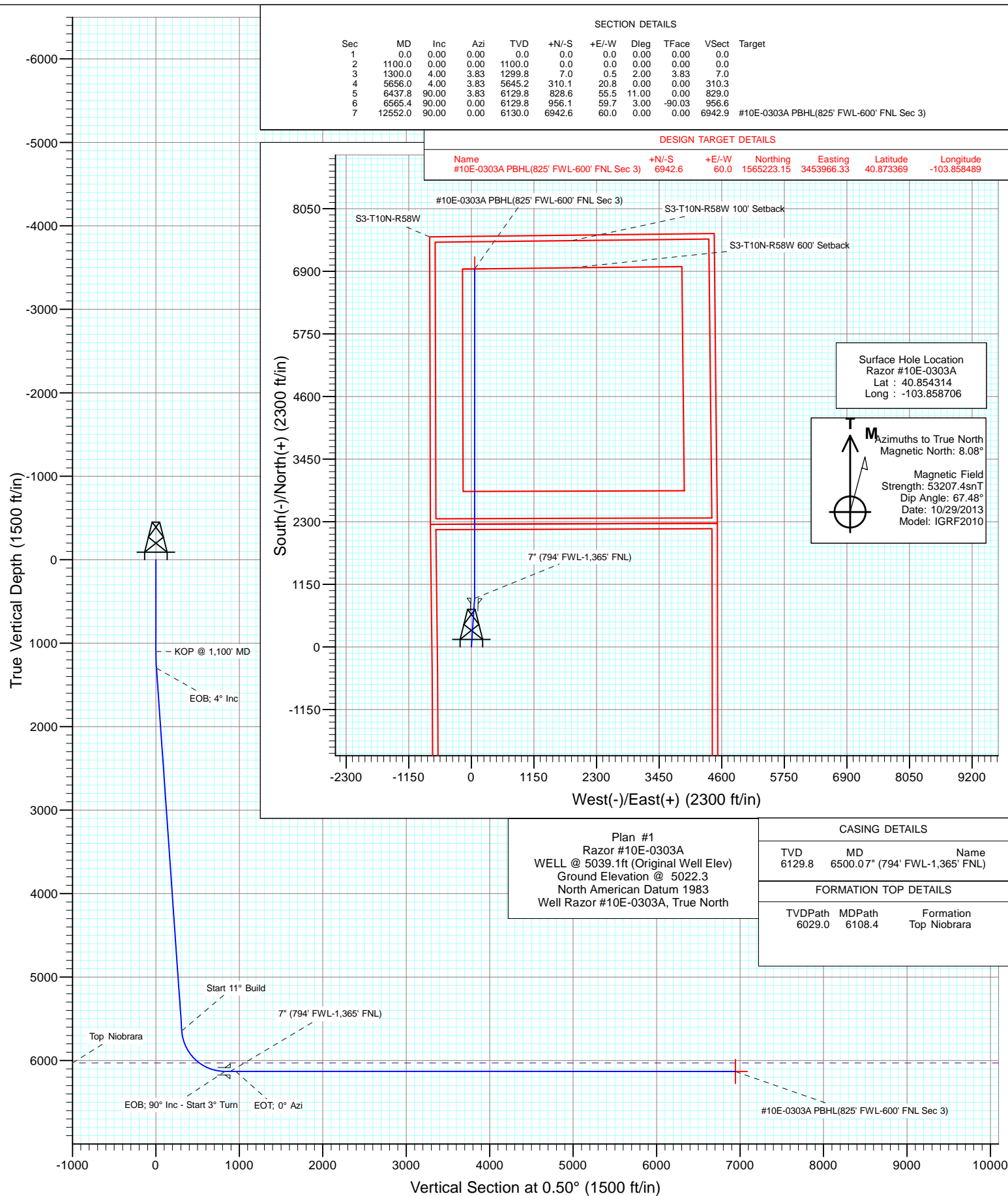




Project: Weld County, CO
Site: S10-T10N-R58W
Well: Razor #10E-0303A
Wellbore: HZ
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #10E-0303A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	North Reference:	True
Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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		S10-T10N-R58W			
Site Position:		Northing:	1,558,370.48 usft	Latitude:	40° 51' 15.74 N
From:	Lat/Long	Easting:	3,457,889.23 usft	Longitude:	103° 50' 41.08 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.07 °

Well	Razor #10E-0303A					
Well Position	+N/-S	0.0 usft	Northing:	1,558,277.48 usft	Latitude:	40° 51' 15.53 N
	+E/-W	0.0 usft	Easting:	3,454,027.91 usft	Longitude:	103° 51' 31.34 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	5,022.3 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	10/29/2013	8.08	67.48	53,207

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	0.50	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,300.0	4.00	3.83	1,299.8	7.0	0.5	2.00	2.00	0.00	3.83	
5,656.0	4.00	3.83	5,645.2	310.1	20.8	0.00	0.00	0.00	0.00	
6,437.8	90.00	3.83	6,129.8	828.6	55.5	11.00	11.00	0.00	0.00	
6,565.4	90.00	0.00	6,129.8	956.1	59.7	3.00	0.00	-3.00	-90.03	
12,551.9	90.00	0.00	6,130.0	6,942.6	60.0	0.00	0.00	0.00	0.00	#10E-0303A PBHL(82

Cathedral Energy Services

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Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	North Reference:	True
Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	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	KOP @ 1,100' MD
1,200.0	2.00	3.83	1,200.0	1.7	0.1	1.7	2.00	2.00	
1,300.0	4.00	3.83	1,299.8	7.0	0.5	7.0	2.00	2.00	EOB; 4° Inc
1,400.0	4.00	3.83	1,399.6	13.9	0.9	13.9	0.00	0.00	
1,500.0	4.00	3.83	1,499.4	20.9	1.4	20.9	0.00	0.00	
1,600.0	4.00	3.83	1,599.1	27.8	1.9	27.9	0.00	0.00	
1,700.0	4.00	3.83	1,698.9	34.8	2.3	34.8	0.00	0.00	
1,800.0	4.00	3.83	1,798.6	41.8	2.8	41.8	0.00	0.00	
1,900.0	4.00	3.83	1,898.4	48.7	3.3	48.7	0.00	0.00	
2,000.0	4.00	3.83	1,998.1	55.7	3.7	55.7	0.00	0.00	
2,100.0	4.00	3.83	2,097.9	62.6	4.2	62.7	0.00	0.00	
2,200.0	4.00	3.83	2,197.6	69.6	4.7	69.6	0.00	0.00	
2,300.0	4.00	3.83	2,297.4	76.6	5.1	76.6	0.00	0.00	
2,400.0	4.00	3.83	2,397.2	83.5	5.6	83.6	0.00	0.00	
2,500.0	4.00	3.83	2,496.9	90.5	6.1	90.5	0.00	0.00	
2,600.0	4.00	3.83	2,596.7	97.4	6.5	97.5	0.00	0.00	
2,700.0	4.00	3.83	2,696.4	104.4	7.0	104.5	0.00	0.00	
2,800.0	4.00	3.83	2,796.2	111.4	7.5	111.4	0.00	0.00	
2,900.0	4.00	3.83	2,895.9	118.3	7.9	118.4	0.00	0.00	
3,000.0	4.00	3.83	2,995.7	125.3	8.4	125.4	0.00	0.00	
3,100.0	4.00	3.83	3,095.5	132.2	8.9	132.3	0.00	0.00	
3,200.0	4.00	3.83	3,195.2	139.2	9.3	139.3	0.00	0.00	
3,300.0	4.00	3.83	3,295.0	146.2	9.8	146.2	0.00	0.00	
3,400.0	4.00	3.83	3,394.7	153.1	10.3	153.2	0.00	0.00	
3,500.0	4.00	3.83	3,494.5	160.1	10.7	160.2	0.00	0.00	
3,600.0	4.00	3.83	3,594.2	167.0	11.2	167.1	0.00	0.00	
3,700.0	4.00	3.83	3,694.0	174.0	11.6	174.1	0.00	0.00	
3,800.0	4.00	3.83	3,793.7	181.0	12.1	181.1	0.00	0.00	
3,900.0	4.00	3.83	3,893.5	187.9	12.6	188.0	0.00	0.00	
4,000.0	4.00	3.83	3,993.3	194.9	13.0	195.0	0.00	0.00	
4,100.0	4.00	3.83	4,093.0	201.8	13.5	202.0	0.00	0.00	
4,200.0	4.00	3.83	4,192.8	208.8	14.0	208.9	0.00	0.00	
4,300.0	4.00	3.83	4,292.5	215.8	14.4	215.9	0.00	0.00	
4,400.0	4.00	3.83	4,392.3	222.7	14.9	222.8	0.00	0.00	
4,500.0	4.00	3.83	4,492.0	229.7	15.4	229.8	0.00	0.00	
4,600.0	4.00	3.83	4,591.8	236.6	15.8	236.8	0.00	0.00	
4,700.0	4.00	3.83	4,691.6	243.6	16.3	243.7	0.00	0.00	
4,800.0	4.00	3.83	4,791.3	250.6	16.8	250.7	0.00	0.00	
4,900.0	4.00	3.83	4,891.1	257.5	17.2	257.7	0.00	0.00	
5,000.0	4.00	3.83	4,990.8	264.5	17.7	264.6	0.00	0.00	
5,100.0	4.00	3.83	5,090.6	271.4	18.2	271.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #10E-0303A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	North Reference:	True
Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,200.0	4.00	3.83	5,190.3	278.4	18.6	278.6	0.00	0.00	
5,300.0	4.00	3.83	5,290.1	285.4	19.1	285.5	0.00	0.00	
5,400.0	4.00	3.83	5,389.9	292.3	19.6	292.5	0.00	0.00	
5,500.0	4.00	3.83	5,489.6	299.3	20.0	299.4	0.00	0.00	
5,600.0	4.00	3.83	5,589.4	306.2	20.5	306.4	0.00	0.00	
5,656.0	4.00	3.83	5,645.2	310.1	20.8	310.3	0.00	0.00	Start 11° Build
5,700.0	8.84	3.83	5,688.9	315.1	21.1	315.2	11.00	11.00	
5,750.0	14.34	3.83	5,737.9	325.1	21.8	325.2	11.00	11.00	
5,800.0	19.84	3.83	5,785.7	339.7	22.7	339.9	11.00	11.00	
5,850.0	25.34	3.83	5,831.8	358.9	24.0	359.1	11.00	11.00	
5,900.0	30.84	3.83	5,875.9	382.4	25.6	382.6	11.00	11.00	
5,950.0	36.34	3.83	5,917.5	410.0	27.4	410.2	11.00	11.00	
6,000.0	41.84	3.83	5,956.3	441.4	29.5	441.6	11.00	11.00	
6,050.0	47.34	3.83	5,991.9	476.4	31.9	476.7	11.00	11.00	
6,100.0	52.84	3.83	6,024.0	514.7	34.5	514.9	11.00	11.00	
6,108.3	53.76	3.83	6,029.0	521.3	34.9	521.6	11.00	11.00	Top Niobrara
6,150.0	58.34	3.83	6,052.2	555.8	37.2	556.1	11.00	11.00	
6,200.0	63.84	3.83	6,076.4	599.5	40.1	599.8	11.00	11.00	
6,250.0	69.34	3.83	6,096.3	645.2	43.2	645.6	11.00	11.00	
6,300.0	74.84	3.83	6,111.6	692.7	46.4	693.0	11.00	11.00	
6,350.0	80.34	3.83	6,122.4	741.4	49.6	741.8	11.00	11.00	
6,400.0	85.84	3.83	6,128.4	790.9	52.9	791.3	11.00	11.00	
6,437.8	90.00	3.83	6,129.8	828.6	55.5	829.0	11.00	11.00	EOB; 90° Inc - Start 3° Turn
6,500.0	90.00	1.96	6,129.8	890.7	58.6	891.2	3.00	0.00	7" (794' FWL-1,365' FNL)
6,565.4	90.00	0.00	6,129.8	956.1	59.7	956.5	3.00	0.00	EOT; 0° Azi
6,600.0	90.00	0.00	6,129.8	990.7	59.7	991.2	0.00	0.00	
6,700.0	90.00	0.00	6,129.8	1,090.7	59.7	1,091.1	0.00	0.00	
6,800.0	90.00	0.00	6,129.8	1,190.7	59.7	1,191.1	0.00	0.00	
6,900.0	90.00	0.00	6,129.8	1,290.7	59.8	1,291.1	0.00	0.00	
7,000.0	90.00	0.00	6,129.8	1,390.7	59.8	1,391.1	0.00	0.00	
7,100.0	90.00	0.00	6,129.8	1,490.7	59.8	1,491.1	0.00	0.00	
7,200.0	90.00	0.00	6,129.8	1,590.7	59.8	1,591.1	0.00	0.00	
7,300.0	90.00	0.00	6,129.8	1,690.7	59.8	1,691.1	0.00	0.00	
7,400.0	90.00	0.00	6,129.8	1,790.7	59.8	1,791.1	0.00	0.00	
7,500.0	90.00	0.00	6,129.8	1,890.7	59.8	1,891.1	0.00	0.00	
7,600.0	90.00	0.00	6,129.8	1,990.7	59.8	1,991.1	0.00	0.00	
7,700.0	90.00	0.00	6,129.8	2,090.7	59.8	2,091.1	0.00	0.00	
7,800.0	90.00	0.00	6,129.8	2,190.7	59.8	2,191.1	0.00	0.00	
7,900.0	90.00	0.00	6,129.8	2,290.7	59.8	2,291.1	0.00	0.00	
8,000.0	90.00	0.00	6,129.8	2,390.7	59.8	2,391.1	0.00	0.00	
8,100.0	90.00	0.00	6,129.8	2,490.7	59.8	2,491.1	0.00	0.00	
8,200.0	90.00	0.00	6,129.8	2,590.7	59.8	2,591.1	0.00	0.00	
8,300.0	90.00	0.00	6,129.8	2,690.7	59.8	2,691.1	0.00	0.00	
8,400.0	90.00	0.00	6,129.8	2,790.7	59.8	2,791.1	0.00	0.00	
8,500.0	90.00	0.00	6,129.8	2,890.7	59.8	2,891.1	0.00	0.00	
8,600.0	90.00	0.00	6,129.8	2,990.7	59.8	2,991.1	0.00	0.00	
8,700.0	90.00	0.00	6,129.8	3,090.7	59.8	3,091.1	0.00	0.00	
8,800.0	90.00	0.00	6,129.9	3,190.7	59.8	3,191.1	0.00	0.00	
8,900.0	90.00	0.00	6,129.9	3,290.7	59.8	3,291.1	0.00	0.00	
9,000.0	90.00	0.00	6,129.9	3,390.7	59.8	3,391.1	0.00	0.00	
9,100.0	90.00	0.00	6,129.9	3,490.7	59.9	3,491.1	0.00	0.00	
9,200.0	90.00	0.00	6,129.9	3,590.7	59.9	3,591.1	0.00	0.00	

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Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,300.0	90.00	0.00	6,129.9	3,690.7	59.9	3,691.1	0.00	0.00	
9,400.0	90.00	0.00	6,129.9	3,790.7	59.9	3,791.0	0.00	0.00	
9,500.0	90.00	0.00	6,129.9	3,890.7	59.9	3,891.0	0.00	0.00	
9,600.0	90.00	0.00	6,129.9	3,990.7	59.9	3,991.0	0.00	0.00	
9,700.0	90.00	0.00	6,129.9	4,090.7	59.9	4,091.0	0.00	0.00	
9,800.0	90.00	0.00	6,129.9	4,190.7	59.9	4,191.0	0.00	0.00	
9,900.0	90.00	0.00	6,129.9	4,290.7	59.9	4,291.0	0.00	0.00	
10,000.0	90.00	0.00	6,129.9	4,390.7	59.9	4,391.0	0.00	0.00	
10,100.0	90.00	0.00	6,129.9	4,490.7	59.9	4,491.0	0.00	0.00	
10,200.0	90.00	0.00	6,129.9	4,590.7	59.9	4,591.0	0.00	0.00	
10,300.0	90.00	0.00	6,129.9	4,690.7	59.9	4,691.0	0.00	0.00	
10,400.0	90.00	0.00	6,129.9	4,790.7	59.9	4,791.0	0.00	0.00	
10,500.0	90.00	0.00	6,129.9	4,890.7	59.9	4,891.0	0.00	0.00	
10,600.0	90.00	0.00	6,129.9	4,990.7	59.9	4,991.0	0.00	0.00	
10,700.0	90.00	0.00	6,129.9	5,090.7	59.9	5,091.0	0.00	0.00	
10,800.0	90.00	0.00	6,129.9	5,190.7	59.9	5,191.0	0.00	0.00	
10,900.0	90.00	0.00	6,129.9	5,290.7	59.9	5,291.0	0.00	0.00	
11,000.0	90.00	0.00	6,129.9	5,390.7	59.9	5,391.0	0.00	0.00	
11,100.0	90.00	0.00	6,129.9	5,490.7	59.9	5,491.0	0.00	0.00	
11,200.0	90.00	0.00	6,129.9	5,590.7	60.0	5,591.0	0.00	0.00	
11,300.0	90.00	0.00	6,130.0	5,690.7	60.0	5,691.0	0.00	0.00	
11,400.0	90.00	0.00	6,130.0	5,790.7	60.0	5,791.0	0.00	0.00	
11,500.0	90.00	0.00	6,130.0	5,890.7	60.0	5,891.0	0.00	0.00	
11,600.0	90.00	0.00	6,130.0	5,990.7	60.0	5,991.0	0.00	0.00	
11,700.0	90.00	0.00	6,130.0	6,090.7	60.0	6,091.0	0.00	0.00	
11,800.0	90.00	0.00	6,130.0	6,190.7	60.0	6,191.0	0.00	0.00	
11,900.0	90.00	0.00	6,130.0	6,290.7	60.0	6,291.0	0.00	0.00	
12,000.0	90.00	0.00	6,130.0	6,390.7	60.0	6,391.0	0.00	0.00	
12,100.0	90.00	0.00	6,130.0	6,490.7	60.0	6,490.9	0.00	0.00	
12,200.0	90.00	0.00	6,130.0	6,590.7	60.0	6,590.9	0.00	0.00	
12,300.0	90.00	0.00	6,130.0	6,690.7	60.0	6,690.9	0.00	0.00	
12,400.0	90.00	0.00	6,130.0	6,790.7	60.0	6,790.9	0.00	0.00	
12,500.0	90.00	0.00	6,130.0	6,890.7	60.0	6,890.9	0.00	0.00	
12,551.9	90.00	0.00	6,130.0	6,942.6	60.0	6,942.9	0.00	0.00	PBHL @ 12,552' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
#10E-0303A PBHL(825'	0.00	0.00	6,130.0	6,942.6	60.0	1,565,220.02	3,453,959.42	40° 52' 24.13 N	103° 51' 30.56 W
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,500.0	6,129.8	7" (794' FWL-1,365' FNL)	7	7-1/2

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #10E-0303A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	North Reference:	True
Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,108.3	6,029.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,100.0	1,100.0	0.0	0.0	KOP @ 1,100' MD	
1,300.0	1,299.8	7.0	0.5	EOB; 4° Inc	
5,656.0	5,645.2	310.1	20.8	Start 11° Build	
6,437.8	6,129.8	828.6	55.5	EOB; 90° Inc - Start 3° Turn	
6,565.4	6,129.8	956.1	59.7	EOT; 0° Azi	
12,551.9	6,130.0	6,942.6	60.0	PBHL @ 12,552' MD	

Whiting Petroleum Corporation

Weld County, CO

S10-T10N-R58W

Razor #10E-0303A

HZ

Plan #1

Anticollision Report

06 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	10/30/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,551.9	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S10-T10N-R58W						
BUSH 1 (EXISTING) - BURNS WELL - NO SURVEYS						Out of range
FREGEAU 1 (EXISTING) - CREST WELL - NO SURVEY						Out of range
FREGEAU 2 (EXISTING) - CREST WELL - NO SURVEY						Out of range
Razor #10E-0301A - HZ - Plan #1	900.0	900.0	65.8	62.1	17.403	CC, ES
Razor #10E-0301A - HZ - Plan #1	12,552.9	12,634.8	659.9	394.7	2.488	SF
Razor #10E-0302B - HZ - Plan #1	1,000.0	1,000.0	32.9	28.7	7.778	CC
Razor #10E-0302B - HZ - Plan #1	1,100.0	1,099.7	33.4	28.7	7.126	ES
Razor #10E-0302B - HZ - Plan #1	12,552.9	12,675.7	351.0	98.9	1.392	Level 3, SF
Razor #10E-0304B - HZ - Plan #1	1,204.1	1,204.0	33.1	28.0	6.434	CC, ES
Razor #10E-0304B - HZ - Plan #1	12,552.9	12,720.6	350.5	99.6	1.397	Level 3, SF
Razor #10E-1501A - HZ - Plan #1	1,100.0	1,100.0	99.5	94.8	21.245	CC, ES
Razor #10E-1501A - HZ - Plan #1	1,300.0	1,296.4	106.7	101.2	19.251	SF
Razor #10E-1502B - HZ - Plan #1	1,100.0	1,100.0	81.6	76.9	17.433	CC, ES
Razor #10E-1502B - HZ - Plan #1	1,200.0	1,197.2	84.9	79.8	16.655	SF
Razor #10E-1503A - HZ - Plan #1	1,000.0	1,000.0	75.1	70.8	17.732	CC, ES
Razor #10E-1503A - HZ - Plan #1	1,100.0	1,097.4	76.7	72.1	16.502	SF
Razor #10E-1504B - HZ - Plan #1	900.0	900.0	82.1	78.3	21.693	CC, ES
Razor #10E-1504B - HZ - Plan #1	1,100.0	1,094.1	88.8	84.2	19.306	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0301A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-65.8	65.8					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-65.8	65.8	65.7	0.19	352.083		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-65.8	65.8	65.2	0.64	103.437		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-65.8	65.8	64.8	1.09	60.624		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-65.8	65.8	64.3	1.54	42.877		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-65.8	65.8	63.9	1.99	33.167		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-65.8	65.8	63.4	2.43	27.043		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-65.8	65.8	63.0	2.88	22.828		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-65.8	65.8	62.5	3.33	19.750		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-65.8	65.8	62.1	3.78	17.403	CC, ES	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-88.67	1.6	-66.6	66.6	62.4	4.23	15.747		
1,100.0	1,100.0	1,097.8	1,097.6	2.3	2.3	-84.86	6.2	-68.7	69.0	64.4	4.67	14.772		
1,200.0	1,200.0	1,197.6	1,197.2	2.6	2.6	-85.23	12.5	-71.7	72.6	67.5	5.12	14.176		
1,300.0	1,299.8	1,297.5	1,296.9	2.8	2.8	-84.71	18.8	-74.6	76.0	70.5	5.58	13.639		
1,400.0	1,399.6	1,397.5	1,396.6	3.0	3.0	-85.55	25.1	-77.5	79.3	73.3	6.04	13.141		
1,500.0	1,499.3	1,497.4	1,496.3	3.2	3.3	-86.33	31.5	-80.5	82.6	76.1	6.50	12.703		
1,600.0	1,599.1	1,597.3	1,596.0	3.5	3.5	-87.04	37.8	-83.4	85.9	78.9	6.98	12.315		
1,700.0	1,698.9	1,697.3	1,695.7	3.7	3.8	-87.70	44.1	-86.4	89.2	81.8	7.45	11.971		
1,800.0	1,798.6	1,797.2	1,795.4	4.0	4.0	-88.32	50.4	-89.3	92.6	84.6	7.94	11.664		
1,900.0	1,898.4	1,897.2	1,895.0	4.2	4.3	-88.89	56.7	-92.2	95.9	87.5	8.42	11.388		
2,000.0	1,998.1	1,997.1	1,994.7	4.4	4.5	-89.42	63.1	-95.2	99.2	90.3	8.91	11.141		
2,100.0	2,097.9	2,097.0	2,094.4	4.7	4.8	-89.92	69.4	-98.1	102.6	93.2	9.40	10.917		
2,200.0	2,197.6	2,197.0	2,194.1	4.9	5.0	-90.39	75.7	-101.1	105.9	96.1	9.89	10.713		
2,300.0	2,297.4	2,296.9	2,293.8	5.2	5.3	-90.83	82.0	-104.0	109.3	98.9	10.38	10.528		
2,400.0	2,397.2	2,396.9	2,393.5	5.4	5.5	-91.24	88.4	-106.9	112.7	101.8	10.88	10.359		
2,500.0	2,496.9	2,496.8	2,493.2	5.7	5.8	-91.63	94.7	-109.9	116.1	104.7	11.37	10.204		
2,600.0	2,596.7	2,596.7	2,592.9	5.9	6.0	-91.99	101.0	-112.8	119.4	107.6	11.87	10.061		
2,700.0	2,696.4	2,696.7	2,692.6	6.2	6.3	-92.34	107.3	-115.7	122.8	110.5	12.37	9.930		
2,800.0	2,796.2	2,796.6	2,792.3	6.4	6.5	-92.67	113.6	-118.7	126.2	113.4	12.87	9.808		
2,900.0	2,895.9	2,896.5	2,892.0	6.7	6.8	-92.98	120.0	-121.6	129.6	116.2	13.37	9.695		
3,000.0	2,995.7	2,996.5	2,991.7	6.9	7.0	-93.27	126.3	-124.6	133.0	119.1	13.87	9.590		
3,100.0	3,095.4	3,096.4	3,091.4	7.2	7.3	-93.55	132.6	-127.5	136.4	122.0	14.37	9.492		
3,200.0	3,195.2	3,196.4	3,191.1	7.4	7.5	-93.82	138.9	-130.4	139.8	125.0	14.88	9.400		
3,300.0	3,295.0	3,296.3	3,290.8	7.7	7.8	-94.07	145.2	-133.4	143.2	127.9	15.38	9.314		
3,400.0	3,394.7	3,396.2	3,390.5	7.9	8.0	-94.31	151.6	-136.3	146.6	130.8	15.88	9.234		
3,500.0	3,494.5	3,496.2	3,490.2	8.2	8.3	-94.54	157.9	-139.3	150.1	133.7	16.38	9.158		
3,600.0	3,594.2	3,596.1	3,589.9	8.5	8.6	-94.76	164.2	-142.2	153.5	136.6	16.89	9.087		
3,700.0	3,694.0	3,696.1	3,689.6	8.7	8.8	-94.97	170.5	-145.1	156.9	139.5	17.39	9.020		
3,800.0	3,793.7	3,796.0	3,789.3	9.0	9.1	-95.18	176.9	-148.1	160.3	142.4	17.90	8.957		
3,900.0	3,893.5	3,895.9	3,889.0	9.2	9.3	-95.37	183.2	-151.0	163.7	145.3	18.40	8.897		
4,000.0	3,993.3	3,995.9	3,988.7	9.5	9.6	-95.55	189.5	-154.0	167.2	148.3	18.91	8.840		
4,100.0	4,093.0	4,095.8	4,088.4	9.7	9.8	-95.73	195.8	-156.9	170.6	151.2	19.41	8.787		
4,200.0	4,192.8	4,195.8	4,188.1	10.0	10.1	-95.90	202.1	-159.8	174.0	154.1	19.92	8.736		
4,300.0	4,292.5	4,295.7	4,287.8	10.2	10.3	-96.07	208.5	-162.8	177.4	157.0	20.43	8.687		
4,400.0	4,392.3	4,395.6	4,387.5	10.5	10.6	-96.23	214.8	-165.7	180.9	159.9	20.93	8.641		
4,500.0	4,492.0	4,495.6	4,487.2	10.7	10.9	-96.38	221.1	-168.7	184.3	162.9	21.44	8.597		
4,600.0	4,591.8	4,595.5	4,586.8	11.0	11.1	-96.52	227.4	-171.6	187.7	165.8	21.95	8.555		
4,700.0	4,691.5	4,695.5	4,686.5	11.2	11.4	-96.67	233.7	-174.5	191.2	168.7	22.45	8.515		
4,800.0	4,791.3	4,795.4	4,786.2	11.5	11.6	-96.80	240.1	-177.5	194.6	171.6	22.96	8.476		
4,900.0	4,891.1	4,895.3	4,885.9	11.8	11.9	-96.93	246.4	-180.4	198.0	174.6	23.47	8.439		
5,000.0	4,990.8	4,995.3	4,985.6	12.0	12.1	-97.06	252.7	-183.4	201.5	177.5	23.97	8.404		
5,100.0	5,090.6	5,095.2	5,085.3	12.3	12.4	-97.18	259.0	-186.3	204.9	180.4	24.48	8.371		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0301A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,195.2	5,185.0	12.5	12.7	-97.30	265.4	-189.2	208.4	183.4	24.99	8.338		
5,300.0	5,290.1	5,295.1	5,284.7	12.8	12.9	-97.42	271.7	-192.2	211.8	186.3	25.50	8.307		
5,400.0	5,389.8	5,395.0	5,384.4	13.0	13.2	-97.53	278.0	-195.1	215.2	189.2	26.00	8.277		
5,500.0	5,489.6	5,495.0	5,484.1	13.3	13.4	-97.64	284.3	-198.1	218.7	192.2	26.51	8.249		
5,600.0	5,589.4	5,594.9	5,583.8	13.5	13.7	-97.74	290.6	-201.0	222.1	195.1	27.02	8.221		
5,700.0	5,688.9	5,689.8	5,678.4	13.8	13.9	-97.76	297.6	-204.2	226.2	198.7	27.53	8.218		
5,800.0	5,785.7	5,775.9	5,762.4	14.2	14.3	-97.54	314.2	-212.0	237.2	209.0	28.19	8.415		
5,900.0	5,875.9	5,860.8	5,841.2	14.7	14.7	-97.03	342.8	-225.2	256.3	227.2	29.08	8.814		
6,000.0	5,956.3	5,944.3	5,912.7	15.4	15.2	-96.13	381.7	-243.4	282.7	252.5	30.22	9.355		
6,100.0	6,024.0	6,026.3	5,975.3	16.3	15.9	-94.78	429.6	-265.6	315.7	284.0	31.65	9.973		
6,200.0	6,076.4	6,107.0	6,028.1	17.4	16.7	-92.99	484.8	-291.3	354.0	320.6	33.37	10.609		
6,300.0	6,111.6	6,187.0	6,070.6	18.6	17.6	-90.80	546.2	-319.8	396.5	361.2	35.35	11.217		
6,400.0	6,128.4	6,267.2	6,102.3	20.0	18.6	-88.36	612.9	-350.9	442.1	404.5	37.56	11.769		
6,500.0	6,129.8	6,350.0	6,122.7	21.4	19.8	-89.07	685.6	-384.6	488.5	448.4	40.07	12.190		
6,600.0	6,129.8	6,440.0	6,130.3	22.7	21.2	-90.06	766.8	-422.4	531.6	488.8	42.78	12.425		
6,700.0	6,129.8	6,569.5	6,130.3	24.3	23.1	-90.05	886.0	-472.9	570.6	524.6	46.07	12.387		
6,800.0	6,129.8	6,706.0	6,130.3	25.9	25.2	-90.05	1,015.1	-517.3	603.2	553.6	49.60	12.160		
6,900.0	6,129.8	6,848.8	6,130.3	27.5	27.5	-90.05	1,153.1	-553.7	628.7	575.3	53.42	11.768		
7,000.0	6,129.8	6,996.5	6,130.3	29.2	29.9	-90.04	1,298.3	-580.4	646.8	589.4	57.44	11.260		
7,100.0	6,129.8	7,147.5	6,130.3	30.9	32.3	-90.04	1,448.5	-596.1	657.2	595.6	61.61	10.666		
7,200.0	6,129.8	7,289.8	6,130.3	32.6	34.5	-90.04	1,590.7	-600.0	659.8	594.1	65.69	10.044		
7,300.0	6,129.8	7,389.8	6,130.2	34.4	36.1	-90.04	1,690.7	-600.0	659.8	590.7	69.11	9.547		
7,400.0	6,129.8	7,489.8	6,130.2	36.2	37.8	-90.04	1,790.7	-600.0	659.8	587.2	72.57	9.092		
7,500.0	6,129.8	7,589.8	6,130.2	37.9	39.4	-90.04	1,890.7	-600.0	659.8	583.7	76.06	8.674		
7,600.0	6,129.8	7,689.8	6,130.2	39.7	41.1	-90.04	1,990.7	-600.0	659.8	580.2	79.59	8.290		
7,700.0	6,129.8	7,789.8	6,130.2	41.5	42.8	-90.04	2,090.7	-600.0	659.8	576.6	83.15	7.935		
7,800.0	6,129.8	7,889.8	6,130.2	43.4	44.5	-90.04	2,190.7	-600.0	659.8	573.1	86.73	7.608		
7,900.0	6,129.8	7,989.8	6,130.2	45.2	46.2	-90.03	2,290.7	-600.0	659.8	569.5	90.33	7.304		
8,000.0	6,129.8	8,089.8	6,130.2	47.0	48.0	-90.03	2,390.7	-600.0	659.8	565.8	93.95	7.023		
8,100.0	6,129.8	8,189.8	6,130.2	48.9	49.8	-90.03	2,490.7	-600.0	659.8	562.2	97.59	6.761		
8,200.0	6,129.8	8,289.8	6,130.2	50.7	51.5	-90.03	2,590.7	-600.0	659.8	558.6	101.24	6.517		
8,300.0	6,129.8	8,389.8	6,130.2	52.5	53.3	-90.03	2,690.7	-600.0	659.8	554.9	104.91	6.289		
8,400.0	6,129.8	8,489.8	6,130.2	54.4	55.1	-90.03	2,790.7	-600.0	659.8	551.2	108.59	6.076		
8,500.0	6,129.8	8,589.8	6,130.2	56.3	56.9	-90.03	2,890.7	-600.0	659.8	547.5	112.28	5.877		
8,600.0	6,129.8	8,689.8	6,130.2	58.1	58.7	-90.03	2,990.7	-600.0	659.8	543.8	115.98	5.689		
8,700.0	6,129.8	8,789.8	6,130.2	60.0	60.5	-90.03	3,090.7	-600.0	659.8	540.1	119.69	5.513		
8,800.0	6,129.9	8,889.8	6,130.2	61.9	62.3	-90.03	3,190.7	-600.0	659.8	536.4	123.40	5.347		
8,900.0	6,129.9	8,989.8	6,130.2	63.7	64.2	-90.03	3,290.7	-600.0	659.8	532.7	127.13	5.190		
9,000.0	6,129.9	9,089.8	6,130.2	65.6	66.0	-90.03	3,390.7	-600.0	659.8	529.0	130.86	5.042		
9,100.0	6,129.9	9,189.8	6,130.2	67.5	67.8	-90.03	3,490.7	-600.0	659.8	525.2	134.60	4.902		
9,200.0	6,129.9	9,289.8	6,130.2	69.4	69.7	-90.03	3,590.7	-600.0	659.8	521.5	138.34	4.770		
9,300.0	6,129.9	9,389.8	6,130.2	71.3	71.5	-90.02	3,690.7	-600.0	659.8	517.7	142.09	4.644		
9,400.0	6,129.9	9,489.8	6,130.1	73.1	73.4	-90.02	3,790.7	-600.0	659.8	514.0	145.84	4.524		
9,500.0	6,129.9	9,589.8	6,130.1	75.0	75.2	-90.02	3,890.7	-600.0	659.8	510.2	149.60	4.411		
9,600.0	6,129.9	9,689.8	6,130.1	76.9	77.1	-90.02	3,990.7	-599.9	659.8	506.5	153.36	4.302		
9,700.0	6,129.9	9,789.8	6,130.1	78.8	79.0	-90.02	4,090.7	-599.9	659.8	502.7	157.13	4.199		
9,800.0	6,129.9	9,889.8	6,130.1	80.7	80.8	-90.02	4,190.7	-599.9	659.8	498.9	160.90	4.101		
9,900.0	6,129.9	9,989.8	6,130.1	82.6	82.7	-90.02	4,290.7	-599.9	659.8	495.2	164.67	4.007		
10,000.0	6,129.9	10,089.8	6,130.1	84.5	84.6	-90.02	4,390.7	-599.9	659.8	491.4	168.45	3.917		
10,100.0	6,129.9	10,189.8	6,130.1	86.4	86.4	-90.02	4,490.7	-599.9	659.8	487.6	172.23	3.831		
10,200.0	6,129.9	10,289.8	6,130.1	88.3	88.3	-90.02	4,590.7	-599.9	659.8	483.8	176.01	3.749		
10,300.0	6,129.9	10,389.8	6,130.1	90.2	90.2	-90.02	4,690.7	-599.9	659.8	480.0	179.80	3.670		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0301A - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	6,129.9	10,489.8	6,130.1	92.1	92.0	-90.02	4,790.7	-599.9	659.8	476.3	183.58	3.594	
10,500.0	6,129.9	10,589.8	6,130.1	94.0	93.9	-90.02	4,890.7	-599.9	659.8	472.5	187.37	3.522	
10,600.0	6,129.9	10,689.8	6,130.1	95.9	95.8	-90.01	4,990.7	-599.9	659.8	468.7	191.16	3.452	
10,700.0	6,129.9	10,789.8	6,130.1	97.8	97.7	-90.01	5,090.7	-599.9	659.8	464.9	194.96	3.385	
10,800.0	6,129.9	10,889.8	6,130.1	99.7	99.6	-90.01	5,190.7	-599.9	659.9	461.1	198.75	3.320	
10,900.0	6,129.9	10,989.8	6,130.1	101.6	101.5	-90.01	5,290.7	-599.9	659.9	457.3	202.55	3.258	
11,000.0	6,129.9	11,089.8	6,130.1	103.5	103.3	-90.01	5,390.7	-599.9	659.9	453.5	206.35	3.198	
11,100.0	6,129.9	11,189.8	6,130.1	105.4	105.2	-90.01	5,490.7	-599.9	659.9	449.7	210.15	3.140	
11,200.0	6,129.9	11,289.8	6,130.1	107.3	107.1	-90.01	5,590.7	-599.9	659.9	445.9	213.95	3.084	
11,300.0	6,130.0	11,389.8	6,130.1	109.2	109.0	-90.01	5,690.7	-599.9	659.9	442.1	217.76	3.030	
11,400.0	6,130.0	11,489.8	6,130.1	111.1	110.9	-90.01	5,790.7	-599.9	659.9	438.3	221.56	2.978	
11,500.0	6,130.0	11,589.8	6,130.0	113.0	112.8	-90.01	5,890.7	-599.9	659.9	434.5	225.37	2.928	
11,600.0	6,130.0	11,689.8	6,130.0	114.9	114.7	-90.01	5,990.7	-599.9	659.9	430.7	229.18	2.879	
11,700.0	6,130.0	11,789.8	6,130.0	116.8	116.6	-90.01	6,090.7	-599.9	659.9	426.9	232.99	2.832	
11,800.0	6,130.0	11,889.8	6,130.0	118.7	118.5	-90.01	6,190.7	-599.9	659.9	423.1	236.79	2.787	
11,900.0	6,130.0	11,989.8	6,130.0	120.7	120.4	-90.00	6,290.7	-599.9	659.9	419.3	240.61	2.743	
12,000.0	6,130.0	12,089.8	6,130.0	122.6	122.3	-90.00	6,390.7	-599.9	659.9	415.5	244.42	2.700	
12,100.0	6,130.0	12,189.8	6,130.0	124.5	124.2	-90.00	6,490.7	-599.9	659.9	411.6	248.23	2.658	
12,200.0	6,130.0	12,289.8	6,130.0	126.4	126.1	-90.00	6,590.7	-599.9	659.9	407.8	252.04	2.618	
12,300.0	6,130.0	12,389.8	6,130.0	128.3	128.0	-90.00	6,690.7	-599.9	659.9	404.0	255.86	2.579	
12,400.0	6,130.0	12,489.8	6,130.0	130.2	129.9	-90.00	6,790.7	-599.9	659.9	400.2	259.67	2.541	
12,500.0	6,130.0	12,589.8	6,130.0	132.1	131.8	-90.00	6,890.7	-599.9	659.9	396.4	263.49	2.504	
12,526.6	6,130.0	12,616.4	6,130.0	132.6	132.2	-90.00	6,917.3	-599.9	659.9	395.4	264.45	2.495	
12,552.9	6,130.0	12,634.8	6,130.0	133.1	132.5	-90.00	6,935.7	-599.9	659.9	394.7	265.24	2.488 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0302B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis				Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-32.9	32.9					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-32.9	32.9	32.7	0.19	176.041		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-32.9	32.9	32.3	0.64	51.718		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-32.9	32.9	31.8	1.09	30.312		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-32.9	32.9	31.4	1.54	21.438		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-32.9	32.9	30.9	1.99	16.584		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-32.9	32.9	30.5	2.43	13.522		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-32.9	32.9	30.0	2.88	11.414		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-32.9	32.9	29.6	3.33	9.875		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-32.9	32.9	29.1	3.78	8.702		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-32.9	32.9	28.7	4.23	7.778 CC		
1,100.0	1,100.0	1,099.7	1,099.7	2.3	2.3	-87.09	1.7	-33.3	33.4	28.7	4.68	7.126 ES		
1,200.0	1,200.0	1,199.3	1,199.1	2.6	2.6	-85.54	6.8	-34.5	35.0	29.8	5.13	6.819		
1,300.0	1,299.8	1,299.2	1,298.8	2.8	2.8	-83.51	13.5	-36.0	37.1	31.5	5.58	6.652		
1,400.0	1,399.6	1,399.2	1,398.6	3.0	3.0	-84.27	20.3	-37.6	39.1	33.0	6.04	6.472		
1,500.0	1,499.3	1,499.2	1,498.3	3.2	3.3	-84.96	27.1	-39.1	41.0	34.5	6.50	6.311		
1,600.0	1,599.1	1,599.2	1,598.0	3.5	3.5	-85.59	33.9	-40.7	43.0	36.0	6.98	6.167		
1,700.0	1,698.9	1,699.1	1,697.8	3.7	3.7	-86.16	40.7	-42.3	45.0	37.5	7.45	6.038		
1,800.0	1,798.6	1,799.1	1,797.5	4.0	4.0	-86.68	47.5	-43.8	47.0	39.1	7.94	5.922		
1,900.0	1,898.4	1,899.1	1,897.2	4.2	4.2	-87.16	54.3	-45.4	49.0	40.6	8.42	5.817		
2,000.0	1,998.1	1,999.1	1,997.0	4.4	4.5	-87.61	61.1	-46.9	51.0	42.1	8.91	5.722		
2,100.0	2,097.9	2,099.1	2,096.7	4.7	4.7	-88.02	67.9	-48.5	53.0	43.6	9.40	5.636		
2,200.0	2,197.6	2,199.0	2,196.4	4.9	5.0	-88.40	74.7	-50.1	55.0	45.1	9.89	5.557		
2,300.0	2,297.4	2,299.0	2,296.2	5.2	5.2	-88.75	81.5	-51.6	57.0	46.6	10.39	5.485		
2,400.0	2,397.2	2,399.0	2,395.9	5.4	5.5	-89.08	88.3	-53.2	59.0	48.1	10.88	5.419		
2,500.0	2,496.9	2,499.0	2,495.6	5.7	5.7	-89.39	95.1	-54.7	61.0	49.6	11.38	5.359		
2,600.0	2,596.7	2,598.9	2,595.4	5.9	6.0	-89.68	101.9	-56.3	63.0	51.1	11.88	5.303		
2,700.0	2,696.4	2,698.9	2,695.1	6.2	6.2	-89.95	108.7	-57.9	65.0	52.6	12.38	5.251		
2,800.0	2,796.2	2,798.9	2,794.8	6.4	6.5	-90.20	115.5	-59.4	67.0	54.1	12.88	5.203		
2,900.0	2,895.9	2,898.9	2,894.6	6.7	6.7	-90.44	122.3	-61.0	69.0	55.6	13.38	5.158		
3,000.0	2,995.7	2,998.9	2,994.3	6.9	7.0	-90.67	129.1	-62.5	71.0	57.2	13.89	5.116		
3,100.0	3,095.4	3,098.8	3,094.1	7.2	7.2	-90.88	135.9	-64.1	73.1	58.7	14.39	5.077		
3,200.0	3,195.2	3,198.8	3,193.8	7.4	7.5	-91.08	142.7	-65.7	75.1	60.2	14.89	5.041		
3,300.0	3,295.0	3,298.8	3,293.5	7.7	7.7	-91.27	149.5	-67.2	77.1	61.7	15.40	5.007		
3,400.0	3,394.7	3,398.8	3,393.3	7.9	8.0	-91.45	156.3	-68.8	79.1	63.2	15.90	4.975		
3,500.0	3,494.5	3,498.8	3,493.0	8.2	8.3	-91.63	163.1	-70.3	81.1	64.7	16.41	4.944		
3,600.0	3,594.2	3,598.7	3,592.7	8.5	8.5	-91.79	169.9	-71.9	83.1	66.2	16.91	4.916		
3,700.0	3,694.0	3,698.7	3,692.5	8.7	8.8	-91.95	176.7	-73.5	85.2	67.7	17.42	4.889		
3,800.0	3,793.7	3,798.7	3,792.2	9.0	9.0	-92.09	183.5	-75.0	87.2	69.3	17.93	4.863		
3,900.0	3,893.5	3,898.7	3,891.9	9.2	9.3	-92.24	190.3	-76.6	89.2	70.8	18.43	4.839		
4,000.0	3,993.3	3,998.7	3,991.7	9.5	9.5	-92.37	197.1	-78.1	91.2	72.3	18.94	4.816		
4,100.0	4,093.0	4,098.6	4,091.4	9.7	9.8	-92.50	203.9	-79.7	93.2	73.8	19.45	4.795		
4,200.0	4,192.8	4,198.6	4,191.1	10.0	10.0	-92.63	210.7	-81.2	95.3	75.3	19.95	4.774		
4,300.0	4,292.5	4,298.6	4,290.9	10.2	10.3	-92.75	217.5	-82.8	97.3	76.8	20.46	4.754		
4,400.0	4,392.3	4,398.6	4,390.6	10.5	10.5	-92.86	224.3	-84.4	99.3	78.3	20.97	4.736		
4,500.0	4,492.0	4,498.6	4,490.4	10.7	10.8	-92.97	231.1	-85.9	101.3	79.9	21.48	4.718		
4,600.0	4,591.8	4,598.5	4,590.1	11.0	11.1	-93.08	237.9	-87.5	103.4	81.4	21.99	4.701		
4,700.0	4,691.5	4,698.5	4,689.8	11.2	11.3	-93.18	244.7	-89.0	105.4	82.9	22.49	4.685		
4,800.0	4,791.3	4,798.5	4,789.6	11.5	11.6	-93.28	251.5	-90.6	107.4	84.4	23.00	4.669		
4,900.0	4,891.1	4,898.5	4,889.3	11.8	11.8	-93.37	258.3	-92.2	109.4	85.9	23.51	4.654		
5,000.0	4,990.8	4,998.4	4,989.0	12.0	12.1	-93.46	265.1	-93.7	111.4	87.4	24.02	4.640		
5,100.0	5,090.6	5,098.4	5,088.8	12.3	12.3	-93.55	271.9	-95.3	113.5	88.9	24.53	4.626		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0302B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,198.4	5,188.5	12.5	12.6	-93.63	278.7	-96.8	115.5	90.5	25.04	4.613		
5,300.0	5,290.1	5,298.4	5,288.2	12.8	12.8	-93.72	285.5	-98.4	117.5	92.0	25.55	4.600		
5,400.0	5,389.8	5,398.4	5,388.0	13.0	13.1	-93.79	292.3	-100.0	119.5	93.5	26.06	4.588		
5,500.0	5,489.6	5,498.3	5,487.7	13.3	13.4	-93.87	299.0	-101.5	121.6	95.0	26.57	4.576		
5,600.0	5,589.4	5,598.3	5,587.4	13.5	13.6	-93.94	305.8	-103.1	123.6	96.5	27.08	4.565		
5,700.0	5,688.9	5,698.2	5,687.1	13.8	13.9	-94.74	312.6	-104.6	125.8	98.2	27.60	4.557		
5,800.0	5,785.7	5,796.0	5,784.7	14.2	14.1	-101.79	319.7	-106.3	130.5	102.3	28.20	4.630		
5,900.0	5,875.9	5,893.1	5,879.6	14.7	14.5	-109.56	338.6	-110.6	143.1	114.4	28.72	4.982		
6,000.0	5,956.3	5,993.8	5,972.5	15.4	15.0	-114.91	375.9	-119.2	163.3	134.1	29.17	5.598		
6,100.0	6,024.0	6,098.3	6,059.3	16.3	15.7	-117.73	432.4	-132.1	189.1	159.3	29.76	6.354		
6,200.0	6,076.4	6,206.9	6,135.4	17.4	16.6	-118.41	507.6	-149.4	218.7	187.8	30.85	7.088		
6,300.0	6,111.6	6,319.9	6,195.8	18.6	17.9	-117.41	600.4	-170.7	250.4	217.7	32.71	7.655		
6,400.0	6,128.4	6,437.4	6,235.4	20.0	19.4	-115.19	708.1	-195.4	282.8	247.4	35.40	7.988		
6,500.0	6,129.8	6,560.0	6,249.2	21.4	21.1	-113.20	826.5	-222.5	312.1	273.4	38.73	8.058		
6,600.0	6,129.8	6,676.1	6,249.2	22.7	22.7	-111.41	940.4	-244.9	331.0	289.0	42.10	7.864		
6,700.0	6,129.8	6,794.8	6,249.2	24.3	24.4	-110.45	1,058.1	-260.6	343.4	298.0	45.40	7.564		
6,800.0	6,129.8	6,915.1	6,249.2	25.9	26.2	-109.97	1,178.0	-269.0	350.0	301.2	48.74	7.180		
6,900.0	6,129.8	7,027.8	6,249.2	27.5	27.9	-109.89	1,290.7	-270.4	351.1	299.1	51.98	6.753		
7,000.0	6,129.8	7,127.8	6,249.2	29.2	29.5	-109.89	1,390.7	-270.4	351.1	295.9	55.13	6.368		
7,100.0	6,129.8	7,227.8	6,249.2	30.9	31.2	-109.89	1,490.7	-270.4	351.1	292.7	58.34	6.017		
7,200.0	6,129.8	7,327.8	6,249.2	32.6	32.9	-109.89	1,590.7	-270.4	351.1	289.5	61.60	5.699		
7,300.0	6,129.8	7,427.8	6,249.2	34.4	34.6	-109.88	1,690.7	-270.4	351.1	286.2	64.90	5.410		
7,400.0	6,129.8	7,527.8	6,249.2	36.2	36.3	-109.88	1,790.7	-270.4	351.1	282.8	68.23	5.145		
7,500.0	6,129.8	7,627.8	6,249.2	37.9	38.1	-109.88	1,890.7	-270.4	351.1	279.5	71.60	4.903		
7,600.0	6,129.8	7,727.8	6,249.2	39.7	39.9	-109.88	1,990.7	-270.4	351.1	276.1	74.99	4.681		
7,700.0	6,129.8	7,827.8	6,249.2	41.5	41.6	-109.88	2,090.7	-270.4	351.1	272.7	78.41	4.477		
7,800.0	6,129.8	7,927.8	6,249.2	43.4	43.4	-109.88	2,190.7	-270.4	351.1	269.2	81.84	4.290		
7,900.0	6,129.8	8,027.8	6,249.2	45.2	45.2	-109.88	2,290.7	-270.3	351.1	265.8	85.30	4.116		
8,000.0	6,129.8	8,127.8	6,249.2	47.0	47.0	-109.88	2,390.7	-270.3	351.1	262.3	88.76	3.955		
8,100.0	6,129.8	8,227.8	6,249.2	48.9	48.9	-109.87	2,490.7	-270.3	351.1	258.8	92.25	3.806		
8,200.0	6,129.8	8,327.8	6,249.2	50.7	50.7	-109.87	2,590.7	-270.3	351.1	255.3	95.74	3.667		
8,300.0	6,129.8	8,427.8	6,249.2	52.5	52.5	-109.87	2,690.7	-270.3	351.1	251.8	99.25	3.537		
8,400.0	6,129.8	8,527.8	6,249.2	54.4	54.4	-109.87	2,790.7	-270.3	351.1	248.3	102.77	3.416		
8,500.0	6,129.8	8,627.8	6,249.2	56.3	56.2	-109.87	2,890.7	-270.3	351.1	244.8	106.29	3.303		
8,600.0	6,129.8	8,727.8	6,249.2	58.1	58.1	-109.87	2,990.7	-270.3	351.1	241.2	109.83	3.196		
8,700.0	6,129.8	8,827.8	6,249.1	60.0	59.9	-109.87	3,090.7	-270.3	351.1	237.7	113.37	3.097		
8,800.0	6,129.9	8,927.8	6,249.1	61.9	61.8	-109.87	3,190.7	-270.3	351.0	234.1	116.92	3.003		
8,900.0	6,129.9	9,027.8	6,249.1	63.7	63.6	-109.86	3,290.7	-270.3	351.0	230.6	120.47	2.914		
9,000.0	6,129.9	9,127.8	6,249.1	65.6	65.5	-109.86	3,390.7	-270.3	351.0	227.0	124.03	2.830		
9,100.0	6,129.9	9,227.8	6,249.1	67.5	67.4	-109.86	3,490.7	-270.3	351.0	223.4	127.60	2.751		
9,200.0	6,129.9	9,327.8	6,249.1	69.4	69.2	-109.86	3,590.7	-270.3	351.0	219.9	131.17	2.676		
9,300.0	6,129.9	9,427.8	6,249.1	71.3	71.1	-109.86	3,690.7	-270.3	351.0	216.3	134.74	2.605		
9,400.0	6,129.9	9,527.8	6,249.1	73.1	73.0	-109.86	3,790.7	-270.3	351.0	212.7	138.32	2.538		
9,500.0	6,129.9	9,627.8	6,249.1	75.0	74.9	-109.86	3,890.7	-270.3	351.0	209.1	141.90	2.474		
9,600.0	6,129.9	9,727.8	6,249.1	76.9	76.8	-109.86	3,990.7	-270.3	351.0	205.6	145.49	2.413		
9,700.0	6,129.9	9,827.8	6,249.1	78.8	78.6	-109.85	4,090.7	-270.3	351.0	202.0	149.08	2.355		
9,800.0	6,129.9	9,927.8	6,249.1	80.7	80.5	-109.85	4,190.7	-270.3	351.0	198.4	152.67	2.299		
9,900.0	6,129.9	10,027.8	6,249.1	82.6	82.4	-109.85	4,290.7	-270.3	351.0	194.8	156.26	2.246		
10,000.0	6,129.9	10,127.8	6,249.1	84.5	84.3	-109.85	4,390.7	-270.3	351.0	191.2	159.86	2.196		
10,100.0	6,129.9	10,227.8	6,249.1	86.4	86.2	-109.85	4,490.7	-270.3	351.0	187.6	163.46	2.148		
10,200.0	6,129.9	10,327.8	6,249.1	88.3	88.1	-109.85	4,590.7	-270.3	351.0	184.0	167.06	2.101		
10,300.0	6,129.9	10,427.8	6,249.1	90.2	90.0	-109.85	4,690.7	-270.3	351.0	180.4	170.66	2.057		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0302B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	6,129.9	10,527.8	6,249.1	92.1	91.9	-109.84	4,790.7	-270.3	351.0	176.8	174.27	2.014	
10,500.0	6,129.9	10,627.8	6,249.1	94.0	93.8	-109.84	4,890.7	-270.3	351.0	173.2	177.88	1.973	
10,600.0	6,129.9	10,727.8	6,249.1	95.9	95.7	-109.84	4,990.7	-270.3	351.0	169.5	181.49	1.934	
10,700.0	6,129.9	10,827.8	6,249.1	97.8	97.6	-109.84	5,090.7	-270.3	351.0	165.9	185.10	1.896	
10,800.0	6,129.9	10,927.7	6,249.1	99.7	99.5	-109.84	5,190.7	-270.3	351.0	162.3	188.71	1.860	
10,900.0	6,129.9	11,027.7	6,249.1	101.6	101.4	-109.84	5,290.7	-270.3	351.0	158.7	192.33	1.825	
11,000.0	6,129.9	11,127.7	6,249.1	103.5	103.3	-109.84	5,390.7	-270.3	351.0	155.1	195.94	1.791	
11,100.0	6,129.9	11,227.7	6,249.1	105.4	105.2	-109.84	5,490.7	-270.2	351.0	151.5	199.56	1.759	
11,200.0	6,129.9	11,327.7	6,249.1	107.3	107.1	-109.83	5,590.7	-270.2	351.0	147.8	203.18	1.728	
11,300.0	6,130.0	11,427.7	6,249.0	109.2	109.0	-109.83	5,690.7	-270.2	351.0	144.2	206.80	1.697	
11,400.0	6,130.0	11,527.7	6,249.0	111.1	110.9	-109.83	5,790.7	-270.2	351.0	140.6	210.42	1.668	
11,500.0	6,130.0	11,627.7	6,249.0	113.0	112.8	-109.83	5,890.7	-270.2	351.0	137.0	214.04	1.640	
11,600.0	6,130.0	11,727.7	6,249.0	114.9	114.7	-109.83	5,990.7	-270.2	351.0	133.4	217.66	1.613	
11,700.0	6,130.0	11,827.7	6,249.0	116.8	116.6	-109.83	6,090.7	-270.2	351.0	129.7	221.29	1.586	
11,800.0	6,130.0	11,927.7	6,249.0	118.7	118.5	-109.83	6,190.7	-270.2	351.0	126.1	224.91	1.561	
11,900.0	6,130.0	12,027.7	6,249.0	120.7	120.4	-109.83	6,290.7	-270.2	351.0	122.5	228.54	1.536	
12,000.0	6,130.0	12,127.7	6,249.0	122.6	122.3	-109.82	6,390.7	-270.2	351.0	118.8	232.16	1.512	
12,100.0	6,130.0	12,227.7	6,249.0	124.5	124.2	-109.82	6,490.7	-270.2	351.0	115.2	235.79	1.489 Level 3	
12,200.0	6,130.0	12,327.7	6,249.0	126.4	126.1	-109.82	6,590.7	-270.2	351.0	111.6	239.42	1.466 Level 3	
12,300.0	6,130.0	12,427.7	6,249.0	128.3	128.0	-109.82	6,690.7	-270.2	351.0	108.0	243.05	1.444 Level 3	
12,400.0	6,130.0	12,527.7	6,249.0	130.2	129.9	-109.82	6,790.7	-270.2	351.0	104.3	246.68	1.423 Level 3	
12,500.0	6,130.0	12,627.7	6,249.0	132.1	131.8	-109.82	6,890.7	-270.2	351.0	100.7	250.31	1.402 Level 3	
12,538.5	6,130.0	12,666.2	6,249.0	132.8	132.6	-109.82	6,929.1	-270.2	351.0	99.3	251.70	1.395 Level 3	
12,552.9	6,130.0	12,675.7	6,249.0	133.1	132.7	-109.82	6,938.6	-270.2	351.0	98.9	252.14	1.392 Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0304B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	33.2	33.2					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	33.2	33.2	33.0	0.19	177.521		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	33.2	33.2	32.6	0.64	52.153		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	33.2	33.2	32.1	1.09	30.566		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	33.2	33.2	31.7	1.54	21.618		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	33.2	33.2	31.2	1.99	16.723		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	33.2	33.2	30.8	2.43	13.635		
700.0	700.0	700.0	700.0	1.4	1.4	90.00	0.0	33.2	33.2	30.3	2.88	11.510		
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	33.2	33.2	29.9	3.33	9.958		
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	33.2	33.2	29.4	3.78	8.775		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	33.2	33.2	29.0	4.23	7.843		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	90.00	0.0	33.2	33.2	28.5	4.68	7.090		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	89.18	0.0	33.2	33.1	28.0	5.13	6.457		
1,204.1	1,204.0	1,204.0	1,204.0	2.6	2.6	89.43	0.0	33.2	33.1	28.0	5.15	6.434 CC, ES		
1,300.0	1,299.8	1,299.7	1,299.7	2.8	2.8	95.21	1.6	33.7	33.7	28.1	5.58	6.042		
1,400.0	1,399.6	1,399.5	1,399.3	3.0	3.0	98.13	6.6	35.4	35.2	29.2	6.03	5.843		
1,500.0	1,499.3	1,499.5	1,499.1	3.2	3.2	98.09	13.2	37.6	37.0	30.5	6.48	5.700		
1,600.0	1,599.1	1,599.5	1,598.8	3.5	3.5	98.05	19.8	39.7	38.7	31.8	6.95	5.570		
1,700.0	1,698.9	1,699.4	1,698.5	3.7	3.7	98.01	26.5	41.9	40.5	33.0	7.42	5.451		
1,800.0	1,798.6	1,799.4	1,798.3	4.0	3.9	97.98	33.1	44.1	42.2	34.3	7.90	5.344		
1,900.0	1,898.4	1,899.4	1,898.0	4.2	4.2	97.95	39.7	46.3	44.0	35.6	8.38	5.246		
2,000.0	1,998.1	1,999.4	1,997.8	4.4	4.4	97.92	46.3	48.5	45.7	36.8	8.86	5.157		
2,100.0	2,097.9	2,099.4	2,097.5	4.7	4.7	97.89	53.0	50.7	47.5	38.1	9.35	5.075		
2,200.0	2,197.6	2,199.4	2,197.3	4.9	4.9	97.87	59.6	52.8	49.2	39.4	9.84	5.000		
2,300.0	2,297.4	2,299.3	2,297.0	5.2	5.2	97.84	66.2	55.0	51.0	40.6	10.33	4.932		
2,400.0	2,397.2	2,399.3	2,396.7	5.4	5.4	97.82	72.8	57.2	52.7	41.9	10.83	4.868		
2,500.0	2,496.9	2,499.3	2,496.5	5.7	5.6	97.80	79.5	59.4	54.5	43.1	11.32	4.810		
2,600.0	2,596.7	2,599.3	2,596.2	5.9	5.9	97.78	86.1	61.6	56.2	44.4	11.82	4.756		
2,700.0	2,696.4	2,699.3	2,696.0	6.2	6.1	97.76	92.7	63.7	58.0	45.6	12.32	4.706		
2,800.0	2,796.2	2,799.3	2,795.7	6.4	6.4	97.75	99.3	65.9	59.7	46.9	12.82	4.659		
2,900.0	2,895.9	2,899.3	2,895.4	6.7	6.6	97.73	106.0	68.1	61.5	48.1	13.32	4.615		
3,000.0	2,995.7	2,999.2	2,995.2	6.9	6.9	97.72	112.6	70.3	63.2	49.4	13.82	4.575		
3,100.0	3,095.4	3,099.2	3,094.9	7.2	7.1	97.70	119.2	72.5	65.0	50.6	14.32	4.537		
3,200.0	3,195.2	3,199.2	3,194.7	7.4	7.4	97.69	125.8	74.7	66.7	51.9	14.82	4.501		
3,300.0	3,295.0	3,299.2	3,294.4	7.7	7.6	97.67	132.5	76.8	68.5	53.1	15.32	4.467		
3,400.0	3,394.7	3,399.2	3,394.1	7.9	7.9	97.66	139.1	79.0	70.2	54.4	15.83	4.436		
3,500.0	3,494.5	3,499.2	3,493.9	8.2	8.1	97.65	145.7	81.2	72.0	55.6	16.33	4.406		
3,600.0	3,594.2	3,599.1	3,593.6	8.5	8.4	97.64	152.3	83.4	73.7	56.9	16.83	4.378		
3,700.0	3,694.0	3,699.1	3,693.4	8.7	8.7	97.63	158.9	85.6	75.5	58.1	17.34	4.351		
3,800.0	3,793.7	3,799.1	3,793.1	9.0	8.9	97.62	165.6	87.8	77.2	59.4	17.85	4.326		
3,900.0	3,893.5	3,899.1	3,892.8	9.2	9.2	97.61	172.2	89.9	78.9	60.6	18.35	4.302		
4,000.0	3,993.3	3,999.1	3,992.6	9.5	9.4	97.60	178.8	92.1	80.7	61.8	18.86	4.280		
4,100.0	4,093.0	4,099.1	4,092.3	9.7	9.7	97.59	185.4	94.3	82.4	63.1	19.36	4.258		
4,200.0	4,192.8	4,199.1	4,192.1	10.0	9.9	97.58	192.1	96.5	84.2	64.3	19.87	4.238		
4,300.0	4,292.5	4,299.0	4,291.8	10.2	10.2	97.58	198.7	98.7	85.9	65.6	20.38	4.218		
4,400.0	4,392.3	4,399.0	4,391.6	10.5	10.4	97.57	205.3	100.9	87.7	66.8	20.88	4.199		
4,500.0	4,492.0	4,499.0	4,491.3	10.7	10.7	97.56	211.9	103.0	89.4	68.1	21.39	4.182		
4,600.0	4,591.8	4,599.0	4,591.0	11.0	10.9	97.55	218.6	105.2	91.2	69.3	21.90	4.165		
4,700.0	4,691.5	4,699.0	4,690.8	11.2	11.2	97.55	225.2	107.4	92.9	70.5	22.41	4.148		
4,800.0	4,791.3	4,799.0	4,790.5	11.5	11.4	97.54	231.8	109.6	94.7	71.8	22.91	4.133		
4,900.0	4,891.1	4,898.9	4,890.3	11.8	11.7	97.53	238.4	111.8	96.4	73.0	23.42	4.118		
5,000.0	4,990.8	4,998.9	4,990.0	12.0	12.0	97.53	245.1	114.0	98.2	74.3	23.93	4.103		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0304B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,090.6	5,098.9	5,089.7	12.3	12.2	97.52	251.7	116.1	99.9	75.5	24.44	4.090	
5,200.0	5,190.3	5,198.9	5,189.5	12.5	12.5	97.52	258.3	118.3	101.7	76.7	24.95	4.076	
5,300.0	5,290.1	5,298.9	5,289.2	12.8	12.7	97.51	264.9	120.5	103.4	78.0	25.46	4.064	
5,400.0	5,389.8	5,398.9	5,389.0	13.0	13.0	97.50	271.6	122.7	105.2	79.2	25.96	4.051	
5,500.0	5,489.6	5,498.8	5,488.7	13.3	13.2	97.50	278.2	124.9	106.9	80.5	26.47	4.040	
5,600.0	5,589.4	5,598.8	5,588.4	13.5	13.5	97.49	284.8	127.1	108.7	81.7	26.98	4.028	
5,700.0	5,688.9	5,698.8	5,688.1	13.8	13.7	98.33	291.4	129.2	110.7	83.2	27.50	4.025	
5,800.0	5,785.7	5,797.2	5,786.2	14.2	14.0	106.11	298.4	131.5	116.4	88.4	28.01	4.155	
5,900.0	5,875.9	5,897.3	5,884.0	14.7	14.3	114.40	318.0	138.0	129.8	101.4	28.35	4.578	
6,000.0	5,956.3	6,001.5	5,979.7	15.4	14.9	119.73	356.9	150.8	149.6	121.1	28.56	5.238	
6,100.0	6,024.0	6,109.9	6,068.5	16.3	15.6	122.24	415.7	170.2	173.8	144.8	28.96	6.000	
6,200.0	6,076.4	6,222.7	6,145.2	17.4	16.6	122.50	494.0	196.0	200.4	170.4	29.94	6.693	
6,300.0	6,111.6	6,339.9	6,204.2	18.6	17.9	121.05	589.8	227.6	228.0	196.2	31.80	7.168	
6,400.0	6,128.4	6,461.1	6,239.9	20.0	19.4	118.37	699.6	263.7	255.4	220.8	34.61	7.378	
6,500.0	6,129.8	6,582.3	6,248.7	21.4	21.1	115.88	814.3	301.4	280.9	243.1	37.80	7.432	
6,600.0	6,129.8	6,694.6	6,248.7	22.7	22.6	113.61	922.3	331.9	304.8	263.9	40.90	7.452	
6,700.0	6,129.8	6,809.9	6,248.7	24.3	24.2	111.84	1,034.8	356.6	324.6	280.3	44.32	7.324	
6,800.0	6,129.8	6,927.8	6,248.7	25.9	25.9	110.68	1,151.4	374.8	339.1	291.3	47.77	7.098	
6,900.0	6,129.8	7,047.6	6,248.7	27.5	27.7	110.04	1,270.6	385.9	347.7	296.5	51.22	6.789	
7,000.0	6,129.8	7,167.7	6,248.7	29.2	29.5	109.84	1,390.6	389.5	350.5	295.9	54.64	6.415	
7,100.0	6,129.8	7,267.7	6,248.7	30.9	31.1	109.84	1,490.6	389.5	350.5	292.7	57.79	6.066	
7,200.0	6,129.8	7,367.7	6,248.7	32.6	32.7	109.84	1,590.6	389.5	350.5	289.5	61.00	5.747	
7,300.0	6,129.8	7,467.7	6,248.7	34.4	34.3	109.84	1,690.6	389.5	350.5	286.3	64.25	5.456	
7,400.0	6,129.8	7,567.7	6,248.8	36.2	36.0	109.84	1,790.6	389.5	350.5	283.0	67.54	5.190	
7,500.0	6,129.8	7,667.7	6,248.8	37.9	37.7	109.84	1,890.6	389.5	350.5	279.7	70.86	4.947	
7,600.0	6,129.8	7,767.7	6,248.8	39.7	39.4	109.84	1,990.6	389.5	350.5	276.3	74.22	4.723	
7,700.0	6,129.8	7,867.7	6,248.8	41.5	41.2	109.84	2,090.6	389.5	350.5	272.9	77.60	4.517	
7,800.0	6,129.8	7,967.7	6,248.8	43.4	42.9	109.84	2,190.6	389.5	350.5	269.5	81.01	4.327	
7,900.0	6,129.8	8,067.7	6,248.8	45.2	44.7	109.84	2,290.6	389.5	350.5	266.1	84.44	4.151	
8,000.0	6,129.8	8,167.7	6,248.8	47.0	46.5	109.84	2,390.6	389.5	350.5	262.7	87.88	3.989	
8,100.0	6,129.8	8,267.7	6,248.8	48.9	48.2	109.84	2,490.6	389.5	350.5	259.2	91.34	3.838	
8,200.0	6,129.8	8,367.7	6,248.8	50.7	50.0	109.84	2,590.6	389.5	350.5	255.7	94.82	3.697	
8,300.0	6,129.8	8,467.7	6,248.8	52.5	51.9	109.84	2,690.6	389.5	350.5	252.2	98.30	3.566	
8,400.0	6,129.8	8,567.7	6,248.8	54.4	53.7	109.84	2,790.6	389.5	350.5	248.7	101.80	3.443	
8,500.0	6,129.8	8,667.7	6,248.8	56.3	55.5	109.84	2,890.6	389.5	350.5	245.2	105.31	3.329	
8,600.0	6,129.8	8,767.7	6,248.8	58.1	57.3	109.84	2,990.6	389.6	350.5	241.7	108.83	3.221	
8,700.0	6,129.8	8,867.7	6,248.8	60.0	59.2	109.84	3,090.6	389.6	350.5	238.2	112.35	3.120	
8,800.0	6,129.9	8,967.7	6,248.8	61.9	61.0	109.84	3,190.6	389.6	350.5	234.6	115.89	3.025	
8,900.0	6,129.9	9,067.7	6,248.8	63.7	62.8	109.84	3,290.6	389.6	350.5	231.1	119.43	2.935	
9,000.0	6,129.9	9,167.7	6,248.8	65.6	64.7	109.84	3,390.6	389.6	350.5	227.5	122.97	2.850	
9,100.0	6,129.9	9,267.7	6,248.8	67.5	66.5	109.84	3,490.6	389.6	350.5	224.0	126.53	2.770	
9,200.0	6,129.9	9,367.7	6,248.8	69.4	68.4	109.84	3,590.6	389.6	350.5	220.4	130.08	2.695	
9,300.0	6,129.9	9,467.7	6,248.8	71.3	70.3	109.84	3,690.6	389.6	350.5	216.9	133.65	2.623	
9,400.0	6,129.9	9,567.7	6,248.8	73.1	72.1	109.84	3,790.6	389.6	350.5	213.3	137.21	2.555	
9,500.0	6,129.9	9,667.7	6,248.9	75.0	74.0	109.84	3,890.6	389.6	350.5	209.7	140.79	2.490	
9,600.0	6,129.9	9,767.7	6,248.9	76.9	75.9	109.84	3,990.6	389.6	350.5	206.2	144.36	2.428	
9,700.0	6,129.9	9,867.7	6,248.9	78.8	77.7	109.84	4,090.6	389.6	350.5	202.6	147.94	2.369	
9,800.0	6,129.9	9,967.7	6,248.9	80.7	79.6	109.84	4,190.6	389.6	350.5	199.0	151.52	2.313	
9,900.0	6,129.9	10,067.7	6,248.9	82.6	81.5	109.84	4,290.6	389.6	350.5	195.4	155.11	2.260	
10,000.0	6,129.9	10,167.7	6,248.9	84.5	83.4	109.84	4,390.6	389.6	350.5	191.8	158.70	2.209	
10,100.0	6,129.9	10,267.7	6,248.9	86.4	85.2	109.84	4,490.6	389.6	350.5	188.2	162.29	2.160	
10,200.0	6,129.9	10,367.7	6,248.9	88.3	87.1	109.84	4,590.6	389.6	350.5	184.6	165.88	2.113	

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0304B - HZ - Plan #1												Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor
10,300.0	6,129.9	10,467.7	6,248.9	90.2	89.0	109.84	4,690.6	389.6	350.5	181.0	169.47	2.068	
10,400.0	6,129.9	10,567.7	6,248.9	92.1	90.9	109.84	4,790.6	389.6	350.5	177.4	173.07	2.025	
10,500.0	6,129.9	10,667.7	6,248.9	94.0	92.8	109.84	4,890.6	389.6	350.5	173.8	176.67	1.984	
10,600.0	6,129.9	10,767.7	6,248.9	95.9	94.7	109.84	4,990.6	389.6	350.5	170.2	180.27	1.944	
10,700.0	6,129.9	10,867.7	6,248.9	97.8	96.6	109.84	5,090.6	389.6	350.5	166.6	183.88	1.906	
10,800.0	6,129.9	10,967.7	6,248.9	99.7	98.4	109.84	5,190.6	389.6	350.5	163.0	187.48	1.870	
10,900.0	6,129.9	11,067.7	6,248.9	101.6	100.3	109.84	5,290.6	389.6	350.5	159.4	191.09	1.834	
11,000.0	6,129.9	11,167.7	6,248.9	103.5	102.2	109.84	5,390.6	389.6	350.5	155.8	194.70	1.800	
11,100.0	6,129.9	11,267.7	6,248.9	105.4	104.1	109.84	5,490.6	389.6	350.5	152.2	198.31	1.767	
11,200.0	6,129.9	11,367.7	6,248.9	107.3	106.0	109.85	5,590.6	389.6	350.5	148.6	201.92	1.736	
11,300.0	6,130.0	11,467.7	6,248.9	109.2	107.9	109.85	5,690.6	389.6	350.5	145.0	205.53	1.705	
11,400.0	6,130.0	11,567.7	6,248.9	111.1	109.8	109.85	5,790.6	389.6	350.5	141.4	209.15	1.676	
11,500.0	6,130.0	11,667.7	6,248.9	113.0	111.7	109.85	5,890.6	389.6	350.5	137.7	212.76	1.647	
11,600.0	6,130.0	11,767.7	6,249.0	114.9	113.6	109.85	5,990.6	389.6	350.5	134.1	216.38	1.620	
11,700.0	6,130.0	11,867.7	6,249.0	116.8	115.5	109.85	6,090.6	389.7	350.5	130.5	219.99	1.593	
11,800.0	6,130.0	11,967.7	6,249.0	118.7	117.4	109.85	6,190.6	389.7	350.5	126.9	223.61	1.567	
11,900.0	6,130.0	12,067.7	6,249.0	120.7	119.3	109.85	6,290.6	389.7	350.5	123.3	227.23	1.542	
12,000.0	6,130.0	12,167.7	6,249.0	122.6	121.2	109.85	6,390.6	389.7	350.5	119.6	230.85	1.518	
12,100.0	6,130.0	12,267.7	6,249.0	124.5	123.1	109.85	6,490.6	389.7	350.5	116.0	234.47	1.495 Level 3	
12,200.0	6,130.0	12,367.7	6,249.0	126.4	125.0	109.85	6,590.6	389.7	350.5	112.4	238.09	1.472 Level 3	
12,300.0	6,130.0	12,467.7	6,249.0	128.3	126.9	109.85	6,690.6	389.7	350.5	108.8	241.71	1.450 Level 3	
12,400.0	6,130.0	12,567.7	6,249.0	130.2	128.8	109.85	6,790.6	389.7	350.5	105.1	245.34	1.429 Level 3	
12,500.0	6,130.0	12,667.7	6,249.0	132.1	130.7	109.85	6,890.6	389.7	350.5	101.5	248.96	1.408 Level 3	
12,552.9	6,130.0	12,720.6	6,249.0	133.1	131.7	109.85	6,943.6	389.7	350.5	99.6	250.88	1.397 Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1501A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-138.98	-75.1	-65.3	99.5					
100.0	100.0	100.0	100.0	0.1	0.1	-138.98	-75.1	-65.3	99.5	99.3	0.19	531.951		
200.0	200.0	200.0	200.0	0.3	0.3	-138.98	-75.1	-65.3	99.5	98.8	0.64	156.279		
300.0	300.0	300.0	300.0	0.5	0.5	-138.98	-75.1	-65.3	99.5	98.4	1.09	91.594		
400.0	400.0	400.0	400.0	0.8	0.8	-138.98	-75.1	-65.3	99.5	97.9	1.54	64.781		
500.0	500.0	500.0	500.0	1.0	1.0	-138.98	-75.1	-65.3	99.5	97.5	1.99	50.111		
600.0	600.0	600.0	600.0	1.2	1.2	-138.98	-75.1	-65.3	99.5	97.0	2.43	40.859		
700.0	700.0	700.0	700.0	1.4	1.4	-138.98	-75.1	-65.3	99.5	96.6	2.88	34.491		
800.0	800.0	800.0	800.0	1.7	1.7	-138.98	-75.1	-65.3	99.5	96.1	3.33	29.840		
900.0	900.0	900.0	900.0	1.9	1.9	-138.98	-75.1	-65.3	99.5	95.7	3.78	26.294		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-138.98	-75.1	-65.3	99.5	95.2	4.23	23.502		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-138.98	-75.1	-65.3	99.5	94.8	4.68	21.245 CC, ES		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-143.39	-75.1	-65.3	100.9	95.7	5.13	19.661		
1,300.0	1,299.8	1,296.4	1,296.4	2.8	2.8	-145.24	-76.6	-65.9	106.7	101.2	5.54	19.251 SF		
1,400.0	1,399.6	1,392.1	1,392.0	3.0	2.9	-147.82	-81.1	-67.6	117.4	111.4	5.94	19.751		
1,500.0	1,499.3	1,490.9	1,490.5	3.2	3.1	-150.22	-87.5	-70.1	130.1	123.8	6.35	20.485		
1,600.0	1,599.1	1,589.9	1,589.3	3.5	3.3	-152.21	-93.9	-72.6	143.1	136.3	6.76	21.149		
1,700.0	1,698.9	1,689.0	1,688.1	3.7	3.5	-153.86	-100.4	-75.1	156.1	148.9	7.18	21.741		
1,800.0	1,798.6	1,788.0	1,786.9	4.0	3.7	-155.26	-106.8	-77.5	169.3	161.7	7.60	22.269		
1,900.0	1,898.4	1,887.1	1,885.7	4.2	3.9	-156.46	-113.3	-80.0	182.6	174.6	8.03	22.741		
2,000.0	1,998.1	1,986.1	1,984.5	4.4	4.2	-157.49	-119.7	-82.5	195.9	187.5	8.46	23.164		
2,100.0	2,097.9	2,085.2	2,083.3	4.7	4.4	-158.39	-126.2	-85.0	209.3	200.4	8.89	23.546		
2,200.0	2,197.6	2,184.2	2,182.1	4.9	4.6	-159.18	-132.6	-87.5	222.8	213.4	9.32	23.891		
2,300.0	2,297.4	2,283.3	2,280.9	5.2	4.8	-159.89	-139.0	-90.0	236.2	226.5	9.76	24.204		
2,400.0	2,397.2	2,382.3	2,379.7	5.4	5.1	-160.51	-145.5	-92.5	249.7	239.5	10.20	24.488		
2,500.0	2,496.9	2,481.3	2,478.6	5.7	5.3	-161.08	-151.9	-95.0	263.3	252.6	10.64	24.749		
2,600.0	2,596.7	2,580.4	2,577.4	5.9	5.6	-161.58	-158.4	-97.4	276.8	265.7	11.08	24.987		
2,700.0	2,696.4	2,679.4	2,676.2	6.2	5.8	-162.04	-164.8	-99.9	290.4	278.9	11.52	25.206		
2,800.0	2,796.2	2,778.5	2,775.0	6.4	6.1	-162.46	-171.3	-102.4	304.0	292.0	11.96	25.408		
2,900.0	2,895.9	2,877.5	2,873.8	6.7	6.3	-162.85	-177.7	-104.9	317.6	305.2	12.41	25.595		
3,000.0	2,995.7	2,976.6	2,972.6	6.9	6.5	-163.20	-184.2	-107.4	331.2	318.4	12.85	25.768		
3,100.0	3,095.4	3,075.6	3,071.4	7.2	6.8	-163.52	-190.6	-109.9	344.8	331.5	13.30	25.928		
3,200.0	3,195.2	3,174.7	3,170.2	7.4	7.0	-163.82	-197.1	-112.4	358.5	344.7	13.75	26.078		
3,300.0	3,295.0	3,273.7	3,269.0	7.7	7.3	-164.10	-203.5	-114.9	372.1	357.9	14.19	26.217		
3,400.0	3,394.7	3,372.8	3,367.8	7.9	7.5	-164.36	-210.0	-117.3	385.8	371.1	14.64	26.347		
3,500.0	3,494.5	3,471.8	3,466.6	8.2	7.8	-164.60	-216.4	-119.8	399.4	384.4	15.09	26.470		
3,600.0	3,594.2	3,570.9	3,565.4	8.5	8.1	-164.82	-222.8	-122.3	413.1	397.6	15.54	26.584		
3,700.0	3,694.0	3,669.9	3,664.2	8.7	8.3	-165.03	-229.3	-124.8	426.8	410.8	15.99	26.692		
3,800.0	3,793.7	3,769.0	3,763.0	9.0	8.6	-165.23	-235.7	-127.3	440.5	424.0	16.44	26.794		
3,900.0	3,893.5	3,868.0	3,861.9	9.2	8.8	-165.41	-242.2	-129.8	454.2	437.3	16.89	26.889		
4,000.0	3,993.3	3,967.1	3,960.7	9.5	9.1	-165.59	-248.6	-132.3	467.8	450.5	17.34	26.980		
4,100.0	4,093.0	4,066.1	4,059.5	9.7	9.3	-165.75	-255.1	-134.8	481.5	463.8	17.79	27.065		
4,200.0	4,192.8	4,165.2	4,158.3	10.0	9.6	-165.91	-261.5	-137.2	495.2	477.0	18.24	27.146		
4,300.0	4,292.5	4,264.2	4,257.1	10.2	9.8	-166.05	-268.0	-139.7	508.9	490.2	18.70	27.223		
4,400.0	4,392.3	4,363.3	4,355.9	10.5	10.1	-166.19	-274.4	-142.2	522.6	503.5	19.15	27.296		
4,500.0	4,492.0	4,462.3	4,454.7	10.7	10.3	-166.32	-280.9	-144.7	536.4	516.8	19.60	27.366		
4,600.0	4,591.8	4,561.4	4,553.5	11.0	10.6	-166.45	-287.3	-147.2	550.1	530.0	20.05	27.432		
4,700.0	4,691.5	4,660.4	4,652.3	11.2	10.9	-166.57	-293.8	-149.7	563.8	543.3	20.50	27.495		
4,800.0	4,791.3	4,759.5	4,751.1	11.5	11.1	-166.68	-300.2	-152.2	577.5	556.5	20.96	27.555		
4,900.0	4,891.1	4,858.5	4,849.9	11.8	11.4	-166.79	-306.6	-154.7	591.2	569.8	21.41	27.613		
5,000.0	4,990.8	4,957.6	4,948.7	12.0	11.6	-166.89	-313.1	-157.1	604.9	583.1	21.86	27.668		
5,100.0	5,090.6	5,056.6	5,047.5	12.3	11.9	-166.99	-319.5	-159.6	618.6	596.3	22.32	27.721		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1501A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,155.7	5,146.3	12.5	12.1	-167.09	-326.0	-162.1	632.4	609.6	22.77	27.771		
5,300.0	5,290.1	5,254.7	5,245.2	12.8	12.4	-167.18	-332.4	-164.6	646.1	622.9	23.22	27.819		
5,400.0	5,389.8	5,353.8	5,344.0	13.0	12.7	-167.26	-338.9	-167.1	659.8	636.1	23.68	27.866		
5,500.0	5,489.6	5,452.8	5,442.8	13.3	12.9	-167.35	-345.3	-169.6	673.5	649.4	24.13	27.910		
5,600.0	5,589.4	5,551.9	5,541.6	13.5	13.2	-167.43	-351.8	-172.1	687.3	662.7	24.59	27.953		
5,700.0	5,688.9	5,650.6	5,640.1	13.8	13.4	-167.35	-358.2	-174.5	702.8	678.0	24.84	28.295		
5,800.0	5,785.7	5,700.0	5,689.2	14.2	13.6	-166.65	-363.1	-176.4	736.9	712.7	24.17	30.484		
5,900.0	5,875.9	5,726.4	5,715.2	14.7	13.7	-165.00	-367.5	-178.1	793.5	770.7	22.78	34.834		
6,000.0	5,956.3	5,750.0	5,738.1	15.4	13.8	-161.77	-372.5	-180.1	868.3	847.3	21.00	41.341		
6,100.0	6,024.0	5,768.7	5,756.2	16.3	13.9	-154.85	-377.1	-181.9	955.9	936.0	19.88	48.089		
6,200.0	6,076.4	5,777.9	5,764.9	17.4	13.9	-135.12	-379.6	-182.8	1,051.3	1,027.5	23.81	44.147		
6,300.0	6,111.6	5,780.0	5,767.0	18.6	13.9	-72.81	-380.2	-183.0	1,150.0	1,118.7	31.24	36.811		
6,400.0	6,128.4	5,776.3	5,763.5	20.0	13.9	-29.43	-379.2	-182.6	1,248.1	1,229.7	18.33	68.080		
6,500.0	6,129.8	5,768.7	5,756.2	21.4	13.9	-27.79	-377.1	-181.8	1,343.4	1,325.3	18.11	74.163		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1502B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-156.85	-75.1	-32.1	81.6					
100.0	100.0	100.0	100.0	0.1	0.1	-156.85	-75.1	-32.1	81.6	81.4	0.19	436.499		
200.0	200.0	200.0	200.0	0.3	0.3	-156.85	-75.1	-32.1	81.6	81.0	0.64	128.237		
300.0	300.0	300.0	300.0	0.5	0.5	-156.85	-75.1	-32.1	81.6	80.5	1.09	75.159		
400.0	400.0	400.0	400.0	0.8	0.8	-156.85	-75.1	-32.1	81.6	80.1	1.54	53.157		
500.0	500.0	500.0	500.0	1.0	1.0	-156.85	-75.1	-32.1	81.6	79.6	1.99	41.120		
600.0	600.0	600.0	600.0	1.2	1.2	-156.85	-75.1	-32.1	81.6	79.2	2.43	33.527		
700.0	700.0	700.0	700.0	1.4	1.4	-156.85	-75.1	-32.1	81.6	78.7	2.88	28.302		
800.0	800.0	800.0	800.0	1.7	1.7	-156.85	-75.1	-32.1	81.6	78.3	3.33	24.485		
900.0	900.0	900.0	900.0	1.9	1.9	-156.85	-75.1	-32.1	81.6	77.8	3.78	21.576		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-156.85	-75.1	-32.1	81.6	77.4	4.23	19.285		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-156.85	-75.1	-32.1	81.6	76.9	4.68	17.433 CC, ES		
1,200.0	1,200.0	1,197.2	1,197.2	2.6	2.5	-161.34	-76.7	-32.3	84.9	79.8	5.10	16.655 SF		
1,300.0	1,299.8	1,293.7	1,293.6	2.8	2.7	-163.03	-81.5	-33.0	94.8	89.3	5.50	17.254		
1,400.0	1,399.6	1,392.6	1,392.2	3.0	2.9	-164.94	-88.4	-33.9	108.3	102.4	5.90	18.350		
1,500.0	1,499.3	1,491.6	1,491.0	3.2	3.1	-166.43	-95.2	-34.8	121.9	115.6	6.31	19.310		
1,600.0	1,599.1	1,590.6	1,589.8	3.5	3.3	-167.62	-102.1	-35.7	135.6	128.8	6.73	20.146		
1,700.0	1,698.9	1,689.6	1,688.5	3.7	3.5	-168.59	-108.9	-36.6	149.3	142.1	7.15	20.877		
1,800.0	1,798.6	1,788.7	1,787.3	4.0	3.7	-169.40	-115.8	-37.5	163.0	155.4	7.57	21.520		
1,900.0	1,898.4	1,887.7	1,886.1	4.2	3.9	-170.08	-122.6	-38.4	176.8	168.8	8.00	22.089		
2,000.0	1,998.1	1,986.7	1,984.9	4.4	4.2	-170.66	-129.5	-39.3	190.5	182.1	8.43	22.594		
2,100.0	2,097.9	2,085.8	2,083.7	4.7	4.4	-171.17	-136.3	-40.3	204.3	195.5	8.87	23.046		
2,200.0	2,197.6	2,184.8	2,182.5	4.9	4.6	-171.61	-143.1	-41.2	218.2	208.9	9.30	23.452		
2,300.0	2,297.4	2,283.8	2,281.3	5.2	4.9	-172.00	-150.0	-42.1	232.0	222.2	9.74	23.818		
2,400.0	2,397.2	2,382.8	2,380.0	5.4	5.1	-172.34	-156.8	-43.0	245.8	235.6	10.18	24.150		
2,500.0	2,496.9	2,481.9	2,478.8	5.7	5.4	-172.65	-163.7	-43.9	259.7	249.1	10.62	24.452		
2,600.0	2,596.7	2,580.9	2,577.6	5.9	5.6	-172.93	-170.5	-44.8	273.5	262.5	11.06	24.727		
2,700.0	2,696.4	2,679.9	2,676.4	6.2	5.9	-173.18	-177.4	-45.7	287.4	275.9	11.50	24.980		
2,800.0	2,796.2	2,779.0	2,775.2	6.4	6.1	-173.41	-184.2	-46.7	301.2	289.3	11.95	25.212		
2,900.0	2,895.9	2,878.0	2,874.0	6.7	6.3	-173.62	-191.1	-47.6	315.1	302.7	12.39	25.426		
3,000.0	2,995.7	2,977.0	2,972.8	6.9	6.6	-173.81	-197.9	-48.5	329.0	316.1	12.84	25.624		
3,100.0	3,095.4	3,076.0	3,071.5	7.2	6.8	-173.98	-204.8	-49.4	342.8	329.6	13.29	25.807		
3,200.0	3,195.2	3,175.1	3,170.3	7.4	7.1	-174.14	-211.6	-50.3	356.7	343.0	13.73	25.977		
3,300.0	3,295.0	3,274.1	3,269.1	7.7	7.4	-174.29	-218.5	-51.2	370.6	356.4	14.18	26.136		
3,400.0	3,394.7	3,373.1	3,367.9	7.9	7.6	-174.43	-225.3	-52.1	384.5	369.9	14.63	26.284		
3,500.0	3,494.5	3,472.1	3,466.7	8.2	7.9	-174.56	-232.2	-53.1	398.4	383.3	15.08	26.423		
3,600.0	3,594.2	3,571.2	3,565.5	8.5	8.1	-174.68	-239.0	-54.0	412.3	396.7	15.53	26.553		
3,700.0	3,694.0	3,670.2	3,664.3	8.7	8.4	-174.79	-245.9	-54.9	426.1	410.2	15.97	26.675		
3,800.0	3,793.7	3,769.2	3,763.1	9.0	8.6	-174.89	-252.7	-55.8	440.0	423.6	16.42	26.790		
3,900.0	3,893.5	3,868.3	3,861.8	9.2	8.9	-174.99	-259.6	-56.7	453.9	437.0	16.87	26.899		
4,000.0	3,993.3	3,967.3	3,960.6	9.5	9.1	-175.08	-266.4	-57.6	467.8	450.5	17.33	27.001		
4,100.0	4,093.0	4,066.3	4,059.4	9.7	9.4	-175.17	-273.2	-58.5	481.7	463.9	17.78	27.098		
4,200.0	4,192.8	4,165.3	4,158.2	10.0	9.6	-175.25	-280.1	-59.4	495.6	477.4	18.23	27.190		
4,300.0	4,292.5	4,264.4	4,257.0	10.2	9.9	-175.33	-286.9	-60.4	509.5	490.8	18.68	27.277		
4,400.0	4,392.3	4,363.4	4,355.8	10.5	10.2	-175.41	-293.8	-61.3	523.4	504.2	19.13	27.359		
4,500.0	4,492.0	4,462.4	4,454.6	10.7	10.4	-175.48	-300.6	-62.2	537.3	517.7	19.58	27.438		
4,600.0	4,591.8	4,561.5	4,553.3	11.0	10.7	-175.54	-307.5	-63.1	551.2	531.1	20.03	27.512		
4,700.0	4,691.5	4,660.5	4,652.1	11.2	10.9	-175.61	-314.3	-64.0	565.1	544.6	20.49	27.583		
4,800.0	4,791.3	4,759.5	4,750.9	11.5	11.2	-175.67	-321.2	-64.9	579.0	558.0	20.94	27.651		
4,900.0	4,891.1	4,858.5	4,849.7	11.8	11.4	-175.72	-328.0	-65.8	592.9	571.5	21.39	27.716		
5,000.0	4,990.8	4,957.6	4,948.5	12.0	11.7	-175.78	-334.9	-66.8	606.8	584.9	21.84	27.778		
5,100.0	5,090.6	5,056.6	5,047.3	12.3	12.0	-175.83	-341.7	-67.7	620.7	598.4	22.30	27.838		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1502B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISWWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.3	5,155.6	5,146.1	12.5	12.2	-175.88	-348.6	-68.6	634.6	611.8	22.75	27.894	
5,300.0	5,290.1	5,254.6	5,244.8	12.8	12.5	-175.93	-355.4	-69.5	648.5	625.3	23.20	27.949	
5,400.0	5,389.8	5,353.7	5,343.6	13.0	12.7	-175.97	-362.3	-70.4	662.4	638.7	23.65	28.001	
5,500.0	5,489.6	5,452.7	5,442.4	13.3	13.0	-176.02	-369.1	-71.3	676.3	652.1	24.11	28.051	
5,600.0	5,589.4	5,551.7	5,541.2	13.5	13.3	-176.06	-376.0	-72.2	690.2	665.6	24.56	28.099	
5,700.0	5,688.9	5,650.4	5,639.7	13.8	13.5	-176.05	-382.8	-73.2	705.9	681.1	24.80	28.462	
5,800.0	5,785.7	5,745.2	5,734.2	14.2	13.8	-175.93	-389.3	-74.0	737.2	713.1	24.15	30.521	
5,900.0	5,875.9	5,800.0	5,788.8	14.7	13.9	-175.60	-393.7	-74.6	787.3	764.7	22.62	34.809	
6,000.0	5,956.3	5,825.5	5,814.1	15.4	14.0	-174.82	-397.3	-75.1	857.1	836.8	20.32	42.173	
6,100.0	6,024.0	5,850.0	5,838.1	16.3	14.1	-173.21	-401.9	-75.7	941.7	924.1	17.53	53.705	
6,200.0	6,076.4	5,850.0	5,838.1	17.4	14.1	-168.05	-401.9	-75.7	1,035.8	1,020.7	15.10	68.590	
6,300.0	6,111.6	5,850.0	5,838.1	18.6	14.1	-116.01	-401.9	-75.7	1,134.8	1,104.9	29.85	38.021	
6,400.0	6,128.4	5,850.0	5,838.1	20.0	14.1	-13.52	-401.9	-75.7	1,234.3	1,222.8	11.53	107.084	
6,500.0	6,129.8	5,850.0	5,838.1	21.4	14.1	-17.14	-401.9	-75.7	1,331.8	1,318.6	13.27	100.352	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1503A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-75.1	0.0	75.1					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-75.1	0.0	75.1	74.9	0.19	401.353		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-75.1	0.0	75.1	74.4	0.64	117.912		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-75.1	0.0	75.1	74.0	1.09	69.107		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-75.1	0.0	75.1	73.5	1.54	48.877		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-75.1	0.0	75.1	73.1	1.99	37.809		
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-75.1	0.0	75.1	72.6	2.43	30.828		
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-75.1	0.0	75.1	72.2	2.88	26.023		
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-75.1	0.0	75.1	71.7	3.33	22.514		
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-75.1	0.0	75.1	71.3	3.78	19.839		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-75.1	0.0	75.1	70.8	4.23	17.732 CC, ES		
1,100.0	1,100.0	1,097.4	1,097.4	2.3	2.3	179.79	-76.7	0.3	76.7	72.1	4.65	16.502 SF		
1,200.0	1,200.0	1,194.5	1,194.4	2.6	2.5	175.46	-81.6	1.1	83.5	78.4	5.05	16.530		
1,300.0	1,299.8	1,293.6	1,293.2	2.8	2.7	175.03	-88.4	2.3	95.6	90.1	5.46	17.507		
1,400.0	1,399.6	1,392.7	1,392.0	3.0	2.9	174.80	-95.2	3.5	109.4	103.5	5.87	18.634		
1,500.0	1,499.3	1,491.7	1,490.8	3.2	3.1	174.61	-102.0	4.7	123.2	116.9	6.29	19.596		
1,600.0	1,599.1	1,590.8	1,589.6	3.5	3.3	174.47	-108.8	5.8	137.0	130.3	6.71	20.422		
1,700.0	1,698.9	1,689.8	1,688.4	3.7	3.5	174.35	-115.6	7.0	150.8	143.7	7.14	21.139		
1,800.0	1,798.6	1,788.8	1,787.2	4.0	3.7	174.25	-122.4	8.2	164.7	157.1	7.57	21.764		
1,900.0	1,898.4	1,887.9	1,886.0	4.2	4.0	174.17	-129.2	9.4	178.5	170.5	8.00	22.313		
2,000.0	1,998.1	1,986.9	1,984.8	4.4	4.2	174.09	-136.0	10.5	192.3	183.9	8.43	22.800		
2,100.0	2,097.9	2,086.0	2,083.6	4.7	4.4	174.03	-142.8	11.7	206.1	197.2	8.87	23.233		
2,200.0	2,197.6	2,185.0	2,182.4	4.9	4.7	173.98	-149.6	12.9	219.9	210.6	9.31	23.621		
2,300.0	2,297.4	2,284.0	2,281.2	5.2	4.9	173.93	-156.4	14.1	233.7	224.0	9.75	23.970		
2,400.0	2,397.2	2,383.1	2,380.0	5.4	5.2	173.89	-163.3	15.2	247.6	237.4	10.19	24.285		
2,500.0	2,496.9	2,482.1	2,478.8	5.7	5.4	173.85	-170.1	16.4	261.4	250.7	10.64	24.571		
2,600.0	2,596.7	2,581.2	2,577.6	5.9	5.7	173.82	-176.9	17.6	275.2	264.1	11.08	24.832		
2,700.0	2,696.4	2,680.2	2,676.4	6.2	5.9	173.78	-183.7	18.8	289.0	277.5	11.53	25.071		
2,800.0	2,796.2	2,779.2	2,775.2	6.4	6.2	173.76	-190.5	19.9	302.8	290.9	11.97	25.290		
2,900.0	2,895.9	2,878.3	2,874.0	6.7	6.4	173.73	-197.3	21.1	316.7	304.2	12.42	25.492		
3,000.0	2,995.7	2,977.3	2,972.8	6.9	6.7	173.71	-204.1	22.3	330.5	317.6	12.87	25.678		
3,100.0	3,095.4	3,076.4	3,071.6	7.2	6.9	173.69	-210.9	23.5	344.3	331.0	13.32	25.851		
3,200.0	3,195.2	3,175.4	3,170.4	7.4	7.2	173.67	-217.7	24.6	358.1	344.3	13.77	26.011		
3,300.0	3,295.0	3,274.4	3,269.2	7.7	7.4	173.65	-224.5	25.8	371.9	357.7	14.22	26.161		
3,400.0	3,394.7	3,373.5	3,368.0	7.9	7.7	173.63	-231.3	27.0	385.7	371.1	14.67	26.300		
3,500.0	3,494.5	3,472.5	3,466.8	8.2	7.9	173.61	-238.1	28.2	399.6	384.4	15.12	26.431		
3,600.0	3,594.2	3,571.6	3,565.6	8.5	8.2	173.60	-244.9	29.3	413.4	397.8	15.57	26.553		
3,700.0	3,694.0	3,670.6	3,664.4	8.7	8.5	173.59	-251.8	30.5	427.2	411.2	16.02	26.668		
3,800.0	3,793.7	3,769.6	3,763.2	9.0	8.7	173.57	-258.6	31.7	441.0	424.6	16.47	26.776		
3,900.0	3,893.5	3,868.7	3,862.0	9.2	9.0	173.56	-265.4	32.9	454.8	437.9	16.92	26.877		
4,000.0	3,993.3	3,967.7	3,960.8	9.5	9.2	173.55	-272.2	34.0	468.7	451.3	17.37	26.973		
4,100.0	4,093.0	4,066.8	4,059.6	9.7	9.5	173.54	-279.0	35.2	482.5	464.7	17.83	27.064		
4,200.0	4,192.8	4,165.8	4,158.4	10.0	9.7	173.53	-285.8	36.4	496.3	478.0	18.28	27.150		
4,300.0	4,292.5	4,264.8	4,257.2	10.2	10.0	173.52	-292.6	37.6	510.1	491.4	18.73	27.232		
4,400.0	4,392.3	4,363.9	4,356.0	10.5	10.3	173.51	-299.4	38.8	523.9	504.8	19.19	27.309		
4,500.0	4,492.0	4,462.9	4,454.8	10.7	10.5	173.50	-306.2	39.9	537.8	518.1	19.64	27.383		
4,600.0	4,591.8	4,562.0	4,553.6	11.0	10.8	173.49	-313.0	41.1	551.6	531.5	20.09	27.453		
4,700.0	4,691.5	4,661.0	4,652.4	11.2	11.0	173.48	-319.8	42.3	565.4	544.8	20.55	27.520		
4,800.0	4,791.3	4,760.0	4,751.2	11.5	11.3	173.48	-326.6	43.5	579.2	558.2	21.00	27.583		
4,900.0	4,891.1	4,859.1	4,850.0	11.8	11.6	173.47	-333.5	44.6	593.0	571.6	21.45	27.644		
5,000.0	4,990.8	4,958.1	4,948.8	12.0	11.8	173.46	-340.3	45.8	606.9	584.9	21.91	27.702		
5,100.0	5,090.6	5,057.2	5,047.6	12.3	12.1	173.46	-347.1	47.0	620.7	598.3	22.36	27.758		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1503A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISWWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,156.2	5,146.4	12.5	12.3	173.45	-353.9	48.2	634.5	611.7	22.81	27.811		
5,300.0	5,290.1	5,255.2	5,245.2	12.8	12.6	173.44	-360.7	49.3	648.3	625.0	23.27	27.862		
5,400.0	5,389.8	5,354.3	5,344.0	13.0	12.8	173.44	-367.5	50.5	662.1	638.4	23.72	27.911		
5,500.0	5,489.6	5,453.3	5,442.8	13.3	13.1	173.43	-374.3	51.7	675.9	651.8	24.18	27.958		
5,600.0	5,589.4	5,552.4	5,541.6	13.5	13.4	173.43	-381.1	52.9	689.8	665.1	24.63	28.003		
5,700.0	5,688.9	5,651.1	5,640.1	13.8	13.6	173.34	-387.9	54.0	705.4	680.5	24.87	28.362		
5,800.0	5,785.7	5,700.0	5,688.7	14.2	13.8	172.92	-393.1	54.9	739.9	715.7	24.14	30.645		
5,900.0	5,875.9	5,726.5	5,714.8	14.7	13.9	171.99	-397.8	55.7	797.1	774.5	22.60	35.277		
6,000.0	5,956.3	5,750.0	5,737.6	15.4	14.0	170.15	-403.0	56.6	872.6	852.2	20.42	42.735		
6,100.0	6,024.0	5,768.6	5,755.6	16.3	14.0	166.07	-407.8	57.5	961.0	942.9	18.10	53.102		
6,200.0	6,076.4	5,777.6	5,764.2	17.4	14.1	152.47	-410.4	57.9	1,057.2	1,038.4	18.80	56.242		
6,300.0	6,111.6	5,779.6	5,766.1	18.6	14.1	61.83	-411.0	58.0	1,156.5	1,127.2	29.36	39.390		
6,400.0	6,128.4	5,775.8	5,762.5	20.0	14.1	17.01	-409.9	57.8	1,255.3	1,242.3	12.97	96.768		
6,500.0	6,129.8	5,768.1	5,755.1	21.4	14.0	6.60	-407.7	57.5	1,351.3	1,341.9	9.46	142.875		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1504B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	156.14	-75.1	33.2	82.1					
100.0	100.0	100.0	100.0	0.1	0.1	156.14	-75.1	33.2	82.1	81.9	0.19	438.859		
200.0	200.0	200.0	200.0	0.3	0.3	156.14	-75.1	33.2	82.1	81.4	0.64	128.931		
300.0	300.0	300.0	300.0	0.5	0.5	156.14	-75.1	33.2	82.1	81.0	1.09	75.565		
400.0	400.0	400.0	400.0	0.8	0.8	156.14	-75.1	33.2	82.1	80.5	1.54	53.444		
500.0	500.0	500.0	500.0	1.0	1.0	156.14	-75.1	33.2	82.1	80.1	1.99	41.342		
600.0	600.0	600.0	600.0	1.2	1.2	156.14	-75.1	33.2	82.1	79.6	2.43	33.709		
700.0	700.0	700.0	700.0	1.4	1.4	156.14	-75.1	33.2	82.1	79.2	2.88	28.455		
800.0	800.0	800.0	800.0	1.7	1.7	156.14	-75.1	33.2	82.1	78.7	3.33	24.618		
900.0	900.0	900.0	900.0	1.9	1.9	156.14	-75.1	33.2	82.1	78.3	3.78	21.693 CC, ES		
1,000.0	1,000.0	997.2	997.2	2.1	2.1	156.17	-76.6	33.8	83.8	79.6	4.20	19.941		
1,100.0	1,100.0	1,094.1	1,094.0	2.3	2.3	156.25	-81.1	35.7	88.8	84.2	4.60	19.306 SF		
1,200.0	1,200.0	1,193.6	1,193.2	2.6	2.5	152.92	-87.5	38.3	97.4	92.3	5.02	19.407		
1,300.0	1,299.8	1,292.9	1,292.2	2.8	2.7	154.13	-94.0	41.0	109.0	103.6	5.43	20.071		
1,400.0	1,399.6	1,391.9	1,391.1	3.0	2.9	155.53	-100.3	43.6	122.3	116.4	5.85	20.900		
1,500.0	1,499.3	1,491.0	1,489.9	3.2	3.1	156.66	-106.7	46.2	135.6	129.3	6.28	21.607		
1,600.0	1,599.1	1,590.1	1,588.7	3.5	3.3	157.59	-113.1	48.8	149.0	142.3	6.71	22.216		
1,700.0	1,698.9	1,689.2	1,687.6	3.7	3.5	158.36	-119.5	51.5	162.4	155.2	7.14	22.744		
1,800.0	1,798.6	1,788.2	1,786.4	4.0	3.8	159.02	-125.9	54.1	175.8	168.2	7.57	23.205		
1,900.0	1,898.4	1,887.3	1,885.2	4.2	4.0	159.58	-132.3	56.7	189.2	181.2	8.01	23.612		
2,000.0	1,998.1	1,986.4	1,984.1	4.4	4.3	160.07	-138.7	59.3	202.7	194.2	8.45	23.972		
2,100.0	2,097.9	2,085.5	2,082.9	4.7	4.5	160.50	-145.1	62.0	216.1	207.2	8.90	24.292		
2,200.0	2,197.6	2,184.6	2,181.7	4.9	4.8	160.87	-151.5	64.6	229.6	220.3	9.34	24.580		
2,300.0	2,297.4	2,283.6	2,280.6	5.2	5.0	161.21	-157.9	67.2	243.1	233.3	9.79	24.838		
2,400.0	2,397.2	2,382.7	2,379.4	5.4	5.3	161.51	-164.3	69.8	256.6	246.4	10.23	25.072		
2,500.0	2,496.9	2,481.8	2,478.3	5.7	5.5	161.78	-170.7	72.5	270.1	259.4	10.68	25.285		
2,600.0	2,596.7	2,580.9	2,577.1	5.9	5.8	162.02	-177.1	75.1	283.6	272.5	11.13	25.478		
2,700.0	2,696.4	2,679.9	2,675.9	6.2	6.0	162.24	-183.5	77.7	297.1	285.6	11.58	25.656		
2,800.0	2,796.2	2,779.0	2,774.8	6.4	6.3	162.45	-189.9	80.3	310.6	298.6	12.03	25.819		
2,900.0	2,895.9	2,878.1	2,873.6	6.7	6.5	162.63	-196.3	83.0	324.2	311.7	12.48	25.969		
3,000.0	2,995.7	2,977.2	2,972.4	6.9	6.8	162.80	-202.6	85.6	337.7	324.8	12.93	26.108		
3,100.0	3,095.4	3,076.2	3,071.3	7.2	7.0	162.96	-209.0	88.2	351.2	337.8	13.39	26.237		
3,200.0	3,195.2	3,175.3	3,170.1	7.4	7.3	163.11	-215.4	90.8	364.7	350.9	13.84	26.356		
3,300.0	3,295.0	3,274.4	3,268.9	7.7	7.5	163.24	-221.8	93.5	378.3	364.0	14.29	26.468		
3,400.0	3,394.7	3,373.5	3,367.8	7.9	7.8	163.37	-228.2	96.1	391.8	377.1	14.75	26.572		
3,500.0	3,494.5	3,472.5	3,466.6	8.2	8.0	163.49	-234.6	98.7	405.3	390.1	15.20	26.669		
3,600.0	3,594.2	3,571.6	3,565.4	8.5	8.3	163.60	-241.0	101.3	418.9	403.2	15.65	26.760		
3,700.0	3,694.0	3,670.7	3,664.3	8.7	8.6	163.70	-247.4	104.0	432.4	416.3	16.11	26.846		
3,800.0	3,793.7	3,769.8	3,763.1	9.0	8.8	163.80	-253.8	106.6	446.0	429.4	16.56	26.927		
3,900.0	3,893.5	3,868.9	3,861.9	9.2	9.1	163.89	-260.2	109.2	459.5	442.5	17.02	27.003		
4,000.0	3,993.3	3,967.9	3,960.8	9.5	9.3	163.97	-266.6	111.8	473.0	455.6	17.47	27.075		
4,100.0	4,093.0	4,067.0	4,059.6	9.7	9.6	164.06	-273.0	114.4	486.6	468.6	17.93	27.143		
4,200.0	4,192.8	4,166.1	4,158.4	10.0	9.9	164.13	-279.4	117.1	500.1	481.7	18.38	27.207		
4,300.0	4,292.5	4,265.2	4,257.3	10.2	10.1	164.21	-285.8	119.7	513.7	494.8	18.84	27.268		
4,400.0	4,392.3	4,364.2	4,356.1	10.5	10.4	164.28	-292.2	122.3	527.2	507.9	19.29	27.326		
4,500.0	4,492.0	4,463.3	4,455.0	10.7	10.6	164.34	-298.5	124.9	540.7	521.0	19.75	27.381		
4,600.0	4,591.8	4,562.4	4,553.8	11.0	10.9	164.40	-304.9	127.6	554.3	534.1	20.20	27.433		
4,700.0	4,691.5	4,661.5	4,652.6	11.2	11.2	164.46	-311.3	130.2	567.8	547.2	20.66	27.483		
4,800.0	4,791.3	4,760.5	4,751.5	11.5	11.4	164.52	-317.7	132.8	581.4	560.3	21.12	27.531		
4,900.0	4,891.1	4,859.6	4,850.3	11.8	11.7	164.57	-324.1	135.4	594.9	573.4	21.57	27.577		
5,000.0	4,990.8	4,958.7	4,949.1	12.0	11.9	164.63	-330.5	138.1	608.5	586.4	22.03	27.620		
5,100.0	5,090.6	5,057.8	5,048.0	12.3	12.2	164.67	-336.9	140.7	622.0	599.5	22.49	27.662		

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 #10E-0303A
Project:	Weld County, CO	TVD Reference:	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	MD Reference:	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1504B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,190.3	5,156.8	5,146.8	12.5	12.5	164.72	-343.3	143.3	635.6	612.6	22.94	27.702		
5,300.0	5,290.1	5,255.9	5,245.6	12.8	12.7	164.77	-349.7	145.9	649.1	625.7	23.40	27.740		
5,400.0	5,389.8	5,355.0	5,344.5	13.0	13.0	164.81	-356.1	148.6	662.7	638.8	23.86	27.777		
5,500.0	5,489.6	5,454.1	5,443.3	13.3	13.2	164.85	-362.5	151.2	676.2	651.9	24.31	27.812		
5,600.0	5,589.4	5,553.1	5,542.1	13.5	13.5	164.89	-368.9	153.8	689.8	665.0	24.77	27.846		
5,700.0	5,688.9	5,651.9	5,640.7	13.8	13.8	164.74	-375.2	156.4	705.1	680.1	25.02	28.178		
5,800.0	5,785.7	5,746.9	5,735.4	14.2	14.0	164.22	-381.4	159.0	735.6	711.1	24.45	30.084		
5,900.0	5,875.9	5,800.0	5,788.3	14.7	14.1	162.92	-385.3	160.6	784.3	761.2	23.10	33.953		
6,000.0	5,956.3	5,828.0	5,816.1	15.4	14.2	160.05	-389.0	162.1	852.5	831.2	21.32	39.978		
6,100.0	6,024.0	5,850.0	5,837.6	16.3	14.3	154.27	-392.9	163.7	935.4	915.3	20.06	46.639		
6,200.0	6,076.4	5,850.0	5,837.6	17.4	14.3	139.07	-392.9	163.7	1,028.1	1,005.4	22.69	45.301		
6,300.0	6,111.6	5,850.0	5,837.6	18.6	14.3	95.05	-392.9	163.7	1,125.7	1,093.2	32.51	34.621		
6,400.0	6,128.4	5,850.0	5,837.6	20.0	14.3	42.78	-392.9	163.7	1,223.9	1,199.7	24.21	50.553		
6,500.0	6,129.8	5,850.0	5,837.6	21.4	14.3	27.03	-392.9	163.7	1,320.5	1,302.5	18.08	73.032		

Cathedral Energy Services

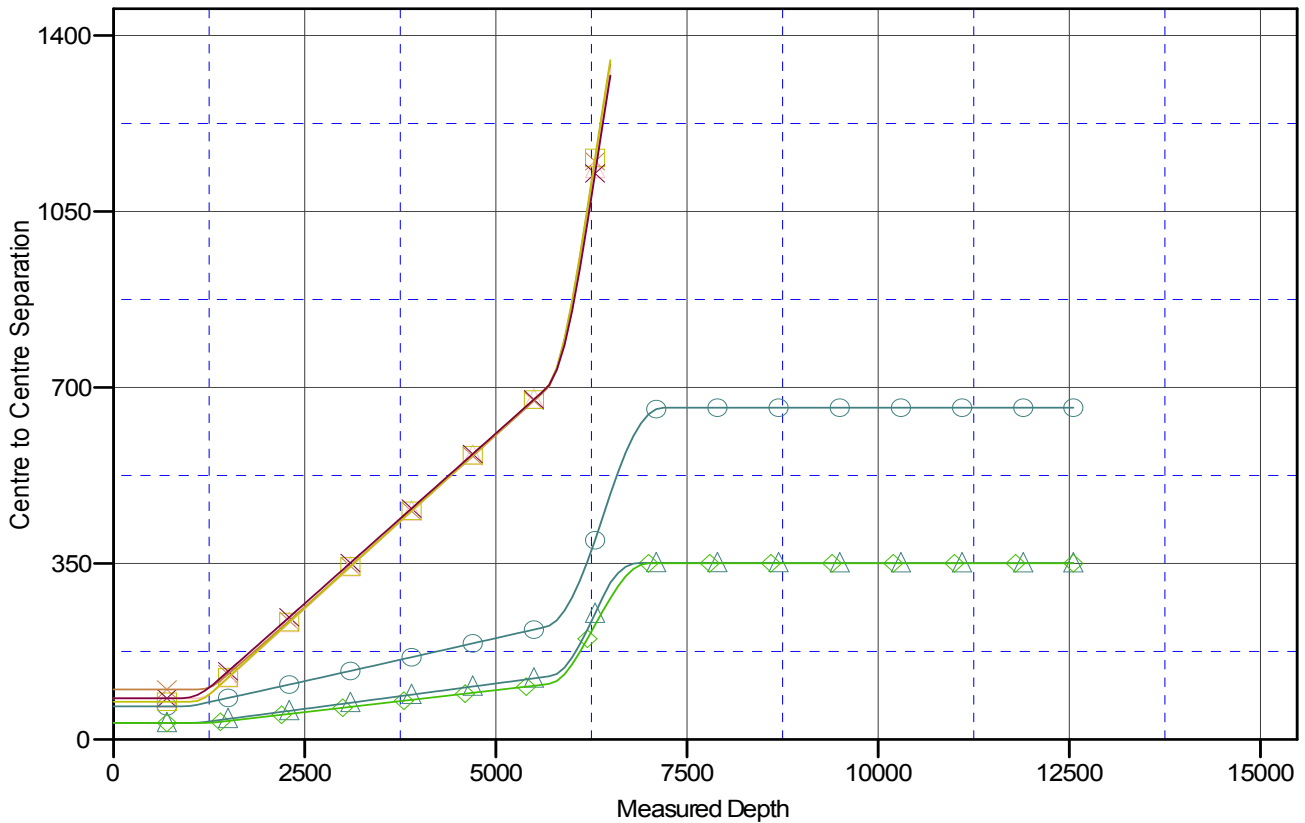
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Reference Well:	Razor #10E-0303A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5039.1usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #10E-0303A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.06°

Ladder Plot



LEGEND

- Razor #10E-0301A, HZ, Plan #1 V0
- △— Razor #10E-0302B, HZ, Plan #1 V0
- ◇— Razor #10E-0304B, HZ, Plan #1 V0
- ×— Razor #10E-1501A, HZ, Plan #1 V0
- △— Razor #10E-1502B, HZ, Plan #1 V0
- ◇— Razor #10E-1503A, HZ, Plan #1 V0