

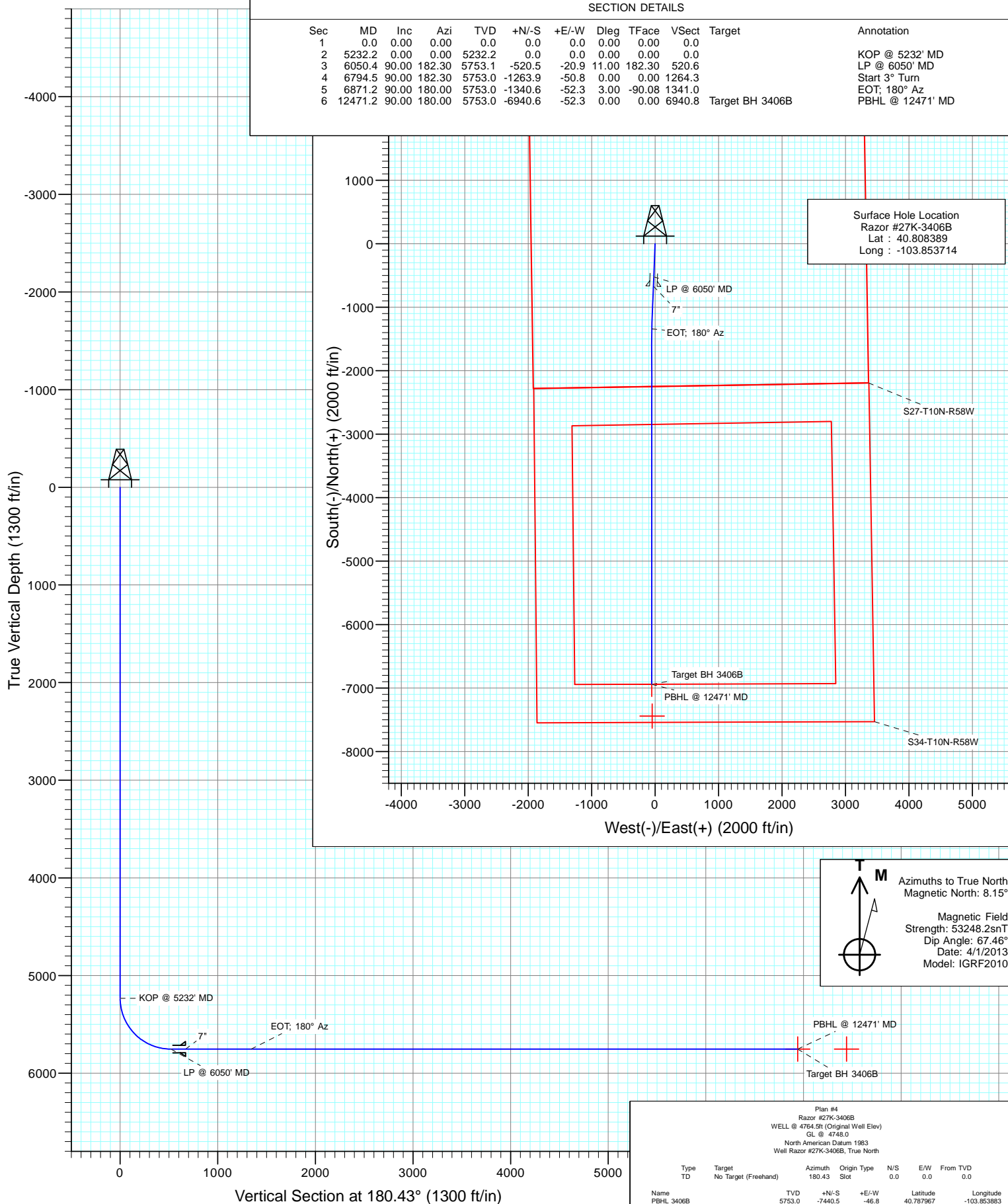


Project: Weld County, CO
Site: S27-T10N-R58W
Well: Razor #27K-3406B
Wellbore: HZ
Design: Plan #4



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		KOP @ 5232' MD
2	5232.2	0.00	0.00	5232.2	0.0	0.0	0.00	0.00	0.0		LP @ 6050' MD
3	6050.4	90.00	182.30	5753.1	-520.5	-20.9	11.00	182.30	520.6		Start 3° Turn
4	6794.5	90.00	182.30	5753.0	-1263.9	-50.8	0.00	0.00	1264.3		EOT: 180° Az
5	6871.2	90.00	180.00	5753.0	-1340.6	-52.3	3.00	-90.08	1341.0		PBHL @ 12471' MD
6	12471.2	90.00	180.00	5753.0	-6940.6	-52.3	0.00	0.00	6940.8	Target BH 3406B	



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #27K-3406B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site:	S27-T10N-R58W	North Reference:	True
Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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-3406B					
Well Position	+N/-S	0.0 ft	Northing:	1,541,576.63 ft	Latitude:	40.808389
	+E/-W	0.0 ft	Easting:	3,455,726.22 ft	Longitude:	-103.853714
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,748.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/1/2013	8.15	67.46	53,248

Design	Plan #4			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.43

Plan Sections										
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	
5,232.2	0.00	0.00	5,232.2	0.0	0.0	0.00	0.00	0.00	0.00	
6,050.4	90.00	182.30	5,753.1	-520.5	-20.9	11.00	11.00	0.00	182.30	
6,794.5	90.00	182.30	5,753.0	-1,263.9	-50.8	0.00	0.00	0.00	0.00	
6,871.2	90.00	180.00	5,753.0	-1,340.6	-52.3	3.00	0.00	-3.00	-90.08	
12,471.2	90.00	180.00	5,753.0	-6,940.6	-52.3	0.00	0.00	0.00	0.00	Target BH 3406B

Cathedral Energy Services

Planning Report

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Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site:	S27-T10N-R58W	North Reference:	True
Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

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	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site:	S27-T10N-R58W	North Reference:	True
Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

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	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	
5,232.2	0.00	0.00	5,232.2	0.0	0.0	0.0	0.00	0.00	KOP @ 5232' MD
5,300.0	7.46	182.30	5,299.8	-4.4	-0.2	4.4	11.00	11.00	
5,400.0	18.46	182.30	5,397.1	-26.8	-1.1	26.8	11.00	11.00	
5,500.0	29.46	182.30	5,488.4	-67.3	-2.7	67.3	11.00	11.00	
5,600.0	40.46	182.30	5,570.2	-124.5	-5.0	124.5	11.00	11.00	
5,700.0	51.46	182.30	5,639.6	-196.2	-7.9	196.2	11.00	11.00	
5,800.0	62.46	182.30	5,694.0	-279.8	-11.2	279.9	11.00	11.00	
5,900.0	73.46	182.30	5,731.5	-372.3	-15.0	372.4	11.00	11.00	
6,000.0	84.46	182.30	5,750.6	-470.2	-18.9	470.3	11.00	11.00	
6,050.4	90.00	182.30	5,753.1	-520.5	-20.9	520.6	11.01	11.01	LP @ 6050' MD
6,100.0	90.00	182.30	5,753.1	-570.0	-22.9	570.2	0.00	0.00	
6,200.0	90.00	182.30	5,753.0	-669.9	-26.9	670.1	0.00	0.00	7"
6,300.0	90.00	182.30	5,753.0	-769.9	-30.9	770.1	0.00	0.00	
6,400.0	90.00	182.30	5,753.0	-869.8	-35.0	870.0	0.00	0.00	
6,500.0	90.00	182.30	5,753.0	-969.7	-39.0	970.0	0.00	0.00	
6,600.0	90.00	182.30	5,753.0	-1,069.6	-43.0	1,069.9	0.00	0.00	
6,700.0	90.00	182.30	5,753.0	-1,169.6	-47.0	1,169.9	0.00	0.00	
6,794.5	90.00	182.30	5,753.0	-1,264.0	-50.8	1,264.3	0.00	0.00	Start 3° Turn
6,800.0	90.00	182.13	5,753.0	-1,269.5	-51.0	1,269.8	3.02	0.00	
6,871.2	90.00	180.00	5,753.0	-1,340.6	-52.3	1,341.0	3.00	0.00	EOT; 180° Az
6,900.0	90.00	180.00	5,753.0	-1,369.5	-52.3	1,369.8	0.00	0.00	
7,000.0	90.00	180.00	5,753.0	-1,469.5	-52.3	1,469.8	0.00	0.00	
7,100.0	90.00	180.00	5,753.0	-1,569.5	-52.3	1,569.8	0.00	0.00	
7,200.0	90.00	180.00	5,753.0	-1,669.5	-52.3	1,669.8	0.00	0.00	
7,300.0	90.00	180.00	5,753.0	-1,769.5	-52.3	1,769.8	0.00	0.00	
7,400.0	90.00	180.00	5,753.0	-1,869.5	-52.3	1,869.8	0.00	0.00	
7,500.0	90.00	180.00	5,753.0	-1,969.5	-52.3	1,969.8	0.00	0.00	
7,600.0	90.00	180.00	5,753.0	-2,069.5	-52.3	2,069.8	0.00	0.00	
7,700.0	90.00	180.00	5,753.0	-2,169.5	-52.3	2,169.8	0.00	0.00	
7,800.0	90.00	180.00	5,753.0	-2,269.5	-52.3	2,269.8	0.00	0.00	
7,900.0	90.00	180.00	5,753.0	-2,369.5	-52.3	2,369.8	0.00	0.00	
8,000.0	90.00	180.00	5,753.0	-2,469.5	-52.3	2,469.8	0.00	0.00	
8,100.0	90.00	180.00	5,753.0	-2,569.5	-52.3	2,569.8	0.00	0.00	
8,200.0	90.00	180.00	5,753.0	-2,669.5	-52.3	2,669.8	0.00	0.00	
8,300.0	90.00	180.00	5,753.0	-2,769.5	-52.3	2,769.8	0.00	0.00	
8,400.0	90.00	180.00	5,753.0	-2,869.5	-52.3	2,869.8	0.00	0.00	
8,500.0	90.00	180.00	5,753.0	-2,969.5	-52.3	2,969.8	0.00	0.00	
8,600.0	90.00	180.00	5,753.0	-3,069.5	-52.3	3,069.8	0.00	0.00	
8,700.0	90.00	180.00	5,753.0	-3,169.5	-52.3	3,169.8	0.00	0.00	
8,800.0	90.00	180.00	5,753.0	-3,269.5	-52.3	3,269.8	0.00	0.00	
8,900.0	90.00	180.00	5,753.0	-3,369.5	-52.3	3,369.8	0.00	0.00	
9,000.0	90.00	180.00	5,753.0	-3,469.5	-52.3	3,469.8	0.00	0.00	
9,100.0	90.00	180.00	5,753.0	-3,569.5	-52.3	3,569.8	0.00	0.00	
9,200.0	90.00	180.00	5,753.0	-3,669.5	-52.3	3,669.8	0.00	0.00	
9,300.0	90.00	180.00	5,753.0	-3,769.5	-52.3	3,769.8	0.00	0.00	
9,400.0	90.00	180.00	5,753.0	-3,869.5	-52.3	3,869.8	0.00	0.00	
9,500.0	90.00	180.00	5,753.0	-3,969.5	-52.3	3,969.7	0.00	0.00	
9,600.0	90.00	180.00	5,753.0	-4,069.5	-52.3	4,069.7	0.00	0.00	
9,700.0	90.00	180.00	5,753.0	-4,169.5	-52.3	4,169.7	0.00	0.00	
9,800.0	90.00	180.00	5,753.0	-4,269.5	-52.3	4,269.7	0.00	0.00	
9,900.0	90.00	180.00	5,753.0	-4,369.5	-52.3	4,369.7	0.00	0.00	

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Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

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	180.00	5,753.0	-4,469.5	-52.3	4,469.7	0.00	0.00	
10,100.0	90.00	180.00	5,753.0	-4,569.5	-52.3	4,569.7	0.00	0.00	
10,200.0	90.00	180.00	5,753.0	-4,669.5	-52.3	4,669.7	0.00	0.00	
10,300.0	90.00	180.00	5,753.0	-4,769.5	-52.3	4,769.7	0.00	0.00	
10,400.0	90.00	180.00	5,753.0	-4,869.5	-52.3	4,869.7	0.00	0.00	
10,500.0	90.00	180.00	5,753.0	-4,969.5	-52.3	4,969.7	0.00	0.00	
10,600.0	90.00	180.00	5,753.0	-5,069.5	-52.3	5,069.7	0.00	0.00	
10,700.0	90.00	180.00	5,753.0	-5,169.5	-52.3	5,169.7	0.00	0.00	
10,800.0	90.00	180.00	5,753.0	-5,269.5	-52.3	5,269.7	0.00	0.00	
10,900.0	90.00	180.00	5,753.0	-5,369.5	-52.3	5,369.7	0.00	0.00	
11,000.0	90.00	180.00	5,753.0	-5,469.5	-52.3	5,469.7	0.00	0.00	
11,100.0	90.00	180.00	5,753.0	-5,569.5	-52.3	5,569.7	0.00	0.00	
11,200.0	90.00	180.00	5,753.0	-5,669.5	-52.3	5,669.7	0.00	0.00	
11,300.0	90.00	180.00	5,753.0	-5,769.5	-52.3	5,769.7	0.00	0.00	
11,400.0	90.00	180.00	5,753.0	-5,869.5	-52.3	5,869.7	0.00	0.00	
11,500.0	90.00	180.00	5,753.0	-5,969.5	-52.3	5,969.7	0.00	0.00	
11,600.0	90.00	180.00	5,753.0	-6,069.5	-52.3	6,069.7	0.00	0.00	
11,700.0	90.00	180.00	5,753.0	-6,169.5	-52.3	6,169.7	0.00	0.00	
11,800.0	90.00	180.00	5,753.0	-6,269.5	-52.3	6,269.7	0.00	0.00	
11,900.0	90.00	180.00	5,753.0	-6,369.5	-52.3	6,369.7	0.00	0.00	
12,000.0	90.00	180.00	5,753.0	-6,469.5	-52.3	6,469.7	0.00	0.00	
12,100.0	90.00	180.00	5,753.0	-6,569.5	-52.3	6,569.7	0.00	0.00	
12,200.0	90.00	180.00	5,753.0	-6,669.5	-52.3	6,669.7	0.00	0.00	
12,300.0	90.00	180.00	5,753.0	-6,769.5	-52.3	6,769.7	0.00	0.00	
12,400.0	90.00	180.00	5,753.0	-6,869.5	-52.3	6,869.7	0.00	0.00	
12,471.2	90.00	180.00	5,753.0	-6,940.6	-52.3	6,940.8	0.00	0.00	PBHL @ 12471' 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									
PBHL 3406B	0.00	1.07	5,753.0	-7,440.5	-46.8	1,534,136.56	3,455,817.55	40.787967	-103.853883
- plan misses target center by 499.9ft at 12471.2ft MD (5753.0 TVD, -6940.6 N, -52.3 E)									
- Point									
Target BH 3406B	0.00	1.07	5,753.0	-6,940.6	-52.3	1,534,636.24	3,455,802.74	40.789339	-103.853903
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,200.0	5,753.0	7"	0.000	0.000

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #27K-3406B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site:	S27-T10N-R58W	North Reference:	True
Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,232.2	5,232.2	0.0	0.0	KOP @ 5232' MD
6,050.4	5,753.1	-520.5	-20.9	LP @ 6050' MD
6,794.5	5,753.0	-1,264.0	-50.8	Start 3° Turn
6,871.2	5,753.0	-1,340.6	-52.3	EOT; 180° Az
12,471.2	5,753.0	-6,940.6	-52.3	PBHL @ 12471' MD

Whiting Petroleum Corporation

Weld County, CO

S27-T10N-R58W

Razor #27K-3406B

HZ

Plan #4

Anticollision Report

11 June, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Reference	Plan #4		
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	12,471.2	Plan #4 (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	5,402.8	5,425.1	61.4	37.8	2.606	CC, ES
Razor #27K-3405A - HZ - Plan #3	12,471.8	12,503.8	341.3	81.8	1.315	Level 3, SF
Razor #27K-3407A - HZ - Plan #3	5,417.9	5,443.4	57.1	33.5	2.419	CC, ES
Razor #27K-3407A - HZ - Plan #3	12,471.8	12,480.2	341.9	81.1	1.311	Level 3, SF
Razor #27K-3408B - HZ - Plan #3	966.3	967.3	65.3	61.2	15.996	CC
Razor #27K-3408B - HZ - Plan #3	1,000.0	1,001.0	65.3	61.1	15.425	ES
Razor #27K-3408B - HZ - Plan #3	5,232.2	5,229.6	186.0	163.0	8.086	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	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					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	81.7					
100.0	100.0	102.0	102.0	0.1	0.1	-23.80	74.7	-32.9	81.7	81.5	0.19	424.873		
200.0	200.0	202.0	202.0	0.3	0.3	-23.80	74.7	-32.9	81.7	81.0	0.64	127.239		
300.0	300.0	302.0	302.0	0.5	0.5	-23.80	74.7	-32.9	81.7	80.6	1.09	74.823		
400.0	400.0	402.0	402.0	0.8	0.8	-23.80	74.7	-32.9	81.7	80.1	1.54	52.993		
500.0	500.0	502.0	502.0	1.0	1.0	-23.80	74.7	-32.9	81.7	79.7	1.99	41.024		
600.0	600.0	602.0	602.0	1.2	1.2	-23.80	74.7	-32.9	81.7	79.2	2.44	33.465		
700.0	700.0	702.0	702.0	1.4	1.4	-23.80	74.7	-32.9	81.7	78.8	2.89	28.259		
800.0	800.0	802.0	802.0	1.7	1.7	-23.80	74.7	-32.9	81.7	78.3	3.34	24.454		
900.0	900.0	902.0	902.0	1.9	1.9	-23.80	74.7	-32.9	81.7	77.9	3.79	21.552		
1,000.0	1,000.0	1,002.0	1,002.0	2.1	2.1	-23.80	74.7	-32.9	81.7	77.4	4.24	19.266		
1,100.0	1,100.0	1,102.0	1,102.0	2.3	2.3	-23.80	74.7	-32.9	81.7	77.0	4.69	17.419		
1,200.0	1,200.0	1,202.0	1,202.0	2.6	2.6	-23.80	74.7	-32.9	81.7	76.5	5.14	15.894		
1,300.0	1,300.0	1,302.0	1,302.0	2.8	2.8	-23.80	74.7	-32.9	81.7	76.1	5.59	14.615		
1,400.0	1,400.0	1,402.0	1,402.0	3.0	3.0	-23.80	74.7	-32.9	81.7	75.6	6.04	13.527		
1,500.0	1,500.0	1,502.0	1,502.0	3.2	3.2	-23.80	74.7	-32.9	81.7	75.2	6.49	12.589		
1,600.0	1,600.0	1,602.0	1,602.0	3.5	3.5	-23.80	74.7	-32.9	81.7	74.7	6.94	11.773		
1,700.0	1,700.0	1,702.0	1,702.0	3.7	3.7	-23.80	74.7	-32.9	81.7	74.3	7.38	11.057		
1,800.0	1,800.0	1,802.0	1,802.0	3.9	3.9	-23.80	74.7	-32.9	81.7	73.8	7.83	10.422		
1,900.0	1,900.0	1,902.0	1,902.0	4.1	4.1	-23.80	74.7	-32.9	81.7	73.4	8.28	9.857		
2,000.0	2,000.0	2,002.0	2,002.0	4.4	4.4	-23.80	74.7	-32.9	81.7	72.9	8.73	9.349		
2,100.0	2,100.0	2,102.0	2,102.0	4.6	4.6	-23.80	74.7	-32.9	81.7	72.5	9.18	8.892		
2,200.0	2,200.0	2,202.0	2,202.0	4.8	4.8	-23.80	74.7	-32.9	81.7	72.0	9.63	8.477		
2,300.0	2,300.0	2,302.0	2,302.0	5.0	5.0	-23.80	74.7	-32.9	81.7	71.6	10.08	8.099		
2,400.0	2,400.0	2,402.0	2,402.0	5.3	5.3	-23.80	74.7	-32.9	81.7	71.1	10.53	7.753		
2,500.0	2,500.0	2,502.0	2,502.0	5.5	5.5	-23.80	74.7	-32.9	81.7	70.7	10.98	7.436		
2,600.0	2,600.0	2,602.0	2,602.0	5.7	5.7	-23.80	74.7	-32.9	81.7	70.2	11.43	7.143		
2,700.0	2,700.0	2,702.0	2,702.0	5.9	5.9	-23.80	74.7	-32.9	81.7	69.8	11.88	6.873		
2,800.0	2,800.0	2,802.0	2,802.0	6.2	6.2	-23.80	74.7	-32.9	81.7	69.3	12.33	6.622		
2,900.0	2,900.0	2,902.0	2,902.0	6.4	6.4	-23.80	74.7	-32.9	81.7	68.9	12.78	6.389		
3,000.0	3,000.0	3,002.0	3,002.0	6.6	6.6	-23.80	74.7	-32.9	81.7	68.4	13.23	6.172		
3,100.0	3,100.0	3,102.0	3,102.0	6.8	6.8	-23.80	74.7	-32.9	81.7	68.0	13.68	5.969		
3,200.0	3,200.0	3,202.0	3,202.0	7.1	7.1	-23.80	74.7	-32.9	81.7	67.5	14.13	5.779		
3,300.0	3,300.0	3,302.0	3,302.0	7.3	7.3	-23.80	74.7	-32.9	81.7	67.1	14.58	5.601		
3,400.0	3,400.0	3,402.0	3,402.0	7.5	7.5	-23.80	74.7	-32.9	81.7	66.6	15.03	5.434		
3,500.0	3,500.0	3,502.0	3,502.0	7.7	7.7	-23.80	74.7	-32.9	81.7	66.2	15.48	5.276		
3,600.0	3,600.0	3,602.0	3,602.0	8.0	8.0	-23.80	74.7	-32.9	81.7	65.7	15.93	5.127		
3,700.0	3,700.0	3,702.0	3,702.0	8.2	8.2	-23.80	74.7	-32.9	81.7	65.3	16.38	4.986		
3,800.0	3,800.0	3,802.0	3,802.0	8.4	8.4	-23.80	74.7	-32.9	81.7	64.8	16.82	4.853		
3,900.0	3,900.0	3,902.0	3,902.0	8.6	8.6	-23.80	74.7	-32.9	81.7	64.4	17.27	4.727		
4,000.0	4,000.0	4,002.0	4,002.0	8.9	8.9	-23.80	74.7	-32.9	81.7	63.9	17.72	4.607		
4,100.0	4,100.0	4,102.0	4,102.0	9.1	9.1	-23.80	74.7	-32.9	81.7	63.5	18.17	4.493		
4,200.0	4,200.0	4,202.0	4,202.0	9.3	9.3	-23.80	74.7	-32.9	81.7	63.0	18.62	4.384		
4,300.0	4,300.0	4,302.0	4,302.0	9.5	9.5	-23.80	74.7	-32.9	81.7	62.6	19.07	4.281		
4,400.0	4,400.0	4,402.0	4,402.0	9.8	9.8	-23.80	74.7	-32.9	81.7	62.1	19.52	4.182		
4,500.0	4,500.0	4,502.0	4,502.0	10.0	10.0	-23.80	74.7	-32.9	81.7	61.7	19.97	4.088		
4,600.0	4,600.0	4,602.0	4,602.0	10.2	10.2	-23.80	74.7	-32.9	81.7	61.2	20.42	3.998		
4,700.0	4,700.0	4,702.0	4,702.0	10.4	10.4	-23.80	74.7	-32.9	81.7	60.8	20.87	3.912		
4,800.0	4,800.0	4,802.0	4,802.0	10.7	10.7	-23.80	74.7	-32.9	81.7	60.3	21.32	3.830		
4,900.0	4,900.0	4,902.0	4,902.0	10.9	10.9	-23.80	74.7	-32.9	81.7	59.9	21.77	3.751		
5,000.0	5,000.0	5,002.0	5,002.0	11.1	11.1	-23.80	74.7	-32.9	81.7	59.4	22.22	3.675		
5,100.0	5,100.0	5,102.0	5,102.0	11.3	11.3	-23.80	74.7	-32.9	81.7	59.0	22.67	3.602		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3405A - 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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,200.0	5,209.4	5,209.2	11.6	11.5	-25.57	71.0	-34.0	79.0	55.9	23.10	3.422		
5,232.2	5,232.2	5,245.1	5,244.6	11.6	11.6	-28.37	65.7	-35.5	75.3	52.1	23.23	3.243		
5,250.0	5,250.0	5,264.6	5,263.6	11.7	11.6	147.38	61.8	-36.5	73.0	49.6	23.31	3.130		
5,300.0	5,299.8	5,318.4	5,315.3	11.7	11.7	140.59	47.5	-40.5	67.1	43.7	23.38	2.869		
5,350.0	5,349.0	5,371.0	5,364.0	11.8	11.8	131.86	28.7	-45.7	63.0	39.6	23.42	2.690		
5,400.0	5,397.1	5,422.3	5,409.5	11.9	11.9	121.65	5.8	-52.1	61.4	37.9	23.55	2.608		
5,402.8	5,399.8	5,425.1	5,412.0	11.9	11.9	121.06	4.4	-52.5	61.4	37.8	23.56	2.606 CC, ES		
5,450.0	5,443.7	5,472.4	5,451.5	12.0	12.1	110.92	-20.6	-59.4	62.8	38.9	23.83	2.634		
5,500.0	5,488.4	5,521.4	5,489.7	12.1	12.2	100.77	-50.0	-67.6	67.1	42.9	24.22	2.772		
5,550.0	5,530.6	5,569.3	5,524.2	12.2	12.4	91.98	-82.0	-76.5	74.1	49.5	24.61	3.013		
5,600.0	5,570.2	5,616.1	5,554.9	12.4	12.6	84.81	-116.1	-85.9	83.2	58.3	24.92	3.338		
5,650.0	5,606.6	5,662.1	5,581.7	12.5	12.9	79.12	-152.1	-95.9	93.7	68.6	25.16	3.726		
5,700.0	5,639.6	5,707.2	5,604.8	12.8	13.2	74.67	-189.4	-106.3	105.3	79.9	25.35	4.153		
5,750.0	5,668.8	5,750.0	5,623.5	13.0	13.5	71.25	-226.5	-116.6	117.5	92.0	25.53	4.602		
5,800.0	5,694.0	5,795.2	5,639.8	13.4	13.9	68.46	-267.1	-127.9	130.1	104.3	25.77	5.048		
5,850.0	5,715.0	5,838.2	5,651.8	13.7	14.3	66.31	-306.9	-138.9	142.9	116.8	26.08	5.479		
5,900.0	5,731.5	5,880.8	5,660.3	14.2	14.7	64.61	-347.0	-150.1	155.7	129.2	26.50	5.877		
5,950.0	5,743.4	5,922.9	5,665.3	14.6	15.1	63.27	-387.3	-161.3	168.4	141.4	27.03	6.231		
6,000.0	5,750.6	5,964.7	5,667.0	15.2	15.6	62.21	-427.6	-172.4	180.9	153.2	27.70	6.532		
6,050.4	5,753.1	6,013.7	5,667.0	15.7	16.2	62.09	-474.8	-185.5	192.2	163.5	28.77	6.682		
6,100.0	5,753.1	6,062.0	5,667.0	16.3	16.8	63.59	-521.3	-198.5	202.4	172.1	30.26	6.689		
6,200.0	5,753.0	6,159.3	5,667.0	17.6	18.2	66.19	-615.1	-224.5	223.2	189.8	33.33	6.697		
6,300.0	5,753.0	6,256.7	5,667.0	19.0	19.6	68.35	-708.9	-250.6	244.4	207.9	36.50	6.695		
6,400.0	5,753.0	6,354.0	5,667.0	20.5	21.1	70.17	-802.7	-276.6	265.8	226.0	39.76	6.685		
6,500.0	5,753.0	6,451.4	5,667.0	22.0	22.6	71.71	-896.5	-302.7	287.5	244.4	43.10	6.670		
6,600.0	5,753.0	6,559.8	5,667.0	23.6	24.2	73.11	-1,001.3	-330.4	308.2	261.7	46.58	6.618		
6,700.0	5,753.0	6,677.2	5,667.0	25.3	26.0	74.09	-1,116.3	-354.0	323.8	273.7	50.11	6.461		
6,794.5	5,753.0	6,789.8	5,667.0	26.9	27.7	74.64	-1,227.7	-370.0	333.1	279.6	53.47	6.229		
6,800.0	5,753.0	6,796.4	5,667.0	27.0	27.8	74.66	-1,234.3	-370.7	333.4	279.8	53.65	6.215		
6,871.2	5,753.0	6,882.0	5,667.0	28.0	29.1	74.88	-1,319.5	-378.1	338.1	282.3	55.86	6.053		
6,900.0	5,753.0	6,916.7	5,667.0	28.5	29.6	74.97	-1,354.2	-380.1	339.7	282.8	56.88	5.972		
7,000.0	5,753.0	7,032.0	5,667.0	30.2	31.5	75.06	-1,469.4	-382.1	341.3	280.9	60.39	5.652		
7,100.0	5,753.0	7,132.0	5,667.0	32.0	33.1	75.06	-1,569.4	-382.1	341.3	277.6	63.72	5.356		
7,200.0	5,753.0	7,232.0	5,667.0	33.8	34.8	75.06	-1,669.4	-382.1	341.3	274.2	67.12	5.086		
7,300.0	5,753.0	7,332.0	5,667.0	35.5	36.5	75.06	-1,769.4	-382.1	341.3	270.8	70.54	4.839		
7,400.0	5,753.0	7,432.0	5,667.0	37.3	38.2	75.06	-1,869.4	-382.1	341.3	267.3	74.00	4.613		
7,500.0	5,753.0	7,532.0	5,667.0	39.2	40.0	75.06	-1,969.4	-382.1	341.3	263.9	77.48	4.405		
7,600.0	5,753.0	7,632.0	5,667.0	41.0	41.7	75.06	-2,069.4	-382.1	341.3	260.3	80.99	4.215		
7,700.0	5,753.0	7,732.0	5,667.0	42.8	43.5	75.06	-2,169.4	-382.1	341.3	256.8	84.51	4.039		
7,800.0	5,753.0	7,832.0	5,667.0	44.7	45.3	75.06	-2,269.4	-382.1	341.3	253.3	88.05	3.876		
7,900.0	5,753.0	7,932.0	5,667.0	46.5	47.1	75.06	-2,369.4	-382.1	341.3	249.7	91.61	3.726		
8,000.0	5,753.0	8,032.0	5,667.0	48.3	48.9	75.06	-2,469.4	-382.1	341.3	246.2	95.18	3.586		
8,100.0	5,753.0	8,132.0	5,667.0	50.2	50.7	75.06	-2,569.4	-382.1	341.3	242.6	98.76	3.456		
8,200.0	5,753.0	8,232.0	5,667.0	52.1	52.6	75.06	-2,669.4	-382.1	341.3	239.0	102.36	3.335		
8,300.0	5,753.0	8,332.0	5,667.0	53.9	54.4	75.06	-2,769.4	-382.1	341.3	235.4	105.96	3.221		
8,400.0	5,753.0	8,432.0	5,667.0	55.8	56.2	75.06	-2,869.4	-382.1	341.3	231.8	109.57	3.115		
8,500.0	5,753.0	8,532.0	5,667.0	57.7	58.1	75.06	-2,969.4	-382.1	341.3	228.1	113.19	3.016		
8,600.0	5,753.0	8,632.0	5,667.0	59.5	59.9	75.06	-3,069.4	-382.1	341.3	224.5	116.82	2.922		
8,700.0	5,753.0	8,732.0	5,667.0	61.4	61.8	75.06	-3,169.4	-382.1	341.3	220.9	120.45	2.834		
8,800.0	5,753.0	8,832.0	5,667.0	63.3	63.6	75.06	-3,269.4	-382.1	341.3	217.2	124.09	2.751		
8,900.0	5,753.0	8,932.0	5,667.0	65.2	65.5	75.06	-3,369.4	-382.1	341.3	213.6	127.73	2.672		
9,000.0	5,753.0	9,032.0	5,667.0	67.1	67.3	75.06	-3,469.4	-382.1	341.3	210.0	131.38	2.598		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3405A - 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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
9,100.0	5,753.0	9,132.0	5,667.0	69.0	69.2	75.06	-3,569.4	-382.1	341.3	206.3	135.03	2.528		
9,200.0	5,753.0	9,232.0	5,667.0	70.8	71.1	75.06	-3,669.4	-382.1	341.3	202.6	138.69	2.461		
9,300.0	5,753.0	9,332.0	5,667.0	72.7	72.9	75.06	-3,769.4	-382.1	341.3	199.0	142.35	2.398		
9,400.0	5,753.0	9,432.0	5,667.0	74.6	74.8	75.06	-3,869.4	-382.1	341.3	195.3	146.02	2.338		
9,500.0	5,753.0	9,532.0	5,667.0	76.5	76.7	75.06	-3,969.4	-382.1	341.3	191.6	149.69	2.280		
9,600.0	5,753.0	9,632.0	5,667.0	78.4	78.6	75.06	-4,069.4	-382.1	341.3	188.0	153.36	2.226		
9,700.0	5,753.0	9,732.0	5,667.0	80.3	80.5	75.06	-4,169.4	-382.1	341.3	184.3	157.03	2.174		
9,800.0	5,753.0	9,832.0	5,667.0	82.2	82.3	75.06	-4,269.4	-382.1	341.3	180.6	160.71	2.124		
9,900.0	5,753.0	9,932.0	5,667.0	84.1	84.2	75.06	-4,369.4	-382.1	341.3	176.9	164.39	2.076		
10,000.0	5,753.0	10,032.0	5,667.0	86.0	86.1	75.06	-4,469.4	-382.1	341.3	173.3	168.07	2.031		
10,100.0	5,753.0	10,132.0	5,667.0	87.9	88.0	75.06	-4,569.4	-382.1	341.3	169.6	171.75	1.987		
10,200.0	5,753.0	10,232.0	5,667.0	89.8	89.9	75.06	-4,669.4	-382.1	341.3	165.9	175.44	1.946		
10,300.0	5,753.0	10,332.0	5,667.0	91.7	91.8	75.06	-4,769.4	-382.1	341.3	162.2	179.13	1.906		
10,400.0	5,753.0	10,432.0	5,667.0	93.6	93.7	75.06	-4,869.4	-382.1	341.3	158.5	182.81	1.867		
10,500.0	5,753.0	10,532.0	5,667.0	95.5	95.6	75.06	-4,969.4	-382.1	341.3	154.8	186.51	1.830		
10,600.0	5,753.0	10,632.0	5,667.0	97.4	97.5	75.06	-5,069.4	-382.1	341.3	151.1	190.20	1.795		
10,700.0	5,753.0	10,732.0	5,667.0	99.3	99.3	75.06	-5,169.4	-382.1	341.3	147.4	193.89	1.760		
10,800.0	5,753.0	10,832.0	5,667.0	101.2	101.2	75.06	-5,269.4	-382.1	341.3	143.8	197.59	1.728		
10,900.0	5,753.0	10,932.0	5,667.0	103.1	103.1	75.06	-5,369.4	-382.1	341.3	140.1	201.28	1.696		
11,000.0	5,753.0	11,032.0	5,667.0	105.1	105.0	75.06	-5,469.4	-382.1	341.3	136.4	204.98	1.665		
11,100.0	5,753.0	11,132.0	5,667.0	107.0	106.9	75.06	-5,569.4	-382.1	341.3	132.7	208.68	1.636		
11,200.0	5,753.0	11,232.0	5,667.0	108.9	108.8	75.06	-5,669.4	-382.1	341.3	129.0	212.38	1.607		
11,300.0	5,753.0	11,332.0	5,667.0	110.8	110.7	75.06	-5,769.4	-382.1	341.3	125.3	216.08	1.580		
11,400.0	5,753.0	11,432.0	5,667.0	112.7	112.6	75.06	-5,869.4	-382.1	341.3	121.6	219.78	1.553		
11,500.0	5,753.0	11,532.0	5,667.0	114.6	114.5	75.06	-5,969.4	-382.1	341.3	117.9	223.49	1.527		
11,600.0	5,753.0	11,632.0	5,667.0	116.5	116.4	75.06	-6,069.4	-382.1	341.3	114.1	227.19	1.502		
11,700.0	5,753.0	11,732.0	5,667.0	118.4	118.3	75.06	-6,169.4	-382.1	341.3	110.4	230.90	1.478 Level 3		
11,800.0	5,753.0	11,832.0	5,667.0	120.3	120.2	75.06	-6,269.4	-382.1	341.3	106.7	234.60	1.455 Level 3		
11,900.0	5,753.0	11,932.0	5,667.0	122.2	122.1	75.06	-6,369.4	-382.1	341.3	103.0	238.31	1.432 Level 3		
12,000.0	5,753.0	12,032.0	5,667.0	124.1	124.1	75.06	-6,469.4	-382.1	341.3	99.3	242.02	1.410 Level 3		
12,100.0	5,753.0	12,132.0	5,667.0	126.1	126.0	75.06	-6,569.4	-382.1	341.3	95.6	245.72	1.389 Level 3		
12,200.0	5,753.0	12,232.0	5,667.0	128.0	127.9	75.06	-6,669.4	-382.1	341.3	91.9	249.43	1.368 Level 3		
12,300.0	5,753.0	12,332.0	5,667.0	129.9	129.8	75.06	-6,769.4	-382.1	341.3	88.2	253.14	1.348 Level 3		
12,400.0	5,753.0	12,432.0	5,667.0	131.8	131.7	75.06	-6,869.4	-382.1	341.3	84.5	256.85	1.329 Level 3		
12,471.2	5,753.0	12,503.1	5,667.0	133.1	133.0	75.06	-6,940.6	-382.1	341.3	81.8	259.49	1.315 Level 3		
12,471.8	5,753.0	12,503.8	5,667.0	133.2	133.0	75.06	-6,941.2	-382.1	341.3	81.8	259.51	1.315 Level 3, SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - 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				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	3.0	3.0	0.0	0.0	23.44	74.7	32.4	81.4					
100.0	100.0	103.0	103.0	0.1	0.1	23.44	74.7	32.4	81.4	81.2	0.19	418.821		
200.0	200.0	203.0	203.0	0.3	0.3	23.44	74.7	32.4	81.4	80.8	0.64	126.450		
300.0	300.0	303.0	303.0	0.5	0.6	23.44	74.7	32.4	81.4	80.3	1.09	74.467		
400.0	400.0	403.0	403.0	0.8	0.8	23.44	74.7	32.4	81.4	79.9	1.54	52.772		
500.0	500.0	503.0	503.0	1.0	1.0	23.44	74.7	32.4	81.4	79.4	1.99	40.866		
600.0	600.0	603.0	603.0	1.2	1.2	23.44	74.7	32.4	81.4	79.0	2.44	33.344		
700.0	700.0	703.0	703.0	1.4	1.4	23.44	74.7	32.4	81.4	78.5	2.89	28.160		
800.0	800.0	803.0	803.0	1.7	1.7	23.44	74.7	32.4	81.4	78.1	3.34	24.371		
900.0	900.0	903.0	903.0	1.9	1.9	23.44	74.7	32.4	81.4	77.6	3.79	21.481		
1,000.0	1,000.0	1,003.0	1,003.0	2.1	2.1	23.44	74.7	32.4	81.4	77.2	4.24	19.204		
1,100.0	1,100.0	1,103.0	1,103.0	2.3	2.3	23.44	74.7	32.4	81.4	76.7	4.69	17.363		
1,200.0	1,200.0	1,203.0	1,203.0	2.6	2.6	23.44	74.7	32.4	81.4	76.3	5.14	15.844		
1,300.0	1,300.0	1,303.0	1,303.0	2.8	2.8	23.44	74.7	32.4	81.4	75.8	5.59	14.570		
1,400.0	1,400.0	1,403.0	1,403.0	3.0	3.0	23.44	74.7	32.4	81.4	75.4	6.04	13.485		
1,500.0	1,500.0	1,503.0	1,503.0	3.2	3.2	23.44	74.7	32.4	81.4	74.9	6.49	12.551		
1,600.0	1,600.0	1,603.0	1,603.0	3.5	3.5	23.44	74.7	32.4	81.4	74.5	6.94	11.738		
1,700.0	1,700.0	1,703.0	1,703.0	3.7	3.7	23.44	74.7	32.4	81.4	74.0	7.39	11.023		
1,800.0	1,800.0	1,803.0	1,803.0	3.9	3.9	23.44	74.7	32.4	81.4	73.6	7.84	10.391		
1,900.0	1,900.0	1,903.0	1,903.0	4.1	4.1	23.44	74.7	32.4	81.4	73.1	8.29	9.827		
2,000.0	2,000.0	2,003.0	2,003.0	4.4	4.4	23.44	74.7	32.4	81.4	72.7	8.74	9.321		
2,100.0	2,100.0	2,103.0	2,103.0	4.6	4.6	23.44	74.7	32.4	81.4	72.2	9.19	8.865		
2,200.0	2,200.0	2,203.0	2,203.0	4.8	4.8	23.44	74.7	32.4	81.4	71.8	9.63	8.452		
2,300.0	2,300.0	2,303.0	2,303.0	5.0	5.0	23.44	74.7	32.4	81.4	71.3	10.08	8.075		
2,400.0	2,400.0	2,403.0	2,403.0	5.3	5.3	23.44	74.7	32.4	81.4	70.9	10.53	7.730		
2,500.0	2,500.0	2,503.0	2,503.0	5.5	5.5	23.44	74.7	32.4	81.4	70.4	10.98	7.414		
2,600.0	2,600.0	2,603.0	2,603.0	5.7	5.7	23.44	74.7	32.4	81.4	70.0	11.43	7.122		
2,700.0	2,700.0	2,703.0	2,703.0	5.9	5.9	23.44	74.7	32.4	81.4	69.5	11.88	6.853		
2,800.0	2,800.0	2,803.0	2,803.0	6.2	6.2	23.44	74.7	32.4	81.4	69.1	12.33	6.603		
2,900.0	2,900.0	2,903.0	2,903.0	6.4	6.4	23.44	74.7	32.4	81.4	68.6	12.78	6.371		
3,000.0	3,000.0	3,003.0	3,003.0	6.6	6.6	23.44	74.7	32.4	81.4	68.2	13.23	6.154		
3,100.0	3,100.0	3,103.0	3,103.0	6.8	6.8	23.44	74.7	32.4	81.4	67.7	13.68	5.952		
3,200.0	3,200.0	3,203.0	3,203.0	7.1	7.1	23.44	74.7	32.4	81.4	67.3	14.13	5.763		
3,300.0	3,300.0	3,303.0	3,303.0	7.3	7.3	23.44	74.7	32.4	81.4	66.8	14.58	5.585		
3,400.0	3,400.0	3,403.0	3,403.0	7.5	7.5	23.44	74.7	32.4	81.4	66.4	15.03	5.418		
3,500.0	3,500.0	3,503.0	3,503.0	7.7	7.7	23.44	74.7	32.4	81.4	65.9	15.48	5.261		
3,600.0	3,600.0	3,603.0	3,603.0	8.0	8.0	23.44	74.7	32.4	81.4	65.5	15.93	5.112		
3,700.0	3,700.0	3,703.0	3,703.0	8.2	8.2	23.44	74.7	32.4	81.4	65.1	16.38	4.972		
3,800.0	3,800.0	3,803.0	3,803.0	8.4	8.4	23.44	74.7	32.4	81.4	64.6	16.83	4.839		
3,900.0	3,900.0	3,903.0	3,903.0	8.6	8.6	23.44	74.7	32.4	81.4	64.2	17.28	4.713		
4,000.0	4,000.0	4,003.0	4,003.0	8.9	8.9	23.44	74.7	32.4	81.4	63.7	17.73	4.594		
4,100.0	4,100.0	4,103.0	4,103.0	9.1	9.1	23.44	74.7	32.4	81.4	63.3	18.18	4.480		
4,200.0	4,200.0	4,203.0	4,203.0	9.3	9.3	23.44	74.7	32.4	81.4	62.8	18.63	4.372		
4,300.0	4,300.0	4,303.0	4,303.0	9.5	9.5	23.44	74.7	32.4	81.4	62.4	19.07	4.269		
4,400.0	4,400.0	4,403.0	4,403.0	9.8	9.8	23.44	74.7	32.4	81.4	61.9	19.52	4.171		
4,500.0	4,500.0	4,503.0	4,503.0	10.0	10.0	23.44	74.7	32.4	81.4	61.5	19.97	4.077		
4,600.0	4,600.0	4,603.0	4,603.0	10.2	10.2	23.44	74.7	32.4	81.4	61.0	20.42	3.987		
4,700.0	4,700.0	4,703.0	4,703.0	10.4	10.4	23.44	74.7	32.4	81.4	60.6	20.87	3.901		
4,800.0	4,800.0	4,803.0	4,803.0	10.7	10.7	23.44	74.7	32.4	81.4	60.1	21.32	3.819		
4,900.0	4,900.0	4,903.0	4,903.0	10.9	10.9	23.44	74.7	32.4	81.4	59.7	21.77	3.740		
5,000.0	5,000.0	5,003.0	5,003.0	11.1	11.1	23.44	74.7	32.4	81.4	59.2	22.22	3.664		
5,100.0	5,100.0	5,103.0	5,103.0	11.3	11.3	23.44	74.7	32.4	81.4	58.8	22.67	3.592		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	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	5,200.0	5,211.1	5,210.9	11.6	11.5	25.12	70.7	33.2	78.5	55.4	23.10	3.399		
5,232.2	5,232.2	5,247.1	5,246.5	11.6	11.6	27.74	65.1	34.3	74.4	51.2	23.24	3.204		
5,250.0	5,250.0	5,266.7	5,265.6	11.7	11.6	-152.71	61.1	35.0	71.8	48.5	23.31	3.080		
5,300.0	5,299.8	5,320.8	5,317.6	11.7	11.7	-146.06	46.2	37.9	65.1	41.7	23.38	2.783		
5,350.0	5,349.0	5,373.7	5,366.5	11.8	11.8	-137.14	26.7	41.7	59.9	36.5	23.40	2.562		
5,400.0	5,397.1	5,425.3	5,412.1	11.9	11.9	-126.22	3.0	46.3	57.3	33.8	23.50	2.437		
5,417.9	5,413.9	5,443.4	5,427.5	12.0	12.0	-122.02	-6.3	48.2	57.1	33.5	23.58	2.419 CC, ES		
5,450.0	5,443.7	5,475.6	5,454.1	12.0	12.1	-114.33	-24.2	51.7	57.8	34.0	23.81	2.426		
5,500.0	5,488.4	5,524.7	5,492.3	12.1	12.2	-102.88	-54.5	57.6	61.6	37.3	24.25	2.540		
5,550.0	5,530.6	5,572.7	5,526.6	12.2	12.4	-92.98	-87.4	64.0	68.4	43.7	24.69	2.771		
5,600.0	5,570.2	5,619.7	5,557.1	12.4	12.6	-85.00	-122.5	70.8	77.5	52.5	25.02	3.098		
5,650.0	5,606.6	5,665.7	5,583.7	12.5	12.9	-78.79	-159.3	77.9	88.2	63.0	25.25	3.494		
5,700.0	5,639.6	5,710.8	5,606.5	12.8	13.2	-74.02	-197.5	85.4	100.0	74.6	25.42	3.935		
5,750.0	5,668.8	5,755.1	5,625.5	13.0	13.6	-70.35	-236.7	93.0	112.5	86.9	25.58	4.398		
5,800.0	5,694.0	5,800.0	5,641.3	13.4	14.0	-67.47	-278.0	101.1	125.4	99.6	25.79	4.862		
5,850.0	5,715.0	5,841.7	5,652.6	13.7	14.4	-65.29	-317.4	108.7	138.5	112.4	26.07	5.311		
5,900.0	5,731.5	5,884.2	5,660.8	14.2	14.9	-63.56	-358.3	116.7	151.5	125.1	26.47	5.725		
5,950.0	5,743.4	5,926.2	5,665.6	14.6	15.3	-62.20	-399.2	124.7	164.4	137.5	26.99	6.093		
6,000.0	5,750.6	5,968.5	5,667.0	15.2	15.8	-61.14	-440.7	132.7	177.1	149.5	27.66	6.404		
6,050.4	5,753.1	6,017.4	5,667.0	15.7	16.5	-61.13	-488.7	142.1	188.5	159.7	28.78	6.549		
6,100.0	5,753.1	6,065.7	5,667.0	16.3	17.1	-62.72	-536.1	151.3	198.6	168.3	30.32	6.550		
6,200.0	5,753.0	6,163.0	5,667.0	17.6	18.5	-65.47	-631.6	169.9	219.4	185.9	33.49	6.552		
6,300.0	5,753.0	6,260.3	5,667.0	19.0	20.0	-67.74	-727.1	188.5	240.7	203.9	36.75	6.548		
6,400.0	5,753.0	6,357.6	5,667.0	20.5	21.6	-69.64	-822.7	207.1	262.2	222.1	40.10	6.538		
6,500.0	5,753.0	6,454.9	5,667.0	22.0	23.2	-71.26	-918.2	225.7	284.0	240.4	43.53	6.524		
6,600.0	5,753.0	6,553.9	5,667.0	23.6	24.8	-72.66	-1,015.3	244.6	305.9	258.9	47.03	6.504		
6,700.0	5,753.0	6,670.5	5,667.0	25.3	26.7	-73.87	-1,130.5	262.7	324.6	273.9	50.74	6.397		
6,794.5	5,753.0	6,782.8	5,667.0	26.9	28.4	-74.60	-1,242.2	273.5	337.0	282.8	54.21	6.216		
6,800.0	5,753.0	6,789.5	5,667.0	27.0	28.5	-74.64	-1,248.9	273.9	337.5	283.1	54.43	6.201		
6,871.2	5,753.0	6,875.2	5,667.0	28.0	29.9	-74.90	-1,334.6	277.4	341.6	284.6	57.04	5.989		
6,900.0	5,753.0	6,910.1	5,667.0	28.5	30.4	-74.91	-1,369.4	277.7	341.9	283.8	58.05	5.889		
7,000.0	5,753.0	7,010.1	5,667.0	30.2	32.1	-74.91	-1,469.4	277.7	341.9	280.5	61.36	5.571		
7,100.0	5,753.0	7,110.1	5,667.0	32.0	33.8	-74.91	-1,569.4	277.7	341.9	277.1	64.76	5.279		
7,200.0	5,753.0	7,210.1	5,667.0	33.8	35.6	-74.91	-1,669.4	277.7	341.9	273.7	68.20	5.013		
7,300.0	5,753.0	7,310.1	5,667.0	35.5	37.3	-74.91	-1,769.4	277.7	341.9	270.2	71.66	4.770		
7,400.0	5,753.0	7,410.1	5,667.0	37.3	39.1	-74.91	-1,869.4	277.7	341.9	266.7	75.15	4.549		
7,500.0	5,753.0	7,510.1	5,667.0	39.2	40.9	-74.91	-1,969.4	277.7	341.9	263.2	78.67	4.346		
7,600.0	5,753.0	7,610.1	5,667.0	41.0	42.7	-74.91	-2,069.4	277.7	341.9	259.7	82.20	4.159		
7,700.0	5,753.0	7,710.1	5,667.0	42.8	44.5	-74.91	-2,169.4	277.7	341.9	256.1	85.75	3.987		
7,800.0	5,753.0	7,810.1	5,667.0	44.7	46.4	-74.91	-2,269.4	277.7	341.9	252.5	89.31	3.828		
7,900.0	5,753.0	7,910.1	5,667.0	46.5	48.2	-74.91	-2,369.4	277.7	341.9	249.0	92.89	3.680		
8,000.0	5,753.0	8,010.1	5,667.0	48.3	50.0	-74.91	-2,469.4	277.7	341.9	245.4	96.48	3.543		
8,100.0	5,753.0	8,110.1	5,667.0	50.2	51.9	-74.91	-2,569.4	277.7	341.9	241.8	100.08	3.416		
8,200.0	5,753.0	8,210.1	5,667.0	52.1	53.7	-74.91	-2,669.4	277.7	341.9	238.2	103.69	3.297		
8,300.0	5,753.0	8,310.1	5,667.0	53.9	55.6	-74.91	-2,769.4	277.7	341.9	234.6	107.31	3.186		
8,400.0	5,753.0	8,410.1	5,667.0	55.8	57.4	-74.91	-2,869.4	277.7	341.9	230.9	110.93	3.082		
8,500.0	5,753.0	8,510.1	5,667.0	57.7	59.3	-74.91	-2,969.4	277.7	341.9	227.3	114.56	2.984		
8,600.0	5,753.0	8,610.1	5,667.0	59.5	61.1	-74.91	-3,069.4	277.7	341.9	223.7	118.20	2.892		
8,700.0	5,753.0	8,710.1	5,667.0	61.4	63.0	-74.91	-3,169.4	277.7	341.9	220.0	121.84	2.806		
8,800.0	5,753.0	8,810.1	5,667.0	63.3	64.9	-74.91	-3,269.4	277.7	341.9	216.4	125.49	2.724		
8,900.0	5,753.0	8,910.1	5,667.0	65.2	66.8	-74.91	-3,369.4	277.7	341.9	212.7	129.14	2.647		
9,000.0	5,753.0	9,010.1	5,667.0	67.1	68.6	-74.91	-3,469.4	277.7	341.9	209.1	132.80	2.574		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	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				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)			
9,100.0	5,753.0	9,110.1	5,667.0	69.0	70.5	-74.91	-3,569.4	277.7	341.9	205.4	136.46	2.505	
9,200.0	5,753.0	9,210.1	5,667.0	70.8	72.4	-74.91	-3,669.4	277.7	341.9	201.7	140.13	2.440	
9,300.0	5,753.0	9,310.1	5,667.0	72.7	74.3	-74.91	-3,769.4	277.7	341.9	198.1	143.80	2.377	
9,400.0	5,753.0	9,410.1	5,667.0	74.6	76.2	-74.91	-3,869.4	277.7	341.9	194.4	147.47	2.318	
9,500.0	5,753.0	9,510.1	5,667.0	76.5	78.1	-74.91	-3,969.4	277.7	341.9	190.7	151.14	2.262	
9,600.0	5,753.0	9,610.1	5,667.0	78.4	79.9	-74.91	-4,069.4	277.7	341.9	187.0	154.82	2.208	
9,700.0	5,753.0	9,710.1	5,667.0	80.3	81.8	-74.91	-4,169.4	277.7	341.9	183.4	158.50	2.157	
9,800.0	5,753.0	9,810.1	5,667.0	82.2	83.7	-74.91	-4,269.4	277.7	341.9	179.7	162.18	2.108	
9,900.0	5,753.0	9,910.1	5,667.0	84.1	85.6	-74.91	-4,369.4	277.7	341.9	176.0	165.87	2.061	
10,000.0	5,753.0	10,010.1	5,667.0	86.0	87.5	-74.91	-4,469.4	277.7	341.9	172.3	169.55	2.016	
10,100.0	5,753.0	10,110.1	5,667.0	87.9	89.4	-74.91	-4,569.4	277.7	341.9	168.6	173.24	1.973	
10,200.0	5,753.0	10,210.1	5,667.0	89.8	91.3	-74.91	-4,669.4	277.7	341.9	164.9	176.93	1.932	
10,300.0	5,753.0	10,310.1	5,667.0	91.7	93.2	-74.91	-4,769.4	277.7	341.9	161.2	180.62	1.893	
10,400.0	5,753.0	10,410.1	5,667.0	93.6	95.1	-74.91	-4,869.4	277.7	341.9	157.6	184.31	1.855	
10,500.0	5,753.0	10,510.1	5,667.0	95.5	97.0	-74.91	-4,969.4	277.7	341.9	153.9	188.01	1.818	
10,600.0	5,753.0	10,610.1	5,667.0	97.4	98.9	-74.91	-5,069.4	277.7	341.9	150.2	191.70	1.783	
10,700.0	5,753.0	10,710.1	5,667.0	99.3	100.8	-74.91	-5,169.4	277.7	341.9	146.5	195.40	1.750	
10,800.0	5,753.0	10,810.1	5,667.0	101.2	102.7	-74.91	-5,269.4	277.7	341.9	142.8	199.10	1.717	
10,900.0	5,753.0	10,910.1	5,667.0	103.1	104.6	-74.91	-5,369.4	277.7	341.9	139.1	202.80	1.686	
11,000.0	5,753.0	11,010.1	5,667.0	105.1	106.5	-74.91	-5,469.4	277.7	341.9	135.4	206.50	1.656	
11,100.0	5,753.0	11,110.1	5,667.0	107.0	108.4	-74.91	-5,569.4	277.7	341.9	131.7	210.20	1.626	
11,200.0	5,753.0	11,210.1	5,667.0	108.9	110.3	-74.91	-5,669.4	277.7	341.9	128.0	213.90	1.598	
11,300.0	5,753.0	11,310.1	5,667.0	110.8	112.2	-74.91	-5,769.4	277.7	341.9	124.3	217.61	1.571	
11,400.0	5,753.0	11,410.1	5,667.0	112.7	114.1	-74.91	-5,869.4	277.7	341.9	120.6	221.31	1.545	
11,500.0	5,753.0	11,510.1	5,667.0	114.6	116.0	-74.91	-5,969.4	277.7	341.9	116.8	225.02	1.519	
11,600.0	5,753.0	11,610.1	5,667.0	116.5	117.9	-74.91	-6,069.4	277.7	341.9	113.1	228.72	1.495 Level 3	
11,700.0	5,753.0	11,710.1	5,667.0	118.4	119.8	-74.91	-6,169.4	277.7	341.9	109.4	232.43	1.471 Level 3	
11,800.0	5,753.0	11,810.1	5,667.0	120.3	121.8	-74.91	-6,269.4	277.7	341.9	105.7	236.14	1.448 Level 3	
11,900.0	5,753.0	11,910.1	5,667.0	122.2	123.7	-74.91	-6,369.4	277.7	341.9	102.0	239.84	1.425 Level 3	
12,000.0	5,753.0	12,010.1	5,667.0	124.1	125.6	-74.91	-6,469.4	277.7	341.9	98.3	243.55	1.404 Level 3	
12,100.0	5,753.0	12,110.1	5,667.0	126.1	127.5	-74.91	-6,569.4	277.7	341.9	94.6	247.26	1.383 Level 3	
12,200.0	5,753.0	12,210.1	5,667.0	128.0	129.4	-74.91	-6,669.4	277.7	341.9	90.9	250.97	1.362 Level 3	
12,300.0	5,753.0	12,310.1	5,667.0	129.9	131.3	-74.91	-6,769.4	277.7	341.9	87.2	254.68	1.342 Level 3	
12,400.0	5,753.0	12,410.1	5,667.0	131.8	133.2	-74.91	-6,869.4	277.7	341.9	83.5	258.36	1.323 Level 3	
12,441.5	5,753.0	12,451.6	5,667.0	132.6	133.8	-74.91	-6,911.0	277.7	341.9	82.1	259.73	1.316 Level 3	
12,471.2	5,753.0	12,480.2	5,667.0	133.1	134.3	-74.91	-6,939.5	277.7	341.9	81.1	260.74	1.311 Level 3	
12,471.8	5,753.0	12,480.2	5,667.0	133.2	134.3	-74.91	-6,939.5	277.7	341.9	81.1	260.75	1.311 Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3408B - 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							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	89.98	0.0	65.3	65.3				
100.0	100.0	101.0	101.0	0.1	0.1	89.98	0.0	65.3	65.3	65.1	0.19	343.987	
200.0	200.0	201.0	201.0	0.3	0.3	89.98	0.0	65.3	65.3	64.7	0.64	102.168	
300.0	300.0	301.0	301.0	0.5	0.5	89.98	0.0	65.3	65.3	64.2	1.09	59.994	
400.0	400.0	401.0	401.0	0.8	0.8	89.98	0.0	65.3	65.3	63.8	1.54	42.464	
500.0	500.0	501.0	501.0	1.0	1.0	89.98	0.0	65.3	65.3	63.3	1.99	32.863	
600.0	600.0	601.0	601.0	1.2	1.2	89.98	0.0	65.3	65.3	62.9	2.44	26.802	
700.0	700.0	701.0	701.0	1.4	1.4	89.98	0.0	65.3	65.3	62.4	2.89	22.629	
800.0	800.0	801.0	801.0	1.7	1.7	89.98	0.0	65.3	65.3	62.0	3.34	19.580	
900.0	900.0	901.0	901.0	1.9	1.9	89.98	0.0	65.3	65.3	61.5	3.79	17.256	
966.3	966.3	967.3	967.3	2.0	2.0	89.98	0.0	65.3	65.3	61.2	4.08	15.996 CC	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	89.98	0.0	65.3	65.3	61.1	4.24	15.425 ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	91.31	-1.5	66.2	66.2	61.5	4.66	14.215	
1,200.0	1,200.0	1,199.8	1,199.7	2.6	2.5	93.87	-4.6	67.8	68.0	62.9	5.06	13.437	
1,300.0	1,300.0	1,299.8	1,299.6	2.8	2.7	96.29	-7.7	69.5	69.9	64.4	5.47	12.777	
1,400.0	1,400.0	1,399.7	1,399.5	3.0	2.9	98.58	-10.7	71.1	71.9	66.0	5.89	12.215	
1,500.0	1,500.0	1,499.6	1,499.4	3.2	3.1	100.74	-13.8	72.8	74.1	67.8	6.31	11.735	
1,600.0	1,600.0	1,599.6	1,599.3	3.5	3.3	102.78	-16.9	74.4	76.3	69.6	6.74	11.322	
1,700.0	1,700.0	1,699.5	1,699.1	3.7	3.5	104.70	-20.0	76.1	78.7	71.5	7.17	10.967	
1,800.0	1,800.0	1,799.5	1,799.0	3.9	3.7	106.51	-23.0	77.7	81.1	73.5	7.61	10.658	
1,900.0	1,900.0	1,899.4	1,898.9	4.1	3.9	108.20	-26.1	79.4	83.6	75.5	8.04	10.389	
2,000.0	2,000.0	1,999.3	1,998.8	4.4	4.1	109.80	-29.2	81.0	86.1	77.6	8.48	10.154	
2,100.0	2,100.0	2,099.3	2,098.6	4.6	4.4	111.31	-32.2	82.7	88.8	79.8	8.92	9.947	
2,200.0	2,200.0	2,199.2	2,198.5	4.8	4.6	112.73	-35.3	84.3	91.4	82.1	9.36	9.765	
2,300.0	2,300.0	2,299.1	2,298.4	5.0	4.8	114.07	-38.4	86.0	94.2	84.4	9.81	9.603	
2,400.0	2,400.0	2,399.1	2,398.3	5.3	5.0	115.33	-41.5	87.6	97.0	86.7	10.25	9.459	
2,500.0	2,500.0	2,499.0	2,498.2	5.5	5.2	116.52	-44.5	89.3	99.8	89.1	10.70	9.330	
2,600.0	2,600.0	2,599.0	2,598.0	5.7	5.5	117.64	-47.6	90.9	102.7	91.5	11.14	9.215	
2,700.0	2,700.0	2,698.9	2,697.9	5.9	5.7	118.70	-50.7	92.6	105.6	94.0	11.59	9.111	
2,800.0	2,800.0	2,798.8	2,797.8	6.2	5.9	119.71	-53.8	94.2	108.5	96.5	12.03	9.017	
2,900.0	2,900.0	2,898.8	2,897.7	6.4	6.2	120.66	-56.8	95.9	111.5	99.0	12.48	8.932	
3,000.0	3,000.0	2,998.7	2,997.5	6.6	6.4	121.56	-59.9	97.5	114.5	101.6	12.93	8.855	
3,100.0	3,100.0	3,098.7	3,097.4	6.8	6.6	122.42	-63.0	99.2	117.5	104.1	13.38	8.785	
3,200.0	3,200.0	3,198.6	3,197.3	7.1	6.8	123.23	-66.0	100.8	120.6	106.7	13.83	8.720	
3,300.0	3,300.0	3,298.5	3,297.2	7.3	7.1	124.01	-69.1	102.5	123.6	109.4	14.28	8.662	
3,400.0	3,400.0	3,398.5	3,397.1	7.5	7.3	124.74	-72.2	104.1	126.7	112.0	14.72	8.608	
3,500.0	3,500.0	3,498.4	3,496.9	7.7	7.5	125.44	-75.3	105.8	129.9	114.7	15.17	8.558	
3,600.0	3,600.0	3,598.4	3,596.8	8.0	7.8	126.11	-78.3	107.4	133.0	117.4	15.62	8.512	
3,700.0	3,700.0	3,698.3	3,696.7	8.2	8.0	126.74	-81.4	109.1	136.2	120.1	16.07	8.470	
3,800.0	3,800.0	3,798.2	3,796.6	8.4	8.2	127.35	-84.5	110.7	139.3	122.8	16.53	8.431	
3,900.0	3,900.0	3,898.2	3,896.5	8.6	8.5	127.93	-87.6	112.4	142.5	125.5	16.98	8.395	
4,000.0	4,000.0	3,998.1	3,996.3	8.9	8.7	128.48	-90.6	114.0	145.7	128.3	17.43	8.361	
4,100.0	4,100.0	4,098.1	4,096.2	9.1	8.9	129.02	-93.7	115.6	148.9	131.0	17.88	8.330	
4,200.0	4,200.0	4,198.0	4,196.1	9.3	9.2	129.52	-96.8	117.3	152.1	133.8	18.33	8.300	
4,300.0	4,300.0	4,297.9	4,296.0	9.5	9.4	130.01	-99.8	118.9	155.4	136.6	18.78	8.273	
4,400.0	4,400.0	4,397.9	4,395.8	9.8	9.6	130.48	-102.9	120.6	158.6	139.4	19.23	8.247	
4,500.0	4,500.0	4,497.8	4,495.7	10.0	9.9	130.93	-106.0	122.2	161.9	142.2	19.69	8.223	
4,600.0	4,600.0	4,597.7	4,595.6	10.2	10.1	131.36	-109.1	123.9	165.2	145.0	20.14	8.201	
4,700.0	4,700.0	4,697.7	4,695.5	10.4	10.3	131.77	-112.1	125.5	168.4	147.8	20.59	8.180	
4,800.0	4,800.0	4,797.6	4,795.4	10.7	10.6	132.17	-115.2	127.2	171.7	150.7	21.04	8.160	
4,900.0	4,900.0	4,897.6	4,895.2	10.9	10.8	132.55	-118.3	128.8	175.0	153.5	21.50	8.141	
5,000.0	5,000.0	4,997.5	4,995.1	11.1	11.0	132.92	-121.4	130.5	178.3	156.4	21.95	8.123	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27K-3406B
Project:	Weld County, CO	TVD Reference:	WELL @ 4764.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	MD Reference:	WELL @ 4764.5ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #27K-3406B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #4	Offset TVD Reference:	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3408B - 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				Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
5,100.0	5,100.0	5,097.4	5,095.0	11.3	11.3	133.28	-124.4	132.1	181.6	159.2	22.40	8.106	
5,200.0	5,200.0	5,197.4	5,194.9	11.6	11.5	133.62	-127.5	133.8	184.9	162.1	22.86	8.090	
5,232.2	5,232.2	5,229.6	5,227.0	11.6	11.6	133.73	-128.5	134.3	186.0	163.0	23.00	8.086 SF	
5,250.0	5,250.0	5,247.4	5,244.8	11.7	11.6	-48.55	-129.0	134.6	186.4	163.4	22.96	8.118	
5,300.0	5,299.8	5,286.0	5,283.3	11.7	11.7	-49.01	-131.2	135.8	186.7	163.6	23.08	8.090	
5,350.0	5,349.0	5,323.1	5,320.2	11.8	11.8	-50.00	-135.6	138.1	187.3	164.2	23.12	8.100	
5,400.0	5,397.1	5,360.2	5,356.4	11.9	11.9	-51.49	-142.2	141.7	188.3	165.2	23.12	8.145	
5,450.0	5,443.7	5,400.0	5,394.7	12.0	12.1	-53.62	-151.9	146.9	190.0	166.8	23.12	8.216	
5,500.0	5,488.4	5,433.6	5,426.2	12.1	12.2	-55.75	-162.1	152.4	192.4	169.3	23.13	8.320	
5,550.0	5,530.6	5,469.9	5,459.4	12.2	12.4	-58.35	-175.1	159.3	196.0	172.7	23.22	8.439	
5,600.0	5,570.2	5,505.9	5,491.3	12.4	12.6	-61.13	-189.9	167.3	200.9	177.5	23.42	8.577	
5,650.0	5,606.6	5,541.6	5,521.6	12.5	12.8	-63.98	-206.5	176.2	207.4	183.7	23.76	8.731	
5,700.0	5,639.6	5,577.0	5,550.3	12.8	13.0	-66.79	-224.7	186.0	215.8	191.5	24.22	8.907	
5,750.0	5,668.8	5,612.2	5,577.4	13.0	13.2	-69.47	-244.4	196.6	226.0	201.2	24.81	9.111	
5,800.0	5,694.0	5,650.0	5,604.7	13.4	13.5	-72.25	-267.4	208.9	238.3	212.7	25.55	9.328	
5,850.0	5,715.0	5,681.7	5,626.2	13.7	13.8	-74.11	-288.0	220.0	252.5	226.2	26.27	9.612	
5,900.0	5,731.5	5,716.3	5,647.8	14.2	14.1	-76.00	-311.7	232.7	268.6	241.5	27.11	9.909	
5,950.0	5,743.4	5,750.0	5,667.3	14.6	14.4	-77.49	-336.0	245.7	286.6	258.6	27.99	10.239	
6,000.0	5,750.6	5,785.4	5,685.7	15.2	14.8	-78.82	-362.6	260.0	306.1	277.2	28.98	10.563	
6,050.4	5,753.1	5,820.5	5,701.8	15.7	15.2	-79.80	-390.0	274.7	327.3	297.3	30.02	10.906	
6,100.0	5,753.1	5,856.2	5,716.1	16.3	15.6	-82.95	-418.9	290.3	349.8	318.6	31.21	11.206	
6,200.0	5,753.0	5,934.4	5,739.3	17.6	16.7	-87.55	-484.6	325.5	398.5	364.9	33.62	11.853	
6,300.0	5,753.0	6,018.2	5,751.6	19.0	17.9	-89.63	-557.6	364.7	449.0	412.8	36.15	12.421	
6,400.0	5,753.0	6,122.5	5,752.7	20.5	19.5	-89.82	-650.1	412.9	498.8	459.8	39.07	12.767	

Cathedral Energy Services

Anticollision Report

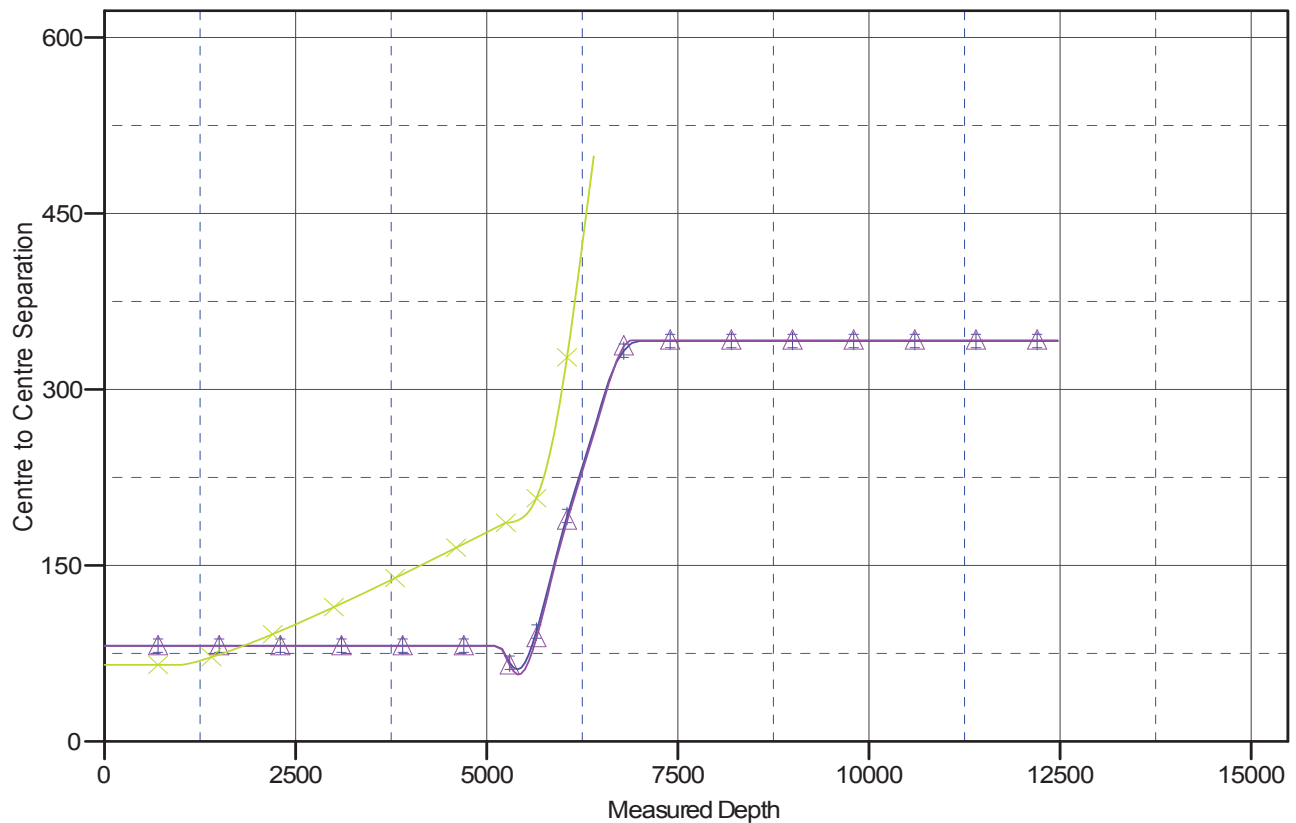
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S27-T10N-R58W
Site Error: 0.0ft
Reference Well: Razor #27K-3406B
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #4

Local Co-ordinate Reference: Well Razor #27K-3406B
TVD Reference: WELL @ 4764.5ft (Original Well Elev)
MD Reference: WELL @ 4764.5ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4764.5ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor #27K-3406B
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.06°

Ladder Plot



LEGEND

—▲— Razor #27K-3405A, HZ, Plan #3 V0
 —▲— Razor #27K-3407A, HZ, Plan #3 V0
 —X— Razor #27K-3408B, HZ, Plan #3 V0