

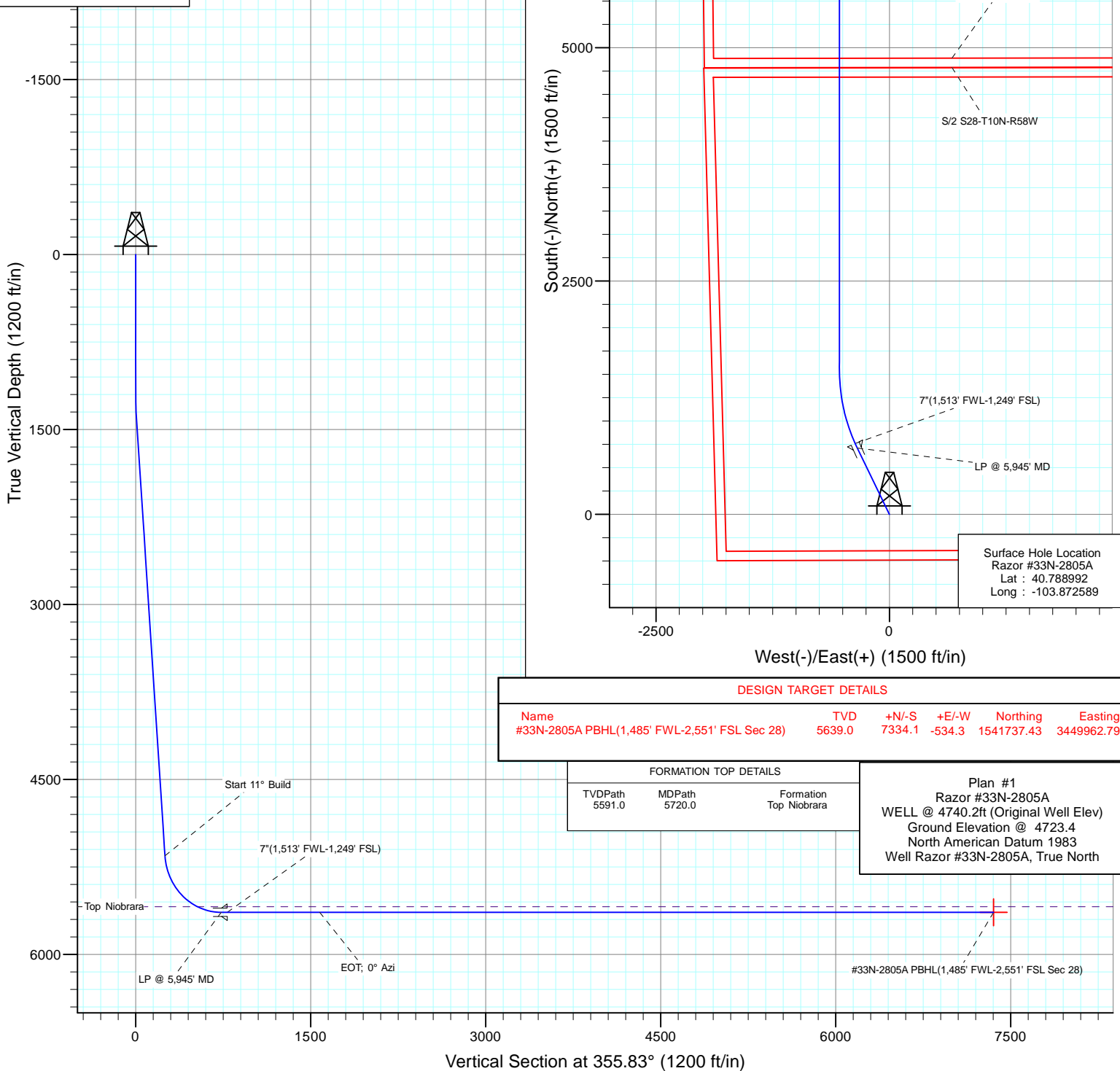
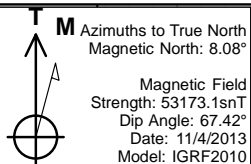


Project: Weld County, CO  
Site: S33-T10N-R58W  
Well: Razor #33N-2805A  
Wellbore: HZ  
Design: Plan #1



#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	KOP @ 1,200' MD
3	1400.0	4.00	334.18	1399.8	6.3	-3.0	2.00	334.18	6.5	EOB; 4" Inc
4	5164.0	4.00	334.18	5154.7	242.6	-117.4	0.00	0.00	250.5	Start 11° Build
5	5945.8	90.00	334.18	5639.2	710.4	-343.7	11.00	0.00	733.5	LP @ 5,945' MD
6	6806.5	90.00	0.00	5639.2	1542.2	-534.4	3.00	90.00	1577.0	EOT; 0° Azi
7	12598.4	90.00	0.00	5639.0	7334.1	-534.3	0.00	0.00	7353.6	PBHL @ 12,598' MD



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
#33N-2805A PBHL(1,485' FWL-2,551' FSL Sec 28)	5639.0	7334.1	-534.3	1541737.43	3449962.79

#### FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION TOP
5591.0	5720.0	Top Niobrara

Plan #1  
Razor #33N-2805A  
WELL @ 4740.2ft (Original Well Elev)  
Ground Elevation @ 4723.4  
North American Datum 1983  
Well Razor #33N-2805A, True North



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33N-2805A	<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		S33-T10N-R58W			
Site Position:		Northing:	1,534,463.93 ft	Latitude:	40.789186
From:	Lat/Long	Easting:	3,449,480.46 ft	Longitude:	-103.876742
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.05 °

Well	Razor #33N-2805A					
Well Position	+N/-S	0.0 ft	Northing:	1,534,414.32 ft	Latitude:	40.788992
	+E/-W	0.0 ft	Easting:	3,450,631.57 ft	Longitude:	-103.872589
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,723.4 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 (nT)</b>
	IGRF2010	11/4/2013	8.08	67.42	53,173

<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	355.83	

<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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,400.0	4.00	334.18	1,399.8	6.3	-3.0	2.00	2.00	0.00	334.18	
5,164.0	4.00	334.18	5,154.7	242.6	-117.4	0.00	0.00	0.00	0.00	
5,945.8	90.00	334.18	5,639.2	710.4	-343.7	11.00	11.00	0.00	0.00	
6,806.5	90.00	0.00	5,639.2	1,542.2	-534.4	3.00	0.00	3.00	90.00	
12,598.4	90.00	0.00	5,639.0	7,334.1	-534.3	0.00	0.00	0.00	0.00	#33N-2805A PBHL(1,



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33N-2805A	<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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1,200' MD
1,300.0	2.00	334.18	1,300.0	1.6	-0.8	1.6	2.00	2.00	
1,400.0	4.00	334.18	1,399.8	6.3	-3.0	6.5	2.00	2.00	EOB; 4° Inc
1,500.0	4.00	334.18	1,499.6	12.6	-6.1	13.0	0.00	0.00	
1,600.0	4.00	334.18	1,599.4	18.8	-9.1	19.5	0.00	0.00	
1,700.0	4.00	334.18	1,699.1	25.1	-12.2	25.9	0.00	0.00	
1,800.0	4.00	334.18	1,798.9	31.4	-15.2	32.4	0.00	0.00	
1,900.0	4.00	334.18	1,898.6	37.7	-18.2	38.9	0.00	0.00	
2,000.0	4.00	334.18	1,998.4	44.0	-21.3	45.4	0.00	0.00	
2,100.0	4.00	334.18	2,098.1	50.2	-24.3	51.9	0.00	0.00	
2,200.0	4.00	334.18	2,197.9	56.5	-27.3	58.4	0.00	0.00	
2,300.0	4.00	334.18	2,297.6	62.8	-30.4	64.8	0.00	0.00	
2,400.0	4.00	334.18	2,397.4	69.1	-33.4	71.3	0.00	0.00	
2,500.0	4.00	334.18	2,497.2	75.4	-36.5	77.8	0.00	0.00	
2,600.0	4.00	334.18	2,596.9	81.6	-39.5	84.3	0.00	0.00	
2,700.0	4.00	334.18	2,696.7	87.9	-42.5	90.8	0.00	0.00	
2,800.0	4.00	334.18	2,796.4	94.2	-45.6	97.3	0.00	0.00	
2,900.0	4.00	334.18	2,896.2	100.5	-48.6	103.7	0.00	0.00	
3,000.0	4.00	334.18	2,995.9	106.7	-51.7	110.2	0.00	0.00	
3,100.0	4.00	334.18	3,095.7	113.0	-54.7	116.7	0.00	0.00	
3,200.0	4.00	334.18	3,195.5	119.3	-57.7	123.2	0.00	0.00	
3,300.0	4.00	334.18	3,295.2	125.6	-60.8	129.7	0.00	0.00	
3,400.0	4.00	334.18	3,395.0	131.9	-63.8	136.2	0.00	0.00	
3,500.0	4.00	334.18	3,494.7	138.1	-66.8	142.6	0.00	0.00	
3,600.0	4.00	334.18	3,594.5	144.4	-69.9	149.1	0.00	0.00	
3,700.0	4.00	334.18	3,694.2	150.7	-72.9	155.6	0.00	0.00	
3,800.0	4.00	334.18	3,794.0	157.0	-76.0	162.1	0.00	0.00	
3,900.0	4.00	334.18	3,893.7	163.3	-79.0	168.6	0.00	0.00	
4,000.0	4.00	334.18	3,993.5	169.5	-82.0	175.1	0.00	0.00	
4,100.0	4.00	334.18	4,093.3	175.8	-85.1	181.5	0.00	0.00	
4,200.0	4.00	334.18	4,193.0	182.1	-88.1	188.0	0.00	0.00	
4,300.0	4.00	334.18	4,292.8	188.4	-91.1	194.5	0.00	0.00	
4,400.0	4.00	334.18	4,392.5	194.7	-94.2	201.0	0.00	0.00	
4,500.0	4.00	334.18	4,492.3	200.9	-97.2	207.5	0.00	0.00	
4,600.0	4.00	334.18	4,592.0	207.2	-100.3	214.0	0.00	0.00	
4,700.0	4.00	334.18	4,691.8	213.5	-103.3	220.4	0.00	0.00	
4,800.0	4.00	334.18	4,791.6	219.8	-106.3	226.9	0.00	0.00	
4,900.0	4.00	334.18	4,891.3	226.1	-109.4	233.4	0.00	0.00	
5,000.0	4.00	334.18	4,991.1	232.3	-112.4	239.9	0.00	0.00	
5,100.0	4.00	334.18	5,090.8	238.6	-115.5	246.4	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 #33N-2805A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33N-2805A	<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
5,164.0	4.00	334.18	5,154.7	242.6	-117.4	250.5	0.00	0.00	Start 11° Build
5,200.0	7.96	334.18	5,190.5	246.0	-119.0	254.0	11.00	11.00	
5,300.0	18.96	334.18	5,287.6	266.9	-129.2	275.6	11.00	11.00	
5,400.0	29.96	334.18	5,378.5	304.1	-147.2	314.0	11.00	11.00	
5,500.0	40.96	334.18	5,459.8	356.3	-172.4	367.9	11.00	11.00	
5,600.0	51.96	334.18	5,528.6	421.4	-203.9	435.1	11.00	11.00	
5,700.0	62.96	334.18	5,582.3	497.2	-240.6	513.4	11.00	11.00	
5,720.0	65.16	334.18	5,591.0	513.4	-248.4	530.1	11.00	11.00	Top Niobrara
5,800.0	73.96	334.18	5,618.9	580.8	-281.0	599.7	11.00	11.00	
5,900.0	84.96	334.18	5,637.2	669.2	-323.8	690.9	11.00	11.00	
5,945.8	90.00	334.18	5,639.2	710.4	-343.7	733.5	11.00	11.00	LP @ 5,945' MD
6,000.0	90.00	335.81	5,639.2	759.5	-366.6	784.1	3.00	0.00	7"(1,513' FWL-1,249' FSL)
6,100.0	90.00	338.81	5,639.2	851.7	-405.2	878.9	3.00	0.00	
6,200.0	90.00	341.81	5,639.2	945.8	-438.9	975.2	3.00	0.00	
6,300.0	90.00	344.81	5,639.2	1,041.6	-467.6	1,072.8	3.00	0.00	
6,400.0	90.00	347.81	5,639.2	1,138.8	-491.3	1,171.5	3.00	0.00	
6,500.0	90.00	350.81	5,639.2	1,237.0	-509.8	1,270.8	3.00	0.00	
6,600.0	90.00	353.81	5,639.2	1,336.1	-523.2	1,370.6	3.00	0.00	
6,700.0	90.00	356.81	5,639.2	1,435.8	-531.4	1,470.6	3.00	0.00	
6,800.0	90.00	359.81	5,639.2	1,535.7	-534.4	1,570.5	3.00	0.00	
6,806.5	90.00	0.00	5,639.2	1,542.2	-534.4	1,577.0	3.00	0.00	EOT; 0° Azi
6,900.0	90.00	0.00	5,639.2	1,635.7	-534.4	1,670.2	0.00	0.00	
7,000.0	90.00	0.00	5,639.2	1,735.7	-534.4	1,769.9	0.00	0.00	
7,100.0	90.00	0.00	5,639.2	1,835.7	-534.4	1,869.7	0.00	0.00	
7,200.0	90.00	0.00	5,639.2	1,935.7	-534.4	1,969.4	0.00	0.00	
7,300.0	90.00	0.00	5,639.2	2,035.7	-534.4	2,069.2	0.00	0.00	
7,400.0	90.00	0.00	5,639.2	2,135.7	-534.4	2,168.9	0.00	0.00	
7,500.0	90.00	0.00	5,639.2	2,235.7	-534.4	2,268.6	0.00	0.00	
7,600.0	90.00	0.00	5,639.2	2,335.7	-534.4	2,368.4	0.00	0.00	
7,700.0	90.00	0.00	5,639.2	2,435.7	-534.4	2,468.1	0.00	0.00	
7,800.0	90.00	0.00	5,639.2	2,535.7	-534.4	2,567.8	0.00	0.00	
7,900.0	90.00	0.00	5,639.2	2,635.7	-534.4	2,667.6	0.00	0.00	
8,000.0	90.00	0.00	5,639.2	2,735.7	-534.4	2,767.3	0.00	0.00	
8,100.0	90.00	0.00	5,639.1	2,835.7	-534.4	2,867.0	0.00	0.00	
8,200.0	90.00	0.00	5,639.1	2,935.7	-534.4	2,966.8	0.00	0.00	
8,300.0	90.00	0.00	5,639.1	3,035.7	-534.4	3,066.5	0.00	0.00	
8,400.0	90.00	0.00	5,639.1	3,135.7	-534.3	3,166.2	0.00	0.00	
8,500.0	90.00	0.00	5,639.1	3,235.7	-534.3	3,266.0	0.00	0.00	
8,600.0	90.00	0.00	5,639.1	3,335.7	-534.3	3,365.7	0.00	0.00	
8,700.0	90.00	0.00	5,639.1	3,435.7	-534.3	3,465.4	0.00	0.00	
8,800.0	90.00	0.00	5,639.1	3,535.7	-534.3	3,565.2	0.00	0.00	
8,900.0	90.00	0.00	5,639.1	3,635.7	-534.3	3,664.9	0.00	0.00	
9,000.0	90.00	0.00	5,639.1	3,735.7	-534.3	3,764.7	0.00	0.00	
9,100.0	90.00	0.00	5,639.1	3,835.7	-534.3	3,864.4	0.00	0.00	
9,200.0	90.00	0.00	5,639.1	3,935.7	-534.3	3,964.1	0.00	0.00	
9,300.0	90.00	0.00	5,639.1	4,035.7	-534.3	4,063.9	0.00	0.00	
9,400.0	90.00	0.00	5,639.1	4,135.7	-534.3	4,163.6	0.00	0.00	
9,500.0	90.00	0.00	5,639.1	4,235.7	-534.3	4,263.3	0.00	0.00	
9,600.0	90.00	0.00	5,639.1	4,335.7	-534.3	4,363.1	0.00	0.00	
9,700.0	90.00	0.00	5,639.1	4,435.7	-534.3	4,462.8	0.00	0.00	
9,800.0	90.00	0.00	5,639.1	4,535.7	-534.3	4,562.5	0.00	0.00	
9,900.0	90.00	0.00	5,639.1	4,635.7	-534.3	4,662.3	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 #33N-2805A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33N-2805A	<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
10,000.0	90.00	0.00	5,639.1	4,735.7	-534.3	4,762.0	0.00	0.00	
10,100.0	90.00	0.00	5,639.1	4,835.7	-534.3	4,861.7	0.00	0.00	
10,200.0	90.00	0.00	5,639.1	4,935.7	-534.3	4,961.5	0.00	0.00	
10,300.0	90.00	0.00	5,639.1	5,035.7	-534.3	5,061.2	0.00	0.00	
10,400.0	90.00	0.00	5,639.1	5,135.7	-534.3	5,161.0	0.00	0.00	
10,500.0	90.00	0.00	5,639.1	5,235.7	-534.3	5,260.7	0.00	0.00	
10,600.0	90.00	0.00	5,639.1	5,335.7	-534.3	5,360.4	0.00	0.00	
10,700.0	90.00	0.00	5,639.1	5,435.7	-534.3	5,460.2	0.00	0.00	
10,800.0	90.00	0.00	5,639.1	5,535.7	-534.3	5,559.9	0.00	0.00	
10,900.0	90.00	0.00	5,639.1	5,635.7	-534.3	5,659.6	0.00	0.00	
11,000.0	90.00	0.00	5,639.1	5,735.7	-534.3	5,759.4	0.00	0.00	
11,100.0	90.00	0.00	5,639.0	5,835.7	-534.3	5,859.1	0.00	0.00	
11,200.0	90.00	0.00	5,639.0	5,935.7	-534.3	5,958.8	0.00	0.00	
11,300.0	90.00	0.00	5,639.0	6,035.7	-534.3	6,058.6	0.00	0.00	
11,400.0	90.00	0.00	5,639.0	6,135.7	-534.3	6,158.3	0.00	0.00	
11,500.0	90.00	0.00	5,639.0	6,235.7	-534.3	6,258.0	0.00	0.00	
11,600.0	90.00	0.00	5,639.0	6,335.7	-534.3	6,357.8	0.00	0.00	
11,700.0	90.00	0.00	5,639.0	6,435.7	-534.3	6,457.5	0.00	0.00	
11,800.0	90.00	0.00	5,639.0	6,535.7	-534.3	6,557.3	0.00	0.00	
11,900.0	90.00	0.00	5,639.0	6,635.7	-534.3	6,657.0	0.00	0.00	
12,000.0	90.00	0.00	5,639.0	6,735.7	-534.3	6,756.7	0.00	0.00	
12,100.0	90.00	0.00	5,639.0	6,835.7	-534.3	6,856.5	0.00	0.00	
12,200.0	90.00	0.00	5,639.0	6,935.7	-534.3	6,956.2	0.00	0.00	
12,300.0	90.00	0.00	5,639.0	7,035.7	-534.3	7,055.9	0.00	0.00	
12,400.0	90.00	0.00	5,639.0	7,135.7	-534.3	7,155.7	0.00	0.00	
12,500.0	90.00	0.00	5,639.0	7,235.7	-534.3	7,255.4	0.00	0.00	
12,598.4	90.00	0.00	5,639.0	7,334.1	-534.3	7,353.6	0.00	0.00	PBHL @ 12,598' MD

### Targets

#### Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
#33N-2805A PBHL(1,48 - plan hits target center - Point	0.00	0.00	5,639.0	7,334.1	-534.3	1,541,737.43	3,449,962.79	40.809122	-103.874519
2805A PB - plan misses target center by 6.0ft at 12098.6ft MD (5639.0 TVD, 6834.3 N, -534.3 E) - Point	0.00	0.00	5,639.0	6,834.3	-528.3	1,541,237.75	3,449,977.98	40.807750	-103.874497

### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,000.0	5,639.2	7"(1,513' FWL-1,249' FSL)	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 #33N-2805A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site:</b>	S33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33N-2805A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,720.0	5,591.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,200.0	1,200.0	0.0	0.0	KOP @ 1,200' MD	
1,400.0	1,399.8	6.3	-3.0	EOB; 4° Inc	
5,164.0	5,154.7	242.6	-117.4	Start 11° Build	
5,945.8	5,639.2	710.4	-343.7	LP @ 5,945' MD	
6,806.5	5,639.2	1,542.2	-534.4	EOT; 0° Azi	
12,598.4	5,639.0	7,334.1	-534.3	PBHL @ 12,598' MD	



# **Whiting Petroleum Corporation**

**Weld County, CO**

**S33-T10N-R58W**

**Razor #33N-2805A**

**HZ**

**Plan #1**

## **Anticollision Report**

**04 November, 2013**



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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:	MD Interval 100.0ft	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	11/4/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,598.4	Plan #1 (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						
S33-T10N-R58W						
Razor #33N-2806B - HZ - Plan #1	1,258.1	1,258.5	29.2	23.9	5.425	CC
Razor #33N-2806B - HZ - Plan #1	1,300.0	1,300.4	29.4	23.8	5.269	ES
Razor #33N-2806B - HZ - Plan #1	12,598.4	12,573.0	476.4	199.9	1.723	SF
Razor #33N-2807A - HZ - Plan #1	1,204.0	1,204.2	60.0	54.9	11.660	CC, ES
Razor #33N-2807A - HZ - Plan #1	12,598.4	12,491.7	659.7	379.4	2.353	SF
Razor #33N-2808B - HZ - Plan #1	900.0	900.0	90.5	86.7	23.912	CC
Razor #33N-2808B - HZ - Plan #1	1,000.0	999.6	90.7	86.5	21.439	ES
Razor #33N-2808B - HZ - Plan #1	12,598.4	12,622.3	993.2	715.2	3.573	SF



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2806B - 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	101.93	-6.2	29.4	30.0					
100.0	100.0	100.0	100.0	0.1	0.1	101.93	-6.2	29.4	30.0	29.8	0.19	160.427		
200.0	200.0	200.0	200.0	0.3	0.3	101.93	-6.2	29.4	30.0	29.4	0.64	47.131		
300.0	300.0	300.0	300.0	0.5	0.5	101.93	-6.2	29.4	30.0	28.9	1.09	27.623		
400.0	400.0	400.0	400.0	0.8	0.8	101.93	-6.2	29.4	30.0	28.5	1.54	19.537		
500.0	500.0	500.0	500.0	1.0	1.0	101.93	-6.2	29.4	30.0	28.0	1.99	15.113		
600.0	600.0	600.0	600.0	1.2	1.2	101.93	-6.2	29.4	30.0	27.6	2.43	12.322		
700.0	700.0	700.0	700.0	1.4	1.4	101.93	-6.2	29.4	30.0	27.1	2.88	10.402		
800.0	800.0	800.0	800.0	1.7	1.7	101.93	-6.2	29.4	30.0	26.7	3.33	8.999		
900.0	900.0	900.0	900.0	1.9	1.9	101.93	-6.2	29.4	30.0	26.2	3.78	7.930		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	101.93	-6.2	29.4	30.0	25.8	4.23	7.088		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	101.93	-6.2	29.4	30.0	25.3	4.68	6.407		
1,200.0	1,200.0	1,200.3	1,200.3	2.6	2.6	98.69	-4.5	29.2	29.5	24.4	5.13	5.749		
1,258.1	1,258.1	1,258.5	1,258.4	2.7	2.7	120.48	-1.8	28.9	29.2	23.9	5.39	5.425 CC		
1,300.0	1,300.0	1,300.4	1,300.3	2.8	2.8	117.39	0.8	28.6	29.4	23.8	5.58	5.269 ES		
1,400.0	1,399.8	1,400.4	1,400.0	3.0	3.0	113.16	7.7	27.9	31.0	24.9	6.03	5.136		
1,500.0	1,499.6	1,500.3	1,499.7	3.2	3.3	112.21	14.6	27.1	33.3	26.8	6.48	5.134		
1,600.0	1,599.4	1,600.3	1,599.4	3.5	3.5	111.39	21.6	26.4	35.6	28.7	6.95	5.128		
1,700.0	1,699.1	1,700.3	1,699.2	3.7	3.7	110.66	28.5	25.7	38.0	30.6	7.42	5.119		
1,800.0	1,798.9	1,800.3	1,798.9	3.9	4.0	110.03	35.4	24.9	40.3	32.4	7.90	5.109		
1,900.0	1,898.6	1,900.2	1,898.6	4.2	4.2	109.46	42.4	24.2	42.7	34.3	8.38	5.097		
2,000.0	1,998.4	2,000.2	1,998.3	4.4	4.5	108.95	49.3	23.5	45.1	36.2	8.86	5.086		
2,100.0	2,098.1	2,100.2	2,098.1	4.7	4.7	108.49	56.2	22.7	47.4	38.1	9.35	5.074		
2,200.0	2,197.9	2,200.1	2,197.8	4.9	4.9	108.08	63.2	22.0	49.8	40.0	9.84	5.062		
2,300.0	2,297.6	2,300.1	2,297.5	5.2	5.2	107.70	70.1	21.3	52.2	41.8	10.33	5.051		
2,400.0	2,397.4	2,400.1	2,397.2	5.4	5.4	107.36	77.0	20.5	54.5	43.7	10.82	5.040		
2,500.0	2,497.2	2,500.1	2,497.0	5.7	5.7	107.05	84.0	19.8	56.9	45.6	11.32	5.029		
2,600.0	2,596.9	2,600.0	2,596.7	5.9	5.9	106.76	90.9	19.1	59.3	47.5	11.81	5.019		
2,700.0	2,696.7	2,700.0	2,696.4	6.2	6.2	106.49	97.9	18.3	61.7	49.4	12.31	5.009		
2,800.0	2,796.4	2,800.0	2,796.2	6.4	6.4	106.24	104.8	17.6	64.0	51.2	12.81	5.000		
2,900.0	2,896.2	2,899.9	2,895.9	6.7	6.7	106.01	111.7	16.9	66.4	53.1	13.31	4.991		
3,000.0	2,995.9	2,999.9	2,995.6	6.9	6.9	105.80	118.7	16.1	68.8	55.0	13.81	4.982		
3,100.0	3,095.7	3,099.9	3,095.3	7.2	7.2	105.60	125.6	15.4	71.2	56.9	14.31	4.974		
3,200.0	3,195.5	3,199.9	3,195.1	7.4	7.4	105.41	132.5	14.6	73.6	58.8	14.82	4.966		
3,300.0	3,295.2	3,299.8	3,294.8	7.7	7.7	105.24	139.5	13.9	76.0	60.6	15.32	4.959		
3,400.0	3,395.0	3,399.8	3,394.5	7.9	8.0	105.07	146.4	13.2	78.3	62.5	15.82	4.952		
3,500.0	3,494.7	3,499.8	3,494.3	8.2	8.2	104.92	153.3	12.4	80.7	64.4	16.33	4.945		
3,600.0	3,594.5	3,599.7	3,594.0	8.4	8.5	104.77	160.3	11.7	83.1	66.3	16.83	4.938		
3,700.0	3,694.2	3,699.7	3,693.7	8.7	8.7	104.64	167.2	11.0	85.5	68.2	17.34	4.932		
3,800.0	3,794.0	3,799.7	3,793.4	8.9	9.0	104.51	174.1	10.2	87.9	70.0	17.84	4.926		
3,900.0	3,893.7	3,899.7	3,893.2	9.2	9.2	104.38	181.1	9.5	90.3	71.9	18.35	4.920		
4,000.0	3,993.5	3,999.6	3,992.9	9.4	9.5	104.27	188.0	8.8	92.7	73.8	18.85	4.915		
4,100.0	4,093.3	4,099.6	4,092.6	9.7	9.7	104.16	194.9	8.0	95.1	75.7	19.36	4.909		
4,200.0	4,193.0	4,199.6	4,192.3	9.9	10.0	104.05	201.9	7.3	97.4	77.6	19.87	4.904		
4,300.0	4,292.8	4,299.5	4,292.1	10.2	10.2	103.95	208.8	6.6	99.8	79.5	20.37	4.900		
4,400.0	4,392.5	4,399.5	4,391.8	10.5	10.5	103.85	215.7	5.8	102.2	81.3	20.88	4.895		
4,500.0	4,492.3	4,499.5	4,491.5	10.7	10.7	103.76	222.7	5.1	104.6	83.2	21.39	4.890		
4,600.0	4,592.0	4,599.5	4,591.3	11.0	11.0	103.68	229.6	4.4	107.0	85.1	21.90	4.886		
4,700.0	4,691.8	4,699.4	4,691.0	11.2	11.3	103.59	236.5	3.6	109.4	87.0	22.41	4.882		
4,800.0	4,791.6	4,799.4	4,790.7	11.5	11.5	103.51	243.5	2.9	111.8	88.9	22.91	4.878		
4,900.0	4,891.3	4,899.4	4,890.4	11.7	11.8	103.44	250.4	2.2	114.2	90.7	23.42	4.874		
5,000.0	4,991.1	4,999.3	4,990.2	12.0	12.0	103.36	257.4	1.4	116.6	92.6	23.93	4.871		

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2806B - 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
5,100.0	5,090.8	5,099.3	5,089.9	12.2	12.3	103.29	264.3	0.7	118.9	94.5	24.44	4.867	
5,200.0	5,190.5	5,199.3	5,189.6	12.5	12.5	103.67	271.2	-0.1	121.6	96.7	24.95	4.876	
5,300.0	5,287.6	5,297.7	5,287.6	12.9	12.8	108.82	280.4	-1.0	128.8	103.4	25.44	5.065	
5,400.0	5,378.5	5,397.1	5,383.5	13.4	13.2	113.07	305.8	-3.7	143.5	117.6	25.97	5.527	
5,500.0	5,459.8	5,498.3	5,474.3	14.1	13.7	115.10	349.8	-8.4	164.8	138.1	26.66	6.181	
5,600.0	5,528.6	5,601.2	5,556.1	15.0	14.5	115.16	411.6	-14.9	191.2	163.5	27.74	6.894	
5,700.0	5,582.3	5,705.6	5,625.1	16.2	15.4	113.70	489.4	-23.2	221.7	192.3	29.44	7.531	
5,800.0	5,618.9	5,811.8	5,677.8	17.5	16.6	111.16	580.8	-32.9	255.0	223.2	31.84	8.010	
5,900.0	5,637.2	5,920.0	5,711.2	19.0	18.0	107.90	682.9	-43.7	290.0	255.2	34.85	8.322	
6,000.0	5,639.2	6,029.8	5,722.8	20.6	19.6	105.71	791.3	-55.2	324.0	285.9	38.14	8.495	
6,100.0	5,639.2	6,112.0	5,722.8	22.1	20.8	104.30	873.2	-62.1	353.8	312.7	41.06	8.616	
6,200.0	5,639.2	6,200.0	5,722.8	23.7	22.0	103.09	961.1	-65.6	382.9	338.8	44.04	8.694	
6,300.0	5,639.2	6,280.5	5,722.8	25.3	23.2	102.16	1,041.6	-65.8	410.4	363.5	46.95	8.742	
6,400.0	5,639.2	6,377.6	5,722.8	26.9	24.7	101.36	1,138.7	-65.8	433.6	383.4	50.16	8.644	
6,500.0	5,639.2	6,475.9	5,722.8	28.5	26.3	100.79	1,237.0	-65.8	451.8	398.5	53.36	8.467	
6,600.0	5,639.2	6,575.0	5,722.8	30.2	28.0	100.41	1,336.1	-65.8	465.0	408.5	56.51	8.229	
6,700.0	5,639.2	6,674.6	5,722.8	31.8	29.7	100.19	1,435.7	-65.8	473.1	413.5	59.56	7.942	
6,800.0	5,639.2	6,774.6	5,722.8	33.4	31.4	100.11	1,535.7	-65.8	476.0	413.5	62.50	7.616	
6,900.0	5,639.2	6,874.6	5,722.8	35.0	33.2	100.11	1,635.7	-65.8	476.0	410.2	65.85	7.228	
7,000.0	5,639.2	6,974.6	5,722.8	36.6	35.0	100.12	1,735.7	-65.8	476.0	406.7	69.27	6.872	
7,100.0	5,639.2	7,074.6	5,722.8	38.2	36.8	100.12	1,835.7	-65.7	476.0	403.3	72.73	6.545	
7,200.0	5,639.2	7,174.6	5,722.8	39.9	38.6	100.12	1,935.7	-65.7	476.0	399.8	76.22	6.246	
7,300.0	5,639.2	7,274.6	5,722.8	41.6	40.4	100.12	2,035.7	-65.7	476.0	396.3	79.73	5.971	
7,400.0	5,639.2	7,374.6	5,722.8	43.3	42.2	100.12	2,135.7	-65.7	476.0	392.8	83.27	5.717	
7,500.0	5,639.2	7,474.6	5,722.8	45.1	44.0	100.12	2,235.7	-65.7	476.1	389.2	86.83	5.483	
7,600.0	5,639.2	7,574.6	5,722.8	46.8	45.9	100.12	2,335.7	-65.7	476.1	385.7	90.41	5.266	
7,700.0	5,639.2	7,674.6	5,722.8	48.6	47.7	100.12	2,435.7	-65.7	476.1	382.1	94.00	5.064	
7,800.0	5,639.2	7,774.6	5,722.8	50.3	49.6	100.12	2,535.7	-65.7	476.1	378.5	97.61	4.877	
7,900.0	5,639.2	7,874.6	5,722.8	52.1	51.4	100.12	2,635.7	-65.7	476.1	374.8	101.23	4.703	
8,000.0	5,639.2	7,974.6	5,722.8	53.9	53.3	100.12	2,735.7	-65.7	476.1	371.2	104.87	4.540	
8,100.0	5,639.1	8,074.6	5,722.8	55.7	55.1	100.12	2,835.7	-65.7	476.1	367.6	108.51	4.387	
8,200.0	5,639.1	8,174.6	5,722.8	57.5	57.0	100.12	2,935.7	-65.7	476.1	363.9	112.17	4.245	
8,300.0	5,639.1	8,274.6	5,722.8	59.3	58.9	100.12	3,035.7	-65.7	476.1	360.3	115.83	4.110	
8,400.0	5,639.1	8,374.6	5,722.8	61.1	60.7	100.13	3,135.7	-65.6	476.1	356.6	119.50	3.984	
8,500.0	5,639.1	8,474.6	5,722.8	63.0	62.6	100.13	3,235.7	-65.6	476.1	352.9	123.18	3.865	
8,600.0	5,639.1	8,574.6	5,722.8	64.8	64.5	100.13	3,335.7	-65.6	476.1	349.3	126.87	3.753	
8,700.0	5,639.1	8,674.6	5,722.9	66.6	66.4	100.13	3,435.7	-65.6	476.1	345.6	130.56	3.647	
8,800.0	5,639.1	8,774.6	5,722.9	68.5	68.3	100.13	3,535.7	-65.6	476.1	341.9	134.25	3.547	
8,900.0	5,639.1	8,874.6	5,722.9	70.3	70.1	100.13	3,635.7	-65.6	476.2	338.2	137.95	3.452	
9,000.0	5,639.1	8,974.6	5,722.9	72.2	72.0	100.13	3,735.7	-65.6	476.2	334.5	141.66	3.361	
9,100.0	5,639.1	9,074.6	5,722.9	74.0	73.9	100.13	3,835.7	-65.6	476.2	330.8	145.37	3.276	
9,200.0	5,639.1	9,174.6	5,722.9	75.9	75.8	100.13	3,935.7	-65.6	476.2	327.1	149.08	3.194	
9,300.0	5,639.1	9,274.6	5,722.9	77.7	77.7	100.13	4,035.7	-65.6	476.2	323.4	152.80	3.116	
9,400.0	5,639.1	9,374.6	5,722.9	79.6	79.6	100.13	4,135.7	-65.6	476.2	319.7	156.52	3.042	
9,500.0	5,639.1	9,474.6	5,722.9	81.5	81.5	100.13	4,235.7	-65.6	476.2	315.9	160.25	2.972	
9,600.0	5,639.1	9,574.6	5,722.9	83.3	83.4	100.13	4,335.7	-65.6	476.2	312.2	163.98	2.904	
9,700.0	5,639.1	9,674.6	5,722.9	85.2	85.3	100.13	4,435.7	-65.6	476.2	308.5	167.71	2.840	
9,800.0	5,639.1	9,774.6	5,722.9	87.1	87.2	100.14	4,535.7	-65.5	476.2	304.8	171.44	2.778	
9,900.0	5,639.1	9,874.6	5,722.9	88.9	89.1	100.14	4,635.7	-65.5	476.2	301.0	175.17	2.719	
10,000.0	5,639.1	9,974.6	5,722.9	90.8	91.0	100.14	4,735.7	-65.5	476.2	297.3	178.91	2.662	
10,100.0	5,639.1	10,074.6	5,722.9	92.7	92.9	100.14	4,835.7	-65.5	476.2	293.6	182.65	2.607	
10,200.0	5,639.1	10,174.6	5,722.9	94.6	94.8	100.14	4,935.7	-65.5	476.2	289.9	186.39	2.555	

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2806B - 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	
10,300.0	5,639.1	10,274.6	5,722.9	96.5	96.7	100.14	5,035.7	-65.5	476.3	286.1	190.13	2.505	
10,400.0	5,639.1	10,374.6	5,722.9	98.3	98.6	100.14	5,135.7	-65.5	476.3	282.4	193.88	2.456	
10,500.0	5,639.1	10,474.6	5,722.9	100.2	100.5	100.14	5,235.7	-65.5	476.3	278.6	197.63	2.410	
10,600.0	5,639.1	10,574.6	5,722.9	102.1	102.4	100.14	5,335.7	-65.5	476.3	274.9	201.38	2.365	
10,700.0	5,639.1	10,674.6	5,722.9	104.0	104.3	100.14	5,435.7	-65.5	476.3	271.2	205.12	2.322	
10,800.0	5,639.1	10,774.6	5,722.9	105.9	106.2	100.14	5,535.7	-65.5	476.3	267.4	208.88	2.280	
10,900.0	5,639.1	10,874.6	5,722.9	107.8	108.1	100.14	5,635.7	-65.5	476.3	263.7	212.63	2.240	
11,000.0	5,639.1	10,974.6	5,722.9	109.7	110.0	100.14	5,735.7	-65.5	476.3	259.9	216.38	2.201	
11,100.0	5,639.0	11,074.6	5,722.9	111.6	111.9	100.14	5,835.7	-65.4	476.3	256.2	220.14	2.164	
11,200.0	5,639.0	11,174.6	5,722.9	113.5	113.8	100.15	5,935.7	-65.4	476.3	252.4	223.89	2.127	
11,300.0	5,639.0	11,274.6	5,723.0	115.3	115.8	100.15	6,035.7	-65.4	476.3	248.7	227.65	2.092	
11,400.0	5,639.0	11,374.6	5,723.0	117.2	117.7	100.15	6,135.7	-65.4	476.3	244.9	231.41	2.058	
11,500.0	5,639.0	11,474.6	5,723.0	119.1	119.6	100.15	6,235.7	-65.4	476.3	241.2	235.17	2.026	
11,600.0	5,639.0	11,574.6	5,723.0	121.0	121.5	100.15	6,335.7	-65.4	476.3	237.4	238.93	1.994	
11,700.0	5,639.0	11,674.6	5,723.0	122.9	123.4	100.15	6,435.7	-65.4	476.4	233.7	242.69	1.963	
11,800.0	5,639.0	11,774.6	5,723.0	124.8	125.3	100.15	6,535.7	-65.4	476.4	229.9	246.45	1.933	
11,900.0	5,639.0	11,874.6	5,723.0	126.7	127.2	100.15	6,635.7	-65.4	476.4	226.2	250.21	1.904	
12,000.0	5,639.0	11,974.6	5,723.0	128.6	129.1	100.15	6,735.7	-65.4	476.4	222.4	253.98	1.876	
12,100.0	5,639.0	12,074.6	5,723.0	130.5	131.0	100.15	6,835.7	-65.4	476.4	218.6	257.74	1.848	
12,200.0	5,639.0	12,174.6	5,723.0	132.4	132.9	100.15	6,935.7	-65.4	476.4	214.9	261.51	1.822	
12,300.0	5,639.0	12,274.6	5,723.0	134.3	134.9	100.15	7,035.7	-65.4	476.4	211.1	265.27	1.796	
12,400.0	5,639.0	12,374.6	5,723.0	136.2	136.8	100.15	7,135.7	-65.3	476.4	207.4	269.04	1.771	
12,500.0	5,639.0	12,474.6	5,723.0	138.1	138.7	100.15	7,235.7	-65.3	476.4	203.6	272.80	1.746	
12,598.4	5,639.0	12,573.0	5,723.0	140.0	140.6	100.16	7,334.1	-65.3	476.4	199.9	276.51	1.723 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2807A - 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	101.80	-12.4	59.3	60.5					
100.0	100.0	100.0	100.0	0.1	0.1	101.80	-12.4	59.3	60.5	60.4	0.19	323.731		
200.0	200.0	200.0	200.0	0.3	0.3	101.80	-12.4	59.3	60.5	59.9	0.64	95.107		
300.0	300.0	300.0	300.0	0.5	0.5	101.80	-12.4	59.3	60.5	59.5	1.09	55.742		
400.0	400.0	400.0	400.0	0.8	0.8	101.80	-12.4	59.3	60.5	59.0	1.54	39.424		
500.0	500.0	500.0	500.0	1.0	1.0	101.80	-12.4	59.3	60.5	58.6	1.99	30.496		
600.0	600.0	600.0	600.0	1.2	1.2	101.80	-12.4	59.3	60.5	58.1	2.43	24.866		
700.0	700.0	700.0	700.0	1.4	1.4	101.80	-12.4	59.3	60.5	57.7	2.88	20.990		
800.0	800.0	800.0	800.0	1.7	1.7	101.80	-12.4	59.3	60.5	57.2	3.33	18.160		
900.0	900.0	900.0	900.0	1.9	1.9	101.80	-12.4	59.3	60.5	56.8	3.78	16.002		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	101.80	-12.4	59.3	60.5	56.3	4.23	14.302		
1,100.0	1,100.0	1,100.2	1,100.2	2.3	2.3	100.15	-10.6	59.4	60.3	55.7	4.68	12.886		
1,200.0	1,200.0	1,200.2	1,200.1	2.6	2.6	95.17	-5.4	59.8	60.0	54.9	5.13	11.696		
1,204.0	1,204.0	1,204.2	1,204.0	2.6	2.6	120.73	-5.1	59.8	60.0	54.9	5.15	11.660 CC, ES		
1,300.0	1,300.0	1,300.1	1,299.7	2.8	2.8	115.83	1.5	60.3	61.1	55.5	5.58	10.944		
1,400.0	1,399.8	1,400.0	1,399.3	3.0	3.0	113.76	8.5	60.8	63.9	57.9	6.03	10.593		
1,500.0	1,499.6	1,499.9	1,499.0	3.2	3.3	113.30	15.4	61.4	67.5	61.0	6.50	10.393		
1,600.0	1,599.4	1,599.9	1,598.7	3.5	3.5	112.88	22.4	61.9	71.1	64.1	6.96	10.211		
1,700.0	1,699.1	1,699.8	1,698.4	3.7	3.7	112.50	29.3	62.4	74.7	67.3	7.44	10.045		
1,800.0	1,798.9	1,799.7	1,798.1	3.9	4.0	112.15	36.3	62.9	78.3	70.4	7.91	9.894		
1,900.0	1,898.6	1,899.7	1,897.8	4.2	4.2	111.84	43.2	63.5	81.9	73.5	8.39	9.755		
2,000.0	1,998.4	1,999.6	1,997.5	4.4	4.5	111.55	50.2	64.0	85.5	76.6	8.88	9.629		
2,100.0	2,098.1	2,099.5	2,097.2	4.7	4.7	111.29	57.1	64.5	89.1	79.7	9.37	9.513		
2,200.0	2,197.9	2,199.5	2,196.9	4.9	5.0	111.04	64.1	65.0	92.7	82.9	9.86	9.407		
2,300.0	2,297.6	2,299.4	2,296.6	5.2	5.2	110.82	71.0	65.6	96.3	86.0	10.35	9.309		
2,400.0	2,397.4	2,399.3	2,396.3	5.4	5.5	110.61	78.0	66.1	99.9	89.1	10.84	9.219		
2,500.0	2,497.2	2,499.3	2,495.9	5.7	5.7	110.41	84.9	66.6	103.5	92.2	11.33	9.136		
2,600.0	2,596.9	2,599.2	2,595.6	5.9	6.0	110.23	91.9	67.2	107.2	95.3	11.83	9.058		
2,700.0	2,696.7	2,699.1	2,695.3	6.2	6.2	110.06	98.9	67.7	110.8	98.4	12.33	8.986		
2,800.0	2,796.4	2,799.1	2,795.0	6.4	6.5	109.90	105.8	68.2	114.4	101.6	12.82	8.920		
2,900.0	2,896.2	2,899.0	2,894.7	6.7	6.7	109.75	112.8	68.7	118.0	104.7	13.32	8.857		
3,000.0	2,995.9	2,998.9	2,994.4	6.9	7.0	109.61	119.7	69.3	121.6	107.8	13.82	8.799		
3,100.0	3,095.7	3,098.9	3,094.1	7.2	7.2	109.48	126.7	69.8	125.2	110.9	14.32	8.744		
3,200.0	3,195.5	3,198.8	3,193.8	7.4	7.5	109.36	133.6	70.3	128.8	114.0	14.82	8.693		
3,300.0	3,295.2	3,298.7	3,293.5	7.7	7.7	109.24	140.6	70.8	132.5	117.1	15.32	8.644		
3,400.0	3,395.0	3,398.7	3,393.2	7.9	8.0	109.13	147.5	71.4	136.1	120.3	15.83	8.599		
3,500.0	3,494.7	3,498.6	3,492.9	8.2	8.2	109.02	154.5	71.9	139.7	123.4	16.33	8.556		
3,600.0	3,594.5	3,598.5	3,592.5	8.4	8.5	108.92	161.4	72.4	143.3	126.5	16.83	8.515		
3,700.0	3,694.2	3,698.5	3,692.2	8.7	8.7	108.82	168.4	72.9	146.9	129.6	17.33	8.477		
3,800.0	3,794.0	3,798.4	3,791.9	8.9	9.0	108.73	175.3	73.5	150.6	132.7	17.84	8.441		
3,900.0	3,893.7	3,898.4	3,891.6	9.2	9.3	108.64	182.3	74.0	154.2	135.8	18.34	8.406		
4,000.0	3,993.5	3,998.3	3,991.3	9.4	9.5	108.56	189.2	74.5	157.8	139.0	18.85	8.374		
4,100.0	4,093.3	4,098.2	4,091.0	9.7	9.8	108.48	196.2	75.0	161.4	142.1	19.35	8.342		
4,200.0	4,193.0	4,198.2	4,190.7	9.9	10.0	108.41	203.1	75.6	165.0	145.2	19.85	8.313		
4,300.0	4,292.8	4,298.1	4,290.4	10.2	10.3	108.33	210.1	76.1	168.7	148.3	20.36	8.285		
4,400.0	4,392.5	4,398.0	4,390.1	10.5	10.5	108.27	217.0	76.6	172.3	151.4	20.86	8.258		
4,500.0	4,492.3	4,498.0	4,489.8	10.7	10.8	108.20	224.0	77.2	175.9	154.5	21.37	8.232		
4,600.0	4,592.0	4,597.9	4,589.5	11.0	11.0	108.14	230.9	77.7	179.5	157.7	21.88	8.207		
4,700.0	4,691.8	4,697.8	4,689.1	11.2	11.3	108.07	237.9	78.2	183.2	160.8	22.38	8.184		
4,800.0	4,791.6	4,797.8	4,788.8	11.5	11.5	108.02	244.8	78.7	186.8	163.9	22.89	8.161		
4,900.0	4,891.3	4,897.7	4,888.5	11.7	11.8	107.96	251.8	79.3	190.4	167.0	23.39	8.139		
5,000.0	4,991.1	4,997.6	4,988.2	12.0	12.1	107.90	258.7	79.8	194.0	170.1	23.90	8.119		

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2807A - 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		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		
5,100.0	5,090.8	5,097.6	5,087.9	12.2	12.3	107.85	265.7	80.3	197.6	173.2	24.41	8.099	
5,200.0	5,190.5	5,194.9	5,185.0	12.5	12.6	107.66	273.4	80.9	201.9	177.0	24.91	8.105	
5,300.0	5,287.6	5,286.6	5,274.3	12.9	12.9	106.72	293.0	82.4	213.6	188.0	25.52	8.367	
5,400.0	5,378.5	5,376.6	5,357.4	13.4	13.4	105.10	327.2	85.0	234.2	207.9	26.36	8.886	
5,500.0	5,459.8	5,464.4	5,431.7	14.1	13.9	102.87	373.9	88.5	263.0	235.5	27.49	9.566	
5,600.0	5,528.6	5,550.0	5,495.4	15.0	14.6	100.13	430.6	92.8	298.7	269.7	28.98	10.308	
5,700.0	5,582.3	5,633.4	5,547.8	16.2	15.4	96.96	495.2	97.7	340.0	309.2	30.83	11.027	
5,800.0	5,618.9	5,715.5	5,588.6	17.5	16.3	93.50	566.1	103.1	385.6	352.6	33.00	11.685	
5,900.0	5,637.2	5,797.1	5,617.6	19.0	17.3	89.88	642.2	108.8	433.9	398.5	35.37	12.266	
6,000.0	5,639.2	5,880.6	5,634.6	20.6	18.5	89.38	723.6	115.0	483.0	445.0	37.97	12.720	
6,100.0	5,639.2	5,978.3	5,638.7	22.1	19.9	89.94	820.8	122.1	528.2	487.3	40.84	12.934	
6,200.0	5,639.2	6,103.4	5,638.7	23.7	21.6	89.95	945.8	125.3	564.2	520.1	44.17	12.774	
6,300.0	5,639.2	6,199.2	5,638.7	25.3	23.1	89.95	1,041.6	125.3	593.0	545.6	47.34	12.527	
6,400.0	5,639.2	6,296.3	5,638.7	26.9	24.7	89.96	1,138.8	125.3	616.6	566.1	50.57	12.194	
6,500.0	5,639.2	6,394.6	5,638.7	28.5	26.3	89.96	1,237.0	125.3	635.2	581.4	53.82	11.802	
6,600.0	5,639.2	6,493.6	5,638.7	30.2	28.0	89.96	1,336.1	125.3	648.6	591.5	57.05	11.368	
6,700.0	5,639.2	6,593.3	5,638.7	31.8	29.7	89.96	1,435.8	125.3	656.8	596.5	60.22	10.906	
6,800.0	5,639.2	6,693.2	5,638.7	33.4	31.5	89.96	1,535.7	125.3	659.7	596.4	63.29	10.423	
6,900.0	5,639.2	6,793.2	5,638.8	35.0	33.2	89.96	1,635.7	125.3	659.7	593.0	66.70	9.890	
7,000.0	5,639.2	6,893.2	5,638.8	36.6	35.0	89.96	1,735.7	125.4	659.7	589.5	70.17	9.401	
7,100.0	5,639.2	6,993.2	5,638.8	38.2	36.8	89.96	1,835.7	125.4	659.7	586.0	73.68	8.954	
7,200.0	5,639.2	7,093.2	5,638.8	39.9	38.6	89.96	1,935.7	125.4	659.7	582.5	77.22	8.544	
7,300.0	5,639.2	7,193.2	5,638.8	41.6	40.4	89.96	2,035.7	125.4	659.7	578.9	80.78	8.167	
7,400.0	5,639.2	7,293.2	5,638.8	43.3	42.2	89.97	2,135.7	125.4	659.7	575.3	84.37	7.819	
7,500.0	5,639.2	7,393.2	5,638.8	45.1	44.1	89.97	2,235.7	125.4	659.7	571.7	87.98	7.498	
7,600.0	5,639.2	7,493.2	5,638.8	46.8	45.9	89.97	2,335.7	125.4	659.7	568.1	91.61	7.201	
7,700.0	5,639.2	7,593.2	5,638.8	48.6	47.8	89.97	2,435.7	125.4	659.7	564.5	95.26	6.926	
7,800.0	5,639.2	7,693.2	5,638.8	50.3	49.6	89.97	2,535.7	125.4	659.7	560.8	98.92	6.669	
7,900.0	5,639.2	7,793.2	5,638.8	52.1	51.5	89.97	2,635.7	125.4	659.7	557.1	102.59	6.430	
8,000.0	5,639.2	7,893.2	5,638.8	53.9	53.3	89.97	2,735.7	125.4	659.7	553.4	106.28	6.207	
8,100.0	5,639.1	7,993.2	5,638.8	55.7	55.2	89.97	2,835.7	125.4	659.7	549.7	109.97	5.999	
8,200.0	5,639.1	8,093.2	5,638.8	57.5	57.1	89.97	2,935.7	125.4	659.7	546.0	113.68	5.803	
8,300.0	5,639.1	8,193.2	5,638.8	59.3	58.9	89.97	3,035.7	125.4	659.7	542.3	117.39	5.620	
8,400.0	5,639.1	8,293.2	5,638.8	61.1	60.8	89.97	3,135.7	125.4	659.7	538.6	121.12	5.447	
8,500.0	5,639.1	8,393.2	5,638.8	63.0	62.7	89.97	3,235.7	125.4	659.7	534.9	124.85	5.284	
8,600.0	5,639.1	8,493.2	5,638.8	64.8	64.6	89.97	3,335.7	125.4	659.7	531.1	128.58	5.131	
8,700.0	5,639.1	8,593.2	5,638.8	66.6	66.5	89.97	3,435.7	125.4	659.7	527.4	132.32	4.986	
8,800.0	5,639.1	8,693.2	5,638.8	68.5	68.3	89.97	3,535.7	125.4	659.7	523.6	136.07	4.848	
8,900.0	5,639.1	8,793.2	5,638.8	70.3	70.2	89.98	3,635.7	125.4	659.7	519.9	139.83	4.718	
9,000.0	5,639.1	8,893.2	5,638.8	72.2	72.1	89.98	3,735.7	125.4	659.7	516.1	143.58	4.595	
9,100.0	5,639.1	8,993.2	5,638.8	74.0	74.0	89.98	3,835.7	125.4	659.7	512.4	147.34	4.477	
9,200.0	5,639.1	9,093.2	5,638.9	75.9	75.9	89.98	3,935.7	125.4	659.7	508.6	151.11	4.366	
9,300.0	5,639.1	9,193.2	5,638.9	77.7	77.8	89.98	4,035.7	125.4	659.7	504.8	154.88	4.259	
9,400.0	5,639.1	9,293.2	5,638.9	79.6	79.7	89.98	4,135.7	125.4	659.7	501.1	158.65	4.158	
9,500.0	5,639.1	9,393.2	5,638.9	81.5	81.6	89.98	4,235.7	125.4	659.7	497.3	162.43	4.062	
9,600.0	5,639.1	9,493.2	5,638.9	83.3	83.5	89.98	4,335.7	125.4	659.7	493.5	166.21	3.969	
9,700.0	5,639.1	9,593.2	5,638.9	85.2	85.4	89.98	4,435.7	125.4	659.7	489.7	169.99	3.881	
9,800.0	5,639.1	9,693.2	5,638.9	87.1	87.3	89.98	4,535.7	125.4	659.7	485.9	173.77	3.796	
9,900.0	5,639.1	9,793.2	5,638.9	88.9	89.2	89.98	4,635.7	125.4	659.7	482.1	177.56	3.715	
10,000.0	5,639.1	9,893.2	5,638.9	90.8	91.1	89.98	4,735.7	125.4	659.7	478.4	181.35	3.638	
10,100.0	5,639.1	9,993.2	5,638.9	92.7	93.0	89.98	4,835.7	125.4	659.7	474.6	185.14	3.563	
10,200.0	5,639.1	10,093.2	5,638.9	94.6	94.9	89.98	4,935.7	125.4	659.7	470.8	188.93	3.492	

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2807A - 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 +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
10,300.0	5,639.1	10,193.2	5,638.9	96.5	96.8	89.98	5,035.7	125.4	659.7	467.0	192.73	3.423	
10,400.0	5,639.1	10,293.2	5,638.9	98.3	98.7	89.99	5,135.7	125.4	659.7	463.2	196.53	3.357	
10,500.0	5,639.1	10,393.2	5,638.9	100.2	100.6	89.99	5,235.7	125.4	659.7	459.4	200.33	3.293	
10,600.0	5,639.1	10,493.2	5,638.9	102.1	102.5	89.99	5,335.7	125.4	659.7	455.6	204.13	3.232	
10,700.0	5,639.1	10,593.2	5,638.9	104.0	104.4	89.99	5,435.7	125.4	659.7	451.8	207.93	3.173	
10,800.0	5,639.1	10,693.2	5,638.9	105.9	106.3	89.99	5,535.7	125.4	659.7	448.0	211.73	3.116	
10,900.0	5,639.1	10,793.2	5,638.9	107.8	108.2	89.99	5,635.7	125.4	659.7	444.2	215.53	3.061	
11,000.0	5,639.1	10,893.2	5,638.9	109.7	110.1	89.99	5,735.7	125.4	659.7	440.4	219.34	3.008	
11,100.0	5,639.0	10,993.2	5,638.9	111.6	112.0	89.99	5,835.7	125.4	659.7	436.5	223.15	2.956	
11,200.0	5,639.0	11,093.2	5,638.9	113.5	113.9	89.99	5,935.7	125.4	659.7	432.7	226.96	2.907	
11,300.0	5,639.0	11,193.2	5,638.9	115.3	115.9	89.99	6,035.7	125.4	659.7	428.9	230.76	2.859	
11,400.0	5,639.0	11,293.2	5,638.9	117.2	117.8	89.99	6,135.7	125.4	659.7	425.1	234.58	2.812	
11,500.0	5,639.0	11,393.2	5,639.0	119.1	119.7	89.99	6,235.7	125.4	659.7	421.3	238.39	2.767	
11,600.0	5,639.0	11,493.2	5,639.0	121.0	121.6	89.99	6,335.7	125.4	659.7	417.5	242.20	2.724	
11,700.0	5,639.0	11,593.2	5,639.0	122.9	123.5	89.99	6,435.7	125.4	659.7	413.7	246.01	2.682	
11,800.0	5,639.0	11,693.2	5,639.0	124.8	125.4	89.99	6,535.7	125.4	659.7	409.9	249.83	2.641	
11,900.0	5,639.0	11,793.2	5,639.0	126.7	127.3	90.00	6,635.7	125.4	659.7	406.1	253.64	2.601	
12,000.0	5,639.0	11,893.2	5,639.0	128.6	129.2	90.00	6,735.7	125.4	659.7	402.2	257.46	2.562	
12,100.0	5,639.0	11,993.2	5,639.0	130.5	131.1	90.00	6,835.7	125.4	659.7	398.4	261.27	2.525	
12,200.0	5,639.0	12,093.2	5,639.0	132.4	133.0	90.00	6,935.7	125.4	659.7	394.6	265.09	2.489	
12,300.0	5,639.0	12,193.2	5,639.0	134.3	135.0	90.00	7,035.7	125.4	659.7	390.8	268.91	2.453	
12,400.0	5,639.0	12,293.2	5,639.0	136.2	136.9	90.00	7,135.7	125.4	659.7	387.0	272.72	2.419	
12,500.0	5,639.0	12,393.2	5,639.0	138.1	138.8	90.00	7,235.7	125.4	659.7	383.1	276.54	2.385	
12,598.4	5,639.0	12,491.7	5,639.0	140.0	140.7	90.00	7,334.1	125.4	659.7	379.4	280.30	2.353 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2808B - 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	101.61	-18.2	88.6	90.5					
100.0	100.0	100.0	100.0	0.1	0.1	101.61	-18.2	88.6	90.5	90.3	0.19	483.753		
200.0	200.0	200.0	200.0	0.3	0.3	101.61	-18.2	88.6	90.5	89.8	0.64	142.120		
300.0	300.0	300.0	300.0	0.5	0.5	101.61	-18.2	88.6	90.5	89.4	1.09	83.295		
400.0	400.0	400.0	400.0	0.8	0.8	101.61	-18.2	88.6	90.5	88.9	1.54	58.911		
500.0	500.0	500.0	500.0	1.0	1.0	101.61	-18.2	88.6	90.5	88.5	1.99	45.571		
600.0	600.0	600.0	600.0	1.2	1.2	101.61	-18.2	88.6	90.5	88.0	2.43	37.157		
700.0	700.0	700.0	700.0	1.4	1.4	101.61	-18.2	88.6	90.5	87.6	2.88	31.366		
800.0	800.0	800.0	800.0	1.7	1.7	101.61	-18.2	88.6	90.5	87.1	3.33	27.136		
900.0	900.0	900.0	900.0	1.9	1.9	101.61	-18.2	88.6	90.5	86.7	3.78	23.912 CC		
1,000.0	1,000.0	999.6	999.5	2.1	2.1	100.53	-16.6	89.2	90.7	86.5	4.23	21.439 ES		
1,100.0	1,100.0	1,098.9	1,098.7	2.3	2.3	97.33	-11.7	90.8	91.6	86.9	4.68	19.582		
1,200.0	1,200.0	1,198.6	1,198.2	2.6	2.6	93.13	-5.1	93.1	93.3	88.1	5.13	18.176		
1,300.0	1,300.0	1,298.5	1,297.8	2.8	2.8	115.81	1.5	95.3	96.1	90.5	5.58	17.219		
1,400.0	1,399.8	1,398.3	1,397.4	3.0	3.0	114.66	8.1	97.6	100.7	94.6	6.04	16.675		
1,500.0	1,499.6	1,498.2	1,497.1	3.2	3.3	114.54	14.7	99.9	106.0	99.5	6.50	16.304		
1,600.0	1,599.4	1,598.1	1,596.7	3.5	3.5	114.43	21.3	102.1	111.3	104.3	6.97	15.969		
1,700.0	1,699.1	1,697.9	1,696.3	3.7	3.8	114.33	27.9	104.4	116.6	109.1	7.44	15.667		
1,800.0	1,798.9	1,797.8	1,795.9	3.9	4.0	114.24	34.4	106.6	121.9	114.0	7.92	15.393		
1,900.0	1,898.6	1,897.6	1,895.5	4.2	4.3	114.16	41.0	108.9	127.2	118.8	8.40	15.144		
2,000.0	1,998.4	1,997.5	1,995.1	4.4	4.5	114.09	47.6	111.1	132.5	123.6	8.88	14.918		
2,100.0	2,098.1	2,097.3	2,094.8	4.7	4.7	114.02	54.2	113.4	137.8	128.4	9.37	14.711		
2,200.0	2,197.9	2,197.2	2,194.4	4.9	5.0	113.96	60.8	115.6	143.1	133.2	9.85	14.522		
2,300.0	2,297.6	2,297.1	2,294.0	5.2	5.2	113.90	67.4	117.9	148.4	138.0	10.34	14.349		
2,400.0	2,397.4	2,396.9	2,393.6	5.4	5.5	113.84	74.0	120.1	153.7	142.8	10.83	14.189		
2,500.0	2,497.2	2,496.8	2,493.2	5.7	5.7	113.79	80.6	122.4	159.0	147.7	11.32	14.041		
2,600.0	2,596.9	2,596.6	2,592.8	5.9	6.0	113.74	87.2	124.6	164.3	152.5	11.81	13.904		
2,700.0	2,696.7	2,696.5	2,692.5	6.2	6.3	113.70	93.8	126.9	169.6	157.3	12.31	13.778		
2,800.0	2,796.4	2,796.4	2,792.1	6.4	6.5	113.65	100.4	129.1	174.9	162.1	12.80	13.660		
2,900.0	2,896.2	2,896.2	2,891.7	6.7	6.8	113.61	107.0	131.4	180.2	166.9	13.30	13.550		
3,000.0	2,995.9	2,996.1	2,991.3	6.9	7.0	113.58	113.5	133.6	185.5	171.7	13.79	13.447		
3,100.0	3,095.7	3,095.9	3,090.9	7.2	7.3	113.54	120.1	135.9	190.8	176.5	14.29	13.351		
3,200.0	3,195.5	3,195.8	3,190.5	7.4	7.5	113.51	126.7	138.2	196.1	181.3	14.79	13.261		
3,300.0	3,295.2	3,295.7	3,290.1	7.7	7.8	113.48	133.3	140.4	201.4	186.1	15.28	13.176		
3,400.0	3,395.0	3,395.5	3,389.8	7.9	8.0	113.44	139.9	142.7	206.7	190.9	15.78	13.096		
3,500.0	3,494.7	3,495.4	3,489.4	8.2	8.3	113.42	146.5	144.9	212.0	195.7	16.28	13.021		
3,600.0	3,594.5	3,595.2	3,589.0	8.4	8.5	113.39	153.1	147.2	217.3	200.5	16.78	12.950		
3,700.0	3,694.2	3,695.1	3,688.6	8.7	8.8	113.36	159.7	149.4	222.6	205.3	17.28	12.882		
3,800.0	3,794.0	3,795.0	3,788.2	8.9	9.0	113.34	166.3	151.7	227.9	210.1	17.78	12.819		
3,900.0	3,893.7	3,894.8	3,887.8	9.2	9.3	113.31	172.9	153.9	233.2	214.9	18.28	12.758		
4,000.0	3,993.5	3,994.7	3,987.5	9.4	9.5	113.29	179.5	156.2	238.5	219.7	18.78	12.701		
4,100.0	4,093.3	4,094.5	4,087.1	9.7	9.8	113.27	186.1	158.4	243.8	224.5	19.28	12.647		
4,200.0	4,193.0	4,194.4	4,186.7	9.9	10.1	113.25	192.6	160.7	249.1	229.3	19.78	12.595		
4,300.0	4,292.8	4,294.3	4,286.3	10.2	10.3	113.23	199.2	162.9	254.4	234.1	20.28	12.545		
4,400.0	4,392.5	4,394.1	4,385.9	10.5	10.6	113.21	205.8	165.2	259.7	238.9	20.78	12.498		
4,500.0	4,492.3	4,494.0	4,485.5	10.7	10.8	113.19	212.4	167.4	265.0	243.7	21.28	12.453		
4,600.0	4,592.0	4,593.8	4,585.2	11.0	11.1	113.17	219.0	169.7	270.3	248.5	21.78	12.410		
4,700.0	4,691.8	4,693.7	4,684.8	11.2	11.3	113.16	225.6	171.9	275.6	253.3	22.28	12.368		
4,800.0	4,791.6	4,793.5	4,784.4	11.5	11.6	113.14	232.2	174.2	280.9	258.1	22.78	12.329		
4,900.0	4,891.3	4,893.4	4,884.0	11.7	11.8	113.13	238.8	176.5	286.2	262.9	23.29	12.291		
5,000.0	4,991.1	4,993.3	4,983.6	12.0	12.1	113.11	245.4	178.7	291.5	267.7	23.79	12.255		
5,100.0	5,090.8	5,093.1	5,083.2	12.2	12.3	113.10	252.0	181.0	296.8	272.5	24.29	12.220		

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2808B - 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	5,190.5	5,192.9	5,182.8	12.5	12.6	113.06	258.6	183.2	302.6	277.8	24.77	12.215		
5,300.0	5,287.6	5,284.1	5,273.7	12.9	12.8	114.05	265.7	185.6	315.1	289.9	25.19	12.507		
5,400.0	5,378.5	5,364.4	5,352.0	13.4	13.1	114.10	281.8	191.2	340.1	314.4	25.66	13.255		
5,500.0	5,459.8	5,442.1	5,424.5	14.1	13.5	112.80	308.1	200.1	377.3	351.0	26.33	14.331		
5,600.0	5,528.6	5,516.3	5,489.2	15.0	14.0	110.10	342.5	211.9	425.1	397.7	27.39	15.520		
5,700.0	5,582.3	5,586.7	5,545.1	16.2	14.5	106.00	382.8	225.7	481.5	452.5	28.96	16.625		
5,800.0	5,618.9	5,653.4	5,592.4	17.5	15.1	100.62	427.2	240.9	544.7	513.7	31.00	17.567		
5,900.0	5,637.2	5,717.1	5,631.6	19.0	15.7	94.18	474.7	257.1	612.6	579.3	33.27	18.411		
6,000.0	5,639.2	5,780.9	5,664.4	20.6	16.4	92.95	526.4	274.7	682.9	647.5	35.40	19.293		
6,100.0	5,639.2	5,855.8	5,694.1	22.1	17.3	95.60	591.4	297.0	750.9	713.4	37.50	20.021		
6,200.0	5,639.2	5,943.0	5,715.9	23.7	18.5	96.84	671.2	324.3	814.7	774.7	39.94	20.398		
6,300.0	5,639.2	6,043.6	5,723.3	25.3	19.9	96.63	766.1	356.6	873.1	830.3	42.78	20.408		
6,400.0	5,639.2	6,206.9	5,723.3	26.9	22.2	95.80	922.9	401.7	922.5	876.0	46.50	19.840		
6,500.0	5,639.2	6,389.6	5,723.3	28.5	24.9	95.26	1,102.3	436.1	959.2	908.4	50.76	18.896		
6,600.0	5,639.2	6,587.0	5,723.3	30.2	27.9	94.97	1,298.9	453.8	981.3	925.8	55.50	17.681		
6,700.0	5,639.2	6,723.9	5,723.3	31.8	30.0	94.88	1,435.7	455.2	990.1	930.8	59.39	16.671		
6,800.0	5,639.2	6,823.9	5,723.2	33.4	31.7	94.86	1,535.7	455.2	993.1	930.5	62.63	15.856		
6,900.0	5,639.2	6,923.9	5,723.2	35.0	33.3	94.86	1,635.7	455.2	993.1	927.1	65.98	15.053		
7,000.0	5,639.2	7,023.9	5,723.2	36.6	35.0	94.86	1,735.7	455.2	993.1	923.7	69.37	14.317		
7,100.0	5,639.2	7,123.9	5,723.2	38.2	36.7	94.86	1,835.7	455.2	993.1	920.3	72.80	13.642		
7,200.0	5,639.2	7,223.9	5,723.2	39.9	38.4	94.86	1,935.7	455.2	993.1	916.8	76.27	13.021		
7,300.0	5,639.2	7,323.9	5,723.2	41.6	40.2	94.85	2,035.7	455.2	993.1	913.3	79.77	12.449		
7,400.0	5,639.2	7,423.9	5,723.2	43.3	41.9	94.85	2,135.7	455.2	993.1	909.8	83.31	11.921		
7,500.0	5,639.2	7,523.9	5,723.2	45.1	43.7	94.85	2,235.7	455.2	993.1	906.3	86.87	11.433		
7,600.0	5,639.2	7,623.9	5,723.2	46.8	45.5	94.85	2,335.7	455.2	993.1	902.7	90.45	10.980		
7,700.0	5,639.2	7,723.9	5,723.2	48.6	47.3	94.85	2,435.7	455.2	993.1	899.1	94.05	10.560		
7,800.0	5,639.2	7,823.9	5,723.2	50.3	49.1	94.85	2,535.7	455.2	993.1	895.5	97.66	10.169		
7,900.0	5,639.2	7,923.9	5,723.2	52.1	50.9	94.85	2,635.7	455.2	993.1	891.8	101.29	9.804		
8,000.0	5,639.2	8,023.9	5,723.2	53.9	52.7	94.85	2,735.7	455.2	993.1	888.2	104.94	9.464		
8,100.0	5,639.1	8,123.9	5,723.2	55.7	54.5	94.85	2,835.7	455.2	993.1	884.5	108.60	9.145		
8,200.0	5,639.1	8,223.9	5,723.2	57.5	56.4	94.85	2,935.7	455.2	993.1	880.9	112.27	8.846		
8,300.0	5,639.1	8,323.9	5,723.2	59.3	58.2	94.85	3,035.7	455.2	993.1	877.2	115.95	8.565		
8,400.0	5,639.1	8,423.9	5,723.2	61.1	60.1	94.85	3,135.7	455.2	993.1	873.5	119.64	8.301		
8,500.0	5,639.1	8,523.9	5,723.2	63.0	61.9	94.85	3,235.7	455.2	993.1	869.8	123.34	8.052		
8,600.0	5,639.1	8,623.9	5,723.2	64.8	63.8	94.85	3,335.7	455.2	993.1	866.1	127.05	7.817		
8,700.0	5,639.1	8,723.9	5,723.2	66.6	65.6	94.85	3,435.7	455.2	993.1	862.4	130.76	7.595		
8,800.0	5,639.1	8,823.9	5,723.2	68.5	67.5	94.85	3,535.7	455.2	993.2	858.7	134.48	7.385		
8,900.0	5,639.1	8,923.9	5,723.2	70.3	69.3	94.85	3,635.7	455.2	993.2	854.9	138.21	7.186		
9,000.0	5,639.1	9,023.9	5,723.2	72.2	71.2	94.85	3,735.7	455.3	993.2	851.2	141.94	6.997		
9,100.0	5,639.1	9,123.9	5,723.1	74.0	73.1	94.85	3,835.7	455.3	993.2	847.5	145.67	6.818		
9,200.0	5,639.1	9,223.9	5,723.1	75.9	74.9	94.85	3,935.7	455.3	993.2	843.7	149.41	6.647		
9,300.0	5,639.1	9,323.9	5,723.1	77.7	76.8	94.85	4,035.7	455.3	993.2	840.0	153.16	6.484		
9,400.0	5,639.1	9,423.9	5,723.1	79.6	78.7	94.85	4,135.7	455.3	993.2	836.3	156.91	6.330		
9,500.0	5,639.1	9,523.9	5,723.1	81.5	80.6	94.85	4,235.7	455.3	993.2	832.5	160.66	6.182		
9,600.0	5,639.1	9,623.9	5,723.1	83.3	82.5	94.85	4,335.7	455.3	993.2	828.7	164.42	6.040		
9,700.0	5,639.1	9,723.9	5,723.1	85.2	84.3	94.85	4,435.7	455.3	993.2	825.0	168.18	5.905		
9,800.0	5,639.1	9,823.9	5,723.1	87.1	86.2	94.85	4,535.7	455.3	993.2	821.2	171.94	5.776		
9,900.0	5,639.1	9,923.9	5,723.1	88.9	88.1	94.85	4,635.7	455.3	993.2	817.5	175.71	5.652		
10,000.0	5,639.1	10,023.9	5,723.1	90.8	90.0	94.85	4,735.7	455.3	993.2	813.7	179.48	5.534		
10,100.0	5,639.1	10,123.9	5,723.1	92.7	91.9	94.85	4,835.7	455.3	993.2	809.9	183.25	5.420		
10,200.0	5,639.1	10,223.9	5,723.1	94.6	93.8	94.85	4,935.7	455.3	993.2	806.2	187.02	5.311		
10,300.0	5,639.1	10,323.9	5,723.1	96.5	95.7	94.85	5,035.7	455.3	993.2	802.4	190.80	5.205		

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 #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 S33-T10N-R58W - Razor #33N-2808B - 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
10,400.0	5,639.1	10,423.9	5,723.1	98.3	97.6	94.85	5,135.7	455.3	993.2	798.6	194.57	5.104	
10,500.0	5,639.1	10,523.9	5,723.1	100.2	99.4	94.85	5,235.7	455.3	993.2	794.8	198.35	5.007	
10,600.0	5,639.1	10,623.9	5,723.1	102.1	101.3	94.85	5,335.7	455.3	993.2	791.1	202.14	4.913	
10,700.0	5,639.1	10,723.9	5,723.1	104.0	103.2	94.85	5,435.7	455.3	993.2	787.3	205.92	4.823	
10,800.0	5,639.1	10,823.9	5,723.1	105.9	105.1	94.85	5,535.7	455.3	993.2	783.5	209.70	4.736	
10,900.0	5,639.1	10,923.9	5,723.1	107.8	107.0	94.85	5,635.7	455.3	993.2	779.7	213.49	4.652	
11,000.0	5,639.1	11,023.9	5,723.1	109.7	108.9	94.85	5,735.7	455.3	993.2	775.9	217.28	4.571	
11,100.0	5,639.0	11,123.9	5,723.1	111.6	110.8	94.85	5,835.7	455.3	993.2	772.1	221.07	4.493	
11,200.0	5,639.0	11,223.9	5,723.1	113.5	112.7	94.85	5,935.7	455.3	993.2	768.3	224.86	4.417	
11,300.0	5,639.0	11,323.9	5,723.1	115.3	114.6	94.85	6,035.7	455.3	993.2	764.5	228.65	4.344	
11,400.0	5,639.0	11,423.9	5,723.1	117.2	116.5	94.85	6,135.7	455.3	993.2	760.8	232.44	4.273	
11,500.0	5,639.0	11,523.9	5,723.0	119.1	118.4	94.85	6,235.7	455.3	993.2	757.0	236.24	4.204	
11,600.0	5,639.0	11,623.9	5,723.0	121.0	120.3	94.85	6,335.7	455.3	993.2	753.2	240.03	4.138	
11,700.0	5,639.0	11,723.9	5,723.0	122.9	122.2	94.85	6,435.7	455.4	993.2	749.4	243.83	4.073	
11,800.0	5,639.0	11,823.9	5,723.0	124.8	124.1	94.85	6,535.7	455.4	993.2	745.6	247.63	4.011	
11,900.0	5,639.0	11,923.9	5,723.0	126.7	126.0	94.85	6,635.7	455.4	993.2	741.8	251.43	3.950	
12,000.0	5,639.0	12,023.9	5,723.0	128.6	127.9	94.85	6,735.7	455.4	993.2	738.0	255.23	3.892	
12,100.0	5,639.0	12,123.9	5,723.0	130.5	129.8	94.85	6,835.7	455.4	993.2	734.2	259.03	3.834	
12,200.0	5,639.0	12,223.9	5,723.0	132.4	131.8	94.85	6,935.7	455.4	993.2	730.4	262.83	3.779	
12,300.0	5,639.0	12,323.9	5,723.0	134.3	133.7	94.85	7,035.7	455.4	993.2	726.6	266.63	3.725	
12,400.0	5,639.0	12,423.9	5,723.0	136.2	135.6	94.85	7,135.7	455.4	993.2	722.8	270.43	3.673	
12,500.0	5,639.0	12,523.9	5,723.0	138.1	137.5	94.85	7,235.7	455.4	993.2	719.0	274.23	3.622	
12,598.4	5,639.0	12,622.3	5,723.0	140.0	139.3	94.85	7,334.1	455.4	993.2	715.2	277.98	3.573 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #33N-2805A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Reference Site:</b>	S33-T10N-R58W	<b>MD Reference:</b>	WELL @ 4740.2ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #33N-2805A	<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 @ 4740.2ft (Original Well Elev)  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Razor #33N-2805A  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.05°

