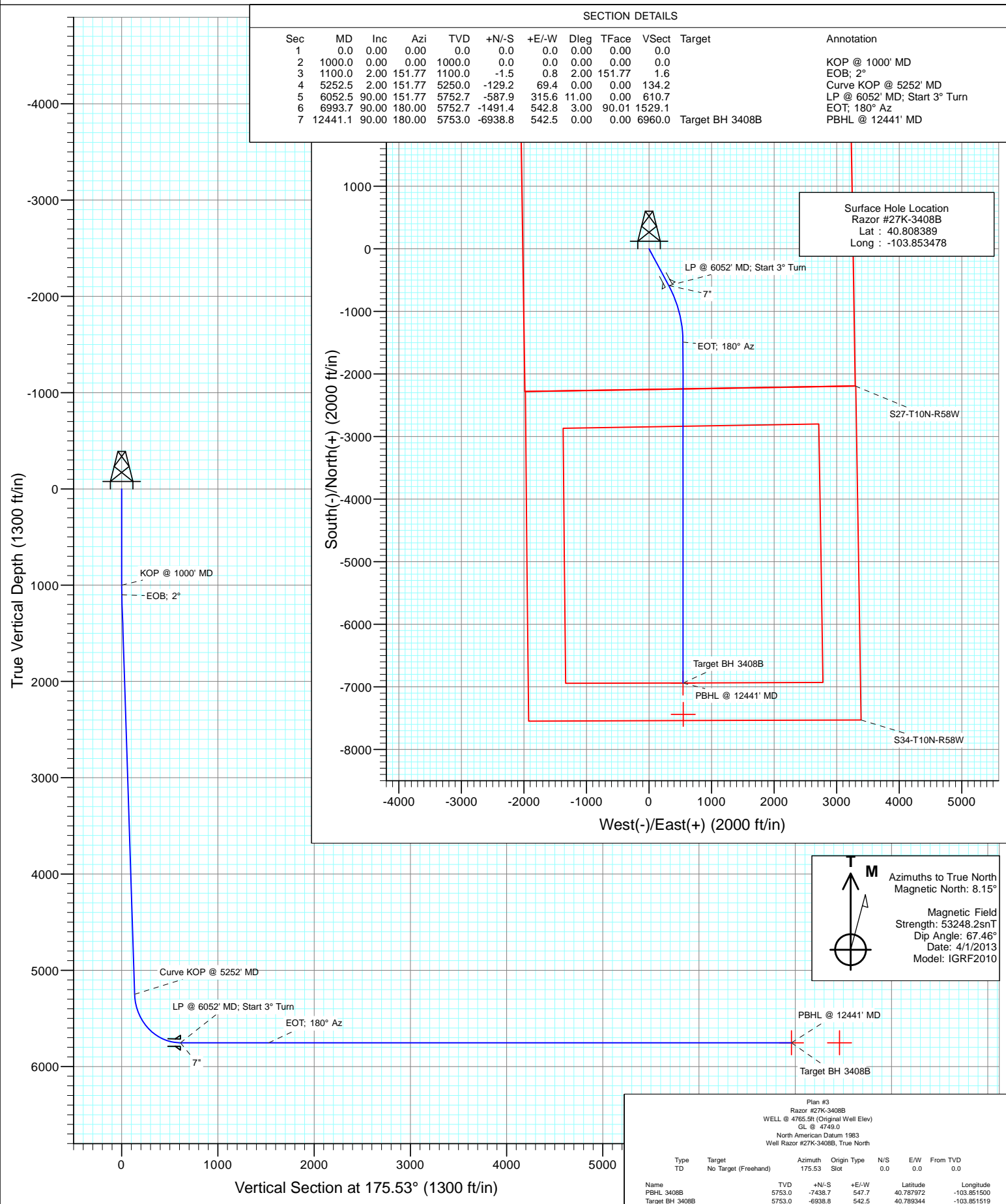




Project: Weld County, CO  
Site: S27-T10N-R58W  
Well: Razor #27K-3408B  
Wellbore: HZ  
Design: Plan #3



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site:</b>	S27-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #27K-3408B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #3		

<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		S27-T10N-R58W			
Site Position:		Northing:	1,541,650.73 ft	Latitude:	40.808594
From:	Lat/Long	Easting:	3,455,691.89 ft	Longitude:	-103.853833
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.06 °

Well	Razor #27K-3408B					
Well Position	+N/-S	0.0 ft	Northing:	1,541,577.86 ft	Latitude:	40.808389
	+E/-W	0.0 ft	Easting:	3,455,791.54 ft	Longitude:	-103.853478
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,749.0 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	4/1/2013	8.15	67.46	53,248

<b>Design</b>	Plan #3				
<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	175.53	

<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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	2.00	151.77	1,100.0	-1.5	0.8	2.00	2.00	0.00	151.77	
5,252.5	2.00	151.77	5,250.0	-129.2	69.4	0.00	0.00	0.00	0.00	
6,052.5	90.00	151.77	5,752.7	-587.9	315.6	11.00	11.00	0.00	0.00	
6,993.7	90.00	180.00	5,752.7	-1,491.4	542.8	3.00	0.00	3.00	90.01	
12,441.1	90.00	180.00	5,753.0	-6,938.8	542.5	0.00	0.00	0.00	0.00	Target BH 3408B

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site:</b>	S27-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #27K-3408B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #3		

### 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	KOP @ 1000' MD
1,100.0	2.00	151.77	1,100.0	-1.5	0.8	1.6	2.00	2.00	EOB; 2°
1,200.0	2.00	151.77	1,199.9	-4.6	2.5	4.8	0.00	0.00	
1,300.0	2.00	151.77	1,299.9	-7.7	4.1	8.0	0.00	0.00	
1,400.0	2.00	151.77	1,399.8	-10.8	5.8	11.2	0.00	0.00	
1,500.0	2.00	151.77	1,499.7	-13.8	7.4	14.4	0.00	0.00	
1,600.0	2.00	151.77	1,599.7	-16.9	9.1	17.6	0.00	0.00	
1,700.0	2.00	151.77	1,699.6	-20.0	10.7	20.8	0.00	0.00	
1,800.0	2.00	151.77	1,799.6	-23.1	12.4	24.0	0.00	0.00	
1,900.0	2.00	151.77	1,899.5	-26.1	14.0	27.2	0.00	0.00	
2,000.0	2.00	151.77	1,999.4	-29.2	15.7	30.3	0.00	0.00	
2,100.0	2.00	151.77	2,099.4	-32.3	17.3	33.5	0.00	0.00	
2,200.0	2.00	151.77	2,199.3	-35.4	19.0	36.7	0.00	0.00	
2,300.0	2.00	151.77	2,299.3	-38.4	20.6	39.9	0.00	0.00	
2,400.0	2.00	151.77	2,399.2	-41.5	22.3	43.1	0.00	0.00	
2,500.0	2.00	151.77	2,499.1	-44.6	23.9	46.3	0.00	0.00	
2,600.0	2.00	151.77	2,599.1	-47.7	25.6	49.5	0.00	0.00	
2,700.0	2.00	151.77	2,699.0	-50.7	27.2	52.7	0.00	0.00	
2,800.0	2.00	151.77	2,798.9	-53.8	28.9	55.9	0.00	0.00	
2,900.0	2.00	151.77	2,898.9	-56.9	30.5	59.1	0.00	0.00	
3,000.0	2.00	151.77	2,998.8	-60.0	32.2	62.3	0.00	0.00	
3,100.0	2.00	151.77	3,098.8	-63.0	33.8	65.5	0.00	0.00	
3,200.0	2.00	151.77	3,198.7	-66.1	35.5	68.7	0.00	0.00	
3,300.0	2.00	151.77	3,298.6	-69.2	37.1	71.9	0.00	0.00	
3,400.0	2.00	151.77	3,398.6	-72.3	38.8	75.1	0.00	0.00	
3,500.0	2.00	151.77	3,498.5	-75.3	40.4	78.3	0.00	0.00	
3,600.0	2.00	151.77	3,598.5	-78.4	42.1	81.5	0.00	0.00	
3,700.0	2.00	151.77	3,698.4	-81.5	43.7	84.6	0.00	0.00	
3,800.0	2.00	151.77	3,798.3	-84.6	45.4	87.8	0.00	0.00	
3,900.0	2.00	151.77	3,898.3	-87.6	47.0	91.0	0.00	0.00	
4,000.0	2.00	151.77	3,998.2	-90.7	48.7	94.2	0.00	0.00	
4,100.0	2.00	151.77	4,098.2	-93.8	50.3	97.4	0.00	0.00	
4,200.0	2.00	151.77	4,198.1	-96.9	52.0	100.6	0.00	0.00	
4,300.0	2.00	151.77	4,298.0	-99.9	53.7	103.8	0.00	0.00	
4,400.0	2.00	151.77	4,398.0	-103.0	55.3	107.0	0.00	0.00	
4,500.0	2.00	151.77	4,497.9	-106.1	57.0	110.2	0.00	0.00	
4,600.0	2.00	151.77	4,597.9	-109.2	58.6	113.4	0.00	0.00	
4,700.0	2.00	151.77	4,697.8	-112.2	60.3	116.6	0.00	0.00	
4,800.0	2.00	151.77	4,797.7	-115.3	61.9	119.8	0.00	0.00	
4,900.0	2.00	151.77	4,897.7	-118.4	63.6	123.0	0.00	0.00	
5,000.0	2.00	151.77	4,997.6	-121.5	65.2	126.2	0.00	0.00	
5,100.0	2.00	151.77	5,097.6	-124.5	66.9	129.4	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 #27K-3408B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site:</b>	S27-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #27K-3408B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #3		

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	2.00	151.77	5,197.5	-127.6	68.5	132.6	0.00	0.00	
5,252.5	2.00	151.77	5,250.0	-129.2	69.4	134.2	0.00	0.00	Curve KOP @ 5252' MD
5,300.0	7.22	151.77	5,297.3	-132.6	71.2	137.7	11.00	11.00	
5,400.0	18.22	151.77	5,394.7	-152.0	81.6	157.8	11.00	11.00	
5,500.0	29.22	151.77	5,486.1	-187.3	100.6	194.6	11.00	11.00	
5,600.0	40.22	151.77	5,568.2	-237.4	127.5	246.7	11.00	11.00	
5,700.0	51.22	151.77	5,637.9	-300.4	161.3	312.1	11.00	11.00	
5,800.0	62.22	151.77	5,692.7	-374.0	200.8	388.5	11.00	11.00	
5,900.0	73.22	151.77	5,730.5	-455.4	244.5	473.0	11.00	11.00	
6,000.0	84.22	151.77	5,750.0	-541.6	290.8	562.7	11.00	11.00	
6,052.5	89.99	151.77	5,752.7	-587.8	315.6	610.6	11.00	11.00	LP @ 6052' MD; Start 3° Turn - 7"
6,100.0	90.00	153.19	5,752.7	-630.0	337.5	654.3	3.00	0.01	
6,200.0	90.00	156.19	5,752.7	-720.3	380.3	747.8	3.00	0.00	
6,300.0	90.00	159.19	5,752.7	-812.9	418.2	843.0	3.00	0.00	
6,400.0	90.00	162.19	5,752.7	-907.2	451.3	939.6	3.00	0.00	
6,500.0	90.00	165.19	5,752.7	-1,003.2	479.4	1,037.5	3.00	0.00	
6,600.0	90.00	168.19	5,752.7	-1,100.5	502.4	1,136.3	3.00	0.00	
6,700.0	90.00	171.19	5,752.7	-1,198.9	520.3	1,235.8	3.00	0.00	
6,800.0	90.00	174.19	5,752.7	-1,298.0	533.0	1,335.6	3.00	0.00	
6,900.0	90.00	177.19	5,752.7	-1,397.7	540.5	1,435.6	3.00	0.00	
6,993.7	90.00	180.00	5,752.7	-1,491.4	542.8	1,529.2	3.00	0.00	EOT; 180° Az
7,000.0	90.00	180.00	5,752.7	-1,497.7	542.8	1,535.5	0.00	0.00	
7,100.0	90.00	180.00	5,752.7	-1,597.7	542.8	1,635.2	0.00	0.00	
7,200.0	90.00	180.00	5,752.7	-1,697.7	542.8	1,734.8	0.00	0.00	
7,300.0	90.00	180.00	5,752.7	-1,797.7	542.8	1,834.5	0.00	0.00	
7,400.0	90.00	180.00	5,752.7	-1,897.7	542.7	1,934.2	0.00	0.00	
7,500.0	90.00	180.00	5,752.7	-1,997.7	542.7	2,033.9	0.00	0.00	
7,600.0	90.00	180.00	5,752.8	-2,097.7	542.7	2,133.6	0.00	0.00	
7,700.0	90.00	180.00	5,752.8	-2,197.7	542.7	2,233.3	0.00	0.00	
7,800.0	90.00	180.00	5,752.8	-2,297.7	542.7	2,333.0	0.00	0.00	
7,900.0	90.00	180.00	5,752.8	-2,397.7	542.7	2,432.7	0.00	0.00	
8,000.0	90.00	180.00	5,752.8	-2,497.7	542.7	2,532.4	0.00	0.00	
8,100.0	90.00	180.00	5,752.8	-2,597.7	542.7	2,632.1	0.00	0.00	
8,200.0	90.00	180.00	5,752.8	-2,697.7	542.7	2,731.8	0.00	0.00	
8,300.0	90.00	180.00	5,752.8	-2,797.7	542.7	2,831.5	0.00	0.00	
8,400.0	90.00	180.00	5,752.8	-2,897.7	542.7	2,931.2	0.00	0.00	
8,500.0	90.00	180.00	5,752.8	-2,997.7	542.7	3,030.9	0.00	0.00	
8,600.0	90.00	180.00	5,752.8	-3,097.7	542.7	3,130.6	0.00	0.00	
8,700.0	90.00	180.00	5,752.8	-3,197.7	542.7	3,230.3	0.00	0.00	
8,800.0	90.00	180.00	5,752.8	-3,297.7	542.7	3,330.0	0.00	0.00	
8,900.0	90.00	180.00	5,752.8	-3,397.7	542.7	3,429.7	0.00	0.00	
9,000.0	90.00	180.00	5,752.8	-3,497.7	542.7	3,529.4	0.00	0.00	
9,100.0	90.00	180.00	5,752.8	-3,597.7	542.7	3,629.1	0.00	0.00	
9,200.0	90.00	180.00	5,752.8	-3,697.7	542.6	3,728.8	0.00	0.00	
9,300.0	90.00	180.00	5,752.8	-3,797.7	542.6	3,828.5	0.00	0.00	
9,400.0	90.00	180.00	5,752.8	-3,897.7	542.6	3,928.2	0.00	0.00	
9,500.0	90.00	180.00	5,752.9	-3,997.7	542.6	4,027.8	0.00	0.00	
9,600.0	90.00	180.00	5,752.9	-4,097.7	542.6	4,127.5	0.00	0.00	
9,700.0	90.00	180.00	5,752.9	-4,197.7	542.6	4,227.2	0.00	0.00	
9,800.0	90.00	180.00	5,752.9	-4,297.7	542.6	4,326.9	0.00	0.00	
9,900.0	90.00	180.00	5,752.9	-4,397.7	542.6	4,426.6	0.00	0.00	
10,000.0	90.00	180.00	5,752.9	-4,497.7	542.6	4,526.3	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 #27K-3408B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site:</b>	S27-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #27K-3408B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #3		

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
10,100.0	90.00	180.00	5,752.9	-4,597.7	542.6	4,626.0	0.00	0.00	
10,200.0	90.00	180.00	5,752.9	-4,697.7	542.6	4,725.7	0.00	0.00	
10,300.0	90.00	180.00	5,752.9	-4,797.7	542.6	4,825.4	0.00	0.00	
10,400.0	90.00	180.00	5,752.9	-4,897.7	542.6	4,925.1	0.00	0.00	
10,500.0	90.00	180.00	5,752.9	-4,997.7	542.6	5,024.8	0.00	0.00	
10,600.0	90.00	180.00	5,752.9	-5,097.7	542.6	5,124.5	0.00	0.00	
10,700.0	90.00	180.00	5,752.9	-5,197.7	542.6	5,224.2	0.00	0.00	
10,800.0	90.00	180.00	5,752.9	-5,297.7	542.6	5,323.9	0.00	0.00	
10,900.0	90.00	180.00	5,752.9	-5,397.7	542.6	5,423.6	0.00	0.00	
11,000.0	90.00	180.00	5,752.9	-5,497.7	542.5	5,523.3	0.00	0.00	
11,100.0	90.00	180.00	5,752.9	-5,597.7	542.5	5,623.0	0.00	0.00	
11,200.0	90.00	180.00	5,752.9	-5,697.7	542.5	5,722.7	0.00	0.00	
11,300.0	90.00	180.00	5,753.0	-5,797.7	542.5	5,822.4	0.00	0.00	
11,400.0	90.00	180.00	5,753.0	-5,897.7	542.5	5,922.1	0.00	0.00	
11,500.0	90.00	180.00	5,753.0	-5,997.7	542.5	6,021.8	0.00	0.00	
11,600.0	90.00	180.00	5,753.0	-6,097.7	542.5	6,121.5	0.00	0.00	
11,700.0	90.00	180.00	5,753.0	-6,197.7	542.5	6,221.1	0.00	0.00	
11,800.0	90.00	180.00	5,753.0	-6,297.7	542.5	6,320.8	0.00	0.00	
11,900.0	90.00	180.00	5,753.0	-6,397.7	542.5	6,420.5	0.00	0.00	
12,000.0	90.00	180.00	5,753.0	-6,497.7	542.5	6,520.2	0.00	0.00	
12,100.0	90.00	180.00	5,753.0	-6,597.7	542.5	6,619.9	0.00	0.00	
12,200.0	90.00	180.00	5,753.0	-6,697.7	542.5	6,719.6	0.00	0.00	
12,300.0	90.00	180.00	5,753.0	-6,797.7	542.5	6,819.3	0.00	0.00	
12,400.0	90.00	180.00	5,753.0	-6,897.7	542.5	6,919.0	0.00	0.00	
12,441.1	90.00	180.00	5,753.0	-6,938.8	542.5	6,960.0	0.00	0.00	PBHL @ 12441' 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									
Target BH 3408B	0.00	1.07	5,753.0	-6,938.8	542.5	1,534,650.33	3,456,462.75	40.789344	-103.851519
- plan hits target center									
- Point									
PBHL 3408B	0.00	1.07	5,753.0	-7,438.7	547.7	1,534,150.64	3,456,477.30	40.787972	-103.851500
- plan misses target center by 499.9ft at 12441.1ft MD (5753.0 TVD, -6938.8 N, 542.5 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,052.5	5,752.7	7"	0.000	0.000	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site:</b>	S27-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #27K-3408B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #3		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1000' MD
1,100.0	1,100.0	-1.5	0.8	EOB; 2°
5,252.5	5,250.0	-129.2	69.4	Curve KOP @ 5252' MD
6,052.5	5,752.7	-587.9	315.6	LP @ 6052' MD; Start 3° Turn
6,993.7	5,752.7	-1,491.4	542.8	EOT; 180° Az
12,441.1	5,753.0	-6,938.8	542.5	PBHL @ 12441' MD

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S27-T10N-R58W**

**Razor #27K-3408B**

**HZ**

**Plan #3**

## **Anticollision Report**

**11 June, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	6/11/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,441.1	Plan #3 (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						
S27-T10N-R58W						
Razor #27K-3405A - HZ - Plan #3	1,000.0	1,001.0	123.4	119.2	29.142	CC, ES
Razor #27K-3405A - HZ - Plan #3	5,350.0	5,411.6	249.4	226.3	10.811	SF
Razor #27K-3406B - HZ - Plan #4	1,000.0	999.0	65.3	61.1	15.441	CC, ES
Razor #27K-3406B - HZ - Plan #4	5,300.0	5,316.2	186.9	163.8	8.099	SF
Razor #27K-3407A - HZ - Plan #3	1,000.0	1,002.0	81.6	77.4	19.262	CC, ES
Razor #27K-3407A - HZ - Plan #3	12,441.1	12,479.4	341.6	82.2	1.317	Level 3, SF



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3405A - HZ - Plan #3													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	1.0	1.0	0.0	0.0	-52.76	74.7	-98.3	123.4					
100.0	100.0	101.0	101.0	0.1	0.1	-52.76	74.7	-98.3	123.4	123.2	0.19	649.915		
200.0	200.0	201.0	201.0	0.3	0.3	-52.76	74.7	-98.3	123.4	122.8	0.64	193.033		
300.0	300.0	301.0	301.0	0.5	0.5	-52.76	74.7	-98.3	123.4	122.3	1.09	113.350		
400.0	400.0	401.0	401.0	0.8	0.8	-52.76	74.7	-98.3	123.4	121.9	1.54	80.231		
500.0	500.0	501.0	501.0	1.0	1.0	-52.76	74.7	-98.3	123.4	121.4	1.99	62.089		
600.0	600.0	601.0	601.0	1.2	1.2	-52.76	74.7	-98.3	123.4	121.0	2.44	50.639		
700.0	700.0	701.0	701.0	1.4	1.4	-52.76	74.7	-98.3	123.4	120.5	2.89	42.754		
800.0	800.0	801.0	801.0	1.7	1.7	-52.76	74.7	-98.3	123.4	120.1	3.34	36.994		
900.0	900.0	901.0	901.0	1.9	1.9	-52.76	74.7	-98.3	123.4	119.7	3.79	32.602		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-52.76	74.7	-98.3	123.4	119.2	4.24	29.142 CC, ES		
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.3	155.78	74.7	-98.3	125.0	120.4	4.66	26.843		
1,200.0	1,199.9	1,200.9	1,200.9	2.5	2.6	156.42	74.7	-98.3	128.2	123.2	5.06	25.342		
1,300.0	1,299.9	1,300.9	1,300.9	2.7	2.8	157.03	74.7	-98.3	131.4	126.0	5.47	24.030		
1,400.0	1,399.8	1,400.8	1,400.8	2.9	3.0	157.61	74.7	-98.3	134.6	128.8	5.88	22.880		
1,500.0	1,499.7	1,500.7	1,500.7	3.1	3.2	158.16	74.7	-98.3	137.9	131.6	6.31	21.866		
1,600.0	1,599.7	1,600.7	1,600.7	3.3	3.5	158.69	74.7	-98.3	141.1	134.4	6.73	20.967		
1,700.0	1,699.6	1,700.6	1,700.6	3.5	3.7	159.19	74.7	-98.3	144.4	137.2	7.16	20.168		
1,800.0	1,799.6	1,800.6	1,800.6	3.7	3.9	159.68	74.7	-98.3	147.6	140.1	7.59	19.454		
1,900.0	1,899.5	1,900.5	1,900.5	3.9	4.1	160.14	74.7	-98.3	150.9	142.9	8.02	18.812		
2,000.0	1,999.4	2,000.4	2,000.4	4.1	4.4	160.58	74.7	-98.3	154.2	145.8	8.46	18.232		
2,100.0	2,099.4	2,100.4	2,100.4	4.4	4.6	161.00	74.7	-98.3	157.5	148.6	8.90	17.707		
2,200.0	2,199.3	2,200.3	2,200.3	4.6	4.8	161.40	74.7	-98.3	160.8	151.5	9.33	17.230		
2,300.0	2,299.2	2,300.2	2,300.2	4.8	5.0	161.79	74.7	-98.3	164.1	154.4	9.77	16.794		
2,400.0	2,399.2	2,400.2	2,400.2	5.0	5.3	162.16	74.7	-98.3	167.4	157.2	10.21	16.394		
2,500.0	2,499.1	2,500.1	2,500.1	5.3	5.5	162.52	74.7	-98.3	170.8	160.1	10.65	16.027		
2,600.0	2,599.1	2,600.1	2,600.1	5.5	5.7	162.87	74.7	-98.3	174.1	163.0	11.10	15.689		
2,700.0	2,699.0	2,700.0	2,700.0	5.7	5.9	163.20	74.7	-98.3	177.4	165.9	11.54	15.376		
2,800.0	2,798.9	2,799.9	2,799.9	5.9	6.2	163.52	74.7	-98.3	180.8	168.8	11.98	15.086		
2,900.0	2,898.9	2,899.9	2,899.9	6.2	6.4	163.83	74.7	-98.3	184.1	171.7	12.43	14.816		
3,000.0	2,998.8	2,999.8	2,999.8	6.4	6.6	164.12	74.7	-98.3	187.5	174.6	12.87	14.565		
3,100.0	3,098.8	3,099.8	3,099.8	6.6	6.8	164.41	74.7	-98.3	190.8	177.5	13.32	14.331		
3,200.0	3,198.7	3,199.7	3,199.7	6.8	7.1	164.69	74.7	-98.3	194.2	180.4	13.76	14.111		
3,300.0	3,298.6	3,299.6	3,299.6	7.1	7.3	164.96	74.7	-98.3	197.6	183.4	14.21	13.906		
3,400.0	3,398.6	3,399.6	3,399.6	7.3	7.5	165.21	74.7	-98.3	201.0	186.3	14.65	13.713		
3,500.0	3,498.5	3,499.5	3,499.5	7.5	7.7	165.46	74.7	-98.3	204.3	189.2	15.10	13.531		
3,600.0	3,598.5	3,599.5	3,599.5	7.8	8.0	165.71	74.7	-98.3	207.7	192.2	15.55	13.360		
3,700.0	3,698.4	3,699.4	3,699.4	8.0	8.2	165.94	74.7	-98.3	211.1	195.1	15.99	13.198		
3,800.0	3,798.3	3,799.3	3,799.3	8.2	8.4	166.17	74.7	-98.3	214.5	198.0	16.44	13.045		
3,900.0	3,898.3	3,899.3	3,899.3	8.5	8.6	166.38	74.7	-98.3	217.9	201.0	16.89	12.900		
4,000.0	3,998.2	3,999.2	3,999.2	8.7	8.9	166.60	74.7	-98.3	221.3	203.9	17.34	12.763		
4,100.0	4,098.2	4,099.2	4,099.2	8.9	9.1	166.80	74.7	-98.3	224.7	206.9	17.78	12.633		
4,200.0	4,198.1	4,199.1	4,199.1	9.2	9.3	167.00	74.7	-98.3	228.1	209.8	18.23	12.509		
4,300.0	4,298.0	4,299.0	4,299.0	9.4	9.5	167.20	74.7	-98.3	231.5	212.8	18.68	12.391		
4,400.0	4,398.0	4,399.0	4,399.0	9.6	9.8	167.39	74.7	-98.3	234.9	215.7	19.13	12.279		
4,500.0	4,497.9	4,498.9	4,498.9	9.9	10.0	167.57	74.7	-98.3	238.3	218.7	19.58	12.172		
4,600.0	4,597.8	4,598.8	4,598.8	10.1	10.2	167.75	74.7	-98.3	241.7	221.7	20.02	12.070		
4,700.0	4,697.8	4,698.8	4,698.8	10.3	10.4	167.92	74.7	-98.3	245.1	224.6	20.47	11.972		
4,800.0	4,797.7	4,798.7	4,798.7	10.6	10.7	168.09	74.7	-98.3	248.5	227.6	20.92	11.879		
4,900.0	4,897.7	4,898.7	4,898.7	10.8	10.9	168.25	74.7	-98.3	251.9	230.6	21.37	11.789		
5,000.0	4,997.6	4,998.6	4,998.6	11.0	11.1	168.41	74.7	-98.3	255.3	233.5	21.82	11.703		
5,100.0	5,097.5	5,098.5	5,098.5	11.3	11.3	168.57	74.7	-98.3	258.8	236.5	22.27	11.621		

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 #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3405A - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
5,200.0	5,197.5	5,219.2	5,219.0	11.5	11.6	167.82	69.7	-99.6	260.1	237.4	22.72	11.446		
5,252.5	5,250.0	5,290.3	5,288.4	11.6	11.7	165.19	55.6	-103.6	255.9	232.9	22.97	11.140		
5,300.0	5,297.3	5,351.1	5,345.8	11.7	11.8	161.69	36.3	-108.9	251.5	228.4	23.08	10.896		
5,350.0	5,346.5	5,411.6	5,400.3	11.9	11.9	157.10	10.9	-116.0	249.4	226.3	23.07	10.811 SF		
5,356.3	5,352.6	5,419.0	5,406.7	11.9	11.9	156.47	7.4	-117.0	249.4	226.3	23.06	10.813		
5,400.0	5,394.7	5,468.3	5,448.2	12.1	12.0	151.86	-18.3	-124.1	250.8	227.8	22.99	10.909		
5,450.0	5,441.3	5,521.2	5,489.6	12.3	12.2	146.25	-49.9	-132.9	256.5	233.6	22.94	11.183		
5,500.0	5,486.1	5,570.4	5,525.0	12.5	12.4	140.46	-82.8	-142.0	266.9	243.9	23.00	11.605		
5,550.0	5,528.5	5,616.3	5,555.0	12.8	12.6	134.59	-116.3	-151.3	281.9	258.7	23.24	12.131		
5,600.0	5,568.2	5,659.3	5,580.2	13.1	12.8	128.70	-149.8	-160.6	301.3	277.6	23.76	12.683		
5,650.0	5,604.7	5,699.7	5,601.2	13.5	13.1	122.79	-183.0	-169.9	324.6	300.1	24.54	13.229		
5,700.0	5,637.9	5,737.8	5,618.5	13.9	13.4	116.88	-215.8	-178.9	351.2	325.6	25.56	13.740		
5,750.0	5,667.3	5,774.0	5,632.6	14.4	13.7	110.97	-247.9	-187.9	380.3	353.6	26.75	14.219		
5,800.0	5,692.7	5,808.7	5,643.9	14.9	14.0	105.10	-279.5	-196.6	411.5	383.5	28.02	14.685		
5,850.0	5,713.8	5,842.1	5,652.7	15.5	14.3	99.31	-310.5	-205.3	444.1	414.8	29.30	15.160		
5,900.0	5,730.5	5,874.5	5,659.3	16.2	14.6	93.67	-341.2	-213.8	477.8	447.3	30.49	15.668		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3406B - HZ - Plan #4													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-90.02	0.0	-65.3	65.3					
100.0	100.0	99.0	99.0	0.1	0.1	-90.02	0.0	-65.3	65.3	65.1	0.19	349.856		
200.0	200.0	199.0	199.0	0.3	0.3	-90.02	0.0	-65.3	65.3	64.7	0.63	102.892		
300.0	300.0	299.0	299.0	0.5	0.5	-90.02	0.0	-65.3	65.3	64.2	1.08	60.242		
400.0	400.0	399.0	399.0	0.8	0.8	-90.02	0.0	-65.3	65.3	63.8	1.53	42.589		
500.0	500.0	499.0	499.0	1.0	1.0	-90.02	0.0	-65.3	65.3	63.3	1.98	32.937		
600.0	600.0	599.0	599.0	1.2	1.2	-90.02	0.0	-65.3	65.3	62.9	2.43	26.852		
700.0	700.0	699.0	699.0	1.4	1.4	-90.02	0.0	-65.3	65.3	62.4	2.88	22.664		
800.0	800.0	799.0	799.0	1.7	1.7	-90.02	0.0	-65.3	65.3	62.0	3.33	19.607		
900.0	900.0	899.0	899.0	1.9	1.9	-90.02	0.0	-65.3	65.3	61.6	3.78	17.276		
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-90.02	0.0	-65.3	65.3	61.1	4.23	15.441	CC, ES	
1,100.0	1,100.0	1,099.0	1,099.0	2.3	2.3	119.53	0.0	-65.3	66.2	61.5	4.65	14.221		
1,200.0	1,199.9	1,198.9	1,198.9	2.5	2.6	122.09	0.0	-65.3	68.0	62.9	5.06	13.443		
1,300.0	1,299.9	1,298.9	1,298.9	2.7	2.8	124.51	0.0	-65.3	69.9	64.4	5.47	12.784		
1,400.0	1,399.8	1,398.8	1,398.8	2.9	3.0	126.80	0.0	-65.3	71.9	66.0	5.88	12.222		
1,500.0	1,499.7	1,498.7	1,498.7	3.1	3.2	128.97	0.0	-65.3	74.1	67.8	6.31	11.743		
1,600.0	1,599.7	1,598.7	1,598.7	3.3	3.5	131.00	0.0	-65.3	76.3	69.6	6.73	11.332		
1,700.0	1,699.6	1,698.6	1,698.6	3.5	3.7	132.92	0.0	-65.3	78.6	71.5	7.16	10.977		
1,800.0	1,799.6	1,798.6	1,798.6	3.7	3.9	134.73	0.0	-65.3	81.1	73.5	7.60	10.669		
1,900.0	1,899.5	1,898.5	1,898.5	3.9	4.1	136.43	0.0	-65.3	83.6	75.5	8.03	10.402		
2,000.0	1,999.4	1,998.4	1,998.4	4.1	4.4	138.03	0.0	-65.3	86.1	77.6	8.47	10.168		
2,100.0	2,099.4	2,098.4	2,098.4	4.4	4.6	139.53	0.0	-65.3	88.7	79.8	8.91	9.962		
2,200.0	2,199.3	2,198.3	2,198.3	4.6	4.8	140.95	0.0	-65.3	91.4	82.1	9.35	9.780		
2,300.0	2,299.2	2,298.2	2,298.2	4.8	5.0	142.29	0.0	-65.3	94.2	84.4	9.79	9.619		
2,400.0	2,399.2	2,398.2	2,398.2	5.0	5.3	143.55	0.0	-65.3	96.9	86.7	10.23	9.476		
2,500.0	2,499.1	2,498.1	2,498.1	5.3	5.5	144.74	0.0	-65.3	99.8	89.1	10.67	9.349		
2,600.0	2,599.1	2,598.1	2,598.1	5.5	5.7	145.87	0.0	-65.3	102.6	91.5	11.12	9.234		
2,700.0	2,699.0	2,698.0	2,698.0	5.7	5.9	146.93	0.0	-65.3	105.6	94.0	11.56	9.131		
2,800.0	2,798.9	2,797.9	2,797.9	5.9	6.2	147.94	0.0	-65.3	108.5	96.5	12.00	9.038		
2,900.0	2,898.9	2,897.9	2,897.9	6.2	6.4	148.89	0.0	-65.3	111.5	99.0	12.45	8.954		
3,000.0	2,998.8	2,997.8	2,997.8	6.4	6.6	149.79	0.0	-65.3	114.5	101.6	12.89	8.878		
3,100.0	3,098.8	3,097.8	3,097.8	6.6	6.8	150.65	0.0	-65.3	117.5	104.2	13.34	8.809		
3,200.0	3,198.7	3,197.7	3,197.7	6.8	7.1	151.46	0.0	-65.3	120.6	106.8	13.78	8.746		
3,300.0	3,298.6	3,297.6	3,297.6	7.1	7.3	152.23	0.0	-65.3	123.6	109.4	14.23	8.688		
3,400.0	3,398.6	3,397.6	3,397.6	7.3	7.5	152.97	0.0	-65.3	126.7	112.1	14.68	8.635		
3,500.0	3,498.5	3,497.5	3,497.5	7.5	7.7	153.67	0.0	-65.3	129.8	114.7	15.12	8.586		
3,600.0	3,598.5	3,597.5	3,597.5	7.8	8.0	154.33	0.0	-65.3	133.0	117.4	15.57	8.541		
3,700.0	3,698.4	3,697.4	3,697.4	8.0	8.2	154.97	0.0	-65.3	136.1	120.1	16.02	8.500		
3,800.0	3,798.3	3,797.3	3,797.3	8.2	8.4	155.58	0.0	-65.3	139.3	122.8	16.46	8.462		
3,900.0	3,898.3	3,897.3	3,897.3	8.5	8.6	156.16	0.0	-65.3	142.5	125.6	16.91	8.426		
4,000.0	3,998.2	3,997.2	3,997.2	8.7	8.9	156.71	0.0	-65.3	145.7	128.3	17.36	8.393		
4,100.0	4,098.2	4,097.2	4,097.2	8.9	9.1	157.24	0.0	-65.3	148.9	131.1	17.81	8.363		
4,200.0	4,198.1	4,197.1	4,197.1	9.2	9.3	157.75	0.0	-65.3	152.1	133.9	18.25	8.334		
4,300.0	4,298.0	4,297.0	4,297.0	9.4	9.5	158.24	0.0	-65.3	155.4	136.7	18.70	8.308		
4,400.0	4,398.0	4,397.0	4,397.0	9.6	9.8	158.71	0.0	-65.3	158.6	139.5	19.15	8.283		
4,500.0	4,497.9	4,496.9	4,496.9	9.9	10.0	159.15	0.0	-65.3	161.9	142.3	19.60	8.260		
4,600.0	4,597.8	4,596.8	4,596.8	10.1	10.2	159.59	0.0	-65.3	165.1	145.1	20.05	8.238		
4,700.0	4,697.8	4,696.8	4,696.8	10.3	10.4	160.00	0.0	-65.3	168.4	147.9	20.49	8.218		
4,800.0	4,797.7	4,796.7	4,796.7	10.6	10.7	160.40	0.0	-65.3	171.7	150.8	20.94	8.199		
4,900.0	4,897.7	4,896.7	4,896.7	10.8	10.9	160.78	0.0	-65.3	175.0	153.6	21.39	8.181		
5,000.0	4,997.6	4,996.6	4,996.6	11.0	11.1	161.15	0.0	-65.3	178.3	156.5	21.84	8.164		
5,100.0	5,097.5	5,096.5	5,096.5	11.3	11.3	161.51	0.0	-65.3	181.6	159.3	22.29	8.148		

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 #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3406B - HZ - Plan #4												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	5,197.5	5,196.5	5,196.5	11.5	11.5	161.85	0.0	-65.3	184.9	162.2	22.74	8.133	
5,252.5	5,250.0	5,254.2	5,254.2	11.6	11.7	161.93	-0.5	-65.4	186.4	163.4	22.98	8.114	
5,300.0	5,297.3	5,316.2	5,315.8	11.7	11.8	160.94	-6.8	-65.6	186.9	163.8	23.07	8.099 SF	
5,350.0	5,346.5	5,380.8	5,378.8	11.9	11.9	158.69	-21.0	-66.2	187.9	164.9	23.03	8.161	
5,400.0	5,394.7	5,444.0	5,438.2	12.1	12.0	155.33	-42.5	-67.0	189.9	167.0	22.86	8.305	
5,450.0	5,441.3	5,505.5	5,493.2	12.3	12.1	151.06	-70.0	-68.1	193.3	170.6	22.67	8.526	
5,500.0	5,486.1	5,565.0	5,542.8	12.5	12.3	146.12	-102.7	-69.5	198.5	176.0	22.54	8.806	
5,550.0	5,528.5	5,622.4	5,586.9	12.8	12.4	140.73	-139.3	-70.9	206.1	183.5	22.60	9.121	
5,600.0	5,568.2	5,677.5	5,625.2	13.1	12.7	135.11	-178.9	-72.5	216.3	193.4	22.93	9.434	
5,650.0	5,604.7	5,730.4	5,657.9	13.5	12.9	129.44	-220.5	-74.2	229.3	205.7	23.57	9.725	
5,700.0	5,637.9	5,781.4	5,685.1	13.9	13.2	123.82	-263.5	-75.9	244.9	220.3	24.55	9.976	
5,750.0	5,667.3	5,830.5	5,707.3	14.4	13.6	118.33	-307.2	-77.7	262.9	237.1	25.81	10.187	
5,800.0	5,692.7	5,877.9	5,724.8	14.9	14.0	113.03	-351.3	-79.5	283.1	255.8	27.25	10.389	
5,850.0	5,713.8	5,924.0	5,737.8	15.5	14.4	107.94	-395.5	-81.2	305.0	276.2	28.78	10.596	
5,900.0	5,730.5	5,969.0	5,746.7	16.2	14.8	103.07	-439.5	-83.0	328.3	298.0	30.34	10.820	
5,950.0	5,742.6	6,013.1	5,751.7	16.9	15.3	98.45	-483.2	-84.8	352.6	320.8	31.87	11.064	
6,000.0	5,750.0	6,056.4	5,753.1	17.6	15.8	94.10	-526.5	-86.5	377.6	344.3	33.33	11.329	
6,052.5	5,752.7	6,101.6	5,753.1	18.4	16.4	90.22	-571.6	-88.3	404.2	369.5	34.78	11.622	
6,100.0	5,752.7	6,142.7	5,753.1	19.1	16.9	90.21	-612.8	-90.0	427.8	391.7	36.10	11.853	
6,200.0	5,752.7	6,231.3	5,753.0	20.6	18.1	90.18	-701.3	-93.5	474.2	435.3	38.89	12.193	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					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)	Total Uncertainty Axis			
0.0	0.0	2.0	2.0	0.0	0.0	-23.80	74.7	-32.9	81.6					
100.0	100.0	102.0	102.0	0.1	0.1	-23.80	74.7	-32.9	81.6	81.4	0.19	424.779		
200.0	200.0	202.0	202.0	0.3	0.3	-23.80	74.7	-32.9	81.6	81.0	0.64	127.211		
300.0	300.0	302.0	302.0	0.5	0.5	-23.80	74.7	-32.9	81.6	80.5	1.09	74.807		
400.0	400.0	402.0	402.0	0.8	0.8	-23.80	74.7	-32.9	81.6	80.1	1.54	52.981		
500.0	500.0	502.0	502.0	1.0	1.0	-23.80	74.7	-32.9	81.6	79.6	1.99	41.015		
600.0	600.0	602.0	602.0	1.2	1.2	-23.80	74.7	-32.9	81.6	79.2	2.44	33.458		
700.0	700.0	702.0	702.0	1.4	1.4	-23.80	74.7	-32.9	81.6	78.7	2.89	28.253		
800.0	800.0	802.0	802.0	1.7	1.7	-23.80	74.7	-32.9	81.6	78.3	3.34	24.449		
900.0	900.0	902.0	902.0	1.9	1.9	-23.80	74.7	-32.9	81.6	77.8	3.79	21.548		
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	-23.80	74.7	-32.9	81.6	77.4	4.24	19.262 CC, ES		
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.3	-175.66	74.7	-32.9	83.4	78.7	4.66	17.890		
1,200.0	1,199.9	1,201.9	1,201.9	2.5	2.6	-175.83	74.7	-32.9	86.9	81.8	5.06	17.155		
1,300.0	1,299.9	1,301.9	1,301.9	2.7	2.8	-176.00	74.7	-32.9	90.3	84.9	5.47	16.507		
1,400.0	1,399.8	1,401.8	1,401.8	2.9	3.0	-176.14	74.7	-32.9	93.8	87.9	5.89	15.934		
1,500.0	1,499.7	1,501.7	1,501.7	3.1	3.2	-176.28	74.7	-32.9	97.3	91.0	6.31	15.424		
1,600.0	1,599.7	1,601.7	1,601.7	3.3	3.5	-176.41	74.7	-32.9	100.8	94.0	6.73	14.969		
1,700.0	1,699.6	1,701.6	1,701.6	3.5	3.7	-176.53	74.7	-32.9	104.3	97.1	7.16	14.562		
1,800.0	1,799.6	1,801.6	1,801.6	3.7	3.9	-176.64	74.7	-32.9	107.7	100.2	7.59	14.196		
1,900.0	1,899.5	1,901.5	1,901.5	3.9	4.1	-176.75	74.7	-32.9	111.2	103.2	8.02	13.865		
2,000.0	1,999.4	2,001.4	2,001.4	4.1	4.4	-176.85	74.7	-32.9	114.7	106.3	8.46	13.565		
2,100.0	2,099.4	2,101.4	2,101.4	4.4	4.6	-176.94	74.7	-32.9	118.2	109.3	8.89	13.292		
2,200.0	2,199.3	2,201.3	2,201.3	4.6	4.8	-177.03	74.7	-32.9	121.7	112.4	9.33	13.042		
2,300.0	2,299.2	2,301.2	2,301.2	4.8	5.0	-177.11	74.7	-32.9	125.2	115.4	9.77	12.813		
2,400.0	2,399.2	2,401.2	2,401.2	5.0	5.3	-177.19	74.7	-32.9	128.7	118.4	10.21	12.603		
2,500.0	2,499.1	2,501.1	2,501.1	5.3	5.5	-177.26	74.7	-32.9	132.1	121.5	10.65	12.409		
2,600.0	2,599.1	2,601.1	2,601.1	5.5	5.7	-177.33	74.7	-32.9	135.6	124.5	11.09	12.229		
2,700.0	2,699.0	2,701.0	2,701.0	5.7	5.9	-177.40	74.7	-32.9	139.1	127.6	11.53	12.063		
2,800.0	2,798.9	2,800.9	2,800.9	5.9	6.2	-177.46	74.7	-32.9	142.6	130.6	11.98	11.908		
2,900.0	2,898.9	2,900.9	2,900.9	6.2	6.4	-177.53	74.7	-32.9	146.1	133.7	12.42	11.763		
3,000.0	2,998.8	3,000.8	3,000.8	6.4	6.6	-177.58	74.7	-32.9	149.6	136.7	12.86	11.628		
3,100.0	3,098.8	3,100.8	3,100.8	6.6	6.8	-177.64	74.7	-32.9	153.1	139.8	13.31	11.502		
3,200.0	3,198.7	3,200.7	3,200.7	6.8	7.1	-177.69	74.7	-32.9	156.5	142.8	13.75	11.384		
3,300.0	3,298.6	3,300.6	3,300.6	7.1	7.3	-177.74	74.7	-32.9	160.0	145.8	14.20	11.272		
3,400.0	3,398.6	3,400.6	3,400.6	7.3	7.5	-177.79	74.7	-32.9	163.5	148.9	14.64	11.168		
3,500.0	3,498.5	3,500.5	3,500.5	7.5	7.7	-177.84	74.7	-32.9	167.0	151.9	15.09	11.069		
3,600.0	3,598.5	3,600.5	3,600.5	7.8	8.0	-177.88	74.7	-32.9	170.5	155.0	15.53	10.975		
3,700.0	3,698.4	3,700.4	3,700.4	8.0	8.2	-177.92	74.7	-32.9	174.0	158.0	15.98	10.887		
3,800.0	3,798.3	3,800.3	3,800.3	8.2	8.4	-177.96	74.7	-32.9	177.5	161.0	16.43	10.803		
3,900.0	3,898.3	3,900.3	3,900.3	8.5	8.6	-178.00	74.7	-32.9	181.0	164.1	16.87	10.724		
4,000.0	3,998.2	4,000.2	4,000.2	8.7	8.9	-178.04	74.7	-32.9	184.4	167.1	17.32	10.649		
4,100.0	4,098.2	4,100.2	4,100.2	8.9	9.1	-178.08	74.7	-32.9	187.9	170.2	17.77	10.577		
4,200.0	4,198.1	4,200.1	4,200.1	9.2	9.3	-178.11	74.7	-32.9	191.4	173.2	18.22	10.509		
4,300.0	4,298.0	4,300.0	4,300.0	9.4	9.5	-178.15	74.7	-32.9	194.9	176.3	18.66	10.444		
4,400.0	4,398.0	4,400.0	4,400.0	9.6	9.8	-178.18	74.7	-32.9	198.4	179.3	19.11	10.381		
4,500.0	4,497.9	4,499.9	4,499.9	9.9	10.0	-178.21	74.7	-32.9	201.9	182.3	19.56	10.322		
4,600.0	4,597.8	4,599.8	4,599.8	10.1	10.2	-178.24	74.7	-32.9	205.4	185.4	20.01	10.265		
4,700.0	4,697.8	4,699.8	4,699.8	10.3	10.4	-178.27	74.7	-32.9	208.9	188.4	20.45	10.211		
4,800.0	4,797.7	4,799.7	4,799.7	10.6	10.7	-178.30	74.7	-32.9	212.4	191.5	20.90	10.159		
4,900.0	4,897.7	4,899.7	4,899.7	10.8	10.9	-178.33	74.7	-32.9	215.8	194.5	21.35	10.109		
5,000.0	4,997.6	4,999.6	4,999.6	11.0	11.1	-178.35	74.7	-32.9	219.3	197.5	21.80	10.061		
5,100.0	5,097.5	5,099.5	5,099.5	11.3	11.3	-178.38	74.7	-32.9	222.8	200.6	22.25	10.015		

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 #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - HZ - Plan #3													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)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,197.5	5,237.0	5,236.5	11.5	11.6	-178.97	66.9	-31.4	221.8	199.1	22.73	9.758		
5,252.5	5,250.0	5,322.2	5,318.9	11.6	11.7	179.31	45.7	-27.3	210.8	187.8	23.00	9.165		
5,300.0	5,297.3	5,393.8	5,384.5	11.7	11.9	176.68	18.0	-21.9	196.5	173.4	23.10	8.505		
5,350.0	5,346.5	5,464.1	5,444.7	11.9	12.0	172.70	-17.7	-15.0	180.0	157.0	23.03	7.818		
5,400.0	5,394.7	5,529.6	5,495.9	12.1	12.2	167.35	-57.7	-7.2	163.1	140.3	22.81	7.148		
5,450.0	5,441.3	5,590.5	5,538.5	12.3	12.5	160.48	-100.4	1.1	146.6	124.0	22.58	6.492		
5,500.0	5,486.1	5,647.4	5,573.5	12.5	12.8	151.97	-144.4	9.7	131.9	109.4	22.55	5.849		
5,550.0	5,528.5	5,700.8	5,601.8	12.8	13.2	141.87	-188.9	18.4	120.5	97.5	23.02	5.235		
5,600.0	5,568.2	5,751.2	5,624.0	13.1	13.5	130.50	-233.2	27.0	114.1	89.9	24.17	4.719		
5,627.5	5,588.7	5,777.7	5,633.9	13.3	13.8	123.96	-257.4	31.7	113.1	88.0	25.06	4.513		
5,650.0	5,604.7	5,799.0	5,641.0	13.5	14.0	118.56	-277.0	35.5	113.7	87.9	25.84	4.402		
5,700.0	5,637.9	5,844.5	5,653.3	13.9	14.4	106.96	-320.1	43.9	119.8	92.2	27.61	4.338		
5,750.0	5,667.3	5,888.2	5,661.4	14.4	14.9	96.42	-362.2	52.1	131.2	102.1	29.06	4.513		
5,800.0	5,692.7	5,930.3	5,665.9	14.9	15.4	87.30	-403.3	60.1	146.5	116.5	30.07	4.874		
5,850.0	5,713.8	5,971.7	5,667.0	15.5	15.9	79.59	-443.9	68.0	164.5	133.8	30.67	5.363		
5,900.0	5,730.5	6,016.7	5,667.0	16.2	16.5	73.58	-488.1	76.6	183.1	152.0	31.12	5.886		
5,950.0	5,742.6	6,063.0	5,667.0	16.9	17.1	69.72	-533.5	85.5	201.0	169.3	31.69	6.342		
6,000.0	5,750.0	6,110.3	5,667.0	17.6	17.7	67.61	-579.9	94.5	217.3	184.8	32.55	6.677		
6,052.5	5,752.7	6,160.4	5,667.0	18.4	18.5	66.92	-629.0	104.1	232.7	198.8	33.89	6.865		
6,100.0	5,752.7	6,205.9	5,667.0	19.1	19.2	68.29	-673.7	112.8	245.2	209.7	35.55	6.897		
6,200.0	5,752.7	6,302.8	5,667.0	20.6	20.7	70.48	-768.8	131.3	268.4	229.4	38.95	6.891		
6,300.0	5,752.7	6,400.8	5,667.0	22.1	22.3	71.96	-865.1	150.0	287.0	244.6	42.32	6.780		
6,400.0	5,752.7	6,499.8	5,667.0	23.7	23.9	72.93	-962.2	168.9	300.7	255.1	45.65	6.587		
6,500.0	5,752.7	6,591.7	5,667.0	25.3	25.5	73.51	-1,052.6	185.9	310.2	261.5	48.75	6.364		
6,600.0	5,752.7	6,677.7	5,667.0	26.9	26.8	73.97	-1,137.7	198.3	318.7	267.1	51.57	6.180		
6,700.0	5,752.7	6,763.5	5,667.0	28.5	28.1	74.37	-1,223.0	206.8	326.4	272.1	54.29	6.013		
6,800.0	5,752.7	6,849.0	5,667.0	30.1	29.5	74.72	-1,308.4	211.4	333.5	276.6	56.90	5.861		
6,900.0	5,752.7	6,938.4	5,667.0	31.7	30.9	75.02	-1,397.7	212.4	339.6	280.2	59.45	5.713		
6,993.7	5,752.7	7,032.0	5,667.0	33.2	32.5	75.13	-1,491.4	212.4	341.8	279.9	61.87	5.525		
7,000.0	5,752.7	7,038.3	5,667.0	33.3	32.6	75.13	-1,497.7	212.4	341.8	279.7	62.08	5.506		
7,100.0	5,752.7	7,138.3	5,667.0	34.9	34.3	75.13	-1,597.7	212.4	341.8	276.4	65.41	5.225		
7,200.0	5,752.7	7,238.3	5,667.0	36.5	36.1	75.13	-1,697.7	212.4	341.8	273.0	68.79	4.969		
7,300.0	5,752.7	7,338.3	5,667.0	38.2	37.8	75.13	-1,797.7	212.4	341.8	269.6	72.20	4.734		
7,400.0	5,752.7	7,438.3	5,667.0	39.8	39.6	75.13	-1,897.7	212.4	341.8	266.2	75.64	4.519		
7,500.0	5,752.7	7,538.3	5,667.0	41.5	41.4	75.13	-1,997.7	212.4	341.8	262.7	79.10	4.321		
7,600.0	5,752.8	7,638.3	5,667.0	43.3	43.2	75.13	-2,097.7	212.4	341.8	259.2	82.59	4.138		
7,700.0	5,752.8	7,738.3	5,667.0	45.0	45.0	75.12	-2,197.7	212.4	341.8	255.7	86.10	3.970		
7,800.0	5,752.8	7,838.3	5,667.0	46.7	46.9	75.12	-2,297.7	212.4	341.8	252.2	89.63	3.813		
7,900.0	5,752.8	7,938.3	5,667.0	48.5	48.7	75.12	-2,397.7	212.4	341.8	248.6	93.18	3.668		
8,000.0	5,752.8	8,038.3	5,667.0	50.3	50.5	75.12	-2,497.7	212.4	341.8	245.0	96.73	3.533		
8,100.0	5,752.8	8,138.3	5,667.0	52.0	52.4	75.12	-2,597.7	212.4	341.8	241.5	100.31	3.407		
8,200.0	5,752.8	8,238.3	5,667.0	53.8	54.2	75.12	-2,697.7	212.4	341.8	237.9	103.89	3.290		
8,300.0	5,752.8	8,338.3	5,667.0	55.6	56.1	75.12	-2,797.7	212.4	341.8	234.3	107.48	3.180		
8,400.0	5,752.8	8,438.3	5,667.0	57.4	57.9	75.12	-2,897.7	212.4	341.8	230.7	111.08	3.077		
8,500.0	5,752.8	8,538.3	5,667.0	59.3	59.8	75.12	-2,997.7	212.4	341.8	227.1	114.69	2.980		
8,600.0	5,752.8	8,638.3	5,667.0	61.1	61.7	75.11	-3,097.7	212.4	341.8	223.4	118.31	2.889		
8,700.0	5,752.8	8,738.3	5,667.0	62.9	63.5	75.11	-3,197.7	212.4	341.8	219.8	121.93	2.803		
8,800.0	5,752.8	8,838.3	5,667.0	64.7	65.4	75.11	-3,297.7	212.4	341.7	216.2	125.56	2.722		
8,900.0	5,752.8	8,938.3	5,667.0	66.6	67.3	75.11	-3,397.7	212.4	341.7	212.5	129.20	2.645		
9,000.0	5,752.8	9,038.3	5,667.0	68.4	69.2	75.11	-3,497.7	212.4	341.7	208.9	132.84	2.573		
9,100.0	5,752.8	9,138.3	5,667.0	70.3	71.1	75.11	-3,597.7	212.4	341.7	205.2	136.49	2.504		
9,200.0	5,752.8	9,238.3	5,667.0	72.1	72.9	75.11	-3,697.7	212.4	341.7	201.6	140.14	2.439		

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 #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - HZ - Plan #3												Offset Site Error:	0.0 ft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,752.8	9,338.3	5,667.0	74.0	74.8	75.11	-3,797.7	212.4	341.7	197.9	143.79	2.377	
9,400.0	5,752.8	9,438.3	5,667.0	75.8	76.7	75.11	-3,897.7	212.4	341.7	194.3	147.45	2.318	
9,500.0	5,752.9	9,538.3	5,667.0	77.7	78.6	75.10	-3,997.7	212.4	341.7	190.6	151.11	2.261	
9,600.0	5,752.9	9,638.3	5,667.0	79.6	80.5	75.10	-4,097.7	212.4	341.7	186.9	154.78	2.208	
9,700.0	5,752.9	9,738.3	5,667.0	81.4	82.4	75.10	-4,197.7	212.4	341.7	183.3	158.45	2.157	
9,800.0	5,752.9	9,838.3	5,667.0	83.3	84.3	75.10	-4,297.7	212.4	341.7	179.6	162.12	2.108	
9,900.0	5,752.9	9,938.3	5,667.0	85.2	86.2	75.10	-4,397.7	212.4	341.7	175.9	165.79	2.061	
10,000.0	5,752.9	10,038.3	5,667.0	87.0	88.0	75.10	-4,497.7	212.4	341.7	172.2	169.47	2.016	
10,100.0	5,752.9	10,138.3	5,667.0	88.9	89.9	75.10	-4,597.7	212.4	341.7	168.6	173.15	1.973	
10,200.0	5,752.9	10,238.3	5,667.0	90.8	91.8	75.10	-4,697.7	212.4	341.7	164.9	176.83	1.932	
10,300.0	5,752.9	10,338.3	5,667.0	92.7	93.7	75.10	-4,797.7	212.4	341.7	161.2	180.51	1.893	
10,400.0	5,752.9	10,438.3	5,667.0	94.5	95.6	75.09	-4,897.7	212.4	341.7	157.5	184.19	1.855	
10,500.0	5,752.9	10,538.3	5,667.0	96.4	97.5	75.09	-4,997.7	212.4	341.7	153.8	187.88	1.819	
10,600.0	5,752.9	10,638.3	5,667.0	98.3	99.4	75.09	-5,097.7	212.4	341.7	150.1	191.57	1.784	
10,700.0	5,752.9	10,738.3	5,667.0	100.2	101.3	75.09	-5,197.7	212.4	341.7	146.4	195.26	1.750	
10,800.0	5,752.9	10,838.3	5,667.0	102.1	103.2	75.09	-5,297.7	212.4	341.7	142.7	198.95	1.717	
10,900.0	5,752.9	10,938.3	5,667.0	104.0	105.1	75.09	-5,397.7	212.4	341.7	139.0	202.64	1.686	
11,000.0	5,752.9	11,038.3	5,667.0	105.9	107.0	75.09	-5,497.7	212.4	341.7	135.3	206.34	1.656	
11,100.0	5,752.9	11,138.3	5,667.0	107.8	109.0	75.09	-5,597.7	212.4	341.7	131.6	210.03	1.627	
11,200.0	5,752.9	11,238.3	5,667.0	109.6	110.9	75.09	-5,697.7	212.4	341.7	127.9	213.73	1.599	
11,300.0	5,753.0	11,338.3	5,667.0	111.5	112.8	75.08	-5,797.7	212.4	341.7	124.2	217.43	1.571	
11,400.0	5,753.0	11,438.3	5,667.0	113.4	114.7	75.08	-5,897.7	212.4	341.6	120.5	221.12	1.545	
11,500.0	5,753.0	11,538.3	5,667.0	115.3	116.6	75.08	-5,997.7	212.4	341.6	116.8	224.82	1.520	
11,600.0	5,753.0	11,638.3	5,667.0	117.2	118.5	75.08	-6,097.7	212.4	341.6	113.1	228.52	1.495	Level 3
11,700.0	5,753.0	11,738.3	5,667.0	119.1	120.4	75.08	-6,197.7	212.4	341.6	109.4	232.23	1.471	Level 3
11,800.0	5,753.0	11,838.3	5,667.0	121.0	122.3	75.08	-6,297.7	212.4	341.6	105.7	235.93	1.448	Level 3
11,900.0	5,753.0	11,938.3	5,667.0	122.9	124.2	75.08	-6,397.7	212.4	341.6	102.0	239.63	1.426	Level 3
12,000.0	5,753.0	12,038.3	5,667.0	124.8	126.1	75.08	-6,497.7	212.4	341.6	98.3	243.33	1.404	Level 3
12,100.0	5,753.0	12,138.3	5,667.0	126.7	128.0	75.08	-6,597.7	212.4	341.6	94.6	247.04	1.383	Level 3
12,200.0	5,753.0	12,238.3	5,667.0	128.6	129.9	75.07	-6,697.7	212.4	341.6	90.9	250.74	1.362	Level 3
12,300.0	5,753.0	12,338.3	5,667.0	130.5	131.8	75.07	-6,797.7	212.4	341.6	87.2	254.45	1.343	Level 3
12,400.0	5,753.0	12,438.3	5,667.0	132.4	133.6	75.07	-6,897.7	212.4	341.6	83.6	258.02	1.324	Level 3
12,441.1	5,753.0	12,479.4	5,667.0	133.2	134.3	75.07	-6,938.8	212.4	341.6	82.2	259.41	1.317	Level 3, SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #27K-3408B
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Reference Site:</b>	S27-T10N-R58W	<b>MD Reference:</b>	WELL @ 4765.5ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #27K-3408B	<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 #3	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4765.5ft (Original Well Elev)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor #27K-3408B  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 1.06°

