

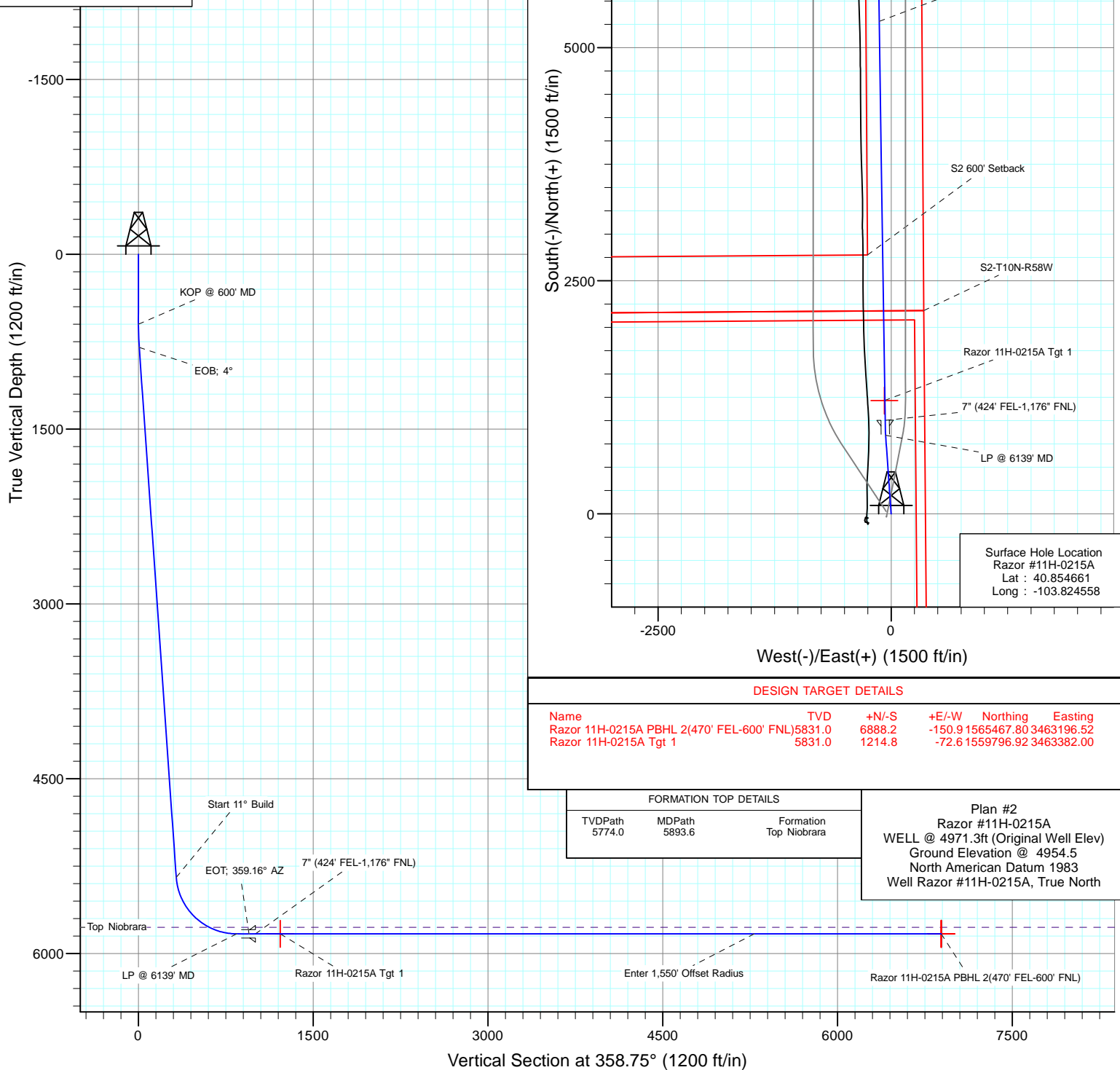
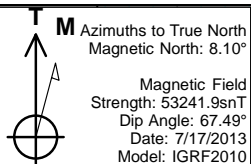


Project: Weld County, CO  
Site: S11-T10N-R58W  
Well: Razor #11H-0215A  
Wellbore: HZ  
Design: Plan #2



#### 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 @ 600' MD
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	EOB; 4°
3	800.0	4.00	356.00	799.8	7.0	-0.5	2.00	356.00	7.0	
4	5100.0	4.00	356.00	5089.4	306.2	-21.4	0.00	0.00	306.6	
5	5357.7	4.00	356.00	5346.5	324.1	-22.7	0.00	0.00	324.5	Start 11° Build
6	6139.5	90.00	356.00	5831.0	842.5	-58.9	11.00	0.00	843.5	LP @ 6139' MD
7	6244.7	90.00	359.16	5831.0	947.5	-63.4	3.00	90.00	948.7	EOT; 359.16° AZ
8	12186.0	90.00	359.16	5831.0	6888.2	-150.9	0.00	0.00	6889.8	PBHL @ 12186' MD



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

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

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

Well	Razor #11H-0215A					
Well Position	+N/-S	0.0 ft	Northing:	1,558,583.70 ft	Latitude:	40.854661
	+E/-W	0.0 ft	Easting:	3,463,477.54 ft	Longitude:	-103.824558
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,954.5 ft

<b>Wellbore</b>	HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF2010	7/17/2013	8.10	67.49	53,242

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	358.75

<b>Plan Sections</b>										
<b>Measured Depth</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical Depth</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Dogleg Rate</b>	<b>Build Rate</b>	<b>Turn Rate</b>	<b>TFO</b>	<b>Target</b>
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	4.00	356.00	799.8	7.0	-0.5	2.00	2.00	0.00	356.00	
5,100.0	4.00	356.00	5,089.4	306.2	-21.4	0.00	0.00	0.00	0.00	
5,357.7	4.00	356.00	5,346.5	324.1	-22.7	0.00	0.00	0.00	0.00	
6,139.5	90.00	356.00	5,831.0	842.5	-58.9	11.00	11.00	0.00	0.00	Razor 11H-0215A Tgt
6,244.7	90.00	359.16	5,831.0	947.5	-63.4	3.00	0.00	3.00	90.00	
12,186.0	90.00	359.16	5,831.0	6,888.2	-150.9	0.00	0.00	0.00	0.00	Razor 11H-0215A PB

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	KOP @ 600' MD
700.0	2.00	356.00	700.0	1.7	-0.1	1.7	2.00	2.00	
800.0	4.00	356.00	799.8	7.0	-0.5	7.0	2.00	2.00	EOB; 4°
900.0	4.00	356.00	899.6	13.9	-1.0	13.9	0.00	0.00	
1,000.0	4.00	356.00	999.4	20.9	-1.5	20.9	0.00	0.00	
1,100.0	4.00	356.00	1,099.1	27.8	-1.9	27.9	0.00	0.00	
1,200.0	4.00	356.00	1,198.9	34.8	-2.4	34.8	0.00	0.00	
1,300.0	4.00	356.00	1,298.6	41.8	-2.9	41.8	0.00	0.00	
1,400.0	4.00	356.00	1,398.4	48.7	-3.4	48.8	0.00	0.00	
1,500.0	4.00	356.00	1,498.1	55.7	-3.9	55.7	0.00	0.00	
1,600.0	4.00	356.00	1,597.9	62.6	-4.4	62.7	0.00	0.00	
1,700.0	4.00	356.00	1,697.6	69.6	-4.9	69.7	0.00	0.00	
1,800.0	4.00	356.00	1,797.4	76.5	-5.4	76.6	0.00	0.00	
1,900.0	4.00	356.00	1,897.2	83.5	-5.8	83.6	0.00	0.00	
2,000.0	4.00	356.00	1,996.9	90.5	-6.3	90.6	0.00	0.00	
2,100.0	4.00	356.00	2,096.7	97.4	-6.8	97.5	0.00	0.00	
2,200.0	4.00	356.00	2,196.4	104.4	-7.3	104.5	0.00	0.00	
2,300.0	4.00	356.00	2,296.2	111.3	-7.8	111.5	0.00	0.00	
2,400.0	4.00	356.00	2,395.9	118.3	-8.3	118.5	0.00	0.00	
2,500.0	4.00	356.00	2,495.7	125.3	-8.8	125.4	0.00	0.00	
2,600.0	4.00	356.00	2,595.5	132.2	-9.2	132.4	0.00	0.00	
2,700.0	4.00	356.00	2,695.2	139.2	-9.7	139.4	0.00	0.00	
2,800.0	4.00	356.00	2,795.0	146.1	-10.2	146.3	0.00	0.00	
2,900.0	4.00	356.00	2,894.7	153.1	-10.7	153.3	0.00	0.00	
3,000.0	4.00	356.00	2,994.5	160.1	-11.2	160.3	0.00	0.00	
3,100.0	4.00	356.00	3,094.2	167.0	-11.7	167.2	0.00	0.00	
3,200.0	4.00	356.00	3,194.0	174.0	-12.2	174.2	0.00	0.00	
3,300.0	4.00	356.00	3,293.7	180.9	-12.7	181.2	0.00	0.00	
3,400.0	4.00	356.00	3,393.5	187.9	-13.1	188.1	0.00	0.00	
3,500.0	4.00	356.00	3,493.3	194.8	-13.6	195.1	0.00	0.00	
3,600.0	4.00	356.00	3,593.0	201.8	-14.1	202.1	0.00	0.00	
3,700.0	4.00	356.00	3,692.8	208.8	-14.6	209.0	0.00	0.00	
3,800.0	4.00	356.00	3,792.5	215.7	-15.1	216.0	0.00	0.00	
3,900.0	4.00	356.00	3,892.3	222.7	-15.6	223.0	0.00	0.00	
4,000.0	4.00	356.00	3,992.0	229.6	-16.1	229.9	0.00	0.00	
4,100.0	4.00	356.00	4,091.8	236.6	-16.5	236.9	0.00	0.00	
4,200.0	4.00	356.00	4,191.6	243.6	-17.0	243.9	0.00	0.00	
4,300.0	4.00	356.00	4,291.3	250.5	-17.5	250.8	0.00	0.00	
4,400.0	4.00	356.00	4,391.1	257.5	-18.0	257.8	0.00	0.00	
4,500.0	4.00	356.00	4,490.8	264.4	-18.5	264.8	0.00	0.00	
4,600.0	4.00	356.00	4,590.6	271.4	-19.0	271.7	0.00	0.00	
4,700.0	4.00	356.00	4,690.3	278.3	-19.5	278.7	0.00	0.00	
4,800.0	4.00	356.00	4,790.1	285.3	-20.0	285.7	0.00	0.00	
4,900.0	4.00	356.00	4,889.9	292.3	-20.4	292.6	0.00	0.00	
5,000.0	4.00	356.00	4,989.6	299.2	-20.9	299.6	0.00	0.00	
5,100.0	4.00	356.00	5,089.4	306.2	-21.4	306.6	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 #11H-0215A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	356.00	5,189.1	313.1	-21.9	313.5	0.00	0.00	
5,300.0	4.00	356.00	5,288.9	320.1	-22.4	320.5	0.00	0.00	
5,357.7	4.00	356.00	5,346.4	324.1	-22.7	324.5	0.00	0.00	Start 11° Build
5,400.0	8.65	356.00	5,388.5	328.8	-23.0	329.2	10.99	10.99	
5,500.0	19.65	356.00	5,485.3	353.1	-24.7	353.6	11.00	11.00	
5,600.0	30.65	356.00	5,575.7	395.4	-27.7	396.0	11.00	11.00	
5,700.0	41.65	356.00	5,656.3	454.2	-31.8	454.8	11.00	11.00	
5,800.0	52.65	356.00	5,724.2	527.2	-36.9	527.9	11.00	11.00	
5,893.6	62.94	356.00	5,774.0	606.1	-42.4	606.9	11.00	11.00	Top Niobrara
5,900.0	63.65	356.00	5,776.9	611.8	-42.8	612.6	11.00	11.00	
6,000.0	74.65	356.00	5,812.4	704.9	-49.3	705.8	11.00	11.00	
6,100.0	85.65	356.00	5,829.5	803.0	-56.2	804.1	11.00	11.00	
6,139.5	89.99	356.00	5,831.0	842.4	-58.9	843.5	11.00	11.00	LP @ 6139' MD
6,200.0	90.00	357.81	5,831.0	902.8	-62.2	904.0	3.00	0.01	
6,244.7	90.00	359.15	5,831.0	947.5	-63.4	948.7	3.00	0.00	EOT; 359.16° AZ
6,300.0	90.00	359.16	5,831.0	1,002.8	-64.2	1,004.0	0.00	0.00	7" (424' FEL-1,176" FNL)
6,400.0	90.00	359.16	5,831.0	1,102.8	-65.6	1,104.0	0.00	0.00	
6,500.0	90.00	359.16	5,831.0	1,202.8	-67.1	1,204.0	0.00	0.00	
6,600.0	90.00	359.16	5,831.0	1,302.8	-68.6	1,304.0	0.00	0.00	
6,700.0	90.00	359.16	5,831.0	1,402.8	-70.1	1,403.9	0.00	0.00	
6,800.0	90.00	359.16	5,831.0	1,502.7	-71.5	1,503.9	0.00	0.00	
6,900.0	90.00	359.16	5,831.0	1,602.7	-73.0	1,603.9	0.00	0.00	
7,000.0	90.00	359.16	5,831.0	1,702.7	-74.5	1,703.9	0.00	0.00	
7,100.0	90.00	359.16	5,831.0	1,802.7	-76.0	1,803.9	0.00	0.00	
7,200.0	90.00	359.16	5,831.0	1,902.7	-77.4	1,903.9	0.00	0.00	
7,300.0	90.00	359.16	5,831.0	2,002.7	-78.9	2,003.9	0.00	0.00	
7,400.0	90.00	359.16	5,831.0	2,102.7	-80.4	2,103.9	0.00	0.00	
7,500.0	90.00	359.16	5,831.0	2,202.7	-81.9	2,203.9	0.00	0.00	
7,600.0	90.00	359.16	5,831.0	2,302.7	-83.3	2,303.9	0.00	0.00	
7,700.0	90.00	359.16	5,831.0	2,402.6	-84.8	2,403.9	0.00	0.00	
7,800.0	90.00	359.16	5,831.0	2,502.6	-86.3	2,503.9	0.00	0.00	
7,900.0	90.00	359.16	5,831.0	2,602.6	-87.7	2,603.9	0.00	0.00	
8,000.0	90.00	359.16	5,831.0	2,702.6	-89.2	2,703.9	0.00	0.00	
8,100.0	90.00	359.16	5,831.0	2,802.6	-90.7	2,803.9	0.00	0.00	
8,200.0	90.00	359.16	5,831.0	2,902.6	-92.2	2,903.9	0.00	0.00	
8,300.0	90.00	359.16	5,831.0	3,002.6	-93.6	3,003.9	0.00	0.00	
8,400.0	90.00	359.16	5,831.0	3,102.6	-95.1	3,103.9	0.00	0.00	
8,500.0	90.00	359.16	5,831.0	3,202.6	-96.6	3,203.9	0.00	0.00	
8,600.0	90.00	359.16	5,831.0	3,302.5	-98.1	3,303.9	0.00	0.00	
8,700.0	90.00	359.16	5,831.0	3,402.5	-99.5	3,403.9	0.00	0.00	
8,800.0	90.00	359.16	5,831.0	3,502.5	-101.0	3,503.9	0.00	0.00	
8,900.0	90.00	359.16	5,831.0	3,602.5	-102.5	3,603.9	0.00	0.00	
9,000.0	90.00	359.16	5,831.0	3,702.5	-104.0	3,703.9	0.00	0.00	
9,100.0	90.00	359.16	5,831.0	3,802.5	-105.4	3,803.9	0.00	0.00	
9,200.0	90.00	359.16	5,831.0	3,902.5	-106.9	3,903.9	0.00	0.00	
9,300.0	90.00	359.16	5,831.0	4,002.5	-108.4	4,003.9	0.00	0.00	
9,400.0	90.00	359.16	5,831.0	4,102.5	-109.8	4,103.9	0.00	0.00	
9,500.0	90.00	359.16	5,831.0	4,202.4	-111.3	4,203.9	0.00	0.00	
9,600.0	90.00	359.16	5,831.0	4,302.4	-112.8	4,303.9	0.00	0.00	
9,700.0	90.00	359.16	5,831.0	4,402.4	-114.3	4,403.9	0.00	0.00	
9,800.0	90.00	359.16	5,831.0	4,502.4	-115.7	4,503.9	0.00	0.00	
9,900.0	90.00	359.16	5,831.0	4,602.4	-117.2	4,603.9	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 #11H-0215A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
10,000.0	90.00	359.16	5,831.0	4,702.4	-118.7	4,703.9	0.00	0.00	
10,100.0	90.00	359.16	5,831.0	4,802.4	-120.2	4,803.9	0.00	0.00	
10,200.0	90.00	359.16	5,831.0	4,902.4	-121.6	4,903.9	0.00	0.00	
10,300.0	90.00	359.16	5,831.0	5,002.4	-123.1	5,003.9	0.00	0.00	
10,400.0	90.00	359.16	5,831.0	5,102.3	-124.6	5,103.9	0.00	0.00	
10,500.0	90.00	359.16	5,831.0	5,202.3	-126.1	5,203.9	0.00	0.00	
10,580.9	90.00	359.16	5,831.0	5,283.2	-127.2	5,284.7	0.00	0.00	Enter 1,550' Offset Radius
10,600.0	90.00	359.16	5,831.0	5,302.3	-127.5	5,303.8	0.00	0.00	
10,700.0	90.00	359.16	5,831.0	5,402.3	-129.0	5,403.8	0.00	0.00	
10,800.0	90.00	359.16	5,831.0	5,502.3	-130.5	5,503.8	0.00	0.00	
10,900.0	90.00	359.16	5,831.0	5,602.3	-132.0	5,603.8	0.00	0.00	
11,000.0	90.00	359.16	5,831.0	5,702.3	-133.4	5,703.8	0.00	0.00	
11,100.0	90.00	359.16	5,831.0	5,802.3	-134.9	5,803.8	0.00	0.00	
11,200.0	90.00	359.16	5,831.0	5,902.3	-136.4	5,903.8	0.00	0.00	
11,300.0	90.00	359.16	5,831.0	6,002.3	-137.8	6,003.8	0.00	0.00	
11,400.0	90.00	359.16	5,831.0	6,102.2	-139.3	6,103.8	0.00	0.00	
11,500.0	90.00	359.16	5,831.0	6,202.2	-140.8	6,203.8	0.00	0.00	
11,600.0	90.00	359.16	5,831.0	6,302.2	-142.3	6,303.8	0.00	0.00	
11,700.0	90.00	359.16	5,831.0	6,402.2	-143.7	6,403.8	0.00	0.00	
11,800.0	90.00	359.16	5,831.0	6,502.2	-145.2	6,503.8	0.00	0.00	
11,900.0	90.00	359.16	5,831.0	6,602.2	-146.7	6,603.8	0.00	0.00	
12,000.0	90.00	359.16	5,831.0	6,702.2	-148.2	6,703.8	0.00	0.00	
12,100.0	90.00	359.16	5,831.0	6,802.2	-149.6	6,803.8	0.00	0.00	
12,186.0	90.00	359.16	5,831.0	6,888.2	-150.9	6,889.8	0.00	0.00	PBHL @ 12186' MD

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Razor 11H-0215A PBHL	0.00	0.00	5,831.0	6,888.2	-175.9	1,565,467.33	3,463,171.50	40.873567	-103.825194
- plan misses target center by 25.0ft at 12186.0ft MD (5831.0 TVD, 6888.2 N, -150.9 E)									
- Point									
Razor 11H-0215A PBHL	0.00	0.00	5,831.0	6,888.2	-150.9	1,565,467.80	3,463,196.52	40.873567	-103.825104
- plan hits target center									
- Point									
Razor 11H-0215A PBHL	0.00	0.00	5,831.0	6,888.2	-150.9	1,565,467.80	3,463,196.52	40.873567	-103.825104
- plan hits target center									
- Point									
Razor 11H-0215A Tgt 1	0.00	0.00	5,831.0	1,214.8	-72.6	1,559,796.92	3,463,382.00	40.857995	-103.824821
- plan misses target center by 5.3ft at 6512.1ft MD (5831.0 TVD, 1214.9 N, -67.3 E)									
- Point									

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,300.0	5,831.0	7" (424' FEL-1,176" FNL)	7.000	7.500

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #2		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,893.6	5,774.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
600.0	600.0	0.0	0.0	KOP @ 600' MD	
800.0	799.8	7.0	-0.5	EOB; 4°	
5,357.7	5,346.4	324.1	-22.7	Start 11° Build	
6,139.5	5,831.0	842.4	-58.9	LP @ 6139' MD	
6,244.7	5,831.0	947.5	-63.4	EOT; 359.16° AZ	
10,580.9	5,831.0	5,283.2	-127.2	Enter 1,550' Offset Radius	
12,186.0	5,831.0	6,888.2	-150.9	PBHL @ 12186' MD	

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S11-T10N-R58W**

**Razor #11H-0215A**

**HZ**

**Plan #2**

## **Anticollision Report**

**19 November, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,356.1ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/19/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,186.0	Plan #2 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S11-T10N-R58W						
Razor #11H-0213A - HZ - Plan #1	807.2	805.3	58.5	55.1	17.399	CC, ES
Razor #11H-0213A - HZ - Plan #1	12,186.0	12,362.5	684.9	421.9	2.604	SF
Razor #11H-0216B - HZ - Plan #1	3,282.4	3,284.7	33.4	18.7	2.266	CC
Razor #11H-0216B - HZ - Plan #1	3,800.0	3,802.2	34.7	17.5	2.018	ES
Razor #11H-0216B - HZ - Plan #1	12,186.0	12,327.6	321.2	69.0	1.274	Level 3, SF
Razor #11H-1413A - HZ - Plan #1	826.6	825.1	88.9	85.5	26.314	CC, ES
Razor #11H-1413A - HZ - Plan #1	1,400.0	1,393.4	117.3	111.3	19.518	SF
Razor #11H-1415A - HZ - Plan #2	913.2	912.7	25.9	22.1	6.733	CC, ES
Razor #11H-1415A - HZ - Plan #2	1,000.0	999.0	27.1	22.9	6.422	SF
Razor #11H-1416B - HZ - Plan #1	600.0	600.0	50.5	48.1	20.743	CC, ES
Razor #11H-1416B - HZ - Plan #1	1,000.0	999.4	69.1	64.9	16.305	SF
Razor 11 Offset (EXISTING) - EXISTING - EXISTING						Out of range
Razor 11-0241H (Existing) - Existing - Existing	6,271.3	6,713.7	206.5	167.9	5.352	CC
Razor 11-0241H (Existing) - Existing - Existing	12,100.0	12,541.8	234.2	3.5	1.015	Level 2, ES, SF
Razor 14-1143H (EXISTING) - EXISTING - EXISTING						Out of range

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0213A - 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				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	-63.07	27.3	-53.8	60.3					
100.0	100.0	100.0	100.0	0.1	0.1	-63.07	27.3	-53.8	60.3	60.1	0.19	322.615		
200.0	200.0	200.0	200.0	0.3	0.3	-63.07	27.3	-53.8	60.3	59.7	0.64	94.784		
300.0	300.0	300.0	300.0	0.5	0.5	-63.07	27.3	-53.8	60.3	59.2	1.09	55.552		
400.0	400.0	400.0	400.0	0.8	0.8	-63.07	27.3	-53.8	60.3	58.8	1.54	39.290		
500.0	500.0	500.0	500.0	1.0	1.0	-63.07	27.3	-53.8	60.3	58.3	1.99	30.393		
600.0	600.0	600.0	600.0	1.2	1.2	-63.07	27.3	-53.8	60.3	57.9	2.43	24.781		
700.0	700.0	700.0	700.0	1.4	1.4	-60.53	27.3	-53.8	59.5	56.6	2.88	20.616		
800.0	799.8	798.2	798.2	1.7	1.7	-64.09	28.7	-54.7	58.5	55.1	3.33	17.573		
807.2	807.0	805.3	805.3	1.7	1.7	-64.38	28.9	-54.9	58.5	55.1	3.36	17.399 CC, ES		
900.0	899.6	896.5	896.4	1.9	1.9	-67.26	32.9	-57.5	59.7	56.0	3.78	15.825		
1,000.0	999.4	996.4	996.0	2.1	2.1	-69.24	38.7	-61.4	62.6	58.4	4.24	14.777		
1,100.0	1,099.1	1,096.3	1,095.7	2.4	2.3	-71.05	44.5	-65.2	65.5	60.8	4.71	13.930		
1,200.0	1,198.9	1,196.3	1,195.4	2.6	2.6	-72.71	50.4	-69.1	68.5	63.4	5.18	13.232		
1,300.0	1,298.6	1,296.2	1,295.1	2.9	2.8	-74.22	56.2	-72.9	71.6	65.9	5.66	12.648		
1,400.0	1,398.4	1,396.1	1,394.8	3.1	3.1	-75.61	62.0	-76.8	74.7	68.5	6.14	12.155		
1,500.0	1,498.1	1,496.1	1,494.5	3.4	3.3	-76.89	67.8	-80.7	77.8	71.2	6.63	11.734		
1,600.0	1,597.9	1,596.0	1,594.2	3.6	3.6	-78.06	73.6	-84.5	81.0	73.8	7.12	11.370		
1,700.0	1,697.6	1,696.0	1,693.9	3.9	3.8	-79.15	79.4	-88.4	84.2	76.5	7.61	11.054		
1,800.0	1,797.4	1,795.9	1,793.5	4.1	4.1	-80.16	85.2	-92.2	87.4	79.3	8.11	10.777		
1,900.0	1,897.2	1,895.8	1,893.2	4.4	4.3	-81.10	91.0	-96.1	90.6	82.0	8.61	10.533		
2,000.0	1,996.9	1,995.8	1,992.9	4.6	4.6	-81.97	96.8	-99.9	93.9	84.8	9.10	10.316		
2,100.0	2,096.7	2,095.7	2,092.6	4.9	4.8	-82.79	102.6	-103.8	97.2	87.6	9.60	10.123		
2,200.0	2,196.4	2,195.6	2,192.3	5.1	5.1	-83.54	108.4	-107.7	100.5	90.4	10.10	9.949		
2,300.0	2,296.2	2,295.6	2,292.0	5.4	5.3	-84.26	114.2	-111.5	103.8	93.2	10.61	9.792		
2,400.0	2,395.9	2,395.5	2,391.7	5.6	5.6	-84.92	120.0	-115.4	107.2	96.1	11.11	9.650		
2,500.0	2,495.7	2,495.4	2,491.4	5.9	5.9	-85.55	125.8	-119.2	110.6	98.9	11.61	9.521		
2,600.0	2,595.5	2,595.4	2,591.1	6.2	6.1	-86.14	131.7	-123.1	113.9	101.8	12.12	9.403		
2,700.0	2,695.2	2,695.3	2,690.8	6.4	6.4	-86.69	137.5	-126.9	117.3	104.7	12.62	9.295		
2,800.0	2,795.0	2,795.3	2,790.5	6.7	6.6	-87.22	143.3	-130.8	120.7	107.6	13.13	9.195		
2,900.0	2,894.7	2,895.2	2,890.2	6.9	6.9	-87.71	149.1	-134.7	124.1	110.5	13.63	9.104		
3,000.0	2,994.5	2,995.1	2,989.9	7.2	7.1	-88.18	154.9	-138.5	127.5	113.4	14.14	9.019		
3,100.0	3,094.2	3,095.1	3,089.6	7.4	7.4	-88.63	160.7	-142.4	130.9	116.3	14.64	8.941		
3,200.0	3,194.0	3,195.0	3,189.3	7.7	7.6	-89.05	166.5	-146.2	134.3	119.2	15.15	8.868		
3,300.0	3,293.7	3,294.9	3,288.9	7.9	7.9	-89.45	172.3	-150.1	137.8	122.1	15.66	8.800		
3,400.0	3,393.5	3,394.9	3,388.6	8.2	8.2	-89.83	178.1	-153.9	141.2	125.1	16.16	8.736		
3,500.0	3,493.3	3,494.8	3,488.3	8.4	8.4	-90.20	183.9	-157.8	144.7	128.0	16.67	8.677		
3,600.0	3,593.0	3,594.7	3,588.0	8.7	8.7	-90.54	189.7	-161.6	148.1	130.9	17.18	8.621		
3,700.0	3,692.8	3,694.7	3,687.7	9.0	8.9	-90.87	195.5	-165.5	151.6	133.9	17.69	8.569		
3,800.0	3,792.5	3,794.6	3,787.4	9.2	9.2	-91.19	201.3	-169.4	155.0	136.8	18.20	8.520		
3,900.0	3,892.3	3,894.6	3,887.1	9.5	9.4	-91.49	207.1	-173.2	158.5	139.8	18.70	8.474		
4,000.0	3,992.0	3,994.5	3,986.8	9.7	9.7	-91.78	213.0	-177.1	162.0	142.8	19.21	8.430		
4,100.0	4,091.8	4,094.4	4,086.5	10.0	9.9	-92.06	218.8	-180.9	165.4	145.7	19.72	8.389		
4,200.0	4,191.6	4,194.4	4,186.2	10.2	10.2	-92.32	224.6	-184.8	168.9	148.7	20.23	8.350		
4,300.0	4,291.3	4,294.3	4,285.9	10.5	10.5	-92.58	230.4	-188.6	172.4	151.7	20.74	8.313		
4,400.0	4,391.1	4,394.2	4,385.6	10.7	10.7	-92.82	236.2	-192.5	175.9	154.6	21.25	8.278		
4,500.0	4,490.8	4,494.2	4,485.3	11.0	11.0	-93.06	242.0	-196.4	179.4	157.6	21.76	8.244		
4,600.0	4,590.6	4,594.1	4,585.0	11.3	11.2	-93.29	247.8	-200.2	182.9	160.6	22.27	8.212		
4,700.0	4,690.3	4,694.1	4,684.6	11.5	11.5	-93.50	253.6	-204.1	186.3	163.6	22.77	8.182		
4,800.0	4,790.1	4,794.0	4,784.3	11.8	11.7	-93.71	259.4	-207.9	189.8	166.6	23.28	8.153		
4,900.0	4,889.9	4,893.9	4,884.0	12.0	12.0	-93.92	265.2	-211.8	193.3	169.5	23.79	8.126		
5,000.0	4,989.6	4,993.9	4,983.7	12.3	12.3	-94.11	271.0	-215.6	196.8	172.5	24.30	8.099		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0213A - 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							
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	
5,100.0	5,089.4	5,093.8	5,083.4	12.5	12.5	-94.30	276.8	-219.5	200.3	175.5	24.81	8.074		
5,200.0	5,189.1	5,193.7	5,183.1	12.8	12.8	-94.48	282.6	-223.4	203.8	178.5	25.32	8.050		
5,300.0	5,288.9	5,293.7	5,282.8	13.1	13.0	-94.66	288.4	-227.2	207.4	181.5	25.83	8.027		
5,400.0	5,388.5	5,388.4	5,377.2	13.3	13.3	-94.76	294.7	-231.4	211.4	185.1	26.35	8.026		
5,500.0	5,485.3	5,473.3	5,460.2	13.7	13.6	-94.78	309.5	-241.2	222.3	195.2	27.03	8.223		
5,600.0	5,575.7	5,557.2	5,538.2	14.3	14.0	-94.65	334.9	-258.1	241.2	213.2	27.95	8.627		
5,700.0	5,656.3	5,639.4	5,609.0	15.0	14.6	-94.18	369.6	-281.1	267.5	238.4	29.14	9.181		
5,800.0	5,724.2	5,720.1	5,671.2	16.0	15.2	-93.26	412.3	-309.5	300.5	269.9	30.61	9.818		
5,900.0	5,776.9	5,800.0	5,724.4	17.1	16.0	-91.86	461.9	-342.4	339.1	306.8	32.37	10.477		
6,000.0	5,812.4	5,878.0	5,766.8	18.4	17.0	-89.96	516.3	-378.5	382.2	347.8	34.40	11.108		
6,100.0	5,829.5	5,956.6	5,799.3	19.8	18.0	-87.75	575.9	-418.1	428.4	391.7	36.67	11.683		
6,200.0	5,831.0	6,037.1	5,821.0	21.2	19.2	-88.60	640.4	-460.9	477.5	438.5	38.96	12.255		
6,300.0	5,831.0	6,120.1	5,830.7	22.6	20.6	-89.96	709.0	-506.5	531.0	489.7	41.30	12.858		
6,400.0	5,831.0	6,232.8	5,831.0	24.2	22.4	-90.00	804.1	-567.0	583.5	539.2	44.36	13.155		
6,500.0	5,831.0	6,362.3	5,831.0	25.9	24.5	-90.00	917.5	-629.4	630.5	582.7	47.78	13.196		
6,600.0	5,831.0	6,500.9	5,831.0	27.5	26.8	-90.00	1,043.3	-687.6	671.2	619.6	51.52	13.027		
6,700.0	5,831.0	6,648.1	5,831.0	29.2	29.4	-90.00	1,181.1	-739.2	704.9	649.3	55.57	12.684		
6,800.0	5,831.0	6,802.8	5,831.0	31.0	32.0	-90.00	1,329.8	-781.8	731.1	671.2	59.86	12.212		
6,900.0	5,831.0	6,963.5	5,831.0	32.7	34.7	-90.00	1,487.3	-813.2	749.2	684.8	64.34	11.644		
7,000.0	5,831.0	7,128.0	5,831.0	34.5	37.3	-90.00	1,650.7	-831.6	758.9	689.9	68.92	11.011		
7,100.0	5,831.0	7,280.1	5,831.0	36.3	39.7	-90.00	1,802.7	-836.1	760.1	686.8	73.29	10.371		
7,200.0	5,831.0	7,380.1	5,831.0	38.1	41.3	-90.00	1,902.7	-836.1	758.6	681.9	76.77	9.882		
7,300.0	5,831.0	7,480.1	5,831.0	39.9	42.9	-90.00	2,002.7	-836.0	757.1	676.9	80.27	9.432		
7,400.0	5,831.0	7,580.1	5,831.0	41.7	44.5	-90.00	2,102.7	-836.0	755.7	671.9	83.80	9.017		
7,500.0	5,831.0	7,680.1	5,831.0	43.6	46.1	-90.00	2,202.7	-836.0	754.2	666.8	87.36	8.633		
7,600.0	5,831.0	7,780.1	5,831.0	45.4	47.7	-90.00	2,302.7	-836.0	752.7	661.8	90.94	8.277		
7,700.0	5,831.0	7,880.1	5,831.0	47.3	49.4	-90.00	2,402.7	-836.0	751.2	656.7	94.54	7.946		
7,800.0	5,831.0	7,980.0	5,831.0	49.1	51.1	-90.00	2,502.7	-836.0	749.8	651.6	98.17	7.638		
7,900.0	5,831.0	8,080.0	5,831.0	51.0	52.8	-90.00	2,602.7	-836.0	748.3	646.5	101.80	7.350		
8,000.0	5,831.0	8,180.0	5,831.0	52.8	54.5	-90.00	2,702.6	-836.0	746.8	641.3	105.46	7.082		
8,100.0	5,831.0	8,280.0	5,831.0	54.7	56.2	-90.00	2,802.6	-836.0	745.3	636.2	109.12	6.830		
8,200.0	5,831.0	8,380.0	5,831.0	56.6	58.0	-90.00	2,902.6	-836.0	743.8	631.0	112.80	6.594		
8,300.0	5,831.0	8,480.0	5,831.0	58.4	59.7	-90.00	3,002.6	-836.0	742.4	625.9	116.49	6.373		
8,400.0	5,831.0	8,580.0	5,831.0	60.3	61.5	-90.00	3,102.6	-836.0	740.9	620.7	120.19	6.165		
8,500.0	5,831.0	8,680.0	5,831.0	62.2	63.3	-90.00	3,202.6	-836.0	739.4	615.5	123.89	5.968		
8,600.0	5,831.0	8,780.0	5,831.0	64.1	65.1	-90.00	3,302.6	-836.0	737.9	610.3	127.61	5.783		
8,700.0	5,831.0	8,879.9	5,831.0	66.0	66.8	-90.00	3,402.6	-836.0	736.5	605.1	131.33	5.608		
8,800.0	5,831.0	8,979.9	5,831.0	67.9	68.6	-90.00	3,502.6	-836.0	735.0	599.9	135.06	5.442		
8,900.0	5,831.0	9,079.9	5,831.0	69.7	70.4	-90.00	3,602.5	-836.0	733.5	594.7	138.80	5.285		
9,000.0	5,831.0	9,179.9	5,831.0	71.6	72.2	-90.00	3,702.5	-836.0	732.0	589.5	142.54	5.136		
9,100.0	5,831.0	9,279.9	5,831.0	73.5	74.1	-90.00	3,802.5	-836.0	730.5	584.3	146.29	4.994		
9,200.0	5,831.0	9,379.9	5,831.0	75.4	75.9	-90.00	3,902.5	-836.0	729.1	579.0	150.04	4.859		
9,300.0	5,831.0	9,479.9	5,831.0	77.3	77.7	-90.00	4,002.5	-836.0	727.6	573.8	153.80	4.731		
9,400.0	5,831.0	9,579.9	5,831.0	79.2	79.5	-90.00	4,102.5	-836.0	726.1	568.5	157.56	4.608		
9,500.0	5,831.0	9,679.9	5,831.0	81.1	81.4	-90.00	4,202.5	-836.0	724.6	563.3	161.33	4.492		
9,600.0	5,831.0	9,779.8	5,831.0	83.0	83.2	-90.00	4,302.5	-836.0	723.2	558.1	165.10	4.380		
9,700.0	5,831.0	9,879.8	5,831.0	84.9	85.0	-90.00	4,402.5	-835.9	721.7	552.8	168.87	4.274		
9,800.0	5,831.0	9,979.8	5,831.0	86.8	86.9	-90.00	4,502.4	-835.9	720.2	547.6	172.65	4.172		
9,900.0	5,831.0	10,079.8	5,831.0	88.7	88.7	-90.00	4,602.4	-835.9	718.7	542.3	176.42	4.074		
10,000.0	5,831.0	10,179.8	5,831.0	90.6	90.6	-90.00	4,702.4	-835.9	717.2	537.0	180.21	3.980		
10,100.0	5,831.0	10,279.8	5,831.0	92.5	92.4	-90.00	4,802.4	-835.9	715.8	531.8	183.99	3.890		
10,200.0	5,831.0	10,379.8	5,831.0	94.5	94.3	-90.00	4,902.4	-835.9	714.3	526.5	187.78	3.804		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0213A - 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							
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
10,300.0	5,831.0	10,479.8	5,831.0	96.4	96.2	-90.00	5,002.4	-835.9	712.8	521.2	191.57	3.721	
10,400.0	5,831.0	10,579.8	5,831.0	98.3	98.0	-90.00	5,102.4	-835.9	711.3	516.0	195.36	3.641	
10,500.0	5,831.0	10,679.7	5,831.0	100.2	99.9	-90.00	5,202.4	-835.9	709.9	510.7	199.15	3.564	
10,600.0	5,831.0	10,779.7	5,831.0	102.1	101.7	-90.00	5,302.4	-835.9	708.4	505.4	202.95	3.490	
10,700.0	5,831.0	10,879.7	5,831.0	104.0	103.6	-90.00	5,402.3	-835.9	706.9	500.2	206.75	3.419	
10,800.0	5,831.0	10,979.7	5,831.0	105.9	105.5	-90.00	5,502.3	-835.9	705.4	494.9	210.55	3.350	
10,900.0	5,831.0	11,079.7	5,831.0	107.8	107.4	-90.00	5,602.3	-835.9	703.9	489.6	214.35	3.284	
11,000.0	5,831.0	11,179.7	5,831.0	109.7	109.2	-90.00	5,702.3	-835.9	702.5	484.3	218.15	3.220	
11,100.0	5,831.0	11,279.7	5,831.0	111.6	111.1	-90.00	5,802.3	-835.9	701.0	479.0	221.96	3.158	
11,200.0	5,831.0	11,379.7	5,831.0	113.5	113.0	-90.00	5,902.3	-835.9	699.5	473.8	225.76	3.098	
11,300.0	5,831.0	11,479.7	5,831.0	115.5	114.9	-90.00	6,002.3	-835.9	698.0	468.5	229.57	3.041	
11,400.0	5,831.0	11,579.6	5,831.0	117.4	116.7	-90.00	6,102.3	-835.9	696.6	463.2	233.38	2.985	
11,500.0	5,831.0	11,679.6	5,831.0	119.3	118.6	-90.00	6,202.3	-835.9	695.1	457.9	237.19	2.931	
11,600.0	5,831.0	11,779.6	5,831.0	121.2	120.5	-90.00	6,302.2	-835.9	693.6	452.6	241.00	2.878	
11,700.0	5,831.0	11,879.6	5,831.0	123.1	122.4	-90.00	6,402.2	-835.9	692.1	447.3	244.81	2.827	
11,800.0	5,831.0	11,979.6	5,831.0	125.0	124.3	-90.00	6,502.2	-835.9	690.6	442.0	248.62	2.778	
11,900.0	5,831.0	12,079.6	5,831.0	126.9	126.1	-90.00	6,602.2	-835.9	689.2	436.7	252.44	2.730	
12,000.0	5,831.0	12,179.6	5,831.0	128.9	128.0	-90.00	6,702.2	-835.8	687.7	431.4	256.25	2.684	
12,100.0	5,831.0	12,279.6	5,831.0	130.8	129.9	-90.00	6,802.2	-835.8	686.2	426.1	260.07	2.639	
12,186.0	5,831.0	12,362.5	5,831.0	132.4	131.3	-90.00	6,885.2	-835.8	684.9	421.9	263.08	2.604 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0216B - 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	-121.29	-30.4	-49.9	58.5					
100.0	100.0	100.0	100.0	0.1	0.1	-121.29	-30.4	-49.9	58.5	58.3	0.19	312.576		
200.0	200.0	200.0	200.0	0.3	0.3	-121.29	-30.4	-49.9	58.5	57.8	0.64	91.830		
300.0	300.0	300.0	300.0	0.5	0.5	-121.29	-30.4	-49.9	58.5	57.4	1.09	53.821		
400.0	400.0	400.0	400.0	0.8	0.8	-121.29	-30.4	-49.9	58.5	56.9	1.54	38.066		
500.0	500.0	500.0	500.0	1.0	1.0	-121.29	-30.4	-49.9	58.5	56.5	1.99	29.446		
600.0	600.0	600.0	600.0	1.2	1.2	-121.29	-30.4	-49.9	58.5	56.0	2.43	24.009		
700.0	700.0	701.4	701.4	1.4	1.4	-117.55	-28.6	-49.6	58.1	55.2	2.89	20.115		
800.0	799.8	802.7	802.6	1.7	1.7	-118.33	-23.3	-48.5	56.9	53.5	3.34	17.025		
900.0	899.6	902.7	902.3	1.9	1.9	-119.46	-16.5	-47.2	55.4	51.6	3.80	14.565		
1,000.0	999.4	1,002.7	1,002.1	2.1	2.1	-120.65	-9.7	-45.8	53.9	49.6	4.27	12.625		
1,100.0	1,099.1	1,102.7	1,101.8	2.4	2.4	-121.90	-2.8	-44.5	52.5	47.7	4.74	11.063		
1,200.0	1,198.9	1,202.7	1,201.5	2.6	2.6	-123.23	4.0	-43.1	51.1	45.8	5.22	9.785		
1,300.0	1,298.6	1,302.7	1,301.3	2.9	2.9	-124.63	10.9	-41.7	49.7	44.0	5.69	8.724		
1,400.0	1,398.4	1,402.6	1,401.0	3.1	3.1	-126.11	17.7	-40.4	48.3	42.1	6.17	7.831		
1,500.0	1,498.1	1,502.6	1,500.7	3.4	3.4	-127.67	24.5	-39.0	47.0	40.3	6.64	7.072		
1,600.0	1,597.9	1,602.6	1,600.5	3.6	3.6	-129.32	31.4	-37.6	45.7	38.6	7.12	6.421		
1,700.0	1,697.6	1,702.6	1,700.2	3.9	3.9	-131.07	38.2	-36.3	44.5	36.9	7.59	5.858		
1,800.0	1,797.4	1,802.6	1,800.0	4.1	4.1	-132.92	45.1	-34.9	43.3	35.2	8.06	5.368		
1,900.0	1,897.2	1,902.6	1,899.7	4.4	4.4	-134.86	51.9	-33.5	42.1	33.6	8.52	4.939		
2,000.0	1,996.9	2,002.5	1,999.4	4.6	4.6	-136.92	58.7	-32.2	41.0	32.0	8.99	4.562		
2,100.0	2,096.7	2,102.5	2,099.2	4.9	4.9	-139.09	65.6	-30.8	39.9	30.5	9.45	4.229		
2,200.0	2,196.4	2,202.5	2,198.9	5.1	5.1	-141.37	72.4	-29.4	39.0	29.1	9.90	3.934		
2,300.0	2,296.2	2,302.5	2,298.7	5.4	5.4	-143.76	79.3	-28.1	38.0	27.7	10.36	3.673		
2,400.0	2,395.9	2,402.5	2,398.4	5.6	5.6	-146.27	86.1	-26.7	37.2	26.4	10.81	3.441		
2,500.0	2,495.7	2,502.4	2,498.1	5.9	5.9	-148.89	92.9	-25.4	36.4	25.2	11.25	3.236		
2,600.0	2,595.5	2,602.4	2,597.9	6.2	6.2	-151.62	99.8	-24.0	35.7	24.0	11.70	3.053		
2,700.0	2,695.2	2,702.4	2,697.6	6.4	6.4	-154.46	106.6	-22.6	35.1	23.0	12.14	2.891		
2,800.0	2,795.0	2,802.4	2,797.4	6.7	6.7	-157.38	113.5	-21.3	34.6	22.0	12.58	2.748		
2,900.0	2,894.7	2,902.4	2,897.1	6.9	6.9	-160.39	120.3	-19.9	34.1	21.1	13.02	2.622		
3,000.0	2,994.5	3,002.4	2,996.8	7.2	7.2	-163.47	127.1	-18.5	33.8	20.3	13.47	2.510		
3,100.0	3,094.2	3,102.3	3,096.6	7.4	7.4	-166.59	134.0	-17.2	33.6	19.7	13.91	2.413		
3,200.0	3,194.0	3,202.3	3,196.3	7.7	7.7	-169.76	140.8	-15.8	33.4	19.1	14.36	2.328		
3,282.4	3,276.2	3,284.7	3,278.5	7.9	7.9	-172.38	146.5	-14.7	33.4	18.7	14.74	2.266 CC		
3,300.0	3,293.7	3,302.3	3,296.1	7.9	7.9	-172.94	147.7	-14.4	33.4	18.6	14.82	2.254		
3,400.0	3,393.5	3,402.3	3,395.8	8.2	8.2	-176.11	154.5	-13.1	33.5	18.2	15.28	2.190		
3,500.0	3,493.3	3,502.3	3,495.5	8.4	8.4	-179.27	161.3	-11.7	33.6	17.9	15.75	2.135		
3,600.0	3,593.0	3,602.3	3,595.3	8.7	8.7	177.62	168.2	-10.3	33.9	17.7	16.23	2.089		
3,700.0	3,692.8	3,702.2	3,695.0	9.0	9.0	174.56	175.0	-9.0	34.3	17.6	16.72	2.050		
3,800.0	3,792.5	3,802.2	3,794.7	9.2	9.2	171.58	181.9	-7.6	34.7	17.5	17.22	2.018 ES		
3,900.0	3,892.3	3,902.2	3,894.5	9.5	9.5	168.69	188.7	-6.3	35.3	17.6	17.72	1.992		
4,000.0	3,992.0	4,002.2	3,994.2	9.7	9.7	165.89	195.5	-4.9	35.9	17.7	18.23	1.972		
4,100.0	4,091.8	4,102.2	4,094.0	10.0	10.0	163.20	202.4	-3.5	36.7	17.9	18.75	1.956		
4,200.0	4,191.6	4,202.2	4,193.7	10.2	10.2	160.62	209.2	-2.2	37.5	18.2	19.27	1.945		
4,300.0	4,291.3	4,302.1	4,293.4	10.5	10.5	158.15	216.1	-0.8	38.4	18.6	19.79	1.938		
4,400.0	4,391.1	4,402.1	4,393.2	10.7	10.7	155.80	222.9	0.6	39.3	19.0	20.32	1.934		
4,500.0	4,490.8	4,502.1	4,492.9	11.0	11.0	153.56	229.7	1.9	40.3	19.5	20.86	1.933		
4,600.0	4,590.6	4,602.1	4,592.7	11.3	11.3	151.43	236.6	3.3	41.4	20.0	21.39	1.934		
4,700.0	4,690.3	4,702.1	4,692.4	11.5	11.5	149.41	243.4	4.7	42.5	20.6	21.93	1.938		
4,800.0	4,790.1	4,802.1	4,792.1	11.8	11.8	147.50	250.3	6.0	43.7	21.2	22.47	1.944		
4,900.0	4,889.9	4,902.0	4,891.9	12.0	12.0	145.69	257.1	7.4	44.9	21.9	23.01	1.951		
5,000.0	4,989.6	5,002.0	4,991.6	12.3	12.3	143.97	263.9	8.8	46.2	22.6	23.55	1.960		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0216B - 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		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
5,100.0	5,089.4	5,102.0	5,091.4	12.5	12.5	142.35	270.8	10.1	47.4	23.4	24.09	1.970		
5,200.0	5,189.1	5,202.0	5,191.1	12.8	12.8	140.82	277.6	11.5	48.8	24.2	24.63	1.981		
5,300.0	5,288.9	5,302.0	5,290.8	13.1	13.0	139.37	284.5	12.8	50.2	25.0	25.16	1.993		
5,400.0	5,388.5	5,401.9	5,390.5	13.3	13.3	139.11	291.3	14.2	52.8	27.2	25.61	2.063		
5,500.0	5,485.3	5,503.9	5,492.1	13.7	13.6	146.08	300.1	16.0	67.2	41.8	25.33	2.651		
5,600.0	5,575.7	5,613.0	5,597.4	14.3	14.0	148.60	327.4	21.4	86.6	61.9	24.73	3.504		
5,700.0	5,656.3	5,725.6	5,697.5	15.0	14.7	146.72	377.5	31.4	107.6	83.3	24.23	4.439		
5,800.0	5,724.2	5,841.0	5,786.3	16.0	15.6	142.39	449.4	45.7	129.4	104.9	24.45	5.290		
5,900.0	5,776.9	5,958.6	5,857.9	17.1	16.8	136.64	540.6	63.9	151.8	125.8	25.99	5.838		
6,000.0	5,812.4	6,077.7	5,907.4	18.4	18.2	130.11	646.5	85.1	174.6	145.5	29.03	6.014		
6,100.0	5,829.5	6,197.6	5,931.1	19.8	19.9	123.23	761.5	108.0	197.5	164.3	33.19	5.950		
6,200.0	5,831.0	6,309.8	5,933.0	21.2	21.5	118.28	871.8	128.8	218.7	181.3	37.41	5.846		
6,300.0	5,831.0	6,420.3	5,933.0	22.6	23.0	116.22	981.3	143.3	232.2	191.4	40.82	5.689		
6,400.0	5,831.0	6,532.4	5,933.0	24.2	24.6	115.17	1,093.1	151.6	240.2	196.1	44.11	5.446		
6,500.0	5,831.0	6,642.2	5,933.0	25.9	26.3	114.82	1,202.8	153.5	243.1	195.8	47.28	5.142		
6,600.0	5,831.0	6,742.2	5,933.0	27.5	27.9	114.67	1,302.8	153.5	244.4	194.1	50.36	4.854		
6,700.0	5,831.0	6,842.2	5,933.0	29.2	29.5	114.53	1,402.7	153.5	245.8	192.3	53.52	4.592		
6,800.0	5,831.0	6,942.1	5,933.0	31.0	31.2	114.39	1,502.7	153.5	247.1	190.4	56.74	4.356		
6,900.0	5,831.0	7,042.1	5,933.0	32.7	32.9	114.25	1,602.7	153.5	248.5	188.5	60.00	4.141		
7,000.0	5,831.0	7,142.1	5,933.0	34.5	34.6	114.11	1,702.7	153.5	249.8	186.5	63.31	3.946		
7,100.0	5,831.0	7,242.1	5,933.0	36.3	36.4	113.97	1,802.7	153.5	251.2	184.5	66.66	3.768		
7,200.0	5,831.0	7,342.1	5,933.0	38.1	38.1	113.83	1,902.7	153.5	252.5	182.5	70.04	3.605		
7,300.0	5,831.0	7,442.1	5,933.0	39.9	39.9	113.70	2,002.7	153.5	253.9	180.4	73.44	3.456		
7,400.0	5,831.0	7,542.1	5,933.0	41.7	41.7	113.56	2,102.7	153.5	255.2	178.3	76.88	3.320		
7,500.0	5,831.0	7,642.1	5,933.0	43.6	43.5	113.43	2,202.7	153.6	256.6	176.2	80.33	3.194		
7,600.0	5,831.0	7,742.1	5,933.0	45.4	45.3	113.30	2,302.6	153.6	257.9	174.1	83.81	3.077		
7,700.0	5,831.0	7,842.0	5,933.0	47.3	47.2	113.17	2,402.6	153.6	259.3	172.0	87.30	2.970		
7,800.0	5,831.0	7,942.0	5,933.0	49.1	49.0	113.05	2,502.6	153.6	260.6	169.8	90.81	2.870		
7,900.0	5,831.0	8,042.0	5,933.0	51.0	50.8	112.92	2,602.6	153.6	262.0	167.6	94.34	2.777		
8,000.0	5,831.0	8,142.0	5,933.0	52.8	52.7	112.79	2,702.6	153.6	263.3	165.5	97.88	2.691		
8,100.0	5,831.0	8,242.0	5,933.0	54.7	54.5	112.67	2,802.6	153.6	264.7	163.3	101.43	2.610		
8,200.0	5,831.0	8,342.0	5,933.0	56.6	56.4	112.55	2,902.6	153.6	266.1	161.1	104.99	2.534		
8,300.0	5,831.0	8,442.0	5,933.0	58.4	58.2	112.43	3,002.6	153.6	267.4	158.9	108.57	2.463		
8,400.0	5,831.0	8,542.0	5,933.0	60.3	60.1	112.31	3,102.6	153.6	268.8	156.6	112.15	2.397		
8,500.0	5,831.0	8,642.0	5,933.0	62.2	61.9	112.19	3,202.6	153.6	270.2	154.4	115.75	2.334		
8,600.0	5,831.0	8,742.0	5,933.0	64.1	63.8	112.07	3,302.5	153.6	271.5	152.2	119.36	2.275		
8,700.0	5,831.0	8,841.9	5,933.0	66.0	65.7	111.95	3,402.5	153.6	272.9	149.9	122.97	2.219		
8,800.0	5,831.0	8,941.9	5,933.0	67.9	67.6	111.84	3,502.5	153.6	274.3	147.7	126.59	2.167		
8,900.0	5,831.0	9,041.9	5,933.0	69.7	69.4	111.72	3,602.5	153.6	275.6	145.4	130.22	2.117		
9,000.0	5,831.0	9,141.9	5,933.0	71.6	71.3	111.61	3,702.5	153.6	277.0	143.1	133.86	2.069		
9,100.0	5,831.0	9,241.9	5,933.0	73.5	73.2	111.50	3,802.5	153.6	278.4	140.9	137.50	2.025		
9,200.0	5,831.0	9,341.9	5,933.0	75.4	75.1	111.39	3,902.5	153.6	279.7	138.6	141.15	1.982		
9,300.0	5,831.0	9,441.9	5,933.0	77.3	77.0	111.28	4,002.5	153.6	281.1	136.3	144.81	1.941		
9,400.0	5,831.0	9,541.9	5,933.0	79.2	78.8	111.17	4,102.5	153.6	282.5	134.0	148.47	1.903		
9,500.0	5,831.0	9,641.9	5,933.0	81.1	80.7	111.06	4,202.4	153.6	283.9	131.7	152.13	1.866		
9,600.0	5,831.0	9,741.8	5,933.0	83.0	82.6	110.96	4,302.4	153.6	285.3	129.4	155.81	1.831		
9,700.0	5,831.0	9,841.8	5,933.0	84.9	84.5	110.85	4,402.4	153.6	286.6	127.1	159.49	1.797		
9,800.0	5,831.0	9,941.8	5,933.0	86.8	86.4	110.75	4,502.4	153.6	288.0	124.8	163.17	1.765		
9,900.0	5,831.0	10,041.8	5,933.0	88.7	88.3	110.64	4,602.4	153.6	289.4	122.5	166.86	1.734		
10,000.0	5,831.0	10,141.8	5,933.0	90.6	90.2	110.54	4,702.4	153.6	290.8	120.2	170.55	1.705		
10,100.0	5,831.0	10,241.8	5,933.0	92.5	92.1	110.44	4,802.4	153.6	292.2	117.9	174.25	1.677		
10,200.0	5,831.0	10,341.8	5,933.0	94.5	94.0	110.34	4,902.4	153.6	293.5	115.6	177.95	1.650		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-0216B - 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							
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
10,300.0	5,831.0	10,441.8	5,933.0	96.4	95.9	110.24	5,002.4	153.6	294.9	113.3	181.65	1.624	
10,400.0	5,831.0	10,541.8	5,933.0	98.3	97.8	110.14	5,102.3	153.6	296.3	110.9	185.36	1.599	
10,500.0	5,831.0	10,641.7	5,933.0	100.2	99.7	110.04	5,202.3	153.6	297.7	108.6	189.07	1.574	
10,600.0	5,831.0	10,741.7	5,933.0	102.1	101.6	109.94	5,302.3	153.6	299.1	106.3	192.79	1.551	
10,700.0	5,831.0	10,841.7	5,933.0	104.0	103.5	109.85	5,402.3	153.6	300.5	104.0	196.51	1.529	
10,800.0	5,831.0	10,941.7	5,933.0	105.9	105.4	109.75	5,502.3	153.6	301.9	101.6	200.24	1.507	
10,900.0	5,831.0	11,041.7	5,933.0	107.8	107.3	109.66	5,602.3	153.6	303.2	99.3	203.96	1.487 Level 3	
11,000.0	5,831.0	11,141.7	5,933.0	109.7	109.2	109.57	5,702.3	153.6	304.6	96.9	207.69	1.467 Level 3	
11,100.0	5,831.0	11,241.7	5,933.0	111.6	111.1	109.47	5,802.3	153.6	306.0	94.6	211.43	1.447 Level 3	
11,200.0	5,831.0	11,341.7	5,933.0	113.5	113.0	109.38	5,902.3	153.6	307.4	92.3	215.16	1.429 Level 3	
11,300.0	5,831.0	11,441.7	5,933.0	115.5	114.9	109.29	6,002.2	153.6	308.8	89.9	218.90	1.411 Level 3	
11,400.0	5,831.0	11,541.6	5,933.0	117.4	116.8	109.20	6,102.2	153.6	310.2	87.6	222.64	1.393 Level 3	
11,500.0	5,831.0	11,641.6	5,933.0	119.3	118.7	109.11	6,202.2	153.6	311.6	85.2	226.39	1.376 Level 3	
11,600.0	5,831.0	11,741.6	5,933.0	121.2	120.6	109.02	6,302.2	153.6	313.0	82.9	230.14	1.360 Level 3	
11,700.0	5,831.0	11,841.6	5,933.0	123.1	122.5	108.93	6,402.2	153.6	314.4	80.5	233.89	1.344 Level 3	
11,800.0	5,831.0	11,941.6	5,933.0	125.0	124.4	108.85	6,502.2	153.6	315.8	78.1	237.64	1.329 Level 3	
11,900.0	5,831.0	12,041.6	5,933.0	126.9	126.4	108.76	6,602.2	153.6	317.2	75.8	241.39	1.314 Level 3	
12,000.0	5,831.0	12,141.6	5,933.0	128.9	128.3	108.68	6,702.2	153.6	318.6	73.4	245.15	1.299 Level 3	
12,100.0	5,831.0	12,241.6	5,933.0	130.8	130.2	108.59	6,802.2	153.6	320.0	71.1	248.91	1.285 Level 3	
12,186.0	5,831.0	12,327.6	5,933.0	132.4	131.8	108.52	6,888.2	153.6	321.2	69.0	252.15	1.274 Level 3, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1413A - 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									
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		
0.0	0.0	0.0	0.0	0.0	0.0	-62.56	41.5	-79.9	90.1						
100.0	100.0	100.0	100.0	0.1	0.1	-62.56	41.5	-79.9	90.1	89.9	0.19	481.542			
200.0	200.0	200.0	200.0	0.3	0.3	-62.56	41.5	-79.9	90.1	89.4	0.64	141.470			
300.0	300.0	300.0	300.0	0.5	0.5	-62.56	41.5	-79.9	90.1	89.0	1.09	82.915			
400.0	400.0	400.0	400.0	0.8	0.8	-62.56	41.5	-79.9	90.1	88.5	1.54	58.642			
500.0	500.0	500.0	500.0	1.0	1.0	-62.56	41.5	-79.9	90.1	88.1	1.99	45.363			
600.0	600.0	599.9	599.9	1.2	1.2	-63.67	40.0	-80.8	90.1	87.7	2.41	37.404			
700.0	700.0	699.4	699.3	1.4	1.4	-63.95	35.4	-83.2	89.7	86.9	2.82	31.776			
800.0	799.8	798.7	798.3	1.7	1.6	-71.42	29.3	-86.5	88.9	85.7	3.26	27.312			
826.6	826.4	825.1	824.7	1.7	1.6	-73.69	27.7	-87.4	88.9	85.5	3.38	26.314 CC, ES			
900.0	899.6	897.8	897.2	1.9	1.8	-79.93	23.2	-89.8	89.4	85.7	3.71	24.112			
1,000.0	999.4	996.9	996.1	2.1	2.0	-88.17	17.2	-93.2	91.8	87.7	4.17	22.029			
1,100.0	1,099.1	1,096.0	1,094.9	2.4	2.3	-95.85	11.1	-96.5	96.1	91.4	4.63	20.744			
1,200.0	1,198.9	1,195.2	1,193.8	2.6	2.5	-102.78	5.0	-99.8	101.9	96.8	5.09	20.004			
1,300.0	1,298.6	1,294.3	1,292.6	2.9	2.8	-108.89	-1.0	-103.1	109.1	103.5	5.55	19.638			
1,400.0	1,398.4	1,393.4	1,391.5	3.1	3.0	-114.20	-7.1	-106.4	117.3	111.3	6.01	19.518 SF			
1,500.0	1,498.1	1,492.5	1,490.4	3.4	3.3	-118.79	-13.2	-109.7	126.5	120.0	6.47	19.558			
1,600.0	1,597.9	1,591.6	1,589.2	3.6	3.5	-122.74	-19.3	-113.0	136.3	129.4	6.92	19.699			
1,700.0	1,697.6	1,690.7	1,688.1	3.9	3.8	-126.15	-25.3	-116.3	146.7	139.3	7.37	19.901			
1,800.0	1,797.4	1,789.8	1,787.0	4.1	4.0	-129.11	-31.4	-119.6	157.5	149.7	7.82	20.138			
1,900.0	1,897.2	1,888.9	1,885.8	4.4	4.3	-131.68	-37.5	-122.9	168.7	160.4	8.27	20.393			
2,000.0	1,996.9	1,988.0	1,984.7	4.6	4.6	-133.92	-43.6	-126.2	180.2	171.5	8.73	20.655			
2,100.0	2,096.7	2,087.1	2,083.5	4.9	4.8	-135.90	-49.6	-129.5	192.0	182.8	9.18	20.917			
2,200.0	2,196.4	2,186.2	2,182.4	5.1	5.1	-137.65	-55.7	-132.8	203.9	194.3	9.63	21.174			
2,300.0	2,296.2	2,285.3	2,281.3	5.4	5.3	-139.20	-61.8	-136.1	216.0	205.9	10.08	21.423			
2,400.0	2,395.9	2,384.4	2,380.1	5.6	5.6	-140.59	-67.8	-139.4	228.2	217.7	10.54	21.663			
2,500.0	2,495.7	2,483.5	2,479.0	5.9	5.8	-141.84	-73.9	-142.7	240.6	229.6	10.99	21.893			
2,600.0	2,595.5	2,582.6	2,577.8	6.2	6.1	-142.96	-80.0	-146.0	253.1	241.6	11.44	22.113			
2,700.0	2,695.2	2,681.7	2,676.7	6.4	6.4	-143.98	-86.1	-149.3	265.6	253.7	11.90	22.323			
2,800.0	2,795.0	2,780.8	2,775.6	6.7	6.6	-144.91	-92.1	-152.6	278.3	265.9	12.35	22.523			
2,900.0	2,894.7	2,879.9	2,874.4	6.9	6.9	-145.75	-98.2	-155.9	290.9	278.1	12.81	22.713			
3,000.0	2,994.5	2,979.0	2,973.3	7.2	7.1	-146.53	-104.3	-159.2	303.7	290.4	13.27	22.893			
3,100.0	3,094.2	3,078.1	3,072.2	7.4	7.4	-147.24	-110.3	-162.5	316.5	302.8	13.72	23.065			
3,200.0	3,194.0	3,177.2	3,171.0	7.7	7.7	-147.90	-116.4	-165.8	329.3	315.2	14.18	23.228			
3,300.0	3,293.7	3,276.3	3,269.9	7.9	7.9	-148.51	-122.5	-169.1	342.2	327.6	14.64	23.383			
3,400.0	3,393.5	3,375.4	3,368.7	8.2	8.2	-149.07	-128.6	-172.4	355.2	340.1	15.09	23.531			
3,500.0	3,493.3	3,474.5	3,467.6	8.4	8.4	-149.60	-134.6	-175.8	368.1	352.6	15.55	23.672			
3,600.0	3,593.0	3,573.6	3,566.5	8.7	8.7	-150.09	-140.7	-179.1	381.1	365.1	16.01	23.806			
3,700.0	3,692.8	3,672.7	3,665.3	9.0	9.0	-150.54	-146.8	-182.4	394.1	377.6	16.47	23.935			
3,800.0	3,792.5	3,771.8	3,764.2	9.2	9.2	-150.97	-152.9	-185.7	407.1	390.2	16.92	24.057			
3,900.0	3,892.3	3,870.9	3,863.1	9.5	9.5	-151.37	-158.9	-189.0	420.2	402.8	17.38	24.173			
4,000.0	3,992.0	3,970.0	3,961.9	9.7	9.8	-151.75	-165.0	-192.3	433.2	415.4	17.84	24.285			
4,100.0	4,091.8	4,069.1	4,060.8	10.0	10.0	-152.10	-171.1	-195.6	446.3	428.0	18.30	24.392			
4,200.0	4,191.6	4,168.2	4,159.6	10.2	10.3	-152.44	-177.1	-198.9	459.4	440.7	18.76	24.494			
4,300.0	4,291.3	4,267.4	4,258.5	10.5	10.5	-152.75	-183.2	-202.2	472.5	453.3	19.22	24.592			
4,400.0	4,391.1	4,366.5	4,357.4	10.7	10.8	-153.05	-189.3	-205.5	485.7	466.0	19.67	24.686			
4,500.0	4,490.8	4,465.6	4,456.2	11.0	11.1	-153.34	-195.4	-208.8	498.8	478.7	20.13	24.776			
4,600.0	4,590.6	4,564.7	4,555.1	11.3	11.3	-153.60	-201.4	-212.1	512.0	491.4	20.59	24.862			
4,700.0	4,690.3	4,663.8	4,653.9	11.5	11.6	-153.86	-207.5	-215.4	525.1	504.1	21.05	24.946			
4,800.0	4,790.1	4,762.9	4,752.8	11.8	11.8	-154.10	-213.6	-218.7	538.3	516.8	21.51	25.025			
4,900.0	4,889.9	4,862.0	4,851.7	12.0	12.1	-154.33	-219.7	-222.0	551.5	529.5	21.97	25.102			
5,000.0	4,989.6	4,961.1	4,950.5	12.3	12.4	-154.55	-225.7	-225.3	564.7	542.3	22.43	25.176			

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1413A - 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		
5,100.0	5,089.4	5,060.2	5,049.4	12.5	12.6	-154.76	-231.8	-228.6	577.9	555.0	22.89	25.248		
5,200.0	5,189.1	5,159.3	5,148.3	12.8	12.9	-154.96	-237.9	-231.9	591.1	567.7	23.35	25.316		
5,300.0	5,288.9	5,258.4	5,247.1	13.1	13.2	-155.16	-243.9	-235.2	604.3	580.5	23.81	25.383		
5,400.0	5,388.5	5,357.2	5,345.7	13.3	13.4	-155.07	-250.0	-238.5	619.1	595.0	24.11	25.681		
5,500.0	5,485.3	5,400.0	5,388.2	13.7	13.5	-153.78	-254.1	-240.8	651.8	628.1	23.66	27.550		
5,600.0	5,575.7	5,450.0	5,437.2	14.3	13.7	-151.32	-262.8	-245.5	707.0	684.2	22.83	30.969		
5,700.0	5,656.3	5,450.0	5,437.2	15.0	13.7	-145.13	-262.8	-245.5	779.5	757.3	22.23	35.069		
5,800.0	5,724.2	5,482.4	5,468.4	16.0	13.9	-135.26	-270.5	-249.7	864.4	841.1	23.26	37.161		
5,900.0	5,776.9	5,500.0	5,485.1	17.1	14.0	-114.74	-275.5	-252.4	957.3	929.2	28.09	34.086		
6,000.0	5,812.4	5,500.0	5,485.1	18.4	14.0	-77.41	-275.5	-252.4	1,053.4	1,021.8	31.55	33.385		
6,100.0	5,829.5	5,500.0	5,485.1	19.8	14.0	-45.87	-275.5	-252.4	1,149.1	1,124.2	24.89	46.162		
6,200.0	5,831.0	5,500.0	5,485.1	21.2	14.0	-34.19	-275.5	-252.4	1,242.7	1,221.7	20.99	59.191		
6,300.0	5,831.0	5,476.2	5,462.5	22.6	13.9	-28.89	-268.9	-248.8	1,336.9	1,317.4	19.41	68.869		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1415A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-63.93	13.2	-26.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	-63.93	13.2	-26.9	29.9	29.8	0.19	160.110		
200.0	200.0	200.0	200.0	0.3	0.3	-63.93	13.2	-26.9	29.9	29.3	0.64	47.038		
300.0	300.0	300.0	300.0	0.5	0.5	-63.93	13.2	-26.9	29.9	28.9	1.09	27.569		
400.0	400.0	400.0	400.0	0.8	0.8	-63.93	13.2	-26.9	29.9	28.4	1.54	19.498		
500.0	500.0	500.0	500.0	1.0	1.0	-63.93	13.2	-26.9	29.9	28.0	1.99	15.083		
600.0	600.0	600.0	600.0	1.2	1.2	-63.93	13.2	-26.9	29.9	27.5	2.43	12.298		
700.0	700.0	700.0	700.0	1.4	1.4	-62.92	13.2	-26.9	29.1	26.2	2.88	10.093		
800.0	799.8	799.8	799.8	1.7	1.7	-72.84	13.2	-26.9	27.1	23.8	3.33	8.136		
900.0	899.6	899.6	899.6	1.9	1.9	-87.69	13.2	-26.9	25.9	22.1	3.79	6.840		
913.2	912.7	912.7	912.7	1.9	1.9	-89.78	13.1	-26.9	25.9	22.1	3.85	6.733 CC, ES		
1,000.0	999.4	999.0	999.0	2.1	2.1	-106.27	11.4	-26.9	27.1	22.9	4.22	6.422 SF		
1,100.0	1,099.1	1,097.8	1,097.6	2.4	2.3	-126.58	6.3	-26.9	32.9	28.3	4.64	7.107		
1,200.0	1,198.9	1,196.8	1,196.4	2.6	2.4	-141.19	-0.6	-26.8	43.0	38.0	5.05	8.519		
1,300.0	1,298.6	1,295.8	1,295.2	2.9	2.7	-149.94	-7.5	-26.8	54.8	49.4	5.47	10.025		
1,400.0	1,398.4	1,394.9	1,394.0	3.1	2.9	-155.52	-14.4	-26.8	67.4	61.5	5.89	11.448		
1,500.0	1,498.1	1,493.9	1,492.8	3.4	3.1	-159.33	-21.3	-26.7	80.5	74.2	6.32	12.742		
1,600.0	1,597.9	1,592.9	1,591.5	3.6	3.3	-162.07	-28.2	-26.7	93.8	87.0	6.74	13.902		
1,700.0	1,697.6	1,691.9	1,690.3	3.9	3.5	-164.12	-35.1	-26.7	107.2	100.0	7.18	14.939		
1,800.0	1,797.4	1,791.0	1,789.1	4.1	3.8	-165.72	-42.0	-26.6	120.7	113.1	7.61	15.866		
1,900.0	1,897.2	1,890.0	1,887.9	4.4	4.0	-166.99	-48.9	-26.6	134.4	126.3	8.05	16.697		
2,000.0	1,996.9	1,989.0	1,986.7	4.6	4.3	-168.03	-55.8	-26.6	148.1	139.6	8.49	17.445		
2,100.0	2,096.7	2,088.0	2,085.5	4.9	4.5	-168.89	-62.7	-26.6	161.8	152.8	8.93	18.120		
2,200.0	2,196.4	2,187.1	2,184.3	5.1	4.7	-169.62	-69.7	-26.5	175.5	166.1	9.37	18.732		
2,300.0	2,296.2	2,286.1	2,283.1	5.4	5.0	-170.25	-76.6	-26.5	189.3	179.5	9.81	19.289		
2,400.0	2,395.9	2,385.1	2,381.8	5.6	5.2	-170.78	-83.5	-26.5	203.1	192.8	10.26	19.797		
2,500.0	2,495.7	2,484.2	2,480.6	5.9	5.5	-171.25	-90.4	-26.4	216.9	206.2	10.70	20.263		
2,600.0	2,595.5	2,583.2	2,579.4	6.2	5.7	-171.67	-97.3	-26.4	230.7	219.5	11.15	20.691		
2,700.0	2,695.2	2,682.2	2,678.2	6.4	6.0	-172.03	-104.2	-26.4	244.5	232.9	11.60	21.085		
2,800.0	2,795.0	2,781.2	2,777.0	6.7	6.2	-172.36	-111.1	-26.3	258.4	246.3	12.05	21.450		
2,900.0	2,894.7	2,880.3	2,875.8	6.9	6.5	-172.65	-118.0	-26.3	272.2	259.7	12.49	21.788		
3,000.0	2,994.5	2,979.3	2,974.6	7.2	6.8	-172.92	-124.9	-26.3	286.1	273.1	12.94	22.102		
3,100.0	3,094.2	3,078.3	3,073.3	7.4	7.0	-173.16	-131.8	-26.2	299.9	286.5	13.39	22.394		
3,200.0	3,194.0	3,177.4	3,172.1	7.7	7.3	-173.38	-138.7	-26.2	313.8	299.9	13.84	22.668		
3,300.0	3,293.7	3,276.4	3,270.9	7.9	7.5	-173.58	-145.6	-26.2	327.6	313.3	14.29	22.923		
3,400.0	3,393.5	3,375.4	3,369.7	8.2	7.8	-173.77	-152.5	-26.1	341.5	326.8	14.74	23.163		
3,500.0	3,493.3	3,474.4	3,468.5	8.4	8.0	-173.94	-159.5	-26.1	355.4	340.2	15.19	23.389		
3,600.0	3,593.0	3,573.5	3,567.3	8.7	8.3	-174.09	-166.4	-26.1	369.3	353.6	15.65	23.601		
3,700.0	3,692.8	3,672.5	3,666.1	9.0	8.5	-174.24	-173.3	-26.1	383.1	367.0	16.10	23.800		
3,800.0	3,792.5	3,771.5	3,764.8	9.2	8.8	-174.38	-180.2	-26.0	397.0	380.5	16.55	23.989		
3,900.0	3,892.3	3,870.5	3,863.6	9.5	9.1	-174.50	-187.1	-26.0	410.9	393.9	17.00	24.168		
4,000.0	3,992.0	3,969.6	3,962.4	9.7	9.3	-174.62	-194.0	-26.0	424.8	407.3	17.45	24.337		
4,100.0	4,091.8	4,068.6	4,061.2	10.0	9.6	-174.73	-200.9	-25.9	438.7	420.8	17.91	24.497		
4,200.0	4,191.6	4,167.6	4,160.0	10.2	9.8	-174.84	-207.8	-25.9	452.6	434.2	18.36	24.649		
4,300.0	4,291.3	4,266.7	4,258.8	10.5	10.1	-174.94	-214.7	-25.9	466.4	447.6	18.81	24.794		
4,400.0	4,391.1	4,365.7	4,357.6	10.7	10.4	-175.03	-221.6	-25.8	480.3	461.1	19.27	24.932		
4,500.0	4,490.8	4,464.7	4,456.4	11.0	10.6	-175.11	-228.5	-25.8	494.2	474.5	19.72	25.063		
4,600.0	4,590.6	4,563.7	4,555.1	11.3	10.9	-175.20	-235.4	-25.8	508.1	487.9	20.17	25.189		
4,700.0	4,690.3	4,662.8	4,653.9	11.5	11.1	-175.28	-242.3	-25.7	522.0	501.4	20.63	25.309		
4,800.0	4,790.1	4,761.8	4,752.7	11.8	11.4	-175.35	-249.3	-25.7	535.9	514.8	21.08	25.423		
4,900.0	4,889.9	4,860.8	4,851.5	12.0	11.7	-175.42	-256.2	-25.7	549.8	528.3	21.53	25.533		
5,000.0	4,989.6	4,959.9	4,950.3	12.3	11.9	-175.49	-263.1	-25.6	563.7	541.7	21.99	25.638		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1415A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,089.4	5,058.9	5,049.1	12.5	12.2	-175.55	-270.0	-25.6	577.6	555.1	22.44	25.738		
5,200.0	5,189.1	5,157.9	5,147.9	12.8	12.4	-175.61	-276.9	-25.6	591.5	568.6	22.89	25.835		
5,300.0	5,288.9	5,256.9	5,246.6	13.1	12.7	-175.67	-283.8	-25.5	605.4	582.0	23.35	25.928		
5,400.0	5,388.5	5,355.7	5,345.2	13.3	12.9	-175.67	-290.7	-25.5	621.0	597.3	23.61	26.295		
5,500.0	5,485.3	5,400.0	5,389.2	13.7	13.1	-175.44	-295.5	-25.5	655.7	632.8	22.95	28.567		
5,600.0	5,575.7	5,433.5	5,422.1	14.3	13.2	-174.90	-301.7	-25.5	713.8	692.3	21.53	33.159		
5,700.0	5,656.3	5,450.0	5,438.2	15.0	13.3	-173.68	-305.5	-25.5	790.4	771.0	19.42	40.698		
5,800.0	5,724.2	5,477.0	5,464.2	16.0	13.4	-171.13	-312.8	-25.4	879.4	862.5	16.96	51.844		
5,900.0	5,776.9	5,500.0	5,486.0	17.1	13.5	-162.65	-320.1	-25.4	976.4	960.7	15.72	62.104		
6,000.0	5,812.4	5,500.0	5,486.0	18.4	13.5	-47.49	-320.1	-25.4	1,076.0	1,051.3	24.69	43.578		
6,100.0	5,829.5	5,500.0	5,486.0	19.8	13.5	-10.49	-320.1	-25.4	1,174.9	1,164.7	10.18	115.356		
6,200.0	5,831.0	5,474.4	5,461.6	21.2	13.4	-1.49	-312.0	-25.4	1,270.3	1,261.9	8.37	151.790		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1416B - 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	-151.86	-44.5	-23.8	50.5					
100.0	100.0	100.0	100.0	0.1	0.1	-151.86	-44.5	-23.8	50.5	50.3	0.19	270.059		
200.0	200.0	200.0	200.0	0.3	0.3	-151.86	-44.5	-23.8	50.5	49.9	0.64	79.339		
300.0	300.0	300.0	300.0	0.5	0.5	-151.86	-44.5	-23.8	50.5	49.4	1.09	46.500		
400.0	400.0	400.0	400.0	0.8	0.8	-151.86	-44.5	-23.8	50.5	49.0	1.54	32.888		
500.0	500.0	500.0	500.0	1.0	1.0	-151.86	-44.5	-23.8	50.5	48.5	1.99	25.440		
600.0	600.0	600.0	600.0	1.2	1.2	-151.86	-44.5	-23.8	50.5	48.1	2.43	20.743	CC, ES	
700.0	700.0	700.0	700.0	1.4	1.4	-148.86	-44.5	-23.8	52.0	49.1	2.89	18.018		
800.0	799.8	799.8	799.8	1.7	1.7	-151.56	-44.5	-23.8	56.5	53.2	3.34	16.942		
900.0	899.6	899.6	899.6	1.9	1.9	-154.60	-44.5	-23.8	62.8	59.0	3.79	16.569		
1,000.0	999.4	999.4	999.4	2.1	2.1	-157.08	-44.5	-23.8	69.1	64.9	4.24	16.305	SF	
1,100.0	1,099.1	1,096.9	1,096.9	2.4	2.3	-159.75	-46.1	-23.4	77.0	72.4	4.66	16.519		
1,200.0	1,198.9	1,193.8	1,193.6	2.6	2.5	-162.99	-50.8	-22.0	88.0	82.9	5.07	17.364		
1,300.0	1,298.6	1,292.7	1,292.3	2.9	2.7	-166.04	-57.5	-20.2	100.9	95.4	5.48	18.409		
1,400.0	1,398.4	1,391.7	1,391.1	3.1	2.9	-168.40	-64.1	-18.3	114.0	108.2	5.90	19.336		
1,500.0	1,498.1	1,490.7	1,489.9	3.4	3.1	-170.27	-70.8	-16.4	127.3	121.0	6.32	20.149		
1,600.0	1,597.9	1,589.8	1,588.7	3.6	3.3	-171.78	-77.4	-14.6	140.7	134.0	6.75	20.863		
1,700.0	1,697.6	1,688.8	1,687.5	3.9	3.5	-173.04	-84.1	-12.7	154.2	147.0	7.17	21.493		
1,800.0	1,797.4	1,787.8	1,786.2	4.1	3.7	-174.09	-90.7	-10.8	167.7	160.1	7.61	22.050		
1,900.0	1,897.2	1,886.9	1,885.0	4.4	4.0	-174.98	-97.4	-8.9	181.3	173.3	8.04	22.546		
2,000.0	1,996.9	1,985.9	1,983.8	4.6	4.2	-175.75	-104.0	-7.1	194.9	186.4	8.48	22.990		
2,100.0	2,096.7	2,085.0	2,082.6	4.9	4.4	-176.42	-110.7	-5.2	208.6	199.7	8.92	23.389		
2,200.0	2,196.4	2,184.0	2,181.4	5.1	4.7	-177.00	-117.3	-3.3	222.2	212.9	9.36	23.749		
2,300.0	2,296.2	2,283.0	2,280.2	5.4	4.9	-177.52	-124.0	-1.5	235.9	226.1	9.80	24.075		
2,400.0	2,395.9	2,382.1	2,379.0	5.6	5.2	-177.98	-130.6	0.4	249.6	239.4	10.24	24.371		
2,500.0	2,495.7	2,481.1	2,477.8	5.9	5.4	-178.40	-137.3	2.3	263.4	252.7	10.69	24.642		
2,600.0	2,595.5	2,580.1	2,576.6	6.2	5.7	-178.77	-143.9	4.2	277.1	266.0	11.13	24.890		
2,700.0	2,695.2	2,679.2	2,675.4	6.4	5.9	-179.11	-150.6	6.0	290.9	279.3	11.58	25.118		
2,800.0	2,795.0	2,778.2	2,774.2	6.7	6.2	-179.41	-157.2	7.9	304.6	292.6	12.03	25.328		
2,900.0	2,894.7	2,877.2	2,873.0	6.9	6.4	-179.69	-163.9	9.8	318.4	305.9	12.47	25.522		
3,000.0	2,994.5	2,976.3	2,971.8	7.2	6.7	-179.95	-170.5	11.6	332.1	319.2	12.92	25.703		
3,100.0	3,094.2	3,075.3	3,070.6	7.4	6.9	179.81	-177.2	13.5	345.9	332.5	13.37	25.870		
3,200.0	3,194.0	3,174.4	3,169.4	7.7	7.2	179.59	-183.8	15.4	359.7	345.9	13.82	26.026		
3,300.0	3,293.7	3,273.4	3,268.2	7.9	7.4	179.39	-190.5	17.3	373.5	359.2	14.27	26.172		
3,400.0	3,393.5	3,372.4	3,367.0	8.2	7.7	179.20	-197.1	19.1	387.3	372.5	14.72	26.308		
3,500.0	3,493.3	3,471.5	3,465.8	8.4	7.9	179.03	-203.8	21.0	401.1	385.9	15.17	26.436		
3,600.0	3,593.0	3,570.5	3,564.6	8.7	8.2	178.87	-210.4	22.9	414.9	399.2	15.62	26.556		
3,700.0	3,692.8	3,669.5	3,663.4	9.0	8.5	178.71	-217.1	24.7	428.7	412.6	16.07	26.670		
3,800.0	3,792.5	3,768.6	3,762.2	9.2	8.7	178.57	-223.7	26.6	442.5	425.9	16.52	26.776		
3,900.0	3,892.3	3,867.6	3,861.0	9.5	9.0	178.43	-230.4	28.5	456.3	439.3	16.98	26.877		
4,000.0	3,992.0	3,966.7	3,959.8	9.7	9.2	178.31	-237.0	30.4	470.1	452.6	17.43	26.972		
4,100.0	4,091.8	4,065.7	4,058.5	10.0	9.5	178.19	-243.7	32.2	483.9	466.0	17.88	27.062		
4,200.0	4,191.6	4,164.7	4,157.3	10.2	9.7	178.08	-250.3	34.1	497.7	479.4	18.33	27.148		
4,300.0	4,291.3	4,263.8	4,256.1	10.5	10.0	177.97	-257.0	36.0	511.5	492.7	18.79	27.229		
4,400.0	4,391.1	4,362.8	4,354.9	10.7	10.3	177.87	-263.6	37.8	525.3	506.1	19.24	27.306		
4,500.0	4,490.8	4,461.8	4,453.7	11.0	10.5	177.77	-270.3	39.7	539.1	519.4	19.69	27.380		
4,600.0	4,590.6	4,560.9	4,552.5	11.3	10.8	177.68	-276.9	41.6	553.0	532.8	20.14	27.450		
4,700.0	4,690.3	4,659.9	4,651.3	11.5	11.0	177.59	-283.6	43.5	566.8	546.2	20.60	27.517		
4,800.0	4,790.1	4,758.9	4,750.1	11.8	11.3	177.51	-290.2	45.3	580.6	559.5	21.05	27.581		
4,900.0	4,889.9	4,858.0	4,848.9	12.0	11.6	177.43	-296.9	47.2	594.4	572.9	21.50	27.642		
5,000.0	4,989.6	4,957.0	4,947.7	12.3	11.8	177.36	-303.5	49.1	608.2	586.3	21.96	27.700		
5,100.0	5,089.4	5,056.1	5,046.5	12.5	12.1	177.28	-310.2	50.9	622.1	599.7	22.41	27.756		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11H-1416B - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-ISWWSA 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	5,189.1	5,155.1	5,145.3	12.8	12.3	177.22	-316.8	52.8	635.9	613.0	22.87	27.810		
5,300.0	5,288.9	5,254.1	5,244.1	13.1	12.6	177.15	-323.5	54.7	649.7	626.4	23.32	27.861		
5,400.0	5,388.5	5,352.9	5,342.6	13.3	12.9	177.05	-330.1	56.6	665.2	641.6	23.59	28.203		
5,500.0	5,485.3	5,447.8	5,437.3	13.7	13.1	176.88	-336.5	58.4	696.2	673.2	23.02	30.240		
5,600.0	5,575.7	5,500.0	5,489.2	14.3	13.3	176.55	-341.5	59.8	747.2	725.6	21.60	34.587		
5,700.0	5,656.3	5,518.9	5,507.9	15.0	13.3	175.84	-344.5	60.6	817.7	798.2	19.43	42.078		
5,800.0	5,724.2	5,550.0	5,538.2	16.0	13.4	174.44	-350.9	62.4	903.1	886.3	16.78	53.827		
5,900.0	5,776.9	5,550.0	5,538.2	17.1	13.4	170.06	-350.9	62.4	997.5	983.2	14.21	70.181		
6,000.0	5,812.4	5,550.0	5,538.2	18.4	13.4	113.55	-350.9	62.4	1,096.6	1,067.3	29.30	37.428		
6,100.0	5,829.5	5,550.0	5,538.2	19.8	13.4	10.57	-350.9	62.4	1,196.0	1,185.7	10.32	115.899		
6,200.0	5,831.0	5,550.0	5,538.2	21.2	13.4	14.67	-350.9	62.4	1,293.5	1,281.5	12.00	107.828		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor 11-0241H (Existing) - Existing - Existing													Offset Site Error:	0.0 ft
Survey Program: 132-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		
0.0	0.0	0.0	0.0	0.0	0.0	-100.41	-45.7	-248.4	252.6					
100.0	100.0	94.4	94.4	0.1	0.1	-100.39	-45.7	-249.3	253.6	253.4	0.20	1,285.234		
200.0	200.0	192.0	191.9	0.3	0.3	-100.31	-45.8	-252.0	256.2	255.6	0.59	434.741		
300.0	300.0	291.7	291.6	0.5	0.5	-100.05	-45.2	-255.1	259.2	258.2	1.03	252.177		
400.0	400.0	392.3	392.2	0.8	0.7	-99.65	-43.9	-258.3	262.1	260.6	1.47	178.843		
500.0	500.0	492.1	491.9	1.0	0.9	-99.23	-42.5	-261.3	264.9	263.0	1.90	139.178		
600.0	600.0	591.2	590.9	1.2	1.2	-98.79	-40.9	-264.6	267.9	265.5	2.35	114.165		
700.0	700.0	692.4	692.1	1.4	1.4	-94.64	-39.2	-267.9	271.0	268.2	2.79	97.245		
800.0	799.8	794.9	794.5	1.7	1.6	-95.39	-38.0	-270.3	273.6	270.4	3.22	85.075		
900.0	899.6	894.4	894.0	1.9	1.8	-96.65	-37.5	-272.3	276.2	272.5	3.65	75.601		
1,000.0	999.4	996.0	995.6	2.1	2.0	-97.99	-37.3	-273.8	278.5	274.4	4.10	67.932		
1,100.0	1,099.1	1,096.3	1,095.8	2.4	2.2	-99.50	-38.0	-274.7	280.6	276.0	4.54	61.760		
1,200.0	1,198.9	1,196.5	1,196.1	2.6	2.4	-101.07	-39.0	-275.4	282.7	277.7	4.99	56.634		
1,300.0	1,298.6	1,297.0	1,296.5	2.9	2.6	-102.70	-40.3	-275.6	284.7	279.3	5.45	52.282		
1,400.0	1,398.4	1,395.5	1,395.1	3.1	2.8	-104.38	-42.2	-275.7	287.1	281.2	5.90	48.674		
1,500.0	1,498.1	1,494.1	1,493.6	3.4	3.0	-106.14	-44.6	-276.1	290.1	283.7	6.35	45.670		
1,600.0	1,597.9	1,591.6	1,591.0	3.6	3.2	-107.89	-47.4	-276.7	293.8	287.0	6.81	43.161		
1,700.0	1,697.6	1,689.3	1,688.7	3.9	3.4	-109.73	-51.3	-277.8	298.6	291.3	7.26	41.115		
1,800.0	1,797.4	1,787.5	1,786.8	4.1	3.6	-111.60	-55.6	-279.1	304.1	296.4	7.72	39.407		
1,900.0	1,897.2	1,886.4	1,885.6	4.4	3.9	-113.33	-59.7	-280.8	310.3	302.1	8.17	37.979		
2,000.0	1,996.9	1,991.9	1,991.0	4.6	4.1	-115.10	-63.8	-282.2	316.1	307.4	8.63	36.614		
2,100.0	2,096.7	2,092.1	2,091.1	4.9	4.3	-116.62	-66.3	-282.2	320.4	311.4	9.09	35.270		
2,200.0	2,196.4	2,184.0	2,183.0	5.1	4.5	-118.04	-69.5	-283.1	326.3	316.7	9.53	34.247		
2,300.0	2,296.2	2,298.4	2,297.3	5.4	4.7	-119.70	-73.0	-283.7	331.8	321.8	10.01	33.157		
2,400.0	2,395.9	2,396.4	2,395.3	5.6	4.9	-121.21	-75.2	-281.9	335.1	324.7	10.45	32.058		
2,500.0	2,495.7	2,495.7	2,494.5	5.9	5.2	-122.87	-78.3	-279.5	338.7	327.8	10.91	31.057		
2,600.0	2,595.5	2,585.3	2,584.0	6.2	5.3	-124.27	-81.8	-278.8	344.4	333.0	11.34	30.377		
2,700.0	2,695.2	2,689.5	2,688.1	6.4	5.6	-125.73	-85.5	-278.9	350.7	338.9	11.79	29.743		
2,800.0	2,795.0	2,792.8	2,791.4	6.7	5.8	-127.22	-89.5	-278.3	356.9	344.6	12.25	29.144		
2,900.0	2,894.7	2,907.5	2,906.0	6.9	6.0	-128.76	-90.2	-274.2	358.8	346.1	12.72	28.210		
3,000.0	2,994.5	3,006.3	3,004.7	7.2	6.2	-130.08	-90.3	-270.0	360.2	347.1	13.16	27.373		
3,100.0	3,094.2	3,105.8	3,104.1	7.4	6.4	-131.39	-90.3	-265.7	361.7	348.1	13.60	26.596		
3,200.0	3,194.0	3,203.3	3,201.5	7.7	6.6	-132.67	-90.7	-261.7	363.8	349.8	14.04	25.913		
3,300.0	3,293.7	3,300.1	3,298.3	7.9	6.8	-133.86	-91.1	-258.6	366.8	352.3	14.48	25.333		
3,400.0	3,393.5	3,397.3	3,395.4	8.2	7.0	-134.95	-91.8	-256.3	370.7	355.7	14.92	24.848		
3,500.0	3,493.3	3,496.1	3,494.2	8.4	7.2	-136.01	-92.8	-254.4	375.2	359.8	15.36	24.424		
3,600.0	3,593.0	3,596.7	3,594.8	8.7	7.5	-137.09	-93.9	-252.4	379.8	363.9	15.80	24.030		
3,700.0	3,692.8	3,698.8	3,696.9	9.0	7.7	-138.21	-94.8	-249.7	384.0	367.8	16.24	23.640		
3,800.0	3,792.5	3,801.4	3,799.4	9.2	7.9	-139.34	-95.3	-246.4	387.7	371.0	16.69	23.236		
3,900.0	3,892.3	3,902.9	3,900.9	9.5	8.1	-140.47	-95.3	-242.6	390.9	373.7	17.12	22.827		
4,000.0	3,992.0	3,990.6	3,988.5	9.7	8.3	-141.28	-95.6	-240.7	395.3	377.8	17.53	22.545		
4,100.0	4,091.8	4,089.0	4,086.9	10.0	8.5	-141.92	-96.7	-241.3	402.0	384.0	17.97	22.368		
4,200.0	4,191.6	4,189.0	4,186.9	10.2	8.7	-142.56	-97.7	-241.6	408.5	390.1	18.41	22.188		
4,300.0	4,291.3	4,287.9	4,285.8	10.5	8.9	-143.19	-98.8	-241.9	415.2	396.3	18.85	22.023		
4,400.0	4,391.1	4,386.0	4,383.9	10.7	9.1	-143.77	-100.1	-242.5	422.2	402.9	19.29	21.890		
4,500.0	4,490.8	4,482.0	4,479.9	11.0	9.3	-144.30	-101.5	-243.5	429.7	410.0	19.72	21.789		
4,600.0	4,590.6	4,577.0	4,574.8	11.3	9.5	-144.81	-103.7	-244.7	438.0	417.9	20.15	21.734		
4,700.0	4,690.3	4,672.0	4,669.8	11.5	9.7	-145.38	-107.0	-246.0	447.4	426.9	20.59	21.734		
4,800.0	4,790.1	4,769.2	4,766.9	11.8	9.9	-145.89	-110.9	-248.1	457.8	436.8	21.02	21.775		
4,900.0	4,889.9	4,892.7	4,890.4	12.0	10.2	-146.29	-112.4	-250.8	465.6	444.1	21.51	21.650		
5,000.0	4,989.6	5,006.1	5,003.7	12.3	10.4	-146.71	-110.3	-250.6	469.8	447.8	21.97	21.383		
5,100.0	5,089.4	5,110.9	5,108.3	12.5	10.6	-146.64	-104.4	-252.6	471.6	449.2	22.42	21.034		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor 11-0241H (Existing) - Existing - Existing													Offset Site Error: 0.0 ft	
Survey Program: 132-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	5,189.1	5,207.5	5,204.7	12.8	10.8	-146.56	-99.0	-254.6	473.5	450.7	22.86	20.714		
5,300.0	5,288.9	5,309.8	5,306.9	13.1	11.0	-146.51	-93.9	-256.8	476.1	452.8	23.31	20.426		
5,400.0	5,388.5	5,615.9	5,594.2	13.3	11.6	-142.29	2.0	-261.2	454.0	429.8	24.18	18.775		
5,500.0	5,485.3	5,788.0	5,729.5	13.7	12.3	-140.28	107.4	-255.7	416.8	392.3	24.45	17.045		
5,600.0	5,575.7	5,922.6	5,817.1	14.3	13.1	-137.97	209.3	-257.9	382.4	357.8	24.62	15.534		
5,700.0	5,656.3	6,098.8	5,903.9	15.0	14.6	-133.77	362.2	-257.4	347.8	322.2	25.62	13.579		
5,800.0	5,724.2	6,274.6	5,942.3	16.0	16.7	-127.51	532.4	-248.5	304.4	276.3	28.06	10.847		
5,900.0	5,776.9	6,368.9	5,942.7	17.1	17.9	-124.49	626.5	-242.9	260.7	230.6	30.05	8.675		
6,000.0	5,812.4	6,455.1	5,940.7	18.4	19.0	-122.14	712.7	-239.3	229.7	197.4	32.31	7.110		
6,100.0	5,829.5	6,546.2	5,939.4	19.8	20.1	-121.09	803.7	-237.7	212.5	177.8	34.65	6.132		
6,200.0	5,831.0	6,641.3	5,939.9	21.2	21.4	-121.82	898.8	-238.5	207.6	170.9	36.73	5.652		
6,271.3	5,831.0	6,713.7	5,939.4	22.2	22.5	-121.85	971.2	-239.7	206.5	167.9	38.58	5.352 CC		
6,300.0	5,831.0	6,739.2	5,939.2	22.6	22.9	-121.66	996.7	-240.5	207.3	168.0	39.31	5.272		
6,400.0	5,831.0	6,835.0	5,937.8	24.2	24.4	-120.89	1,092.4	-245.0	209.3	167.0	42.31	4.948		
6,500.0	5,831.0	6,930.6	5,937.5	25.9	25.8	-120.13	1,187.8	-251.4	213.7	168.4	45.32	4.715		
6,600.0	5,831.0	7,030.6	5,940.2	27.5	27.4	-120.07	1,287.5	-258.0	219.4	171.2	48.23	4.550		
6,700.0	5,831.0	7,133.1	5,940.1	29.2	29.0	-119.35	1,389.8	-265.0	224.1	172.6	51.53	4.349		
6,800.0	5,831.0	7,235.4	5,940.3	31.0	30.7	-118.91	1,491.9	-270.5	227.6	172.8	54.78	4.155		
6,900.0	5,831.0	7,332.9	5,940.8	32.7	32.3	-118.45	1,589.2	-276.5	231.9	173.9	57.98	3.999		
7,000.0	5,831.0	7,430.8	5,941.1	34.5	33.9	-117.88	1,686.9	-283.5	237.1	175.8	61.32	3.866		
7,100.0	5,831.0	7,540.7	5,941.3	36.3	35.7	-117.57	1,796.6	-288.3	239.6	174.9	64.75	3.700		
7,200.0	5,831.0	7,639.2	5,941.6	38.1	37.3	-117.47	1,895.1	-291.3	241.1	173.2	67.91	3.551		
7,300.0	5,831.0	7,744.2	5,943.9	39.9	39.1	-117.77	2,000.1	-294.4	243.6	172.6	70.96	3.433		
7,316.3	5,831.0	7,760.8	5,944.1	40.2	39.4	-117.83	2,016.7	-294.5	243.6	172.1	71.46	3.408		
7,400.0	5,831.0	7,842.9	5,944.5	41.7	40.8	-117.88	2,098.7	-296.0	243.9	169.8	74.10	3.292		
7,500.0	5,831.0	7,941.2	5,943.7	43.6	42.5	-117.63	2,197.0	-298.3	244.3	166.9	77.42	3.156		
7,600.0	5,831.0	8,044.7	5,943.6	45.4	44.2	-117.52	2,300.4	-300.5	244.9	164.1	80.77	3.032		
7,700.0	5,831.0	8,145.3	5,943.0	47.3	45.9	-117.51	2,401.1	-300.9	243.7	159.7	84.00	2.901		
7,800.0	5,831.0	8,247.0	5,942.6	49.1	47.7	-117.59	2,502.7	-301.0	242.3	155.1	87.19	2.779		
7,900.0	5,831.0	8,345.7	5,942.5	51.0	49.4	-117.65	2,601.4	-301.7	241.5	151.2	90.37	2.673		
8,000.0	5,831.0	8,449.0	5,942.9	52.8	51.2	-117.96	2,704.7	-301.2	239.9	146.5	93.45	2.568		
8,081.9	5,831.0	8,526.0	5,944.0	54.4	52.5	-118.34	2,781.8	-301.0	239.3	143.5	95.74	2.499		
8,100.0	5,831.0	8,543.3	5,944.2	54.7	52.8	-118.41	2,799.0	-301.1	239.3	143.0	96.27	2.485		
8,200.0	5,831.0	8,641.3	5,945.3	56.6	54.5	-118.60	2,897.0	-302.8	240.0	140.6	99.36	2.415		
8,300.0	5,831.0	8,737.7	5,947.4	58.4	56.2	-118.91	2,993.3	-305.3	242.0	139.7	102.27	2.366		
8,400.0	5,831.0	8,850.0	5,946.7	60.3	58.2	-118.71	3,105.6	-307.5	242.2	136.3	105.90	2.287		
8,500.0	5,831.0	8,945.4	5,946.0	62.2	59.8	-118.73	3,201.0	-307.5	240.5	131.5	109.03	2.206		
8,522.6	5,831.0	8,966.5	5,946.4	62.6	60.1	-118.85	3,222.1	-307.5	240.4	130.8	109.62	2.193		
8,600.0	5,831.0	9,044.8	5,948.9	64.1	61.5	-119.51	3,300.4	-307.4	240.5	129.0	111.55	2.156		
8,638.3	5,831.0	9,082.2	5,949.8	64.8	62.1	-119.79	3,337.7	-307.1	240.2	127.7	112.51	2.135		
8,700.0	5,831.0	9,139.8	5,951.8	66.0	63.1	-120.26	3,395.3	-307.5	240.9	127.0	113.98	2.114		
8,800.0	5,831.0	9,242.1	5,955.0	67.9	64.9	-120.86	3,497.5	-309.5	242.9	126.3	116.66	2.082		
8,900.0	5,831.0	9,337.6	5,957.8	69.7	66.6	-121.31	3,593.0	-311.9	245.3	125.9	119.36	2.055		
9,000.0	5,831.0	9,436.1	5,961.6	71.6	68.4	-121.71	3,691.3	-316.1	249.7	127.6	122.11	2.045		
9,100.0	5,831.0	9,540.9	5,964.4	73.5	70.2	-121.96	3,795.9	-320.2	253.3	128.2	125.09	2.025		
9,200.0	5,831.0	9,642.9	5,966.7	75.4	72.0	-122.42	3,897.9	-321.6	254.3	126.5	127.81	1.990		
9,300.0	5,831.0	9,740.6	5,969.0	77.3	73.7	-122.75	3,995.6	-323.7	256.2	125.6	130.56	1.962		
9,400.0	5,831.0	9,842.2	5,971.3	79.2	75.5	-123.24	4,097.1	-324.8	257.1	123.9	133.17	1.930		
9,500.0	5,831.0	9,941.7	5,972.6	81.1	77.3	-123.54	4,196.6	-325.7	257.3	121.4	135.95	1.893		
9,600.0	5,831.0	10,041.7	5,974.3	83.0	79.0	-123.86	4,296.6	-327.3	258.4	119.7	138.67	1.863		
9,700.0	5,831.0	10,145.6	5,976.2	84.9	80.9	-124.30	4,400.5	-328.0	258.7	117.4	141.31	1.831		
9,800.0	5,831.0	10,245.5	5,976.5	86.8	82.7	-124.50	4,500.3	-328.4	258.0	113.8	144.18	1.790		

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 #11H-0215A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4971.3ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11H-0215A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor 11-0241H (Existing) - Existing - Existing													Offset Site Error:	0.0 ft
Survey Program: 132-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		
9,900.0	5,831.0	10,346.3	5,976.8	88.7	84.4	-124.64	4,601.2	-329.2	257.7	110.5	147.13	1.751		
10,000.0	5,831.0	10,448.3	5,976.6	90.6	86.3	-124.82	4,703.2	-329.0	256.1	106.1	150.04	1.707		
10,100.0	5,831.0	10,548.9	5,974.8	92.5	88.1	-124.55	4,803.7	-330.0	254.7	101.1	153.62	1.658		
10,200.0	5,831.0	10,648.6	5,973.3	94.5	89.8	-124.35	4,903.4	-330.9	253.4	96.3	157.05	1.613		
10,300.0	5,831.0	10,748.6	5,971.8	96.4	91.6	-124.13	5,003.4	-331.7	252.0	91.5	160.54	1.570		
10,400.0	5,831.0	10,848.1	5,968.6	98.3	93.4	-123.53	5,102.8	-333.3	250.3	85.7	164.64	1.520		
10,500.0	5,831.0	10,949.3	5,963.7	100.2	95.2	-122.38	5,203.9	-336.3	248.9	79.3	169.64	1.467 Level 3		
10,600.0	5,831.0	11,047.4	5,958.3	102.1	97.0	-121.08	5,301.7	-339.8	247.8	73.0	174.79	1.418 Level 3		
10,700.0	5,831.0	11,147.4	5,953.5	104.0	98.7	-119.96	5,401.6	-342.5	246.4	66.7	179.73	1.371 Level 3		
10,800.0	5,831.0	11,247.0	5,949.5	105.9	100.5	-119.03	5,501.1	-345.0	245.4	61.0	184.40	1.331 Level 3		
10,880.0	5,831.0	11,326.2	5,947.0	107.4	101.9	-118.41	5,580.2	-347.2	245.1	57.2	187.92	1.304 Level 3		
10,900.0	5,831.0	11,344.9	5,946.6	107.8	102.2	-118.31	5,598.9	-347.7	245.1	56.4	188.72	1.299 Level 3		
11,000.0	5,831.0	11,451.6	5,943.7	109.7	104.2	-117.61	5,705.5	-350.1	244.5	51.3	193.19	1.266 Level 3		
11,100.0	5,831.0	11,553.1	5,942.2	111.6	105.9	-117.65	5,807.0	-348.5	241.2	44.7	196.47	1.227 Level 2		
11,200.0	5,831.0	11,654.0	5,941.8	113.5	107.7	-117.91	5,907.8	-346.7	238.1	38.7	199.41	1.194 Level 2		
11,300.0	5,831.0	11,749.6	5,940.6	115.5	109.4	-117.90	6,003.5	-346.0	235.6	32.9	202.68	1.162 Level 2		
11,400.0	5,831.0	11,854.6	5,938.8	117.4	111.3	-117.80	6,108.5	-344.9	232.5	26.2	206.26	1.127 Level 2		
11,500.0	5,831.0	11,947.0	5,938.4	119.3	112.9	-117.95	6,200.9	-344.4	230.4	21.2	209.21	1.102 Level 2		
11,582.3	5,831.0	12,027.8	5,940.0	120.9	114.3	-118.44	6,281.6	-344.4	230.2	19.1	211.12	1.090 Level 2		
11,600.0	5,831.0	12,045.1	5,940.3	121.2	114.6	-118.51	6,299.0	-344.5	230.2	18.6	211.59	1.088 Level 2		
11,700.0	5,831.0	12,145.3	5,940.8	123.1	116.4	-118.65	6,399.1	-345.7	230.2	15.5	214.70	1.072 Level 2		
11,788.6	5,831.0	12,233.8	5,940.1	124.8	118.0	-118.52	6,487.6	-346.8	229.6	11.7	217.87	1.054 Level 2		
11,800.0	5,831.0	12,244.9	5,940.0	125.0	118.2	-118.51	6,498.6	-347.0	229.6	11.4	218.27	1.052 Level 2		
11,900.0	5,831.0	12,340.4	5,940.5	126.9	119.9	-118.48	6,594.2	-349.6	231.0	9.5	221.57	1.043 Level 2		
12,000.0	5,831.0	12,442.6	5,939.8	128.9	121.8	-118.06	6,696.3	-353.3	232.6	6.9	225.69	1.030 Level 2		
12,100.0	5,831.0	12,541.8	5,937.0	130.8	123.6	-117.08	6,795.3	-358.1	234.2	3.5	230.74	1.015 Level 2, ES, SF		
12,186.0	5,831.0	12,562.0	5,936.4	132.4	123.9	-116.86	6,815.5	-359.1	244.6	11.7	232.94	1.050 Level 2		

# Cathedral Energy Services

## Anticollision Report

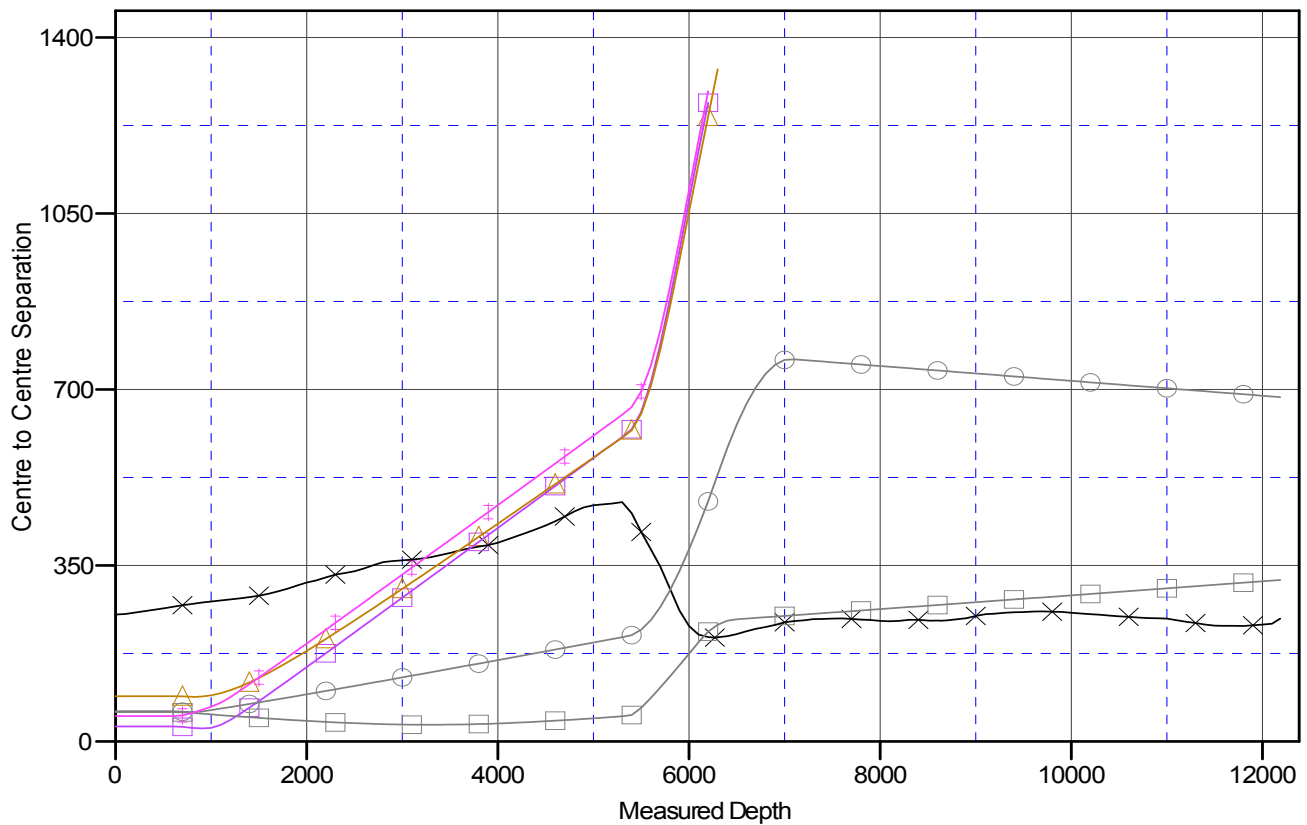
**Company:** Whiting Petroleum Corporation  
**Project:** Weld County, CO  
**Reference Site:** S11-T10N-R58W  
**Site Error:** 0.0ft  
**Reference Well:** Razor #11H-0215A  
**Well Error:** 0.0ft  
**Reference Wellbore:** HZ  
**Reference Design:** Plan #2

**Local Co-ordinate Reference:** Well Razor #11H-0215A  
**TVD Reference:** WELL @ 4971.3ft (Original Well Elev)  
**MD Reference:** WELL @ 4971.3ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** USA EDM 5000 Multi Users DB  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to WELL @ 4971.3ft (Original Well Elev)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor #11H-0215A  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 1.08°

### Ladder Plot



### LEGEND

- \* Razor 11-0241H (Existing), Existing, Existing V0
- Razor #11H-0213A, HZ, Plan #1 V0
- △ Razor #11H-1413A, HZ, Plan #1 V0
- Razor #11H-1415A, HZ, Plan #2 V0
- ▣ Razor #11H-0216B, HZ, Plan #1 V0
- ✦ Razor #11H-1416B, HZ, Plan #1 V0