450.0	5,439.5	90.1	13.2	58.84	377.6	-89.4	5,105.8	5,012.5	93.24	54.757		
10,300.0	5,910.9	5,450.0	5,439.5	92.0	13.2	58.84	377.6	-89.4	5,204.2	5,109.2	94.97	54.797		
10,400.0	5,910.9	5,450.0	5,439.5	93.9	13.2	58.84	377.6	-89.4	5,302.7	5,206.0	96.70	54.835		
10,500.0	5,910.9	5,450.0	5,439.5	95.8	13.2	58.84	377.6	-89.4	5,401.2	5,302.8	98.43	54.872		
10,600.0	5,910.9	5,450.0	5,439.5	97.6	13.2	58.84	377.6	-89.4	5,499.8	5,399.6	100.16	54.908		
10,700.0	5,910.9	5,450.0	5,439.5	99.5	13.2	58.84	377.6	-89.4	5,598.5	5,496.6	101.90	54.942		
10,800.0	5,910.9	5,450.0	5,439.5	101.4	13.2	58.84	377.6	-89.4	5,697.1	5,593.5	103.63	54.975		
10,900.0	5,910.9	5,443.7	5,433.2	103.3	13.2	58.50	377.1	-89.3	5,795.8	5,690.8	105.02	55.188		
11,000.0	5,910.9	5,443.0	5,432.5	105.1	13.2	58.46	377.0	-89.3	5,894.6	5,787.9	106.71	55.238		
11,100.0	5,910.9	5,437.0	5,426.5	107.0	13.2	58.14	376.6	-89.3	5,993.4	5,885.3	108.10	55.442		
11,200.0	5,910.9	5,437.0	5,426.5	108.9	13.2	58.14	376.6	-89.3	6,092.3	5,982.5	109.83	55.471		
11,300.0	5,911.0	5,437.0	5,426.5	110.8	13.2	58.14	376.6	-89.3	6,191.2	6,079.6	111.56	55.498		
11,400.0	5,911.0	5,437.0	5,426.5	112.7	13.2	58.14	376.6	-89.3	6,290.1	6,176.8	113.28	55.525		
11,500.0	5,911.0	5,437.0	5,426.5	114.6	13.2	58.14	376.6	-89.3	6,389.0	6,274.0	115.01	55.551		
11,600.0	5,911.0	5,437.0	5,426.5	116.5	13.2	58.14	376.6	-89.3	6,488.0	6,371.3	116.74	55.576		
11,700.0	5,911.0	5,437.0	5,426.5	118.3	13.2	58.14	376.6	-89.3	6,587.0	6,468.5	118.47	55.601		
11,800.0	5,911.0	5,437.0	5,426.5	120.2	13.2	58.14	376.6	-89.3	6,686.1	6,565.9	120.20	55.624		
11,900.0	5,911.0	5,437.0	5,426.5	122.1	13.2	58.14	376.6	-89.3	6,785.1	6,663.2	121.93	55.648		
12,000.0	5,911.0	5,437.0	5,426.5	124.0	13.2	58.14	376.6	-89.3	6,884.2	6,760.6	123.66	55.670		
12,100.0	5,911.0	5,434.6	5,424.1	125.9	13.2	58.02	376.4	-89.3	6,983.3	6,858.1	125.24	55.761		
12,200.0	5,911.0	5,427.7	5,417.2	127.8	13.2	57.65	375.9	-89.2	7,082.5	6,956.0	126.51	55.983		
12,300.0	5,911.0	5,420.7	5,410.3	129.7	13.1	57.29	375.4	-89.2	7,181.6	7,053.9	127.77	56.206		
12,400.0	5,911.0	5,413.8	5,403.3	131.6	13.1	56.93	374.9	-89.2	7,280.8	7,151.8	129.02	56.430		
12,500.0	5,911.0	5,406.8	5,396.4	133.5	13.1	56.57	374.5	-89.1	7,380.0	7,249.7	130.26	56.654		
12,600.0	5,911.0	5,399.9	5,389.5	135.4	13.1	56.21	374.0	-89.1	7,479.2	7,347.7	131.49	56.879		
12,700.0	5,911.0	5,392.9	5,382.5	137.3	13.1	55.86	373.5	-89.1	7,578.4	7,445.7	132.71	57.105		
12,800.0	5,911.0	5,386.0	5,375.6	139.2	13.0	55.51	373.0	-89.0	7,677.7	7,543.7	133.92	57.332		
12,900.0	5,911.0	5,379.0	5,368.7	141.1	13.0	55.17	372.5	-89.0	7,776.9	7,641.8	135.11	57.559		
13,000.0	5,911.0	5,372.1	5,361.7	143.0	13.0	54.82	372.0	-88.9	7,876.2	7,739.9	136.30	57.787		
13,100.0	5,911.0	5,365.1	5,354.8	144.9	13.0	54.48	371.6	-88.9	7,975.4	7,838.0	137.47	58.016		
13,200.0	5,911.0	5,358.1	5,347.9	146.8	13.0	54.14	371.1	-88.9	8,074.7	7,936.1	138.63	58.245		
13,300.0	5,911.0	5,351.2	5,340.9	148.7	13.0	53.81	370.6	-88.8	8,174.0	8,034.2	139.79	58.475		
13,400.0	5,911.0	5,344.2	5,334.0	150.6	12.9	53.48	370.1	-88.8	8,273.3	8,132.4	140.93	58.705		
13,435.8	5,911.0	5,341.8	5,331.5	151.2	12.9	53.36	369.9	-88.8	8,308.8	8,167.6	141.22	58.836		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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	0.17	473.083		
200.0	200.0	200.0	200.0	0.3	0.3	-23.81	74.9	-33.0	81.9	81.2	0.62	131.495		
300.0	300.0	300.0	300.0	0.5	0.5	-23.81	74.9	-33.0	81.9	80.8	1.07	76.360		
400.0	400.0	400.0	400.0	0.8	0.8	-23.81	74.9	-33.0	81.9	80.3	1.52	53.801		
500.0	500.0	500.0	500.0	1.0	1.0	-23.81	74.9	-33.0	81.9	79.9	1.97	41.532		
600.0	600.0	600.0	600.0	1.2	1.2	-23.81	74.9	-33.0	81.9	79.4	2.42	33.819		
700.0	700.0	700.0	700.0	1.4	1.4	-23.81	74.9	-33.0	81.9	79.0	2.87	28.522		
800.0	800.0	800.0	800.0	1.7	1.7	-23.81	74.9	-33.0	81.9	78.5	3.32	24.660		
900.0	900.0	900.0	900.0	1.9	1.9	-23.81	74.9	-33.0	81.9	78.1	3.77	21.719 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-173.27	74.9	-33.0	83.6	79.4	4.19	19.940		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-173.66	74.9	-33.0	88.8	84.2	4.59	19.327 SF		
1,200.0	1,199.6	1,197.0	1,197.0	2.5	2.6	-173.51	76.5	-32.7	97.1	92.1	5.00	19.409		
1,300.0	1,299.4	1,293.6	1,293.4	2.7	2.8	-172.34	81.3	-31.6	108.1	102.6	5.42	19.948		
1,400.0	1,399.1	1,392.6	1,392.2	2.9	3.0	-170.84	88.0	-30.0	120.6	114.8	5.84	20.647		
1,500.0	1,498.9	1,491.7	1,491.1	3.1	3.2	-169.62	94.7	-28.5	133.3	127.0	6.27	21.252		
1,600.0	1,598.6	1,590.9	1,590.0	3.3	3.5	-168.62	101.5	-27.0	146.0	139.3	6.71	21.771		
1,700.0	1,698.4	1,690.0	1,688.9	3.6	3.7	-167.77	108.2	-25.4	158.7	151.6	7.14	22.220		
1,800.0	1,798.1	1,789.2	1,787.8	3.8	3.9	-167.05	115.0	-23.9	171.5	163.9	7.58	22.612		
1,900.0	1,897.9	1,888.4	1,886.8	4.1	4.2	-166.43	121.7	-22.3	184.3	176.2	8.03	22.954		
2,000.0	1,997.6	1,987.5	1,985.7	4.3	4.4	-165.89	128.5	-20.8	197.1	188.6	8.47	23.258		
2,100.0	2,097.4	2,086.7	2,084.6	4.6	4.7	-165.42	135.2	-19.2	209.9	201.0	8.92	23.528		
2,200.0	2,197.2	2,185.8	2,183.5	4.8	4.9	-165.00	141.9	-17.7	222.7	213.4	9.37	23.769		
2,300.0	2,296.9	2,285.0	2,282.4	5.1	5.1	-164.62	148.7	-16.2	235.6	225.7	9.82	23.985		
2,400.0	2,396.7	2,384.2	2,381.4	5.3	5.4	-164.29	155.4	-14.6	248.4	238.1	10.27	24.181		
2,500.0	2,496.4	2,483.3	2,480.3	5.6	5.6	-163.99	162.2	-13.1	261.3	250.5	10.73	24.358		
2,600.0	2,596.2	2,582.5	2,579.2	5.8	5.9	-163.71	168.9	-11.5	274.1	263.0	11.18	24.519		
2,700.0	2,695.9	2,681.6	2,678.1	6.1	6.1	-163.46	175.7	-10.0	287.0	275.4	11.64	24.667		
2,800.0	2,795.7	2,780.8	2,777.0	6.3	6.4	-163.24	182.4	-8.4	299.9	287.8	12.09	24.802		
2,900.0	2,895.5	2,880.0	2,876.0	6.6	6.6	-163.03	189.1	-6.9	312.8	300.2	12.55	24.927		
3,000.0	2,895.2	2,879.1	2,874.9	6.8	6.9	-162.83	195.9	-5.4	325.7	312.7	13.00	25.041		
3,100.0	3,095.0	3,078.3	3,073.8	7.1	7.1	-162.66	202.6	-3.8	338.5	325.1	13.46	25.148		
3,200.0	3,194.7	3,177.5	3,172.7	7.4	7.4	-162.49	209.4	-2.3	351.4	337.5	13.92	25.247		
3,300.0	3,294.5	3,276.6	3,271.6	7.6	7.6	-162.34	216.1	-0.7	364.3	349.9	14.38	25.339		
3,400.0	3,394.2	3,375.8	3,370.6	7.9	7.9	-162.20	222.9	0.8	377.2	362.4	14.84	25.424		
3,500.0	3,494.0	3,474.9	3,469.5	8.1	8.1	-162.06	229.6	2.4	390.1	374.8	15.30	25.504		
3,600.0	3,593.8	3,574.1	3,568.4	8.4	8.4	-161.94	236.3	3.9	403.0	387.3	15.76	25.580		
3,700.0	3,693.5	3,673.3	3,667.3	8.7	8.6	-161.82	243.1	5.4	415.9	399.7	16.22	25.650		
3,800.0	3,793.3	3,772.4	3,766.2	8.9	8.9	-161.71	249.8	7.0	428.8	412.1	16.68	25.716		
3,900.0	3,893.0	3,871.6	3,865.2	9.2	9.1	-161.61	256.6	8.5	441.7	424.6	17.14	25.779		
4,000.0	3,992.8	3,970.7	3,964.1	9.4	9.4	-161.51	263.3	10.1	454.6	437.0	17.60	25.838		
4,100.0	4,092.5	4,069.9	4,063.0	9.7	9.6	-161.42	270.1	11.6	467.5	449.5	18.06	25.893		
4,200.0	4,192.3	4,169.1	4,161.9	10.0	9.9	-161.33	276.8	13.2	480.5	461.9	18.52	25.946		
4,300.0	4,292.1	4,268.2	4,260.8	10.2	10.1	-161.25	283.5	14.7	493.4	474.4	18.98	25.996		
4,400.0	4,391.8	4,367.4	4,359.7	10.5	10.4	-161.17	290.3	16.2	506.3	486.8	19.44	26.043		
4,500.0	4,491.6	4,466.5	4,458.7	10.7	10.6	-161.09	297.0	17.8	519.2	499.3	19.90	26.088		
4,600.0	4,591.3	4,565.7	4,557.6	11.0	10.9	-161.02	303.8	19.3	532.1	511.7	20.36	26.131		
4,700.0	4,691.1	4,664.9	4,656.5	11.3	11.1	-160.96	310.5	20.9	545.0	524.2	20.82	26.172		
4,800.0	4,790.8	4,764.0	4,755.4	11.5	11.4	-160.89	317.3	22.4	557.9	536.6	21.29	26.211		
4,900.0	4,890.6	4,863.2	4,854.3	11.8	11.7	-160.83	324.0	24.0	570.8	549.1	21.75	26.248		
5,000.0	4,990.3	4,962.3	4,953.3	12.0	11.9	-160.77	330.7	25.5	583.7	561.5	22.21	26.284		
5,100.0	5,090.1	5,061.5	5,052.2	12.3	12.2	-160.71	337.5	27.0	596.7	574.0	22.67	26.318		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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	5,160.7	5,151.1	12.6	12.4	-160.66	344.2	28.6	609.6	586.4	23.13	26.350		
5,300.0	5,289.6	5,259.8	5,250.0	12.8	12.7	-160.61	351.0	30.1	622.5	598.9	23.60	26.381		
5,400.0	5,389.4	5,350.0	5,340.0	13.1	12.9	-160.56	357.2	31.6	635.6	611.6	24.04	26.441		
5,437.0	5,426.3	5,365.2	5,355.0	13.2	12.9	-160.53	358.8	31.9	641.6	617.4	24.16	26.552		
5,450.0	5,439.2	5,371.2	5,361.0	13.2	13.0	-160.42	359.6	32.1	644.1	619.9	24.17	26.648		
5,500.0	5,488.7	5,400.0	5,389.4	13.4	13.0	-159.86	364.1	33.1	657.8	633.7	24.10	27.289		
5,550.0	5,537.3	5,414.8	5,403.9	13.6	13.1	-159.04	367.0	33.8	677.4	653.5	23.84	28.409		
5,600.0	5,584.5	5,434.3	5,422.9	13.9	13.2	-157.90	371.4	34.8	702.6	679.2	23.45	29.959		
5,650.0	5,629.9	5,450.0	5,438.0	14.1	13.2	-156.35	375.5	35.7	732.9	710.0	22.95	31.940		
5,700.0	5,673.1	5,467.4	5,454.6	14.5	13.3	-154.29	380.5	36.9	767.7	745.3	22.40	34.268		
5,750.0	5,713.7	5,480.7	5,467.2	14.9	13.4	-151.46	384.7	37.9	806.2	784.3	21.92	36.781		
5,800.0	5,751.3	5,500.0	5,485.3	15.3	13.5	-147.77	391.4	39.4	848.0	826.3	21.68	39.113		
5,850.0	5,785.6	5,500.0	5,485.3	15.8	13.5	-141.79	391.4	39.4	892.1	870.0	22.09	40.388		
5,900.0	5,816.3	5,500.0	5,485.3	16.4	13.5	-132.69	391.4	39.4	938.4	914.7	23.68	39.623		
5,950.0	5,843.0	5,500.0	5,485.3	17.0	13.5	-118.62	391.4	39.4	986.0	959.2	26.82	36.769		
6,000.0	5,865.5	5,500.0	5,485.3	17.7	13.5	-98.15	391.4	39.4	1,034.5	1,004.2	30.26	34.181		
6,050.0	5,883.7	5,516.3	5,500.3	18.4	13.5	-78.14	397.5	40.8	1,082.9	1,051.9	31.00	34.934		
6,100.0	5,897.3	5,500.0	5,485.3	19.1	13.5	-54.12	391.4	39.4	1,131.8	1,104.7	27.05	41.840		
6,150.0	5,906.3	5,500.0	5,485.3	19.9	13.5	-40.29	391.4	39.4	1,179.8	1,157.1	22.72	51.922		
6,200.0	5,910.5	5,500.0	5,485.3	20.8	13.5	-31.29	391.4	39.4	1,226.9	1,207.7	19.19	63.920		
6,218.8	5,910.8	5,500.0	5,485.3	21.1	13.5	-28.76	391.4	39.4	1,244.3	1,226.1	18.15	68.574		
6,300.0	5,910.8	5,500.0	5,485.3	22.3	13.5	-23.26	391.4	39.4	1,319.7	1,303.4	16.33	80.835		
6,400.0	5,910.8	5,500.0	5,485.3	23.9	13.5	-15.17	391.4	39.4	1,414.1	1,400.7	13.34	105.980		
6,500.0	5,910.8	5,500.0	5,485.3	25.5	13.5	-5.67	391.4	39.4	1,509.6	1,499.1	10.49	143.887		
6,600.0	5,910.8	5,476.4	5,463.2	27.1	13.4	5.18	383.4	37.5	1,605.1	1,594.5	10.62	151.160		
6,700.0	5,910.8	5,468.9	5,456.1	28.7	13.3	15.36	381.0	37.0	1,701.2	1,686.3	14.87	114.442		
6,800.0	5,910.8	5,450.0	5,438.0	30.4	13.2	24.50	375.5	35.7	1,797.4	1,776.7	20.65	87.018		
6,900.0	5,910.8	5,450.0	5,438.0	32.0	13.2	33.07	375.5	35.7	1,893.0	1,866.3	26.63	71.079		
7,000.0	5,910.8	5,450.0	5,438.0	33.6	13.2	40.55	375.5	35.7	1,988.2	1,956.2	31.96	62.213		
7,100.0	5,910.8	5,450.0	5,438.0	35.2	13.2	46.91	375.5	35.7	2,082.9	2,046.4	36.43	57.170		
7,200.0	5,910.8	5,450.0	5,438.0	36.8	13.2	52.23	375.5	35.7	2,176.8	2,136.7	40.08	54.309		
7,241.1	5,910.8	5,450.0	5,438.0	37.4	13.2	54.15	375.5	35.7	2,215.1	2,173.8	41.37	53.548		
7,300.0	5,910.8	5,450.0	5,438.0	38.4	13.2	54.15	375.5	35.7	2,270.1	2,227.8	42.24	53.740		
7,400.0	5,910.8	5,427.2	5,416.0	40.0	13.1	52.96	369.7	34.4	2,363.3	2,320.2	43.05	54.899		
7,500.0	5,910.8	5,422.7	5,411.6	41.6	13.1	52.72	368.7	34.2	2,457.3	2,412.8	44.41	55.328		
7,600.0	5,910.8	5,400.0	5,389.4	43.3	13.0	51.56	364.1	33.1	2,552.0	2,506.8	45.19	56.471		
7,700.0	5,910.8	5,400.0	5,389.4	45.0	13.0	51.56	364.1	33.1	2,646.7	2,600.0	46.70	56.669		
7,800.0	5,910.9	5,400.0	5,389.4	46.7	13.0	51.56	364.1	33.1	2,741.7	2,693.5	48.23	56.850		
7,900.0	5,910.9	5,400.0	5,389.4	48.4	13.0	51.56	364.1	33.1	2,837.1	2,787.3	49.76	57.016		
8,000.0	5,910.9	5,400.0	5,389.4	50.1	13.0	51.56	364.1	33.1	2,932.8	2,881.5	51.30	57.170		
8,100.0	5,910.9	5,400.0	5,389.4	51.9	13.0	51.56	364.1	33.1	3,028.7	2,975.9	52.85	57.311		
8,200.0	5,910.9	5,400.0	5,389.4	53.6	13.0	51.56	364.1	33.1	3,124.9	3,070.5	54.40	57.443		
8,300.0	5,910.9	5,400.0	5,389.4	55.4	13.0	51.56	364.1	33.1	3,221.4	3,165.4	55.96	57.566		
8,400.0	5,910.9	5,400.0	5,389.4	57.1	13.0	51.56	364.1	33.1	3,318.0	3,260.5	57.53	57.680		
8,500.0	5,910.9	5,400.0	5,389.4	58.9	13.0	51.56	364.1	33.1	3,414.9	3,355.8	59.09	57.787		
8,600.0	5,910.9	5,400.0	5,389.4	60.7	13.0	51.56	364.1	33.1	3,511.9	3,451.2	60.67	57.887		
8,700.0	5,910.9	5,400.0	5,389.4	62.5	13.0	51.56	364.1	33.1	3,609.1	3,546.8	62.25	57.981		
8,800.0	5,910.9	5,400.0	5,389.4	64.3	13.0	51.56	364.1	33.1	3,706.4	3,642.6	63.83	58.069		
8,900.0	5,910.9	5,400.0	5,389.4	66.2	13.0	51.56	364.1	33.1	3,803.9	3,738.5	65.41	58.153		
9,000.0	5,910.9	5,400.0	5,389.4	68.0	13.0	51.56	364.1	33.1	3,901.5	3,834.5	67.00	58.232		
9,100.0	5,910.9	5,400.0	5,389.4	69.8	13.0	51.56	364.1	33.1	3,999.2	3,930.6	68.59	58.307		
9,200.0	5,910.9	5,376.6	5,366.4	71.6	13.0	50.38	360.3	32.3	4,096.5	4,027.4	69.11	59.278		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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	5,910.9	5,374.9	5,364.7	73.5	13.0	50.30	360.1	32.2	4,194.3	4,123.7	70.60	59.407		
9,400.0	5,910.9	5,373.4	5,363.2	75.3	13.0	50.22	359.9	32.2	4,292.3	4,220.2	72.10	59.530		
9,500.0	5,910.9	5,350.0	5,340.0	77.1	12.9	49.08	357.2	31.6	4,390.8	4,318.3	72.55	60.524		
9,600.0	5,910.9	5,350.0	5,340.0	79.0	12.9	49.08	357.2	31.6	4,488.9	4,414.8	74.10	60.576		
9,700.0	5,910.9	5,350.0	5,340.0	80.8	12.9	49.08	357.2	31.6	4,587.0	4,511.3	75.66	60.626		
9,800.0	5,910.9	5,350.0	5,340.0	82.7	12.9	49.08	357.2	31.6	4,685.2	4,608.0	77.22	60.673		
9,900.0	5,910.9	5,350.0	5,340.0	84.6	12.9	49.08	357.2	31.6	4,783.5	4,704.7	78.78	60.719		
10,000.0	5,910.9	5,350.0	5,340.0	86.4	12.9	49.08	357.2	31.6	4,881.9	4,801.5	80.34	60.762		
10,100.0	5,910.9	5,350.0	5,340.0	88.3	12.9	49.08	357.2	31.6	4,980.3	4,898.4	81.91	60.804		
10,200.0	5,910.9	5,350.0	5,340.0	90.1	12.9	49.08	357.2	31.6	5,078.8	4,995.3	83.47	60.844		
10,300.0	5,910.9	5,350.0	5,340.0	92.0	12.9	49.08	357.2	31.6	5,177.3	5,092.3	85.04	60.883		
10,400.0	5,910.9	5,350.0	5,340.0	93.9	12.9	49.08	357.2	31.6	5,275.9	5,189.3	86.60	60.920		
10,500.0	5,910.9	5,350.0	5,340.0	95.8	12.9	49.08	357.2	31.6	5,374.6	5,286.4	88.17	60.956		
10,600.0	5,910.9	5,350.0	5,340.0	97.6	12.9	49.08	357.2	31.6	5,473.3	5,383.5	89.74	60.990		
10,700.0	5,910.9	5,350.0	5,340.0	99.5	12.9	49.08	357.2	31.6	5,572.0	5,480.7	91.31	61.023		
10,800.0	5,910.9	5,350.0	5,340.0	101.4	12.9	49.08	357.2	31.6	5,670.8	5,577.9	92.88	61.055		
10,900.0	5,910.9	5,350.0	5,340.0	103.3	12.9	49.08	357.2	31.6	5,769.7	5,675.2	94.45	61.086		
11,000.0	5,910.9	5,350.0	5,340.0	105.1	12.9	49.08	357.2	31.6	5,868.5	5,772.5	96.02	61.116		
11,100.0	5,910.9	5,350.0	5,340.0	107.0	12.9	49.08	357.2	31.6	5,967.4	5,869.8	97.60	61.145		
11,200.0	5,910.9	5,350.0	5,340.0	108.9	12.9	49.08	357.2	31.6	6,066.4	5,967.2	99.17	61.173		
11,300.0	5,911.0	5,350.0	5,340.0	110.8	12.9	49.08	357.2	31.6	6,165.4	6,064.6	100.74	61.200		
11,400.0	5,911.0	5,350.0	5,340.0	112.7	12.9	49.08	357.2	31.6	6,264.4	6,162.1	102.32	61.226		
11,500.0	5,911.0	5,350.0	5,340.0	114.6	12.9	49.08	357.2	31.6	6,363.4	6,259.5	103.89	61.251		
11,600.0	5,911.0	5,350.0	5,340.0	116.5	12.9	49.08	357.2	31.6	6,462.5	6,357.0	105.47	61.276		
11,700.0	5,911.0	5,350.0	5,340.0	118.3	12.9	49.08	357.2	31.6	6,561.6	6,454.6	107.04	61.300		
11,800.0	5,911.0	5,350.0	5,340.0	120.2	12.9	49.08	357.2	31.6	6,660.7	6,552.1	108.62	61.323		
11,900.0	5,911.0	5,350.0	5,340.0	122.1	12.9	49.08	357.2	31.6	6,759.9	6,649.7	110.19	61.345		
12,000.0	5,911.0	5,350.0	5,340.0	124.0	12.9	49.08	357.2	31.6	6,859.1	6,747.3	111.77	61.367		
12,100.0	5,911.0	5,350.0	5,340.0	125.9	12.9	49.08	357.2	31.6	6,958.3	6,844.9	113.35	61.389		
12,200.0	5,911.0	5,350.0	5,340.0	127.8	12.9	49.08	357.2	31.6	7,057.5	6,942.6	114.93	61.409		
12,300.0	5,911.0	5,350.0	5,340.0	129.7	12.9	49.08	357.2	31.6	7,156.7	7,040.2	116.50	61.429		
12,400.0	5,911.0	5,350.0	5,340.0	131.6	12.9	49.08	357.2	31.6	7,256.0	7,137.9	118.08	61.449		
12,500.0	5,911.0	5,350.0	5,340.0	133.5	12.9	49.08	357.2	31.6	7,355.3	7,235.6	119.66	61.468		
12,600.0	5,911.0	5,344.1	5,334.0	135.4	12.9	48.79	356.7	31.5	7,454.6	7,333.8	120.79	61.715		
12,700.0	5,911.0	5,338.0	5,328.0	137.3	12.9	48.50	356.3	31.3	7,553.9	7,432.0	121.90	61.968		
12,800.0	5,911.0	5,338.0	5,328.0	139.2	12.9	48.50	356.3	31.3	7,653.2	7,529.8	123.47	61.985		
12,900.0	5,911.0	5,338.0	5,328.0	141.1	12.9	48.50	356.3	31.3	7,752.6	7,627.5	125.04	62.002		
13,000.0	5,911.0	5,338.0	5,328.0	143.0	12.9	48.50	356.3	31.3	7,851.9	7,725.3	126.61	62.018		
13,100.0	5,911.0	5,338.0	5,328.0	144.9	12.9	48.50	356.3	31.3	7,951.3	7,823.1	128.18	62.034		
13,200.0	5,911.0	5,338.0	5,328.0	146.8	12.9	48.50	356.3	31.3	8,050.7	7,921.0	129.75	62.049		
13,300.0	5,911.0	5,338.0	5,328.0	148.7	12.9	48.50	356.3	31.3	8,150.1	8,018.8	131.32	62.064		
13,400.0	5,911.0	5,338.0	5,328.0	150.6	12.9	48.50	356.3	31.3	8,249.5	8,116.7	132.89	62.079		
13,435.8	5,911.0	5,338.0	5,328.0	151.2	12.9	48.50	356.3	31.3	8,285.1	8,151.7	133.33	62.138		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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	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	0.17	432.788		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.62	120.295		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.07	69.856		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.52	49.218		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.97	37.994		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	74.9	0.0	74.9	72.5	2.42	30.938		
700.0	700.0	700.0	700.0	1.4	1.4	0.00	74.9	0.0	74.9	72.0	2.87	26.093		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	74.9	0.0	74.9	71.6	3.32	22.560		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	74.9	0.0	74.9	71.1	3.77	19.869 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-149.98	74.9	0.0	76.4	72.2	4.19	18.221		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-151.79	74.9	0.0	81.0	76.4	4.60	17.616		
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	-153.96	74.9	0.0	87.2	82.2	5.01	17.402 SF		
1,300.0	1,299.4	1,296.6	1,296.6	2.7	2.8	-155.27	76.4	0.7	94.9	89.5	5.43	17.498		
1,400.0	1,399.1	1,393.2	1,393.0	2.9	3.0	-155.43	80.8	2.8	105.6	99.7	5.85	18.056		
1,500.0	1,498.9	1,492.2	1,491.8	3.1	3.2	-155.07	87.0	5.7	117.9	111.6	6.28	18.768		
1,600.0	1,598.6	1,591.4	1,590.8	3.3	3.4	-154.79	93.3	8.6	130.2	123.4	6.72	19.383		
1,700.0	1,698.4	1,690.7	1,689.8	3.6	3.7	-154.55	99.6	11.6	142.4	135.3	7.15	19.910		
1,800.0	1,798.1	1,789.9	1,788.8	3.8	3.9	-154.35	105.8	14.5	154.7	147.1	7.60	20.367		
1,900.0	1,897.9	1,889.2	1,887.8	4.1	4.1	-154.17	112.1	17.5	167.0	159.0	8.04	20.766		
2,000.0	1,997.6	1,988.4	1,986.8	4.3	4.4	-154.03	118.4	20.4	179.3	170.8	8.49	21.116		
2,100.0	2,097.4	2,087.6	2,085.8	4.6	4.6	-153.90	124.6	23.4	191.6	182.7	8.94	21.426		
2,200.0	2,197.2	2,186.9	2,184.8	4.8	4.9	-153.79	130.9	26.3	203.9	194.5	9.40	21.702		
2,300.0	2,296.9	2,286.1	2,283.8	5.1	5.1	-153.68	137.2	29.3	216.2	206.4	9.85	21.948		
2,400.0	2,396.7	2,385.4	2,382.8	5.3	5.4	-153.60	143.4	32.2	228.5	218.2	10.31	22.170		
2,500.0	2,496.4	2,484.6	2,481.8	5.6	5.6	-153.51	149.7	35.1	240.8	230.1	10.76	22.371		
2,600.0	2,596.2	2,583.9	2,580.8	5.8	5.8	-153.44	155.9	38.1	253.1	241.9	11.22	22.553		
2,700.0	2,695.9	2,683.1	2,679.8	6.1	6.1	-153.38	162.2	41.0	265.4	253.7	11.68	22.719		
2,800.0	2,795.7	2,782.3	2,778.8	6.3	6.3	-153.32	168.5	44.0	277.7	265.6	12.14	22.871		
2,900.0	2,895.5	2,881.6	2,877.8	6.6	6.6	-153.26	174.7	46.9	290.0	277.4	12.60	23.011		
3,000.0	2,895.2	2,880.8	2,876.8	6.8	6.8	-153.21	181.0	49.9	302.3	289.3	13.07	23.139		
3,100.0	3,095.0	3,080.1	3,075.8	7.1	7.1	-153.16	187.3	52.8	314.6	301.1	13.53	23.258		
3,200.0	3,194.7	3,179.3	3,174.8	7.4	7.3	-153.12	193.5	55.8	326.9	312.9	13.99	23.368		
3,300.0	3,294.5	3,278.5	3,273.8	7.6	7.6	-153.08	199.8	58.7	339.2	324.8	14.45	23.470		
3,400.0	3,394.2	3,377.8	3,372.8	7.9	7.8	-153.04	206.1	61.6	351.5	336.6	14.92	23.565		
3,500.0	3,494.0	3,477.0	3,471.8	8.1	8.1	-153.01	212.3	64.6	363.8	348.5	15.38	23.654		
3,600.0	3,593.8	3,576.3	3,570.8	8.4	8.3	-152.98	218.6	67.5	376.1	360.3	15.85	23.737		
3,700.0	3,693.5	3,675.5	3,669.8	8.7	8.6	-152.95	224.9	70.5	388.4	372.1	16.31	23.815		
3,800.0	3,793.3	3,774.7	3,768.8	8.9	8.8	-152.92	231.1	73.4	400.7	384.0	16.78	23.888		
3,900.0	3,893.0	3,874.0	3,867.8	9.2	9.1	-152.89	237.4	76.4	413.0	395.8	17.24	23.957		
4,000.0	3,992.8	3,973.2	3,966.8	9.4	9.3	-152.87	243.7	79.3	425.3	407.6	17.71	24.021		
4,100.0	4,092.5	4,072.5	4,065.8	9.7	9.6	-152.84	249.9	82.3	437.6	419.5	18.17	24.082		
4,200.0	4,192.3	4,171.7	4,164.8	10.0	9.8	-152.82	256.2	85.2	450.0	431.3	18.64	24.140		
4,300.0	4,292.1	4,270.9	4,263.8	10.2	10.1	-152.80	262.5	88.1	462.3	443.1	19.11	24.195		
4,400.0	4,391.8	4,370.2	4,362.8	10.5	10.3	-152.78	268.7	91.1	474.6	455.0	19.57	24.247		
4,500.0	4,491.6	4,469.4	4,461.8	10.7	10.6	-152.76	275.0	94.0	486.9	466.8	20.04	24.296		
4,600.0	4,591.3	4,568.7	4,560.8	11.0	10.9	-152.74	281.3	97.0	499.2	478.7	20.51	24.343		
4,700.0	4,691.1	4,667.9	4,659.8	11.3	11.1	-152.72	287.5	99.9	511.5	490.5	20.97	24.387		
4,800.0	4,790.8	4,767.1	4,758.8	11.5	11.4	-152.71	293.8	102.9	523.8	502.3	21.44	24.430		
4,900.0	4,890.6	4,866.4	4,857.8	11.8	11.6	-152.69	300.1	105.8	536.1	514.2	21.91	24.470		
5,000.0	4,990.3	4,965.6	4,956.8	12.0	11.9	-152.68	306.3	108.8	548.4	526.0	22.37	24.509		
5,100.0	5,090.1	5,064.9	5,055.8	12.3	12.1	-152.66	312.6	111.7	560.7	537.8	22.84	24.546		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA 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	5,164.1	5,154.8	12.6	12.4	-152.65	318.8	114.6	573.0	549.7	23.31	24.581			
5,300.0	5,289.6	5,263.3	5,253.8	12.8	12.6	-152.64	325.1	117.6	585.3	561.5	23.78	24.615			
5,400.0	5,389.4	5,362.6	5,352.8	13.1	12.9	-152.62	331.4	120.5	597.6	573.3	24.25	24.648			
5,437.0	5,426.3	5,399.3	5,389.4	13.2	13.0	-152.62	333.7	121.6	602.1	577.7	24.42	24.659			
5,450.0	5,439.2	5,412.2	5,402.2	13.2	13.0	-152.54	334.5	122.0	603.9	579.4	24.44	24.704			
5,500.0	5,488.7	5,450.0	5,440.0	13.4	13.1	-152.13	337.1	123.2	613.5	589.1	24.43	25.116			
5,550.0	5,537.3	5,471.6	5,461.5	13.6	13.2	-151.41	339.4	124.3	628.9	604.7	24.24	25.947			
5,600.0	5,584.5	5,500.0	5,489.4	13.9	13.3	-150.40	343.6	126.3	650.1	626.1	23.95	27.143			
5,650.0	5,629.9	5,513.5	5,502.6	14.1	13.3	-148.85	346.1	127.4	676.3	652.8	23.56	28.705			
5,700.0	5,673.1	5,531.5	5,520.1	14.5	13.4	-146.83	349.9	129.2	707.4	684.2	23.18	30.515			
5,750.0	5,713.7	5,550.0	5,538.0	14.9	13.4	-144.18	354.4	131.3	742.5	719.6	22.90	32.427			
5,800.0	5,751.3	5,550.0	5,538.0	15.3	13.4	-140.01	354.4	131.3	781.3	758.4	22.92	34.090			
5,850.0	5,785.6	5,572.2	5,559.1	15.8	13.5	-135.44	360.5	134.2	822.6	799.3	23.35	35.229			
5,900.0	5,816.3	5,581.3	5,567.6	16.4	13.6	-128.58	363.2	135.5	866.4	841.8	24.57	35.261			
5,950.0	5,843.0	5,600.0	5,585.1	17.0	13.7	-120.35	369.3	138.4	912.1	885.7	26.46	34.468			
6,000.0	5,865.5	5,600.0	5,585.1	17.7	13.7	-107.39	369.3	138.4	958.7	929.5	29.20	32.829			
6,050.0	5,883.7	5,600.0	5,585.1	18.4	13.7	-91.28	369.3	138.4	1,006.1	974.9	31.28	32.161			
6,100.0	5,897.3	5,600.0	5,585.1	19.1	13.7	-74.13	369.3	138.4	1,053.8	1,022.6	31.17	33.810			
6,150.0	5,906.3	5,600.0	5,585.1	19.9	13.7	-58.87	369.3	138.4	1,101.3	1,072.5	28.83	38.203			
6,200.0	5,910.5	5,600.0	5,585.1	20.8	13.7	-46.97	369.3	138.4	1,148.2	1,122.6	25.60	44.860			
6,218.8	5,910.8	5,600.0	5,585.1	21.1	13.7	-43.34	369.3	138.4	1,165.7	1,141.3	24.40	47.767			
6,300.0	5,910.8	5,600.0	5,585.1	22.3	13.7	-38.56	369.3	138.4	1,241.4	1,218.0	23.39	53.082			
6,400.0	5,910.8	5,579.3	5,565.8	23.9	13.6	-28.82	362.6	135.2	1,336.0	1,316.1	19.89	67.183			
6,500.0	5,910.8	5,572.1	5,559.0	25.5	13.5	-18.59	360.5	134.2	1,432.1	1,416.4	15.74	90.974			
6,600.0	5,910.8	5,550.0	5,538.0	27.1	13.4	-5.89	354.4	131.3	1,529.3	1,518.0	11.28	135.628			
6,700.0	5,910.8	5,550.0	5,538.0	28.7	13.4	6.40	354.4	131.3	1,626.4	1,614.9	11.51	141.329			
6,800.0	5,910.8	5,550.0	5,538.0	30.4	13.4	18.84	354.4	131.3	1,723.8	1,706.3	17.51	98.444			
6,900.0	5,910.8	5,550.0	5,538.0	32.0	13.4	30.25	354.4	131.3	1,821.1	1,796.0	25.04	72.734			
7,000.0	5,910.8	5,550.0	5,538.0	33.6	13.4	39.96	354.4	131.3	1,918.0	1,886.3	31.72	60.464			
7,100.0	5,910.8	5,550.0	5,538.0	35.2	13.4	47.83	354.4	131.3	2,014.5	1,977.4	37.05	54.367			
7,200.0	5,910.8	5,528.0	5,516.7	36.8	13.4	52.72	349.1	128.9	2,109.7	2,069.4	40.38	52.247			
7,241.1	5,910.8	5,525.8	5,514.6	37.4	13.4	54.79	348.6	128.6	2,148.7	2,107.0	41.73	51.493			
7,300.0	5,910.8	5,522.8	5,511.7	38.4	13.3	54.61	348.0	128.3	2,204.6	2,162.1	42.51	51.864			
7,400.0	5,910.8	5,500.0	5,489.4	40.0	13.3	53.22	343.6	126.3	2,300.1	2,256.9	43.23	53.211			
7,500.0	5,910.8	5,500.0	5,489.4	41.6	13.3	53.22	343.6	126.3	2,395.5	2,350.8	44.74	53.544			
7,600.0	5,910.8	5,500.0	5,489.4	43.3	13.3	53.22	343.6	126.3	2,491.3	2,445.0	46.27	53.847			
7,700.0	5,910.8	5,500.0	5,489.4	45.0	13.3	53.22	343.6	126.3	2,587.4	2,539.6	47.81	54.123			
7,800.0	5,910.9	5,500.0	5,489.4	46.7	13.3	53.22	343.6	126.3	2,683.7	2,634.4	49.35	54.376			
7,900.0	5,910.9	5,500.0	5,489.4	48.4	13.3	53.22	343.6	126.3	2,780.4	2,729.5	50.91	54.609			
8,000.0	5,910.9	5,500.0	5,489.4	50.1	13.3	53.22	343.6	126.3	2,877.2	2,824.7	52.48	54.824			
8,100.0	5,910.9	5,500.0	5,489.4	51.9	13.3	53.22	343.6	126.3	2,974.3	2,920.2	54.06	55.023			
8,200.0	5,910.9	5,500.0	5,489.4	53.6	13.3	53.22	343.6	126.3	3,071.5	3,015.9	55.64	55.207			
8,300.0	5,910.9	5,500.0	5,489.4	55.4	13.3	53.22	343.6	126.3	3,169.0	3,111.7	57.22	55.378			
8,400.0	5,910.9	5,500.0	5,489.4	57.1	13.3	53.22	343.6	126.3	3,266.5	3,207.7	58.82	55.538			
8,500.0	5,910.9	5,500.0	5,489.4	58.9	13.3	53.22	343.6	126.3	3,364.3	3,303.8	60.41	55.687			
8,600.0	5,910.9	5,500.0	5,489.4	60.7	13.3	53.22	343.6	126.3	3,462.1	3,400.1	62.02	55.826			
8,700.0	5,910.9	5,478.2	5,467.9	62.5	13.2	51.93	340.2	124.7	3,559.6	3,497.0	62.59	56.872			
8,800.0	5,910.9	5,476.2	5,466.0	64.3	13.2	51.81	339.9	124.6	3,657.6	3,593.6	64.08	57.078			
8,900.0	5,910.9	5,474.3	5,464.1	66.2	13.2	51.70	339.7	124.4	3,755.7	3,690.2	65.58	57.273			
9,000.0	5,910.9	5,472.5	5,462.3	68.0	13.2	51.59	339.5	124.3	3,853.9	3,786.8	67.07	57.457			
9,100.0	5,910.9	5,450.0	5,440.0	69.8	13.1	50.28	337.1	123.2	3,952.6	3,885.1	67.50	58.553			
9,200.0	5,910.9	5,450.0	5,440.0	71.6	13.1	50.28	337.1	123.2	4,050.9	3,981.8	69.07	58.645			

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
9,300.0	5,910.9	5,450.0	5,440.0	73.5	13.1	50.28	337.1	123.2	4,149.2	4,078.6	70.65	58.732		
9,400.0	5,910.9	5,450.0	5,440.0	75.3	13.1	50.28	337.1	123.2	4,247.7	4,175.5	72.22	58.815		
9,500.0	5,910.9	5,450.0	5,440.0	77.1	13.1	50.28	337.1	123.2	4,346.2	4,272.4	73.80	58.894		
9,600.0	5,910.9	5,450.0	5,440.0	79.0	13.1	50.28	337.1	123.2	4,444.8	4,369.4	75.38	58.969		
9,700.0	5,910.9	5,450.0	5,440.0	80.8	13.1	50.28	337.1	123.2	4,543.4	4,466.5	76.96	59.040		
9,800.0	5,910.9	5,450.0	5,440.0	82.7	13.1	50.28	337.1	123.2	4,642.2	4,563.6	78.54	59.108		
9,900.0	5,910.9	5,450.0	5,440.0	84.6	13.1	50.28	337.1	123.2	4,740.9	4,660.8	80.12	59.173		
10,000.0	5,910.9	5,450.0	5,440.0	86.4	13.1	50.28	337.1	123.2	4,839.7	4,758.0	81.70	59.235		
10,100.0	5,910.9	5,450.0	5,440.0	88.3	13.1	50.28	337.1	123.2	4,938.6	4,855.3	83.29	59.294		
10,200.0	5,910.9	5,450.0	5,440.0	90.1	13.1	50.28	337.1	123.2	5,037.5	4,952.6	84.88	59.351		
10,300.0	5,910.9	5,450.0	5,440.0	92.0	13.1	50.28	337.1	123.2	5,136.4	5,050.0	86.46	59.406		
10,400.0	5,910.9	5,450.0	5,440.0	93.9	13.1	50.28	337.1	123.2	5,235.4	5,147.4	88.05	59.458		
10,500.0	5,910.9	5,450.0	5,440.0	95.8	13.1	50.28	337.1	123.2	5,334.4	5,244.8	89.64	59.508		
10,600.0	5,910.9	5,450.0	5,440.0	97.6	13.1	50.28	337.1	123.2	5,433.5	5,342.3	91.23	59.557		
10,700.0	5,910.9	5,450.0	5,440.0	99.5	13.1	50.28	337.1	123.2	5,532.6	5,439.8	92.82	59.603		
10,800.0	5,910.9	5,450.0	5,440.0	101.4	13.1	50.28	337.1	123.2	5,631.7	5,537.3	94.42	59.648		
10,900.0	5,910.9	5,450.0	5,440.0	103.3	13.1	50.28	337.1	123.2	5,730.9	5,634.9	96.01	59.691		
11,000.0	5,910.9	5,450.0	5,440.0	105.1	13.1	50.28	337.1	123.2	5,830.1	5,732.5	97.60	59.732		
11,100.0	5,910.9	5,450.0	5,440.0	107.0	13.1	50.28	337.1	123.2	5,929.3	5,830.1	99.20	59.773		
11,200.0	5,910.9	5,450.0	5,440.0	108.9	13.1	50.28	337.1	123.2	6,028.5	5,927.7	100.79	59.811		
11,300.0	5,911.0	5,450.0	5,440.0	110.8	13.1	50.28	337.1	123.2	6,127.8	6,025.4	102.39	59.849		
11,400.0	5,911.0	5,450.0	5,440.0	112.7	13.1	50.28	337.1	123.2	6,227.1	6,123.1	103.98	59.885		
11,500.0	5,911.0	5,450.0	5,440.0	114.6	13.1	50.28	337.1	123.2	6,326.4	6,220.8	105.58	59.920		
11,600.0	5,911.0	5,450.0	5,440.0	116.5	13.1	50.28	337.1	123.2	6,425.7	6,318.5	107.18	59.953		
11,700.0	5,911.0	5,450.0	5,440.0	118.3	13.1	50.28	337.1	123.2	6,525.0	6,416.3	108.78	59.986		
11,800.0	5,911.0	5,443.1	5,433.1	120.2	13.1	49.89	336.5	122.9	6,624.4	6,514.5	109.83	60.317		
11,900.0	5,911.0	5,442.5	5,432.5	122.1	13.1	49.85	336.5	122.9	6,723.7	6,612.4	111.37	60.374		
12,000.0	5,911.0	5,436.0	5,426.0	124.0	13.1	49.49	336.0	122.7	6,823.2	6,710.7	112.43	60.686		
12,100.0	5,911.0	5,436.0	5,426.0	125.9	13.1	49.49	336.0	122.7	6,922.6	6,808.6	114.02	60.715		
12,200.0	5,911.0	5,436.0	5,426.0	127.8	13.1	49.49	336.0	122.7	7,022.0	6,906.4	115.60	60.742		
12,300.0	5,911.0	5,436.0	5,426.0	129.7	13.1	49.49	336.0	122.7	7,121.5	7,004.3	117.19	60.769		
12,400.0	5,911.0	5,436.0	5,426.0	131.6	13.1	49.49	336.0	122.7	7,220.9	7,102.1	118.78	60.795		
12,500.0	5,911.0	5,436.0	5,426.0	133.5	13.1	49.49	336.0	122.7	7,320.4	7,200.0	120.36	60.820		
12,600.0	5,911.0	5,436.0	5,426.0	135.4	13.1	49.49	336.0	122.7	7,419.9	7,297.9	121.95	60.844		
12,700.0	5,911.0	5,436.0	5,426.0	137.3	13.1	49.49	336.0	122.7	7,519.4	7,395.8	123.54	60.868		
12,800.0	5,911.0	5,436.0	5,426.0	139.2	13.1	49.49	336.0	122.7	7,618.9	7,493.8	125.12	60.891		
12,900.0	5,911.0	5,436.0	5,426.0	141.1	13.1	49.49	336.0	122.7	7,718.4	7,591.7	126.71	60.914		
13,000.0	5,911.0	5,436.0	5,426.0	143.0	13.1	49.49	336.0	122.7	7,817.9	7,689.7	128.30	60.936		
13,100.0	5,911.0	5,436.0	5,426.0	144.9	13.1	49.49	336.0	122.7	7,917.5	7,787.6	129.89	60.957		
13,200.0	5,911.0	5,432.7	5,422.7	146.8	13.1	49.30	335.8	122.6	8,017.1	7,885.9	131.17	61.122		
13,300.0	5,911.0	5,426.4	5,416.4	148.7	13.0	48.95	335.4	122.4	8,116.6	7,984.5	132.16	61.417		
13,400.0	5,911.0	5,420.1	5,410.1	150.6	13.0	48.60	335.0	122.2	8,216.2	8,083.1	133.14	61.713		
13,435.8	5,911.0	5,417.8	5,407.9	151.2	13.0	48.47	334.9	122.2	8,251.8	8,118.4	133.37	61.872		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													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	-99.1	99.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-99.1	99.1	99.0	0.18	550.651		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-99.1	99.1	98.5	0.63	157.462		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-99.1	99.1	98.1	1.08	91.866		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-99.1	99.1	97.6	1.53	64.850		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-99.1	99.1	97.2	1.98	50.113		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-99.1	99.1	96.7	2.43	40.834		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-99.1	99.1	96.3	2.88	34.454		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-99.1	99.1	95.8	3.33	29.798		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-99.1	99.1	95.4	3.78	26.251 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	121.53	0.0	-99.1	100.0	95.8	4.20	23.824		
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	123.96	0.0	-99.1	102.9	98.3	4.60	22.350		
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	127.06	0.0	-99.1	106.9	101.9	5.02	21.307		
1,300.0	1,299.4	1,299.2	1,299.1	2.7	2.8	129.04	-1.7	-99.5	111.4	105.9	5.41	20.566		
1,400.0	1,399.1	1,398.8	1,398.7	2.9	2.9	129.15	-6.7	-100.5	116.0	110.2	5.80	20.014		
1,500.0	1,498.9	1,498.7	1,498.3	3.1	3.1	128.41	-13.6	-101.9	120.8	114.6	6.20	19.488		
1,600.0	1,598.6	1,598.6	1,597.9	3.3	3.3	127.73	-20.4	-103.3	125.6	119.0	6.62	18.982		
1,700.0	1,698.4	1,698.5	1,697.6	3.6	3.5	127.09	-27.2	-104.7	130.5	123.4	7.05	18.502		
1,800.0	1,798.1	1,798.3	1,797.2	3.8	3.7	126.51	-34.0	-106.1	135.3	127.8	7.50	18.053		
1,900.0	1,897.9	1,898.2	1,896.8	4.1	4.0	125.96	-40.9	-107.5	140.2	132.2	7.95	17.635		
2,000.0	1,997.6	1,998.1	1,996.5	4.3	4.2	125.45	-47.7	-108.9	145.0	136.6	8.41	17.247		
2,100.0	2,097.4	2,098.0	2,096.1	4.6	4.4	124.97	-54.5	-110.3	149.9	141.0	8.88	16.887		
2,200.0	2,197.2	2,197.8	2,195.7	4.8	4.6	124.53	-61.3	-111.7	154.8	145.5	9.35	16.555		
2,300.0	2,296.9	2,297.7	2,295.4	5.1	4.9	124.11	-68.2	-113.1	159.7	149.9	9.83	16.247		
2,400.0	2,396.7	2,397.6	2,395.0	5.3	5.1	123.71	-75.0	-114.5	164.6	154.3	10.31	15.962		
2,500.0	2,496.4	2,497.4	2,494.6	5.6	5.4	123.34	-81.8	-115.9	169.5	158.7	10.80	15.697		
2,600.0	2,596.2	2,597.3	2,594.2	5.8	5.6	122.99	-88.6	-117.3	174.4	163.1	11.29	15.452		
2,700.0	2,695.9	2,697.2	2,693.9	6.1	5.8	122.66	-95.5	-118.7	179.4	167.6	11.78	15.224		
2,800.0	2,795.7	2,797.1	2,793.5	6.3	6.1	122.35	-102.3	-120.1	184.3	172.0	12.28	15.012		
2,900.0	2,895.5	2,896.9	2,893.1	6.6	6.3	122.05	-109.1	-121.5	189.2	176.4	12.77	14.814		
3,000.0	2,995.2	2,996.8	2,992.8	6.8	6.6	121.77	-115.9	-122.9	194.2	180.9	13.27	14.629		
3,100.0	3,095.0	3,096.7	3,092.4	7.1	6.8	121.50	-122.7	-124.3	199.1	185.3	13.77	14.456		
3,200.0	3,194.7	3,196.6	3,192.0	7.4	7.1	121.24	-129.6	-125.7	204.1	189.8	14.28	14.294		
3,300.0	3,294.5	3,296.4	3,291.7	7.6	7.3	121.00	-136.4	-127.1	209.0	194.2	14.78	14.142		
3,400.0	3,394.2	3,396.3	3,391.3	7.9	7.6	120.77	-143.2	-128.5	214.0	198.7	15.28	13.999		
3,500.0	3,494.0	3,496.2	3,490.9	8.1	7.8	120.55	-150.0	-129.9	218.9	203.1	15.79	13.864		
3,600.0	3,593.8	3,596.1	3,590.5	8.4	8.1	120.34	-156.9	-131.3	223.9	207.6	16.30	13.737		
3,700.0	3,693.5	3,695.9	3,690.2	8.7	8.4	120.13	-163.7	-132.7	228.8	212.0	16.81	13.618		
3,800.0	3,793.3	3,795.8	3,789.8	8.9	8.6	119.94	-170.5	-134.1	233.8	216.5	17.31	13.504		
3,900.0	3,893.0	3,895.7	3,889.4	9.2	8.9	119.75	-177.3	-135.5	238.8	221.0	17.82	13.397		
4,000.0	3,992.8	3,995.6	3,989.1	9.4	9.1	119.58	-184.2	-136.9	243.8	225.4	18.33	13.295		
4,100.0	4,092.5	4,095.4	4,088.7	9.7	9.4	119.41	-191.0	-138.3	248.7	229.9	18.84	13.199		
4,200.0	4,192.3	4,195.3	4,188.3	10.0	9.6	119.24	-197.8	-139.7	253.7	234.4	19.36	13.107		
4,300.0	4,292.1	4,295.2	4,288.0	10.2	9.9	119.08	-204.6	-141.1	258.7	238.8	19.87	13.020		
4,400.0	4,391.8	4,395.0	4,387.6	10.5	10.2	118.93	-211.5	-142.5	263.7	243.3	20.38	12.937		
4,500.0	4,491.6	4,494.9	4,487.2	10.7	10.4	118.78	-218.3	-143.9	268.6	247.8	20.89	12.858		
4,600.0	4,591.3	4,594.8	4,586.9	11.0	10.7	118.64	-225.1	-145.3	273.6	252.2	21.41	12.782		
4,700.0	4,691.1	4,694.7	4,686.5	11.3	10.9	118.51	-231.9	-146.7	278.6	256.7	21.92	12.710		
4,800.0	4,790.8	4,794.5	4,786.1	11.5	11.2	118.38	-238.8	-148.1	283.6	261.2	22.44	12.641		
4,900.0	4,890.6	4,894.4	4,885.7	11.8	11.5	118.25	-245.6	-149.6	288.6	265.6	22.95	12.575		
5,000.0	4,990.3	4,994.3	4,985.4	12.0	11.7	118.13	-252.4	-151.0	293.6	270.1	23.47	12.512		
5,100.0	5,090.1	5,094.2	5,085.0	12.3	12.0	118.01	-259.2	-152.4	298.6	274.6	23.98	12.451		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		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			
5,200.0	5,189.9	5,194.0	5,184.6	12.6	12.2	117.89	-266.1	-153.8	303.6	279.1	24.50	12.393		
5,300.0	5,289.6	5,293.9	5,284.3	12.8	12.5	117.78	-272.9	-155.2	308.6	283.6	25.01	12.337		
5,400.0	5,389.4	5,386.2	5,376.1	13.1	12.8	117.27	-281.5	-156.9	314.2	288.7	25.53	12.307		
5,437.0	5,426.3	5,417.7	5,407.0	13.2	12.9	116.56	-287.4	-158.1	317.3	291.6	25.75	12.325		
5,450.0	5,439.2	5,428.7	5,417.6	13.2	12.9	116.13	-289.9	-158.7	318.6	292.8	25.82	12.341		
5,500.0	5,488.7	5,470.2	5,457.5	13.4	13.1	114.33	-301.4	-161.0	325.8	299.7	26.11	12.477		
5,550.0	5,537.3	5,510.7	5,495.4	13.6	13.3	112.34	-315.5	-163.9	336.2	309.7	26.44	12.716		
5,600.0	5,584.5	5,550.0	5,530.9	13.9	13.5	110.19	-331.9	-167.3	349.6	322.8	26.80	13.042		
5,650.0	5,629.9	5,588.5	5,564.3	14.1	13.8	107.89	-350.5	-171.1	365.8	338.6	27.24	13.428		
5,700.0	5,673.1	5,625.5	5,595.2	14.5	14.0	105.47	-370.7	-175.2	384.6	356.9	27.75	13.860		
5,750.0	5,713.7	5,661.4	5,623.5	14.9	14.3	102.92	-392.2	-179.6	405.7	377.4	28.33	14.320		
5,800.0	5,751.3	5,700.0	5,652.3	15.3	14.6	100.31	-417.4	-184.8	428.8	399.8	29.07	14.753		
5,850.0	5,785.6	5,729.6	5,673.0	15.8	14.9	97.53	-438.1	-189.1	453.7	423.8	29.86	15.195		
5,900.0	5,816.3	5,762.1	5,694.3	16.4	15.2	94.71	-462.1	-194.0	480.0	449.3	30.74	15.616		
5,950.0	5,843.0	5,793.6	5,713.5	17.0	15.6	91.81	-486.5	-199.0	507.6	476.0	31.68	16.024		
6,000.0	5,865.5	5,824.2	5,730.7	17.7	15.9	88.88	-511.4	-204.1	536.3	503.6	32.66	16.421		
6,050.0	5,883.7	5,850.0	5,743.9	18.4	16.2	85.77	-533.0	-208.6	565.7	532.1	33.60	16.834		
6,100.0	5,897.3	5,883.2	5,759.4	19.1	16.6	82.98	-561.8	-214.5	595.7	561.0	34.62	17.203		
6,150.0	5,906.3	5,911.8	5,771.2	19.9	17.0	80.07	-587.3	-219.7	626.0	590.4	35.59	17.591		
6,200.0	5,910.5	5,940.0	5,781.4	20.8	17.3	77.24	-613.0	-225.0	656.6	620.1	36.53	17.975		
6,218.8	5,910.8	5,950.0	5,784.7	21.1	17.5	76.17	-622.3	-226.9	668.1	631.3	36.87	18.123		
6,300.0	5,910.8	6,000.0	5,798.3	22.3	18.1	78.68	-669.4	-236.6	717.6	678.2	39.32	18.251		
6,400.0	5,910.8	6,062.0	5,808.7	23.9	19.0	80.69	-729.2	-248.8	777.0	734.8	42.16	18.429		
6,500.0	5,910.8	6,142.9	5,811.8	25.5	20.2	81.87	-808.4	-264.9	833.8	788.6	45.17	18.460		
6,600.0	5,910.8	6,300.5	5,811.8	27.1	22.4	82.87	-964.2	-288.3	882.3	833.4	48.97	18.017		
6,700.0	5,910.8	6,475.9	5,811.8	28.7	24.9	83.53	-1,139.3	-299.0	918.4	865.2	53.19	17.268		
6,800.0	5,910.8	6,586.7	5,811.8	30.4	26.6	83.81	-1,250.0	-299.3	943.8	887.1	56.69	16.648		
6,900.0	5,910.8	6,684.6	5,811.8	32.0	28.2	84.01	-1,347.9	-299.3	964.1	904.0	60.04	16.057		
7,000.0	5,910.8	6,783.4	5,811.8	33.6	29.9	84.15	-1,446.8	-299.3	979.2	915.8	63.32	15.464		
7,100.0	5,910.8	6,882.9	5,811.8	35.2	31.6	84.24	-1,546.2	-299.3	989.1	922.6	66.49	14.877		
7,200.0	5,910.8	6,982.8	5,811.8	36.8	33.3	84.28	-1,646.1	-299.3	993.9	924.4	69.51	14.299		
7,241.1	5,910.8	7,023.8	5,811.8	37.4	34.1	84.28	-1,687.2	-299.3	994.3	923.6	70.70	14.064		
7,300.0	5,910.8	7,082.8	5,811.8	38.4	35.1	84.28	-1,746.1	-299.3	994.3	921.6	72.73	13.672		
7,400.0	5,910.8	7,182.8	5,811.8	40.0	36.9	84.28	-1,846.1	-299.3	994.3	918.1	76.21	13.047		
7,500.0	5,910.8	7,282.8	5,811.8	41.6	38.7	84.28	-1,946.1	-299.3	994.3	914.6	79.73	12.471		
7,600.0	5,910.8	7,382.8	5,811.8	43.3	40.5	84.29	-2,046.1	-299.3	994.4	911.1	83.28	11.940		
7,700.0	5,910.8	7,482.8	5,811.8	45.0	42.3	84.29	-2,146.1	-299.3	994.4	907.5	86.85	11.449		
7,800.0	5,910.9	7,582.8	5,811.8	46.7	44.1	84.29	-2,246.1	-299.3	994.4	903.9	90.44	10.995		
7,900.0	5,910.9	7,682.8	5,811.8	48.4	45.9	84.29	-2,346.1	-299.3	994.4	900.3	94.05	10.573		
8,000.0	5,910.9	7,782.8	5,811.8	50.1	47.8	84.29	-2,446.1	-299.4	994.4	896.7	97.68	10.180		
8,100.0	5,910.9	7,882.8	5,811.8	51.9	49.6	84.29	-2,546.1	-299.4	994.4	893.1	101.32	9.814		
8,200.0	5,910.9	7,982.8	5,811.8	53.6	51.5	84.29	-2,646.1	-299.4	994.4	889.4	104.98	9.473		
8,300.0	5,910.9	8,082.8	5,811.9	55.4	53.3	84.29	-2,746.1	-299.4	994.4	885.8	108.65	9.153		
8,400.0	5,910.9	8,182.8	5,811.9	57.1	55.2	84.29	-2,846.1	-299.4	994.5	882.1	112.33	8.853		
8,500.0	5,910.9	8,282.8	5,811.9	58.9	57.1	84.29	-2,946.1	-299.4	994.5	878.4	116.02	8.572		
8,600.0	5,910.9	8,382.8	5,811.9	60.7	58.9	84.29	-3,046.1	-299.4	994.5	874.8	119.71	8.307		
8,700.0	5,910.9	8,482.8	5,811.9	62.5	60.8	84.29	-3,146.1	-299.4	994.5	871.1	123.42	8.058		
8,800.0	5,910.9	8,582.8	5,811.9	64.3	62.7	84.29	-3,246.1	-299.4	994.5	867.4	127.13	7.823		
8,900.0	5,910.9	8,682.8	5,811.9	66.2	64.5	84.29	-3,346.1	-299.4	994.5	863.7	130.85	7.600		
9,000.0	5,910.9	8,782.8	5,811.9	68.0	66.4	84.29	-3,446.1	-299.4	994.5	859.9	134.58	7.390		
9,100.0	5,910.9	8,882.8	5,811.9	69.8	68.3	84.29	-3,546.1	-299.4	994.5	856.2	138.31	7.191		
9,200.0	5,910.9	8,982.8	5,811.9	71.6	70.2	84.29	-3,646.1	-299.5	994.5	852.5	142.04	7.002		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1												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	5,910.9	9,082.8	5,811.9	73.5	72.1	84.29	-3,746.1	-299.5	994.6	848.8	145.79	6.822	
9,400.0	5,910.9	9,182.8	5,811.9	75.3	74.0	84.29	-3,846.1	-299.5	994.6	845.0	149.53	6.651	
9,500.0	5,910.9	9,282.8	5,811.9	77.1	75.9	84.29	-3,946.1	-299.5	994.6	841.3	153.28	6.489	
9,600.0	5,910.9	9,382.8	5,811.9	79.0	77.7	84.29	-4,046.1	-299.5	994.6	837.6	157.03	6.334	
9,700.0	5,910.9	9,482.8	5,811.9	80.8	79.6	84.29	-4,146.1	-299.5	994.6	833.8	160.79	6.186	
9,800.0	5,910.9	9,582.8	5,811.9	82.7	81.5	84.29	-4,246.1	-299.5	994.6	830.1	164.55	6.044	
9,900.0	5,910.9	9,682.8	5,811.9	84.6	83.4	84.29	-4,346.1	-299.5	994.6	826.3	168.31	5.909	
10,000.0	5,910.9	9,782.8	5,811.9	86.4	85.3	84.29	-4,446.1	-299.5	994.6	822.6	172.08	5.780	
10,100.0	5,910.9	9,882.8	5,811.9	88.3	87.2	84.29	-4,546.1	-299.5	994.6	818.8	175.85	5.656	
10,200.0	5,910.9	9,982.8	5,811.9	90.1	89.1	84.29	-4,646.1	-299.5	994.7	815.0	179.62	5.538	
10,300.0	5,910.9	10,082.8	5,811.9	92.0	91.0	84.29	-4,746.1	-299.5	994.7	811.3	183.39	5.424	
10,400.0	5,910.9	10,182.8	5,811.9	93.9	92.9	84.29	-4,846.1	-299.6	994.7	807.5	187.17	5.314	
10,500.0	5,910.9	10,282.8	5,811.9	95.8	94.8	84.29	-4,946.1	-299.6	994.7	803.7	190.95	5.209	
10,600.0	5,910.9	10,382.8	5,811.9	97.6	96.7	84.29	-5,046.1	-299.6	994.7	800.0	194.73	5.108	
10,700.0	5,910.9	10,482.8	5,811.9	99.5	98.6	84.29	-5,146.1	-299.6	994.7	796.2	198.51	5.011	
10,800.0	5,910.9	10,582.8	5,811.9	101.4	100.5	84.29	-5,246.1	-299.6	994.7	792.4	202.29	4.917	
10,900.0	5,910.9	10,682.8	5,811.9	103.3	102.4	84.29	-5,346.1	-299.6	994.7	788.7	206.08	4.827	
11,000.0	5,910.9	10,782.8	5,811.9	105.1	104.3	84.29	-5,446.1	-299.6	994.8	784.9	209.86	4.740	
11,100.0	5,910.9	10,882.8	5,811.9	107.0	106.2	84.29	-5,546.1	-299.6	994.8	781.1	213.65	4.656	
11,200.0	5,910.9	10,982.8	5,811.9	108.9	108.1	84.29	-5,646.1	-299.6	994.8	777.3	217.44	4.575	
11,300.0	5,911.0	11,082.8	5,811.9	110.8	110.1	84.29	-5,746.1	-299.6	994.8	773.6	221.23	4.497	
11,400.0	5,911.0	11,182.8	5,811.9	112.7	112.0	84.29	-5,846.1	-299.6	994.8	769.8	225.02	4.421	
11,500.0	5,911.0	11,282.8	5,812.0	114.6	113.9	84.29	-5,946.1	-299.6	994.8	766.0	228.82	4.348	
11,600.0	5,911.0	11,382.8	5,812.0	116.5	115.8	84.29	-6,046.1	-299.6	994.8	762.2	232.61	4.277	
11,700.0	5,911.0	11,482.8	5,812.0	118.3	117.7	84.29	-6,146.1	-299.7	994.8	758.4	236.41	4.208	
11,800.0	5,911.0	11,582.8	5,812.0	120.2	119.6	84.29	-6,246.1	-299.7	994.8	754.6	240.20	4.142	
11,900.0	5,911.0	11,682.8	5,812.0	122.1	121.5	84.29	-6,346.1	-299.7	994.9	750.9	244.00	4.077	
12,000.0	5,911.0	11,782.8	5,812.0	124.0	123.4	84.29	-6,446.1	-299.7	994.9	747.1	247.80	4.015	
12,100.0	5,911.0	11,882.8	5,812.0	125.9	125.3	84.29	-6,546.1	-299.7	994.9	743.3	251.60	3.954	
12,200.0	5,911.0	11,982.8	5,812.0	127.8	127.2	84.29	-6,646.1	-299.7	994.9	739.5	255.40	3.895	
12,300.0	5,911.0	12,082.8	5,812.0	129.7	129.1	84.29	-6,746.1	-299.7	994.9	735.7	259.20	3.838	
12,400.0	5,911.0	12,182.8	5,812.0	131.6	131.1	84.29	-6,846.1	-299.7	994.9	731.9	263.00	3.783	
12,500.0	5,911.0	12,282.8	5,812.0	133.5	133.0	84.29	-6,946.1	-299.7	994.9	728.1	266.80	3.729	
12,600.0	5,911.0	12,382.8	5,812.0	135.4	134.9	84.29	-7,046.1	-299.7	994.9	724.3	270.61	3.677	
12,700.0	5,911.0	12,482.8	5,812.0	137.3	136.8	84.29	-7,146.1	-299.7	995.0	720.5	274.41	3.626	
12,800.0	5,911.0	12,582.8	5,812.0	139.2	138.7	84.29	-7,246.1	-299.7	995.0	716.8	278.21	3.576	
12,900.0	5,911.0	12,682.8	5,812.0	141.1	140.6	84.29	-7,346.1	-299.8	995.0	713.0	282.02	3.528	
13,000.0	5,911.0	12,782.8	5,812.0	143.0	142.5	84.29	-7,446.1	-299.8	995.0	709.2	285.82	3.481	
13,100.0	5,911.0	12,882.8	5,812.0	144.9	144.4	84.29	-7,546.1	-299.8	995.0	705.4	289.63	3.435	
13,200.0	5,911.0	12,982.8	5,812.0	146.8	146.4	84.29	-7,646.1	-299.8	995.0	701.6	293.44	3.391	
13,300.0	5,911.0	13,082.8	5,812.0	148.7	148.3	84.29	-7,746.1	-299.8	995.0	697.8	297.24	3.348	
13,400.0	5,911.0	13,182.8	5,812.0	150.6	150.2	84.29	-7,846.1	-299.8	995.0	694.0	301.05	3.305	
13,435.8	5,911.0	13,218.5	5,812.0	151.2	150.9	84.29	-7,881.9	-299.8	995.0	692.8	302.29	3.292 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1														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	-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	0.18	367.100			
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-66.1	66.1	65.5	0.63	104.975			
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-66.1	66.1	65.0	1.08	61.244			
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-66.1	66.1	64.6	1.53	43.234			
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-66.1	66.1	64.1	1.98	33.409			
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-66.1	66.1	63.7	2.43	27.223			
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-66.1	66.1	63.2	2.88	22.969			
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-66.1	66.1	62.8	3.33	19.866			
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-66.1	66.1	62.3	3.78	17.501 CC, ES			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	121.95	0.0	-66.1	67.0	62.8	4.20	15.955			
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	125.54	0.0	-66.1	69.9	65.3	4.60	15.189			
1,200.0	1,199.6	1,200.2	1,200.2	2.5	2.5	128.64	-1.7	-65.9	73.7	68.8	4.99	14.779			
1,300.0	1,299.4	1,300.8	1,300.7	2.7	2.7	128.90	-7.0	-65.4	76.8	71.5	5.37	14.317			
1,400.0	1,399.1	1,400.8	1,400.4	2.9	2.9	127.94	-13.9	-64.6	79.5	73.7	5.76	13.794			
1,500.0	1,498.9	1,500.8	1,500.1	3.1	3.1	127.04	-20.9	-63.9	82.2	76.0	6.18	13.301			
1,600.0	1,598.6	1,600.7	1,599.8	3.3	3.3	126.20	-27.8	-63.2	84.9	78.3	6.61	12.844			
1,700.0	1,698.4	1,700.7	1,699.5	3.6	3.5	125.41	-34.7	-62.4	87.7	80.6	7.06	12.424			
1,800.0	1,798.1	1,800.6	1,799.2	3.8	3.7	124.67	-41.7	-61.7	90.4	82.9	7.51	12.039			
1,900.0	1,897.9	1,900.6	1,898.9	4.1	4.0	123.97	-48.6	-61.0	93.2	85.2	7.97	11.686			
2,000.0	1,997.6	2,000.5	1,998.7	4.3	4.2	123.32	-55.5	-60.3	95.9	87.5	8.44	11.364			
2,100.0	2,097.4	2,100.5	2,098.4	4.6	4.4	122.70	-62.5	-59.5	98.7	89.8	8.92	11.069			
2,200.0	2,197.2	2,200.4	2,198.1	4.8	4.7	122.11	-69.4	-58.8	101.5	92.1	9.40	10.799			
2,300.0	2,296.9	2,300.4	2,297.8	5.1	4.9	121.56	-76.3	-58.1	104.3	94.5	9.89	10.552			
2,400.0	2,396.7	2,400.4	2,397.5	5.3	5.2	121.03	-83.3	-57.3	107.2	96.8	10.38	10.324			
2,500.0	2,496.4	2,500.3	2,497.2	5.6	5.4	120.53	-90.2	-56.6	110.0	99.1	10.87	10.115			
2,600.0	2,596.2	2,600.3	2,596.9	5.8	5.7	120.06	-97.1	-55.9	112.8	101.4	11.37	9.922			
2,700.0	2,695.9	2,700.2	2,696.6	6.1	5.9	119.61	-104.1	-55.1	115.7	103.8	11.87	9.744			
2,800.0	2,795.7	2,800.2	2,796.4	6.3	6.2	119.18	-111.0	-54.4	118.5	106.1	12.37	9.578			
2,900.0	2,895.5	2,900.1	2,896.1	6.6	6.4	118.77	-117.9	-53.7	121.4	108.5	12.88	9.425			
3,000.0	2,995.2	3,000.1	2,995.8	6.8	6.7	118.38	-124.9	-53.0	124.2	110.8	13.38	9.282			
3,100.0	3,095.0	3,100.0	3,095.5	7.1	6.9	118.01	-131.8	-52.2	127.1	113.2	13.89	9.149			
3,200.0	3,194.7	3,200.0	3,195.2	7.4	7.2	117.65	-138.7	-51.5	130.0	115.6	14.40	9.025			
3,300.0	3,294.5	3,300.0	3,294.9	7.6	7.4	117.31	-145.7	-50.8	132.8	117.9	14.91	8.909			
3,400.0	3,394.2	3,399.9	3,394.6	7.9	7.7	116.99	-152.6	-50.0	135.7	120.3	15.42	8.800			
3,500.0	3,494.0	3,499.9	3,494.3	8.1	7.9	116.68	-159.5	-49.3	138.6	122.7	15.94	8.698			
3,600.0	3,593.8	3,599.8	3,594.1	8.4	8.2	116.38	-166.5	-48.6	141.5	125.0	16.45	8.602			
3,700.0	3,693.5	3,699.8	3,693.8	8.7	8.4	116.09	-173.4	-47.9	144.4	127.4	16.96	8.511			
3,800.0	3,793.3	3,799.7	3,793.5	8.9	8.7	115.81	-180.3	-47.1	147.3	129.8	17.48	8.426			
3,900.0	3,893.0	3,899.7	3,893.2	9.2	9.0	115.55	-187.3	-46.4	150.2	132.2	18.00	8.346			
4,000.0	3,992.8	3,999.6	3,992.9	9.4	9.2	115.29	-194.2	-45.7	153.1	134.6	18.51	8.269			
4,100.0	4,092.5	4,099.6	4,092.6	9.7	9.5	115.05	-201.1	-44.9	156.0	137.0	19.03	8.197			
4,200.0	4,192.3	4,199.6	4,192.3	10.0	9.7	114.81	-208.1	-44.2	158.9	139.3	19.55	8.129			
4,300.0	4,292.1	4,299.5	4,292.0	10.2	10.0	114.58	-215.0	-43.5	161.8	141.7	20.07	8.064			
4,400.0	4,391.8	4,399.5	4,391.8	10.5	10.3	114.36	-221.9	-42.8	164.7	144.1	20.59	8.002			
4,500.0	4,491.6	4,499.4	4,491.5	10.7	10.5	114.15	-228.9	-42.0	167.6	146.5	21.10	7.943			
4,600.0	4,591.3	4,599.4	4,591.2	11.0	10.8	113.94	-235.8	-41.3	170.6	148.9	21.62	7.887			
4,700.0	4,691.1	4,699.3	4,690.9	11.3	11.0	113.74	-242.8	-40.6	173.5	151.3	22.14	7.834			
4,800.0	4,790.8	4,799.3	4,790.6	11.5	11.3	113.55	-249.7	-39.8	176.4	153.7	22.67	7.783			
4,900.0	4,890.6	4,899.2	4,890.3	11.8	11.6	113.37	-256.6	-39.1	179.3	156.1	23.19	7.734			
5,000.0	4,990.3	4,999.2	4,990.0	12.0	11.8	113.19	-263.6	-38.4	182.2	158.5	23.71	7.687			
5,100.0	5,090.1	5,099.2	5,089.7	12.3	12.1	113.01	-270.5	-37.7	185.2	160.9	24.23	7.643			

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1												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	5,199.1	5,189.5	12.6	12.3	112.84	-277.4	-36.9	188.1	163.4	24.75	7.600	
5,300.0	5,289.6	5,299.1	5,289.2	12.8	12.6	112.68	-284.4	-36.2	191.0	165.8	25.27	7.559	
5,400.0	5,389.4	5,399.0	5,388.9	13.1	12.9	112.52	-291.3	-35.5	194.0	168.2	25.79	7.520	
5,437.0	5,426.3	5,436.0	5,425.8	13.2	13.0	112.46	-293.9	-35.2	195.1	169.1	25.99	7.505	
5,450.0	5,439.2	5,448.8	5,438.6	13.2	13.0	112.40	-294.9	-35.1	195.5	169.4	26.05	7.504	
5,500.0	5,488.7	5,498.0	5,487.2	13.4	13.2	111.99	-301.7	-34.4	198.5	172.1	26.34	7.535	
5,550.0	5,537.3	5,547.0	5,534.9	13.6	13.3	111.31	-313.0	-33.2	203.4	176.8	26.68	7.625	
5,600.0	5,584.5	5,595.6	5,580.9	13.9	13.6	110.39	-328.5	-31.6	210.3	183.3	27.09	7.765	
5,650.0	5,629.9	5,643.9	5,624.9	14.1	13.9	109.25	-348.1	-29.5	219.1	191.5	27.57	7.946	
5,700.0	5,673.1	5,691.7	5,666.6	14.5	14.2	107.93	-371.5	-27.0	229.6	201.5	28.15	8.159	
5,750.0	5,713.7	5,739.0	5,705.5	14.9	14.5	106.46	-398.2	-24.2	241.9	213.0	28.82	8.392	
5,800.0	5,751.3	5,785.8	5,741.4	15.3	14.9	104.87	-427.9	-21.1	255.6	226.0	29.61	8.632	
5,850.0	5,785.6	5,832.1	5,774.2	15.8	15.3	103.18	-460.4	-17.7	270.8	240.3	30.55	8.866	
5,900.0	5,816.3	5,877.9	5,803.7	16.4	15.8	101.41	-495.3	-14.0	287.3	255.7	31.60	9.091	
5,950.0	5,843.0	5,923.3	5,829.7	17.0	16.3	99.60	-532.3	-10.1	304.9	272.1	32.77	9.305	
6,000.0	5,865.5	5,968.4	5,852.2	17.7	16.8	97.74	-571.1	-6.1	323.5	289.4	34.03	9.505	
6,050.0	5,883.7	6,013.2	5,871.2	18.4	17.4	95.87	-611.4	-1.8	342.8	307.4	35.38	9.690	
6,100.0	5,897.3	6,057.9	5,886.6	19.1	18.0	93.99	-653.1	2.6	362.8	326.0	36.80	9.860	
6,150.0	5,906.3	6,102.5	5,898.4	19.9	18.6	92.14	-696.0	7.1	383.2	345.0	38.27	10.015	
6,200.0	5,910.5	6,147.3	5,906.4	20.8	19.3	90.31	-739.7	11.7	404.0	364.2	39.77	10.156	
6,218.8	5,910.8	6,164.2	5,908.4	21.1	19.5	89.64	-756.4	13.4	411.8	371.4	40.35	10.206	
6,300.0	5,910.8	6,234.8	5,911.3	22.3	20.6	90.07	-826.6	20.7	444.2	401.3	42.88	10.358	
6,400.0	5,910.8	6,300.0	5,911.3	23.9	21.5	90.06	-891.6	25.9	482.3	436.6	45.64	10.567	
6,500.0	5,910.8	6,382.9	5,911.3	25.5	22.6	90.06	-974.4	29.2	518.9	470.4	48.56	10.685	
6,600.0	5,910.8	6,466.7	5,911.3	27.1	23.8	90.05	-1,058.2	29.6	553.9	502.3	51.55	10.744	
6,700.0	5,910.8	6,562.0	5,911.3	28.7	25.3	90.05	-1,153.4	29.6	584.3	529.6	54.77	10.670	
6,800.0	5,910.8	6,658.7	5,911.3	30.4	27.0	90.05	-1,250.1	29.6	609.8	551.8	57.99	10.515	
6,900.0	5,910.8	6,756.6	5,911.3	32.0	28.6	90.04	-1,348.0	29.6	630.1	568.9	61.15	10.303	
7,000.0	5,910.8	6,855.4	5,911.3	33.6	30.4	90.04	-1,446.9	29.6	645.3	581.0	64.23	10.046	
7,100.0	5,910.8	6,954.9	5,911.3	35.2	32.1	90.04	-1,546.4	29.6	655.3	588.1	67.18	9.754	
7,200.0	5,910.8	7,054.7	5,911.3	36.8	33.9	90.04	-1,646.2	29.6	660.0	590.0	69.98	9.432	
7,241.1	5,910.8	7,095.8	5,911.3	37.4	34.6	90.04	-1,687.3	29.6	660.5	589.4	71.08	9.292	
7,300.0	5,910.8	7,154.7	5,911.3	38.4	35.7	90.04	-1,746.2	29.6	660.5	587.3	73.13	9.032	
7,400.0	5,910.8	7,254.7	5,911.3	40.0	37.5	90.04	-1,846.2	29.6	660.5	583.8	76.64	8.617	
7,500.0	5,910.8	7,354.7	5,911.3	41.6	39.3	90.04	-1,946.2	29.6	660.5	580.3	80.19	8.236	
7,600.0	5,910.8	7,454.7	5,911.3	43.3	41.1	90.04	-2,046.2	29.6	660.5	576.7	83.76	7.885	
7,700.0	5,910.8	7,554.7	5,911.3	45.0	42.9	90.04	-2,146.2	29.6	660.4	573.1	87.36	7.560	
7,800.0	5,910.9	7,654.7	5,911.3	46.7	44.8	90.03	-2,246.2	29.7	660.4	569.5	90.98	7.259	
7,900.0	5,910.9	7,754.7	5,911.2	48.4	46.6	90.03	-2,346.2	29.7	660.4	565.8	94.61	6.980	
8,000.0	5,910.9	7,854.7	5,911.2	50.1	48.4	90.03	-2,446.2	29.7	660.4	562.2	98.27	6.721	
8,100.0	5,910.9	7,954.7	5,911.2	51.9	50.3	90.03	-2,546.2	29.7	660.4	558.5	101.93	6.479	
8,200.0	5,910.9	8,054.7	5,911.2	53.6	52.2	90.03	-2,646.2	29.7	660.4	554.8	105.61	6.254	
8,300.0	5,910.9	8,154.7	5,911.2	55.4	54.0	90.03	-2,746.2	29.7	660.4	551.1	109.30	6.042	
8,400.0	5,910.9	8,254.7	5,911.2	57.1	55.9	90.03	-2,846.2	29.7	660.4	547.4	113.00	5.844	
8,500.0	5,910.9	8,354.7	5,911.2	58.9	57.8	90.03	-2,946.2	29.7	660.4	543.7	116.71	5.659	
8,600.0	5,910.9	8,454.7	5,911.2	60.7	59.6	90.03	-3,046.2	29.7	660.4	540.0	120.43	5.484	
8,700.0	5,910.9	8,554.7	5,911.2	62.5	61.5	90.03	-3,146.2	29.7	660.4	536.3	124.16	5.319	
8,800.0	5,910.9	8,654.7	5,911.2	64.3	63.4	90.03	-3,246.2	29.7	660.4	532.5	127.89	5.164	
8,900.0	5,910.9	8,754.7	5,911.2	66.2	65.3	90.03	-3,346.2	29.7	660.4	528.8	131.63	5.017	
9,000.0	5,910.9	8,854.7	5,911.2	68.0	67.2	90.03	-3,446.2	29.7	660.4	525.0	135.37	4.879	
9,100.0	5,910.9	8,954.7	5,911.2	69.8	69.1	90.03	-3,546.2	29.7	660.4	521.3	139.12	4.747	
9,200.0	5,910.9	9,054.7	5,911.2	71.6	71.0	90.03	-3,646.2	29.7	660.4	517.5	142.88	4.622	

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1												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	5,910.9	9,154.7	5,911.2	73.5	72.8	90.03	-3,746.2	29.7	660.4	513.8	146.64	4.504	
9,400.0	5,910.9	9,254.7	5,911.2	75.3	74.7	90.02	-3,846.2	29.7	660.4	510.0	150.41	4.391	
9,500.0	5,910.9	9,354.7	5,911.2	77.1	76.6	90.02	-3,946.2	29.8	660.4	506.2	154.17	4.284	
9,600.0	5,910.9	9,454.8	5,911.2	79.0	78.5	90.02	-4,046.2	29.8	660.4	502.5	157.95	4.181	
9,700.0	5,910.9	9,554.8	5,911.2	80.8	80.4	90.02	-4,146.2	29.8	660.4	498.7	161.72	4.084	
9,800.0	5,910.9	9,654.8	5,911.2	82.7	82.3	90.02	-4,246.2	29.8	660.4	494.9	165.50	3.990	
9,900.0	5,910.9	9,754.8	5,911.2	84.6	84.2	90.02	-4,346.2	29.8	660.4	491.1	169.28	3.901	
10,000.0	5,910.9	9,854.8	5,911.2	86.4	86.1	90.02	-4,446.2	29.8	660.4	487.3	173.07	3.816	
10,100.0	5,910.9	9,954.8	5,911.2	88.3	88.0	90.02	-4,546.2	29.8	660.4	483.5	176.85	3.734	
10,200.0	5,910.9	10,054.8	5,911.1	90.1	89.9	90.02	-4,646.2	29.8	660.4	479.8	180.64	3.656	
10,300.0	5,910.9	10,154.8	5,911.1	92.0	91.8	90.02	-4,746.2	29.8	660.4	476.0	184.43	3.581	
10,400.0	5,910.9	10,254.8	5,911.1	93.9	93.7	90.02	-4,846.2	29.8	660.4	472.2	188.23	3.508	
10,500.0	5,910.9	10,354.8	5,911.1	95.8	95.6	90.02	-4,946.2	29.8	660.4	468.4	192.02	3.439	
10,600.0	5,910.9	10,454.8	5,911.1	97.6	97.5	90.02	-5,046.2	29.8	660.4	464.6	195.82	3.372	
10,700.0	5,910.9	10,554.8	5,911.1	99.5	99.4	90.02	-5,146.2	29.8	660.4	460.8	199.62	3.308	
10,800.0	5,910.9	10,654.8	5,911.1	101.4	101.3	90.02	-5,246.2	29.8	660.4	457.0	203.42	3.246	
10,900.0	5,910.9	10,754.8	5,911.1	103.3	103.3	90.02	-5,346.2	29.8	660.4	453.2	207.22	3.187	
11,000.0	5,910.9	10,854.8	5,911.1	105.1	105.2	90.01	-5,446.2	29.8	660.4	449.3	211.03	3.129	
11,100.0	5,910.9	10,954.8	5,911.1	107.0	107.1	90.01	-5,546.2	29.8	660.4	445.5	214.83	3.074	
11,200.0	5,910.9	11,054.8	5,911.1	108.9	109.0	90.01	-5,646.2	29.8	660.4	441.7	218.64	3.020	
11,300.0	5,911.0	11,154.8	5,911.1	110.8	110.9	90.01	-5,746.2	29.9	660.4	437.9	222.45	2.969	
11,400.0	5,911.0	11,254.8	5,911.1	112.7	112.8	90.01	-5,846.2	29.9	660.4	434.1	226.26	2.919	
11,500.0	5,911.0	11,354.8	5,911.1	114.6	114.7	90.01	-5,946.2	29.9	660.4	430.3	230.07	2.870	
11,600.0	5,911.0	11,454.8	5,911.1	116.5	116.6	90.01	-6,046.2	29.9	660.4	426.5	233.88	2.824	
11,700.0	5,911.0	11,554.8	5,911.1	118.3	118.5	90.01	-6,146.2	29.9	660.4	422.7	237.69	2.778	
11,800.0	5,911.0	11,654.8	5,911.1	120.2	120.4	90.01	-6,246.2	29.9	660.4	418.9	241.51	2.734	
11,900.0	5,911.0	11,754.8	5,911.1	122.1	122.3	90.01	-6,346.2	29.9	660.4	415.0	245.32	2.692	
12,000.0	5,911.0	11,854.8	5,911.1	124.0	124.3	90.01	-6,446.2	29.9	660.4	411.2	249.14	2.651	
12,100.0	5,911.0	11,954.8	5,911.1	125.9	126.2	90.01	-6,546.2	29.9	660.4	407.4	252.95	2.611	
12,200.0	5,911.0	12,054.8	5,911.1	127.8	128.1	90.01	-6,646.2	29.9	660.4	403.6	256.77	2.572	
12,300.0	5,911.0	12,154.8	5,911.1	129.7	130.0	90.01	-6,746.2	29.9	660.3	399.8	260.59	2.534	
12,400.0	5,911.0	12,254.8	5,911.1	131.6	131.9	90.01	-6,846.2	29.9	660.3	395.9	264.41	2.497	
12,500.0	5,911.0	12,354.8	5,911.1	133.5	133.8	90.01	-6,946.2	29.9	660.3	392.1	268.23	2.462	
12,600.0	5,911.0	12,454.8	5,911.0	135.4	135.7	90.01	-7,046.2	29.9	660.3	388.3	272.05	2.427	
12,700.0	5,911.0	12,554.8	5,911.0	137.3	137.6	90.00	-7,146.2	29.9	660.3	384.5	275.87	2.394	
12,800.0	5,911.0	12,654.8	5,911.0	139.2	139.6	90.00	-7,246.2	29.9	660.3	380.7	279.69	2.361	
12,900.0	5,911.0	12,754.8	5,911.0	141.1	141.5	90.00	-7,346.2	29.9	660.3	376.8	283.51	2.329	
13,000.0	5,911.0	12,854.8	5,911.0	143.0	143.4	90.00	-7,446.2	30.0	660.3	373.0	287.33	2.298	
13,100.0	5,911.0	12,954.8	5,911.0	144.9	145.3	90.00	-7,546.2	30.0	660.3	369.2	291.15	2.268	
13,200.0	5,911.0	13,054.8	5,911.0	146.8	147.2	90.00	-7,646.2	30.0	660.3	365.4	294.98	2.239	
13,300.0	5,911.0	13,154.8	5,911.0	148.7	149.1	90.00	-7,746.2	30.0	660.3	361.5	298.80	2.210	
13,400.0	5,911.0	13,254.8	5,911.0	150.6	150.9	90.00	-7,846.2	30.0	660.3	357.9	302.43	2.183	
13,435.8	5,911.0	13,290.5	5,911.0	151.2	151.4	90.00	-7,882.0	30.0	660.3	356.8	303.55	2.175 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1311A - HZ - Plan #1													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	-89.99	0.0	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-33.0	33.0	32.9	0.18	183.550		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-33.0	33.0	32.4	0.63	52.488		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-33.0	33.0	32.0	1.08	30.622		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-33.0	33.0	31.5	1.53	21.617		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-33.0	33.0	31.1	1.98	16.704		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-33.0	33.0	30.6	2.43	13.611		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-33.0	33.0	30.2	2.88	11.485		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-33.0	33.0	29.7	3.33	9.933		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-33.0	33.0	29.3	3.78	8.750 CC, ES		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	123.20	0.0	-33.0	34.0	29.8	4.20	8.090		
1,100.0	1,099.8	1,100.4	1,100.4	2.3	2.3	127.55	-1.6	-32.4	36.3	31.7	4.57	7.928		
1,200.0	1,199.6	1,201.0	1,200.9	2.5	2.5	128.82	-6.6	-30.6	38.2	33.2	4.94	7.718		
1,300.0	1,299.4	1,301.0	1,300.6	2.7	2.7	127.78	-13.2	-28.2	39.2	33.9	5.34	7.355		
1,400.0	1,399.1	1,401.0	1,400.3	2.9	2.9	126.79	-19.7	-25.9	40.3	34.6	5.75	7.019		
1,500.0	1,498.9	1,501.0	1,500.1	3.1	3.1	125.85	-26.3	-23.5	41.5	35.3	6.18	6.712		
1,600.0	1,598.6	1,601.0	1,599.8	3.3	3.3	124.97	-32.8	-21.1	42.6	36.0	6.62	6.434		
1,700.0	1,698.4	1,701.0	1,699.6	3.6	3.5	124.13	-39.4	-18.7	43.7	36.6	7.07	6.182		
1,800.0	1,798.1	1,801.0	1,799.3	3.8	3.8	123.33	-45.9	-16.3	44.9	37.3	7.53	5.954		
1,900.0	1,897.9	1,901.0	1,899.1	4.1	4.0	122.57	-52.5	-13.9	46.0	38.0	8.00	5.748		
2,000.0	1,997.6	2,001.0	1,998.8	4.3	4.3	121.85	-59.1	-11.5	47.2	38.7	8.48	5.561		
2,100.0	2,097.4	2,100.9	2,098.6	4.6	4.5	121.16	-65.6	-9.2	48.3	39.4	8.96	5.392		
2,200.0	2,197.2	2,200.9	2,198.3	4.8	4.7	120.51	-72.2	-6.8	49.5	40.0	9.45	5.238		
2,300.0	2,296.9	2,300.9	2,298.1	5.1	5.0	119.88	-78.7	-4.4	50.7	40.7	9.94	5.097		
2,400.0	2,396.7	2,400.9	2,397.8	5.3	5.2	119.29	-85.3	-2.0	51.9	41.4	10.44	4.968		
2,500.0	2,496.4	2,500.9	2,497.6	5.6	5.5	118.72	-91.8	0.4	53.0	42.1	10.93	4.851		
2,600.0	2,596.2	2,600.9	2,597.3	5.8	5.7	118.17	-98.4	2.8	54.2	42.8	11.44	4.742		
2,700.0	2,695.9	2,700.9	2,697.1	6.1	6.0	117.65	-104.9	5.2	55.4	43.5	11.94	4.642		
2,800.0	2,795.7	2,800.9	2,796.8	6.3	6.2	117.15	-111.5	7.5	56.6	44.2	12.45	4.550		
2,900.0	2,895.5	2,900.9	2,896.6	6.6	6.5	116.68	-118.0	9.9	57.8	44.9	12.95	4.465		
3,000.0	2,995.2	3,000.9	2,996.3	6.8	6.7	116.22	-124.6	12.3	59.0	45.6	13.46	4.386		
3,100.0	3,095.0	3,100.9	3,096.1	7.1	7.0	115.78	-131.2	14.7	60.3	46.3	13.98	4.312		
3,200.0	3,194.7	3,200.9	3,195.8	7.4	7.3	115.35	-137.7	17.1	61.5	47.0	14.49	4.243		
3,300.0	3,294.5	3,300.8	3,295.6	7.6	7.5	114.95	-144.3	19.5	62.7	47.7	15.00	4.179		
3,400.0	3,394.2	3,400.8	3,395.3	7.9	7.8	114.56	-150.8	21.9	63.9	48.4	15.52	4.119		
3,500.0	3,494.0	3,500.8	3,495.1	8.1	8.0	114.18	-157.4	24.2	65.1	49.1	16.03	4.063		
3,600.0	3,593.8	3,600.8	3,594.8	8.4	8.3	113.82	-163.9	26.6	66.4	49.8	16.55	4.011		
3,700.0	3,693.5	3,700.8	3,694.6	8.7	8.5	113.47	-170.5	29.0	67.6	50.5	17.07	3.961		
3,800.0	3,793.3	3,800.8	3,794.3	8.9	8.8	113.14	-177.0	31.4	68.8	51.3	17.59	3.914		
3,900.0	3,893.0	3,900.8	3,894.1	9.2	9.1	112.81	-183.6	33.8	70.1	52.0	18.11	3.870		
4,000.0	3,992.8	4,000.8	3,993.8	9.4	9.3	112.50	-190.1	36.2	71.3	52.7	18.63	3.829		
4,100.0	4,092.5	4,100.8	4,093.6	9.7	9.6	112.20	-196.7	38.5	72.6	53.4	19.15	3.789		
4,200.0	4,192.3	4,200.8	4,193.3	10.0	9.8	111.90	-203.2	40.9	73.8	54.1	19.67	3.752		
4,300.0	4,292.1	4,300.8	4,293.0	10.2	10.1	111.62	-209.8	43.3	75.0	54.9	20.19	3.717		
4,400.0	4,391.8	4,400.8	4,392.8	10.5	10.4	111.35	-216.4	45.7	76.3	55.6	20.71	3.683		
4,500.0	4,491.6	4,500.7	4,492.5	10.7	10.6	111.08	-222.9	48.1	77.5	56.3	21.24	3.651		
4,600.0	4,591.3	4,600.7	4,592.3	11.0	10.9	110.83	-229.5	50.5	78.8	57.0	21.76	3.621		
4,700.0	4,691.1	4,700.7	4,692.0	11.3	11.2	110.58	-236.0	52.9	80.0	57.8	22.28	3.592		
4,800.0	4,790.8	4,800.7	4,791.8	11.5	11.4	110.34	-242.6	55.2	81.3	58.5	22.81	3.564		
4,900.0	4,890.6	4,900.7	4,891.5	11.8	11.7	110.10	-249.1	57.6	82.5	59.2	23.33	3.538		
5,000.0	4,990.3	5,000.7	4,991.3	12.0	11.9	109.88	-255.7	60.0	83.8	59.9	23.85	3.513		
5,100.0	5,090.1	5,100.7	5,091.0	12.3	12.2	109.66	-262.2	62.4	85.1	60.7	24.38	3.489		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1311A - HZ - Plan #1													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	5,200.7	5,190.8	12.6	12.5	109.45	-268.8	64.8	86.3	61.4	24.90	3.466		
5,300.0	5,289.6	5,300.7	5,290.5	12.8	12.7	109.24	-275.3	67.2	87.6	62.1	25.43	3.444		
5,400.0	5,389.4	5,401.9	5,391.1	13.1	13.0	106.52	-285.6	70.9	88.3	62.3	26.03	3.394		
5,437.0	5,426.3	5,438.9	5,427.1	13.2	13.2	102.70	-293.5	73.8	88.4	62.1	26.32	3.359		
5,450.0	5,439.2	5,451.7	5,439.4	13.2	13.2	101.08	-296.8	75.0	88.6	62.1	26.43	3.351		
5,500.0	5,488.7	5,500.0	5,485.0	13.4	13.5	94.94	-311.7	80.4	90.3	63.5	26.84	3.366		
5,550.0	5,537.3	5,548.1	5,528.8	13.6	13.7	89.03	-330.4	87.2	93.9	66.6	27.27	3.443		
5,600.0	5,584.5	5,595.1	5,569.6	13.9	14.1	83.74	-352.2	95.2	99.1	71.4	27.72	3.575		
5,650.0	5,629.9	5,641.2	5,607.5	14.1	14.4	79.13	-377.0	104.2	105.7	77.5	28.17	3.751		
5,700.0	5,673.1	5,686.6	5,642.3	14.5	14.8	75.22	-404.3	114.1	113.3	84.6	28.62	3.958		
5,750.0	5,713.7	5,731.3	5,674.0	14.9	15.2	71.97	-433.9	124.9	121.7	92.6	29.06	4.186		
5,800.0	5,751.3	5,775.4	5,702.5	15.3	15.7	69.32	-465.5	136.4	130.6	101.1	29.53	4.425		
5,850.0	5,785.6	5,819.0	5,727.8	15.8	16.2	67.19	-498.8	148.5	140.0	110.0	30.03	4.663		
5,900.0	5,816.3	5,862.0	5,749.8	16.4	16.7	65.49	-533.6	161.2	149.6	119.0	30.59	4.891		
5,950.0	5,843.0	5,904.7	5,768.5	17.0	17.3	64.16	-569.6	174.3	159.3	128.1	31.23	5.100		
6,000.0	5,865.5	5,950.0	5,784.9	17.7	17.9	63.16	-609.3	188.7	169.0	137.0	32.02	5.279		
6,050.0	5,883.7	5,988.8	5,795.9	18.4	18.4	62.41	-644.3	201.5	178.6	145.7	32.85	5.436		
6,100.0	5,897.3	6,030.5	5,804.7	19.1	19.1	61.89	-682.6	215.4	188.0	154.1	33.87	5.550		
6,150.0	5,906.3	6,072.0	5,810.1	19.9	19.7	61.58	-721.2	229.5	197.1	162.1	35.04	5.626		
6,200.0	5,910.5	6,113.4	5,812.3	20.8	20.4	61.44	-760.0	243.6	206.0	169.7	36.34	5.669		
6,218.8	5,910.8	6,129.7	5,812.3	21.1	20.6	61.47	-775.4	249.1	209.2	172.4	36.88	5.674		
6,300.0	5,910.8	6,200.0	5,812.3	22.3	21.7	63.31	-842.0	271.6	222.8	183.2	39.66	5.619		
6,400.0	5,910.8	6,290.8	5,812.3	23.9	23.0	65.34	-929.1	297.0	239.4	196.4	42.96	5.572		
6,500.0	5,910.8	6,378.8	5,812.3	25.5	24.3	67.01	-1,014.6	317.6	255.6	209.4	46.17	5.536		
6,600.0	5,910.8	6,466.1	5,812.3	27.1	25.6	68.44	-1,100.4	334.1	271.4	222.1	49.31	5.504		
6,700.0	5,910.8	6,552.9	5,812.3	28.7	26.9	69.66	-1,186.3	346.7	286.7	234.4	52.34	5.478		
6,800.0	5,910.8	6,639.1	5,812.3	30.4	28.3	70.71	-1,272.1	355.3	301.5	246.2	55.26	5.456		
6,900.0	5,910.8	6,724.9	5,812.3	32.0	29.6	71.63	-1,357.7	360.0	315.7	257.6	58.03	5.440		
7,000.0	5,910.8	6,814.0	5,812.3	33.6	31.0	72.44	-1,446.8	361.0	329.0	268.3	60.73	5.418		
7,100.0	5,910.8	6,913.5	5,812.3	35.2	32.7	73.03	-1,546.3	361.0	338.6	275.1	63.45	5.336		
7,200.0	5,910.8	7,013.4	5,812.3	36.8	34.4	73.31	-1,646.2	360.9	343.1	277.2	65.93	5.205		
7,241.1	5,910.8	7,054.5	5,812.3	37.4	35.1	73.33	-1,687.2	360.9	343.6	276.7	66.87	5.138		
7,300.0	5,910.8	7,113.4	5,812.3	38.4	36.1	73.33	-1,746.2	360.9	343.6	274.8	68.83	4.992		
7,400.0	5,910.8	7,213.4	5,812.3	40.0	37.8	73.33	-1,846.2	360.9	343.6	271.4	72.19	4.759		
7,500.0	5,910.8	7,313.4	5,812.3	41.6	39.6	73.33	-1,946.2	360.9	343.6	268.0	75.59	4.546		
7,600.0	5,910.8	7,413.4	5,812.3	43.3	41.4	73.33	-2,046.2	360.9	343.6	264.6	79.01	4.349		
7,700.0	5,910.8	7,513.4	5,812.3	45.0	43.2	73.33	-2,146.2	360.9	343.6	261.2	82.46	4.167		
7,800.0	5,910.9	7,613.4	5,812.3	46.7	44.9	73.33	-2,246.2	360.9	343.6	257.7	85.93	3.999		
7,900.0	5,910.9	7,713.4	5,812.3	48.4	46.8	73.33	-2,346.2	360.9	343.7	254.2	89.42	3.843		
8,000.0	5,910.9	7,813.4	5,812.2	50.1	48.6	73.33	-2,446.2	360.9	343.7	250.7	92.93	3.698		
8,100.0	5,910.9	7,913.4	5,812.2	51.9	50.4	73.32	-2,546.2	360.9	343.7	247.2	96.45	3.563		
8,200.0	5,910.9	8,013.4	5,812.2	53.6	52.2	73.32	-2,646.2	360.9	343.7	243.7	99.98	3.438		
8,300.0	5,910.9	8,113.4	5,812.2	55.4	54.1	73.32	-2,746.2	360.9	343.7	240.2	103.53	3.320		
8,400.0	5,910.9	8,213.4	5,812.2	57.1	55.9	73.32	-2,846.2	360.9	343.7	236.6	107.09	3.210		
8,500.0	5,910.9	8,313.4	5,812.2	58.9	57.7	73.32	-2,946.2	360.9	343.7	233.1	110.65	3.106		
8,600.0	5,910.9	8,413.4	5,812.2	60.7	59.6	73.32	-3,046.2	360.9	343.7	229.5	114.23	3.009		
8,700.0	5,910.9	8,513.4	5,812.2	62.5	61.4	73.32	-3,146.2	360.8	343.8	225.9	117.81	2.918		
8,800.0	5,910.9	8,613.4	5,812.2	64.3	63.3	73.32	-3,246.2	360.8	343.8	222.4	121.40	2.832		
8,900.0	5,910.9	8,713.4	5,812.2	66.2	65.2	73.32	-3,346.2	360.8	343.8	218.8	125.00	2.750		
9,000.0	5,910.9	8,813.4	5,812.2	68.0	67.0	73.32	-3,446.2	360.8	343.8	215.2	128.60	2.673		
9,100.0	5,910.9	8,913.4	5,812.2	69.8	68.9	73.32	-3,546.2	360.8	343.8	211.6	132.21	2.600		
9,200.0	5,910.9	9,013.4	5,812.2	71.6	70.8	73.32	-3,646.2	360.8	343.8	208.0	135.83	2.531		

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 #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1311A - HZ - Plan #1													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	5,910.9	9,113.4	5,812.2	73.5	72.6	73.32	-3,746.2	360.8	343.8	204.4	139.45	2.466		
9,400.0	5,910.9	9,213.4	5,812.2	75.3	74.5	73.32	-3,846.2	360.8	343.8	200.8	143.07	2.403		
9,500.0	5,910.9	9,313.4	5,812.2	77.1	76.4	73.32	-3,946.2	360.8	343.8	197.1	146.70	2.344		
9,600.0	5,910.9	9,413.4	5,812.2	79.0	78.3	73.31	-4,046.2	360.8	343.9	193.5	150.33	2.287		
9,700.0	5,910.9	9,513.4	5,812.2	80.8	80.2	73.31	-4,146.2	360.8	343.9	189.9	153.96	2.233		
9,800.0	5,910.9	9,613.4	5,812.2	82.7	82.1	73.31	-4,246.2	360.8	343.9	186.3	157.60	2.182		
9,900.0	5,910.9	9,713.4	5,812.2	84.6	83.9	73.31	-4,346.2	360.8	343.9	182.7	161.24	2.133		
10,000.0	5,910.9	9,813.4	5,812.2	86.4	85.8	73.31	-4,446.2	360.8	343.9	179.0	164.89	2.086		
10,100.0	5,910.9	9,913.4	5,812.2	88.3	87.7	73.31	-4,546.2	360.7	343.9	175.4	168.53	2.041		
10,200.0	5,910.9	10,013.4	5,812.2	90.1	89.6	73.31	-4,646.2	360.7	343.9	171.7	172.18	1.997		
10,300.0	5,910.9	10,113.4	5,812.1	92.0	91.5	73.31	-4,746.2	360.7	343.9	168.1	175.83	1.956		
10,400.0	5,910.9	10,213.4	5,812.1	93.9	93.4	73.31	-4,846.2	360.7	344.0	164.5	179.49	1.916		
10,500.0	5,910.9	10,313.4	5,812.1	95.8	95.3	73.31	-4,946.2	360.7	344.0	160.8	183.14	1.878		
10,600.0	5,910.9	10,413.4	5,812.1	97.6	97.2	73.31	-5,046.2	360.7	344.0	157.2	186.80	1.841		
10,700.0	5,910.9	10,513.4	5,812.1	99.5	99.1	73.31	-5,146.2	360.7	344.0	153.5	190.46	1.806		
10,800.0	5,910.9	10,613.4	5,812.1	101.4	101.0	73.31	-5,246.2	360.7	344.0	149.9	194.12	1.772		
10,900.0	5,910.9	10,713.4	5,812.1	103.3	102.9	73.31	-5,346.2	360.7	344.0	146.2	197.78	1.739		
11,000.0	5,910.9	10,813.4	5,812.1	105.1	104.8	73.31	-5,446.2	360.7	344.0	142.6	201.44	1.708		
11,100.0	5,910.9	10,913.4	5,812.1	107.0	106.7	73.31	-5,546.2	360.7	344.0	138.9	205.11	1.677		
11,200.0	5,910.9	11,013.4	5,812.1	108.9	108.6	73.30	-5,646.2	360.7	344.0	135.3	208.78	1.648		
11,300.0	5,911.0	11,113.4	5,812.1	110.8	110.5	73.30	-5,746.2	360.7	344.1	131.6	212.44	1.620		
11,400.0	5,911.0	11,213.4	5,812.1	112.7	112.4	73.30	-5,846.2	360.7	344.1	128.0	216.11	1.592		
11,500.0	5,911.0	11,313.4	5,812.1	114.6	114.3	73.30	-5,946.2	360.7	344.1	124.3	219.78	1.566		
11,600.0	5,911.0	11,413.4	5,812.1	116.5	116.2	73.30	-6,046.2	360.6	344.1	120.6	223.46	1.540		
11,700.0	5,911.0	11,513.4	5,812.1	118.3	118.1	73.30	-6,146.2	360.6	344.1	117.0	227.13	1.515		
11,800.0	5,911.0	11,613.4	5,812.1	120.2	120.0	73.30	-6,246.2	360.6	344.1	113.3	230.80	1.491 Level 3		
11,900.0	5,911.0	11,713.4	5,812.1	122.1	121.9	73.30	-6,346.2	360.6	344.1	109.7	234.48	1.468 Level 3		
12,000.0	5,911.0	11,813.4	5,812.1	124.0	123.8	73.30	-6,446.2	360.6	344.1	106.0	238.15	1.445 Level 3		
12,100.0	5,911.0	11,913.4	5,812.1	125.9	125.7	73.30	-6,546.2	360.6	344.2	102.3	241.83	1.423 Level 3		
12,200.0	5,911.0	12,013.4	5,812.1	127.8	127.6	73.30	-6,646.2	360.6	344.2	98.7	245.50	1.402 Level 3		
12,300.0	5,911.0	12,113.4	5,812.1	129.7	129.5	73.30	-6,746.2	360.6	344.2	95.0	249.18	1.381 Level 3		
12,400.0	5,911.0	12,213.4	5,812.1	131.6	131.4	73.30	-6,846.2	360.6	344.2	91.3	252.86	1.361 Level 3		
12,500.0	5,911.0	12,313.4	5,812.1	133.5	133.3	73.30	-6,946.2	360.6	344.2	87.7	256.54	1.342 Level 3		
12,600.0	5,911.0	12,413.4	5,812.0	135.4	135.3	73.30	-7,046.2	360.6	344.2	84.0	260.22	1.323 Level 3		
12,700.0	5,911.0	12,513.4	5,812.0	137.3	137.2	73.29	-7,146.2	360.6	344.2	80.3	263.90	1.304 Level 3		
12,800.0	5,911.0	12,613.4	5,812.0	139.2	139.1	73.29	-7,246.2	360.6	344.2	76.7	267.58	1.286 Level 3		
12,900.0	5,911.0	12,713.4	5,812.0	141.1	141.0	73.29	-7,346.2	360.6	344.3	73.0	271.26	1.269 Level 3		
13,000.0	5,911.0	12,813.4	5,812.0	143.0	142.9	73.29	-7,446.2	360.6	344.3	69.3	274.95	1.252 Level 3		
13,100.0	5,911.0	12,913.4	5,812.0	144.9	144.8	73.29	-7,546.2	360.5	344.3	65.6	278.63	1.236 Level 2		
13,200.0	5,911.0	13,013.4	5,812.0	146.8	146.7	73.29	-7,646.2	360.5	344.3	62.0	282.31	1.220 Level 2		
13,300.0	5,911.0	13,113.4	5,812.0	148.7	148.6	73.29	-7,746.2	360.5	344.3	58.3	286.00	1.204 Level 2		
13,400.0	5,911.0	13,213.4	5,812.0	150.6	150.5	73.29	-7,846.2	360.5	344.3	54.7	289.63	1.189 Level 2		
13,435.8	5,911.0	13,249.1	5,812.0	151.2	151.0	73.29	-7,881.9	360.5	344.3	53.6	290.70	1.184 Level 2, SF		

# Cathedral Energy Services

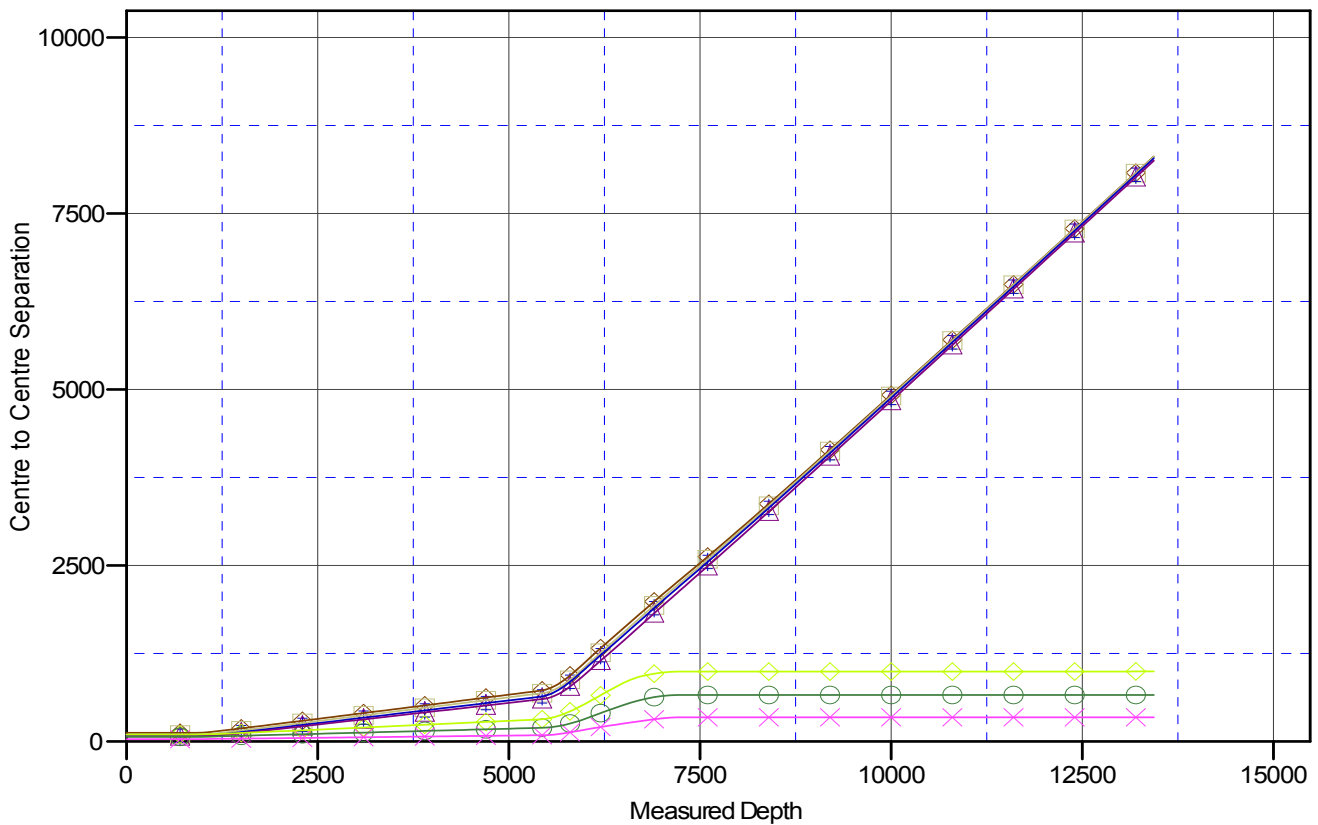
## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1312B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Reference Site:</b>	S12-T10N-R58W	<b>MD Reference:</b>	WELL @ 4970.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor Federal #12G-1312B	<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 #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4970.3ft (Original Well Elev)  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Razor Federal #12G-1312B  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.09°

### Ladder Plot



### LEGEND

Razor #12G-0109A, HZ, Plan #1 V0	Razor #12G-0110B, HZ, Plan #1 V0	Razor #12G-0111A, HZ, Plan #1 V0
Razor Federal #12G-1309A, HZ, Plan #1 V0	Razor Federal #12G-1310B, HZ, Plan #1 V0	Razor Federal #12G-1311A, HZ, Plan #1 V0