

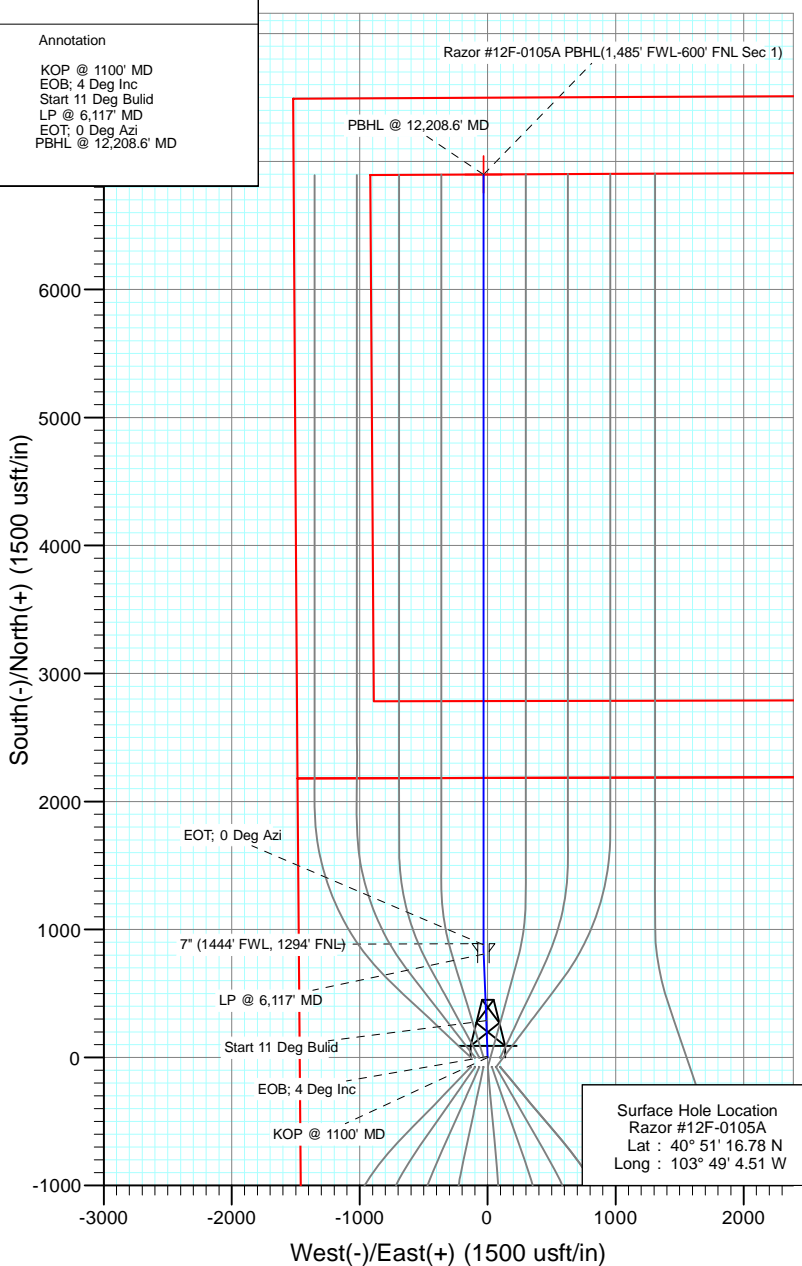
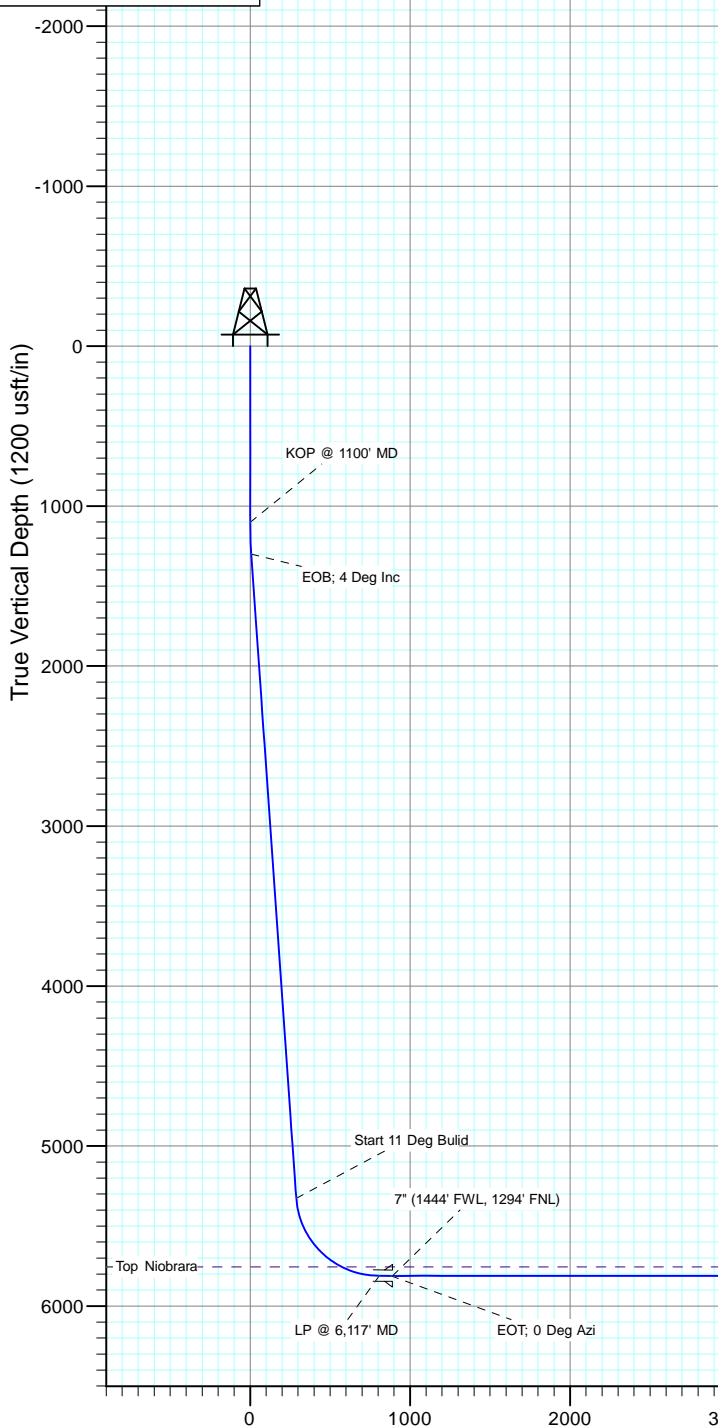
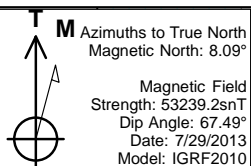


Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor #12F-0105A
Wellbore: HZ
Design: Plan #3



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	KOP @ 1100' MD
2	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0	EOB; 4 Deg Inc
3	1300.0	4.00	357.80	1298.8	7.0	-0.3	2.00	357.80	7.0	Start 11 Deg Build
4	5336.0	4.00	357.80	5326.0	288.3	-11.1	0.00	0.00	288.3	LP @ 6,117' MD
5	6117.8	90.00	357.80	5810.5	807.5	-31.0	11.00	0.00	807.5	EOT; 0 Deg Azi
6	6191.2	90.00	0.00	5810.5	880.9	-32.4	3.00	90.11	880.9	PBHL @ 12,208.6' MD
7	12208.6	90.00	0.00	5811.0	6898.3	-32.3	0.00	0.00	6898.3	



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5755.0	5875.1	Top Niobrara

Plan #3
Razor #12F-0105A
WELL @ 4953.6usft (Original Well Elev)
Ground Elevation @ 4936.8
North American Datum 1983
Well Razor #12F-0105A, True North

Vertical Section at 0.00° (1200 usft/in)

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0105A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0105A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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		S12-T10N-R58W			
Site Position:		Northing:	1,558,537.97 usft	Latitude:	40° 51' 16.04 N
From:	Lat/Long	Easting:	3,465,176.15 usft	Longitude:	103° 49' 6.23 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.09 °

Well	Razor #12F-0105A					
Well Position	+N/-S	0.0 usft	Northing:	1,558,615.33 usft	Latitude:	40° 51' 16.78 N
	+E/-W	0.0 usft	Easting:	3,465,306.88 usft	Longitude:	103° 49' 4.51 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,936.8 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/29/2013	8.09	67.49	53,239

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	0.00	

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	357.80	1,299.8	7.0	-0.3	2.00	2.00	0.00	357.80	
5,336.0	4.00	357.80	5,326.0	288.3	-11.1	0.00	0.00	0.00	0.00	
6,117.8	90.00	357.80	5,810.5	807.5	-31.0	11.00	11.00	0.00	0.00	
6,191.2	90.00	0.00	5,810.5	880.9	-32.4	3.00	-0.01	3.00	90.11	
12,208.6	90.00	0.00	5,811.0	6,898.3	-32.3	0.00	0.00	0.00	0.00	Razor #12F-0105A Pf

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0105A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0105A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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 @ 1100' MD
1,200.0	2.00	357.80	1,200.0	1.7	-0.1	1.7	2.00	2.00	
1,300.0	4.00	357.80	1,299.8	7.0	-0.3	7.0	2.00	2.00	EOB; 4 Deg Inc
1,400.0	4.00	357.80	1,399.6	13.9	-0.5	13.9	0.00	0.00	
1,500.0	4.00	357.80	1,499.4	20.9	-0.8	20.9	0.00	0.00	
1,600.0	4.00	357.80	1,599.1	27.9	-1.1	27.9	0.00	0.00	
1,700.0	4.00	357.80	1,698.9	34.9	-1.3	34.9	0.00	0.00	
1,800.0	4.00	357.80	1,798.6	41.8	-1.6	41.8	0.00	0.00	
1,900.0	4.00	357.80	1,898.4	48.8	-1.9	48.8	0.00	0.00	
2,000.0	4.00	357.80	1,998.1	55.8	-2.1	55.8	0.00	0.00	
2,100.0	4.00	357.80	2,097.9	62.7	-2.4	62.7	0.00	0.00	
2,200.0	4.00	357.80	2,197.6	69.7	-2.7	69.7	0.00	0.00	
2,300.0	4.00	357.80	2,297.4	76.7	-2.9	76.7	0.00	0.00	
2,400.0	4.00	357.80	2,397.2	83.6	-3.2	83.6	0.00	0.00	
2,500.0	4.00	357.80	2,496.9	90.6	-3.5	90.6	0.00	0.00	
2,600.0	4.00	357.80	2,596.7	97.6	-3.7	97.6	0.00	0.00	
2,700.0	4.00	357.80	2,696.4	104.6	-4.0	104.6	0.00	0.00	
2,800.0	4.00	357.80	2,796.2	111.5	-4.3	111.5	0.00	0.00	
2,900.0	4.00	357.80	2,895.9	118.5	-4.6	118.5	0.00	0.00	
3,000.0	4.00	357.80	2,995.7	125.5	-4.8	125.5	0.00	0.00	
3,100.0	4.00	357.80	3,095.5	132.4	-5.1	132.4	0.00	0.00	
3,200.0	4.00	357.80	3,195.2	139.4	-5.4	139.4	0.00	0.00	
3,300.0	4.00	357.80	3,295.0	146.4	-5.6	146.4	0.00	0.00	
3,400.0	4.00	357.80	3,394.7	153.4	-5.9	153.4	0.00	0.00	
3,500.0	4.00	357.80	3,494.5	160.3	-6.2	160.3	0.00	0.00	
3,600.0	4.00	357.80	3,594.2	167.3	-6.4	167.3	0.00	0.00	
3,700.0	4.00	357.80	3,694.0	174.3	-6.7	174.3	0.00	0.00	
3,800.0	4.00	357.80	3,793.7	181.2	-7.0	181.2	0.00	0.00	
3,900.0	4.00	357.80	3,893.5	188.2	-7.2	188.2	0.00	0.00	
4,000.0	4.00	357.80	3,993.3	195.2	-7.5	195.2	0.00	0.00	
4,100.0	4.00	357.80	4,093.0	202.1	-7.8	202.1	0.00	0.00	
4,200.0	4.00	357.80	4,192.8	209.1	-8.0	209.1	0.00	0.00	
4,300.0	4.00	357.80	4,292.5	216.1	-8.3	216.1	0.00	0.00	
4,400.0	4.00	357.80	4,392.3	223.1	-8.6	223.1	0.00	0.00	
4,500.0	4.00	357.80	4,492.0	230.0	-8.8	230.0	0.00	0.00	
4,600.0	4.00	357.80	4,591.8	237.0	-9.1	237.0	0.00	0.00	
4,700.0	4.00	357.80	4,691.6	244.0	-9.4	244.0	0.00	0.00	
4,800.0	4.00	357.80	4,791.3	250.9	-9.6	250.9	0.00	0.00	
4,900.0	4.00	357.80	4,891.1	257.9	-9.9	257.9	0.00	0.00	
5,000.0	4.00	357.80	4,990.8	264.9	-10.2	264.9	0.00	0.00	
5,100.0	4.00	357.80	5,090.6	271.9	-10.4	271.9	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0105A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0105A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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	357.80	5,190.3	278.8	-10.7	278.8	0.00	0.00	
5,300.0	4.00	357.80	5,290.1	285.8	-11.0	285.8	0.00	0.00	
5,336.0	4.00	357.80	5,326.0	288.3	-11.1	288.3	0.00	0.00	Start 11 Deg Build
5,400.0	11.04	357.80	5,389.4	296.7	-11.4	296.7	11.00	11.00	
5,500.0	22.04	357.80	5,485.1	325.1	-12.5	325.1	11.00	11.00	
5,600.0	33.04	357.80	5,573.7	371.2	-14.3	371.2	11.00	11.00	
5,700.0	44.04	357.80	5,651.8	433.4	-16.6	433.4	11.00	11.00	
5,800.0	55.04	357.80	5,716.6	509.3	-19.6	509.3	11.00	11.00	
5,875.1	63.30	357.80	5,755.0	573.7	-22.0	573.7	11.00	11.00	Top Niobrara
5,900.0	66.04	357.80	5,765.7	596.2	-22.9	596.2	11.00	11.00	
6,000.0	77.04	357.80	5,797.3	690.8	-26.5	690.8	11.00	11.00	
6,100.0	88.04	357.80	5,810.2	789.7	-30.3	789.7	11.00	11.00	
6,117.8	90.00	357.80	5,810.5	807.5	-31.0	807.5	11.00	11.00	LP @ 6,117' MD
6,191.2	90.00	0.00	5,810.5	880.9	-32.4	880.9	3.00	-0.01	EOT; 0 Deg Azi
6,200.0	90.00	0.00	5,810.5	889.7	-32.4	889.7	0.00	0.00	7" (1444' FWL, 1294' FNL)
6,300.0	90.00	0.00	5,810.6	989.7	-32.4	989.7	0.00	0.00	
6,400.0	90.00	0.00	5,810.6	1,089.7	-32.4	1,089.7	0.00	0.00	
6,500.0	90.00	0.00	5,810.6	1,189.7	-32.4	1,189.7	0.00	0.00	
6,600.0	90.00	0.00	5,810.6	1,289.7	-32.4	1,289.7	0.00	0.00	
6,700.0	90.00	0.00	5,810.6	1,389.7	-32.4	1,389.7	0.00	0.00	
6,800.0	90.00	0.00	5,810.6	1,489.7	-32.4	1,489.7	0.00	0.00	
6,900.0	90.00	0.00	5,810.6	1,589.7	-32.4	1,589.7	0.00	0.00	
7,000.0	90.00	0.00	5,810.6	1,689.7	-32.4	1,689.7	0.00	0.00	
7,100.0	90.00	0.00	5,810.6	1,789.7	-32.4	1,789.7	0.00	0.00	
7,200.0	90.00	0.00	5,810.6	1,889.7	-32.4	1,889.7	0.00	0.00	
7,300.0	90.00	0.00	5,810.6	1,989.7	-32.4	1,989.7	0.00	0.00	
7,400.0	90.00	0.00	5,810.6	2,089.7	-32.4	2,089.7	0.00	0.00	
7,500.0	90.00	0.00	5,810.6	2,189.7	-32.4	2,189.7	0.00	0.00	
7,600.0	90.00	0.00	5,810.7	2,289.7	-32.4	2,289.7	0.00	0.00	
7,700.0	90.00	0.00	5,810.7	2,389.7	-32.4	2,389.7	0.00	0.00	
7,800.0	90.00	0.00	5,810.7	2,489.7	-32.4	2,489.7	0.00	0.00	
7,900.0	90.00	0.00	5,810.7	2,589.7	-32.4	2,589.7	0.00	0.00	
8,000.0	90.00	0.00	5,810.7	2,689.7	-32.4	2,689.7	0.00	0.00	
8,100.0	90.00	0.00	5,810.7	2,789.7	-32.4	2,789.7	0.00	0.00	
8,200.0	90.00	0.00	5,810.7	2,889.7	-32.4	2,889.7	0.00	0.00	
8,300.0	90.00	0.00	5,810.7	2,989.7	-32.4	2,989.7	0.00	0.00	
8,400.0	90.00	0.00	5,810.7	3,089.7	-32.4	3,089.7	0.00	0.00	
8,500.0	90.00	0.00	5,810.7	3,189.7	-32.4	3,189.7	0.00	0.00	
8,600.0	90.00	0.00	5,810.7	3,289.7	-32.4	3,289.7	0.00	0.00	
8,700.0	90.00	0.00	5,810.7	3,389.7	-32.4	3,389.7	0.00	0.00	
8,800.0	90.00	0.00	5,810.7	3,489.7	-32.4	3,489.7	0.00	0.00	
8,900.0	90.00	0.00	5,810.8	3,589.7	-32.4	3,589.7	0.00	0.00	
9,000.0	90.00	0.00	5,810.8	3,689.7	-32.4	3,689.7	0.00	0.00	
9,100.0	90.00	0.00	5,810.8	3,789.7	-32.4	3,789.7	0.00	0.00	
9,200.0	90.00	0.00	5,810.8	3,889.7	-32.3	3,889.7	0.00	0.00	
9,300.0	90.00	0.00	5,810.8	3,989.7	-32.3	3,989.7	0.00	0.00	
9,400.0	90.00	0.00	5,810.8	4,089.7	-32.3	4,089.7	0.00	0.00	
9,500.0	90.00	0.00	5,810.8	4,189.7	-32.3	4,189.7	0.00	0.00	
9,600.0	90.00	0.00	5,810.8	4,289.7	-32.3	4,289.7	0.00	0.00	
9,700.0	90.00	0.00	5,810.8	4,389.7	-32.3	4,389.7	0.00	0.00	
9,800.0	90.00	0.00	5,810.8	4,489.7	-32.3	4,489.7	0.00	0.00	
9,900.0	90.00	0.00	5,810.8	4,589.7	-32.3	4,589.7	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
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Well:	Razor #12F-0105A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
10,000.0	90.00	0.00	5,810.8	4,689.7	-32.3	4,689.7	0.00	0.00	
10,100.0	90.00	0.00	5,810.8	4,789.7	-32.3	4,789.7	0.00	0.00	
10,200.0	90.00	0.00	5,810.8	4,889.7	-32.3	4,889.7	0.00	0.00	
10,300.0	90.00	0.00	5,810.9	4,989.7	-32.3	4,989.7	0.00	0.00	
10,400.0	90.00	0.00	5,810.9	5,089.7	-32.3	5,089.7	0.00	0.00	
10,500.0	90.00	0.00	5,810.9	5,189.7	-32.3	5,189.7	0.00	0.00	
10,600.0	90.00	0.00	5,810.9	5,289.7	-32.3	5,289.7	0.00	0.00	
10,700.0	90.00	0.00	5,810.9	5,389.7	-32.3	5,389.7	0.00	0.00	
10,800.0	90.00	0.00	5,810.9	5,489.7	-32.3	5,489.7	0.00	0.00	
10,900.0	90.00	0.00	5,810.9	5,589.7	-32.3	5,589.7	0.00	0.00	
11,000.0	90.00	0.00	5,810.9	5,689.7	-32.3	5,689.7	0.00	0.00	
11,100.0	90.00	0.00	5,810.9	5,789.7	-32.3	5,789.7	0.00	0.00	
11,200.0	90.00	0.00	5,810.9	5,889.7	-32.3	5,889.7	0.00	0.00	
11,300.0	90.00	0.00	5,810.9	5,989.7	-32.3	5,989.7	0.00	0.00	
11,400.0	90.00	0.00	5,810.9	6,089.7	-32.3	6,089.7	0.00	0.00	
11,500.0	90.00	0.00	5,810.9	6,189.7	-32.3	6,189.7	0.00	0.00	
11,600.0	90.00	0.00	5,811.0	6,289.7	-32.3	6,289.7	0.00	0.00	
11,700.0	90.00	0.00	5,811.0	6,389.7	-32.3	6,389.7	0.00	0.00	
11,800.0	90.00	0.00	5,811.0	6,489.7	-32.3	6,489.7	0.00	0.00	
11,900.0	90.00	0.00	5,811.0	6,589.7	-32.3	6,589.7	0.00	0.00	
12,000.0	90.00	0.00	5,811.0	6,689.7	-32.3	6,689.7	0.00	0.00	
12,100.0	90.00	0.00	5,811.0	6,789.7	-32.3	6,789.7	0.00	0.00	
12,200.0	90.00	0.00	5,811.0	6,889.7	-32.3	6,889.7	0.00	0.00	
12,208.6	90.00	0.00	5,811.0	6,898.3	-32.3	6,898.3	0.00	0.00	PBHL @ 12,208.6' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Razor #12F-0105A PBH	0.00	0.00	5,811.0	6,898.3	-32.3	1,565,511.79	3,465,143.77	40° 52' 24.94 N	103° 49' 4.93 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,200.0	5,810.5	7" (1444' FWL, 1294' FNL)	0	0	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,875.1	5,755.0	Top Niobrara		0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor #12F-0105A
Wellbore: HZ
Design: Plan #3

Local Co-ordinate Reference: Well Razor #12F-0105A
TVD Reference: WELL @ 4953.6usft (Original Well Elev)
MD Reference: WELL @ 4953.6usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,100.0	1,100.0	0.0	0.0	KOP @ 1100' MD
1,300.0	1,299.8	7.0	-0.3	EOB; 4 Deg Inc
5,336.0	5,326.0	288.3	-11.1	Start 11 Deg Bulid
6,117.8	5,810.5	807.5	-31.0	LP @ 6,117' MD
6,191.2	5,810.5	880.9	-32.4	EOT; 0 Deg Azi
12,208.6	5,811.0	6,898.3	-32.3	PBHL @ 12,208.6' MD

Whiting Petroleum Corporation

Weld County, CO

S12-T10N-R58W

Razor #12F-0105A

HZ

Plan #3

Anticollision Report

08 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
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 750.0usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/8/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,208.5	Plan #3 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance		Separation Factor	Warning
			Between Centres (usft)	Between Ellipses (usft)		
S12-T10N-R58W						
Razor #12F-0101A - HZ - Plan #3	500.0	500.0	132.2	130.2	66.582	CC, ES
Razor #12F-0101A - HZ - Plan #3	5,400.0	5,371.5	371.4	345.5	14.350	SF
Razor #12F-0102B - HZ - Plan #3	500.0	500.0	99.1	97.1	49.936	CC, ES
Razor #12F-0102B - HZ - Plan #3	5,500.0	5,477.2	301.3	274.6	11.281	SF
Razor #12F-0103A - HZ - Plan #3	1,000.0	1,000.0	66.1	61.9	15.613	CC, ES
Razor #12F-0103A - HZ - Plan #3	12,208.6	12,338.7	659.9	396.0	2.500	SF
Razor #12F-0104B - HZ - Plan #3	800.0	800.0	33.0	29.7	9.912	CC, ES
Razor #12F-0104B - HZ - Plan #3	12,208.6	12,325.1	345.4	91.3	1.359	Level 3, SF
Razor #12F-0106B - HZ - Plan #2	1,281.0	1,285.1	49.0	43.5	8.872	CC
Razor #12F-0106B - HZ - Plan #2	1,300.0	1,304.0	49.1	43.5	8.750	ES
Razor #12F-0106B - HZ - Plan #2	12,208.6	12,388.3	344.7	90.0	1.353	Level 3, SF
Razor #12F-0107A - HZ - Plan #2	1,100.0	1,100.0	98.4	93.7	21.007	CC
Razor #12F-0107A - HZ - Plan #2	1,200.0	1,200.0	98.4	93.3	19.187	ES
Razor #12F-0107A - HZ - Plan #2	12,208.6	12,319.8	659.1	396.7	2.511	SF
Razor #12F-0108B - HZ - Plan #2	1,115.9	1,116.7	97.5	92.7	20.497	CC, ES
Razor #12F-0108B - HZ - Plan #2	5,300.0	5,296.2	286.1	260.6	11.238	SF
Razor #12G-0109A - HZ - Plan #1						Out of range
Razor Federal #12F-1301A - HZ - Plan #3	1,000.0	1,000.0	151.9	147.7	35.888	CC, ES
Razor Federal #12F-1301A - HZ - Plan #3	5,300.0	5,255.8	655.7	632.0	27.732	SF
Razor Federal #12F-1302B - HZ - Plan #2	1,100.0	1,100.0	124.2	119.5	26.532	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	1,400.0	1,390.7	139.2	133.2	23.406	SF
Razor Federal #12F-1303A - HZ - Plan #3	500.0	500.0	99.9	97.9	50.308	CC, ES
Razor Federal #12F-1303A - HZ - Plan #3	1,300.0	1,291.0	152.5	147.1	28.155	SF
Razor Federal #12F-1304B - HZ - Plan #2	1,100.0	1,100.0	81.9	77.2	17.482	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	1,200.0	1,197.2	85.1	80.0	16.689	SF
Razor Federal #12F-1305A - HZ - Plan #3	900.0	900.0	74.9	71.1	19.791	CC, ES
Razor Federal #12F-1305A - HZ - Plan #3	1,100.0	1,094.6	81.6	77.0	17.747	SF
Razor Federal #12F-1306B - HZ - Plan #2	1,000.0	1,000.0	81.6	77.3	19.267	CC, ES
Razor Federal #12F-1306B - HZ - Plan #2	1,200.0	1,194.0	89.9	84.9	17.807	SF
Razor Federal #12F-1307A - HZ - Plan #3	400.0	400.0	99.4	97.8	64.705	CC, ES
Razor Federal #12F-1307A - HZ - Plan #3	2,500.0	2,479.6	317.5	306.6	29.239	SF
Razor Federal #12F-1308B - HZ - Plan #1	866.7	866.7	123.6	120.0	34.027	CC
Razor Federal #12F-1308B - HZ - Plan #1	900.0	900.0	123.6	119.9	32.680	ES
Razor Federal #12F-1308B - HZ - Plan #1	1,300.0	1,290.2	148.5	143.1	27.317	SF
Razor Federal #12F-1308B - HZ - Plan #2	866.7	866.7	123.6	120.0	34.027	CC
Razor Federal #12F-1308B - HZ - Plan #2	900.0	900.0	123.6	119.9	32.680	ES
Razor Federal #12F-1308B - HZ - Plan #2	1,300.0	1,290.2	148.5	143.1	27.317	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-132.2	132.2					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-132.2	132.2	0.19	706.790			
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-132.2	132.2	0.64	207.645			
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-132.2	132.2	1.09	121.699			
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-132.2	132.2	1.54	86.073			
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-132.2	132.2	1.99	66.582	CC, ES		
600.0	600.0	596.7	596.7	1.2	1.2	-89.52	1.1	-133.4	133.4	2.42	55.047			
700.0	700.0	693.2	693.1	1.4	1.4	-88.13	4.5	-136.9	137.2	2.86	47.907			
800.0	800.0	792.7	792.3	1.7	1.7	-86.28	9.2	-142.0	142.5	3.31	43.012			
900.0	900.0	892.5	891.8	1.9	1.9	-84.56	14.0	-147.0	147.9	3.76	39.314			
1,000.0	1,000.0	992.2	991.4	2.1	2.1	-82.97	18.8	-152.1	153.5	4.21	36.422			
1,100.0	1,100.0	1,092.0	1,090.9	2.3	2.4	-81.49	23.5	-157.2	159.2	4.67	34.107			
1,200.0	1,200.0	1,191.8	1,190.4	2.6	2.6	-78.39	28.3	-162.2	164.6	5.12	32.135			
1,300.0	1,299.8	1,291.7	1,290.1	2.8	2.9	-78.72	33.1	-167.3	169.4	5.58	30.359			
1,400.0	1,399.6	1,391.5	1,389.7	3.0	3.1	-79.68	37.8	-172.4	173.8	6.04	28.767			
1,500.0	1,499.4	1,491.4	1,489.3	3.2	3.4	-80.59	42.6	-177.5	178.3	6.51	27.386			
1,600.0	1,599.1	1,591.3	1,588.9	3.5	3.6	-81.46	47.4	-182.5	182.8	6.98	26.179			
1,700.0	1,698.9	1,691.1	1,688.5	3.7	3.9	-82.29	52.2	-187.6	187.4	7.46	25.118			
1,800.0	1,798.6	1,791.0	1,788.2	4.0	4.2	-83.08	56.9	-192.7	192.0	7.94	24.179			
1,900.0	1,898.4	1,890.8	1,887.8	4.2	4.4	-83.83	61.7	-197.8	196.6	8.42	23.344			
2,000.0	1,998.1	1,990.7	1,987.4	4.4	4.7	-84.54	66.5	-202.8	201.3	8.91	22.596			
2,100.0	2,097.9	2,090.6	2,087.0	4.7	4.9	-85.22	71.3	-207.9	206.0	9.39	21.924			
2,200.0	2,197.6	2,190.4	2,186.6	4.9	5.2	-85.88	76.0	-213.0	210.7	9.88	21.317			
2,300.0	2,297.4	2,290.3	2,286.2	5.2	5.4	-86.50	80.8	-218.0	215.4	10.37	20.767			
2,400.0	2,397.2	2,390.1	2,385.9	5.4	5.7	-87.10	85.6	-223.1	220.2	10.87	20.266			
2,500.0	2,496.9	2,490.0	2,485.5	5.7	5.9	-87.67	90.4	-228.2	225.0	11.36	19.809			
2,600.0	2,596.7	2,589.9	2,585.1	5.9	6.2	-88.22	95.1	-233.3	229.8	11.85	19.389			
2,700.0	2,696.4	2,689.7	2,684.7	6.2	6.5	-88.74	99.9	-238.3	234.7	12.35	19.003			
2,800.0	2,796.2	2,789.6	2,784.3	6.4	6.7	-89.24	104.7	-243.4	239.5	12.84	18.647			
2,900.0	2,895.9	2,889.4	2,884.0	6.7	7.0	-89.73	109.5	-248.5	244.4	13.34	18.318			
3,000.0	2,995.7	2,989.3	2,983.6	6.9	7.2	-90.19	114.2	-253.6	249.3	13.84	18.012			
3,100.0	3,095.5	3,089.2	3,083.2	7.2	7.5	-90.64	119.0	-258.6	254.2	14.34	17.729			
3,200.0	3,195.2	3,189.0	3,182.8	7.4	7.7	-91.07	123.8	-263.7	259.1	14.84	17.464			
3,300.0	3,295.0	3,288.9	3,282.4	7.7	8.0	-91.48	128.6	-268.8	264.0	15.34	17.217			
3,400.0	3,394.7	3,388.7	3,382.0	7.9	8.3	-91.88	133.3	-273.8	269.0	15.84	16.986			
3,500.0	3,494.5	3,488.6	3,481.7	8.2	8.5	-92.26	138.1	-278.9	274.0	16.34	16.769			
3,600.0	3,594.2	3,588.5	3,581.3	8.5	8.8	-92.64	142.9	-284.0	278.9	16.84	16.566			
3,700.0	3,694.0	3,688.3	3,680.9	8.7	9.0	-92.99	147.6	-289.1	283.9	17.34	16.375			
3,800.0	3,793.7	3,788.2	3,780.5	9.0	9.3	-93.34	152.4	-294.1	288.9	17.84	16.194			
3,900.0	3,893.5	3,888.0	3,880.1	9.2	9.5	-93.67	157.2	-299.2	293.9	18.34	16.024			
4,000.0	3,993.3	3,987.9	3,979.7	9.5	9.8	-93.99	162.0	-304.3	298.9	18.84	15.863			
4,100.0	4,093.0	4,087.8	4,079.4	9.7	10.1	-94.31	166.7	-309.4	304.0	19.35	15.711			
4,200.0	4,192.8	4,187.6	4,179.0	10.0	10.3	-94.61	171.5	-314.4	309.0	19.85	15.567			
4,300.0	4,292.5	4,287.5	4,278.6	10.2	10.6	-94.90	176.3	-319.5	314.0	20.35	15.430			
4,400.0	4,392.3	4,387.4	4,378.2	10.5	10.8	-95.18	181.1	-324.6	319.1	20.86	15.300			
4,500.0	4,492.0	4,487.2	4,477.8	10.7	11.1	-95.45	185.8	-329.6	324.2	21.36	15.176			
4,600.0	4,591.8	4,587.1	4,577.4	11.0	11.4	-95.72	190.6	-334.7	329.2	21.86	15.058			
4,700.0	4,691.6	4,686.9	4,677.1	11.2	11.6	-95.98	195.4	-339.8	334.3	22.37	14.946			
4,800.0	4,791.3	4,786.8	4,776.7	11.5	11.9	-96.23	200.2	-344.9	339.4	22.87	14.839			
4,900.0	4,891.1	4,886.7	4,876.3	11.8	12.1	-96.47	204.9	-349.9	344.4	23.37	14.736			
5,000.0	4,990.8	4,986.5	4,975.9	12.0	12.4	-96.70	209.7	-355.0	349.5	23.88	14.638			
5,100.0	5,090.6	5,086.4	5,075.5	12.3	12.6	-96.93	214.5	-360.1	354.6	24.38	14.545			

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design		S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3											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			
5,200.0	5,190.3	5,186.2	5,175.1	12.5	12.9	-97.15	219.3	-365.2	359.7	334.8	24.89	14.455				
5,300.0	5,290.1	5,286.1	5,274.8	12.8	13.2	-97.37	224.0	-370.2	364.8	339.5	25.39	14.369				
5,400.0	5,389.4	5,371.5	5,359.9	13.1	13.4	-97.33	228.9	-375.4	371.4	345.5	25.88	14.350	SF			
5,500.0	5,485.1	5,440.3	5,427.3	13.5	13.6	-96.89	238.2	-385.3	387.2	360.7	26.48	14.622				
5,600.0	5,573.7	5,500.0	5,483.8	14.0	13.9	-95.74	251.2	-399.1	413.0	385.8	27.23	15.170				
5,700.0	5,651.8	5,570.4	5,547.2	14.8	14.4	-94.45	272.1	-421.4	448.0	419.8	28.25	15.859				
5,800.0	5,716.6	5,630.4	5,597.6	15.7	14.8	-92.13	294.5	-445.1	491.3	461.8	29.46	16.675				
5,900.0	5,765.7	5,686.8	5,641.2	16.8	15.3	-88.97	318.9	-471.1	541.5	510.6	30.87	17.540				
6,000.0	5,797.3	5,739.6	5,678.3	18.1	15.8	-85.00	344.6	-498.4	597.2	564.8	32.39	18.440				
6,100.0	5,810.2	5,789.1	5,709.5	19.5	16.3	-80.35	370.9	-526.3	656.9	623.0	33.88	19.388				
6,200.0	5,810.5	5,837.7	5,736.5	20.9	16.9	-81.95	398.6	-555.7	721.5	685.8	35.65	20.236				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #3													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	-89.99	0.0	-99.1	99.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-99.1	99.1	98.9	0.19	530.092		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-99.1	99.1	98.5	0.64	155.733		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-99.1	99.1	98.0	1.09	91.274		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-99.1	99.1	97.6	1.54	64.555		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-99.1	99.1	97.1	1.99	49.936	CC, ES	
600.0	600.0	597.9	597.9	1.2	1.2	-89.23	1.3	-100.2	100.2	97.8	2.43	41.276		
700.0	700.0	695.5	695.4	1.4	1.4	-87.06	5.3	-103.2	103.5	100.6	2.87	36.034		
800.0	800.0	795.2	794.8	1.7	1.7	-84.26	10.8	-107.5	108.1	104.8	3.32	32.541		
900.0	900.0	895.0	894.3	1.9	1.9	-81.70	16.3	-111.7	113.0	109.3	3.78	29.941		
1,000.0	1,000.0	994.7	993.8	2.1	2.1	-79.35	21.8	-116.0	118.2	113.9	4.23	27.938		
1,100.0	1,100.0	1,094.5	1,093.3	2.3	2.4	-77.20	27.3	-120.2	123.5	118.8	4.68	26.360		
1,200.0	1,200.0	1,194.3	1,192.9	2.6	2.6	-73.68	32.8	-124.5	128.4	123.3	5.14	24.983		
1,300.0	1,299.8	1,294.2	1,292.6	2.8	2.9	-73.91	38.3	-128.8	132.5	126.9	5.60	23.657		
1,400.0	1,399.6	1,394.1	1,392.3	3.0	3.1	-74.91	43.8	-133.0	136.0	130.0	6.06	22.430		
1,500.0	1,499.4	1,494.0	1,491.9	3.2	3.4	-75.86	49.4	-137.3	139.6	133.1	6.53	21.365		
1,600.0	1,599.1	1,593.9	1,591.6	3.5	3.7	-76.75	54.9	-141.6	143.2	136.2	7.01	20.435		
1,700.0	1,698.9	1,693.9	1,691.3	3.7	3.9	-77.61	60.4	-145.8	146.9	139.4	7.49	19.618		
1,800.0	1,798.6	1,793.8	1,790.9	4.0	4.2	-78.42	65.9	-150.1	150.6	142.6	7.97	18.895		
1,900.0	1,898.4	1,893.7	1,890.6	4.2	4.4	-79.19	71.4	-154.3	154.3	145.9	8.46	18.252		
2,000.0	1,998.1	1,993.6	1,990.3	4.4	4.7	-79.93	76.9	-158.6	158.1	149.1	8.94	17.677		
2,100.0	2,097.9	2,093.5	2,089.9	4.7	4.9	-80.63	82.4	-162.9	161.9	152.4	9.43	17.160		
2,200.0	2,197.6	2,193.4	2,189.6	4.9	5.2	-81.30	87.9	-167.1	165.7	155.7	9.92	16.694		
2,300.0	2,297.4	2,293.3	2,289.3	5.2	5.4	-81.94	93.5	-171.4	169.5	159.1	10.42	16.271		
2,400.0	2,397.2	2,393.2	2,388.9	5.4	5.7	-82.55	99.0	-175.7	173.3	162.4	10.91	15.886		
2,500.0	2,496.9	2,493.1	2,488.6	5.7	6.0	-83.14	104.5	-179.9	177.2	165.8	11.41	15.534		
2,600.0	2,596.7	2,593.0	2,588.3	5.9	6.2	-83.70	110.0	-184.2	181.1	169.2	11.90	15.211		
2,700.0	2,696.4	2,692.9	2,687.9	6.2	6.5	-84.23	115.5	-188.5	185.0	172.6	12.40	14.915		
2,800.0	2,796.2	2,792.9	2,787.6	6.4	6.7	-84.75	121.0	-192.7	188.9	176.0	12.90	14.641		
2,900.0	2,895.9	2,892.8	2,887.3	6.7	7.0	-85.24	126.5	-197.0	192.8	179.4	13.40	14.388		
3,000.0	2,995.7	2,992.7	2,986.9	6.9	7.2	-85.72	132.0	-201.2	196.7	182.8	13.90	14.154		
3,100.0	3,095.5	3,092.6	3,086.6	7.2	7.5	-86.17	137.6	-205.5	200.7	186.3	14.40	13.936		
3,200.0	3,195.2	3,192.5	3,186.3	7.4	7.7	-86.61	143.1	-209.8	204.6	189.7	14.90	13.732		
3,300.0	3,295.0	3,292.4	3,285.9	7.7	8.0	-87.03	148.6	-214.0	208.6	193.2	15.40	13.543		
3,400.0	3,394.7	3,392.3	3,385.6	7.9	8.3	-87.43	154.1	-218.3	212.6	196.7	15.91	13.366		
3,500.0	3,494.5	3,492.2	3,485.3	8.2	8.5	-87.82	159.6	-222.6	216.6	200.2	16.41	13.199		
3,600.0	3,594.2	3,592.1	3,584.9	8.5	8.8	-88.20	165.1	-226.8	220.6	203.7	16.91	13.043		
3,700.0	3,694.0	3,692.0	3,684.6	8.7	9.0	-88.56	170.6	-231.1	224.6	207.2	17.42	12.896		
3,800.0	3,793.7	3,792.0	3,784.3	9.0	9.3	-88.91	176.1	-235.4	228.6	210.7	17.92	12.758		
3,900.0	3,893.5	3,891.9	3,883.9	9.2	9.5	-89.25	181.7	-239.6	232.7	214.3	18.43	12.627		
4,000.0	3,993.3	3,991.8	3,983.6	9.5	9.8	-89.58	187.2	-243.9	236.7	217.8	18.93	12.504		
4,100.0	4,093.0	4,091.7	4,083.3	9.7	10.1	-89.89	192.7	-248.1	240.8	221.3	19.44	12.387		
4,200.0	4,192.8	4,191.6	4,182.9	10.0	10.3	-90.20	198.2	-252.4	244.8	224.9	19.94	12.277		
4,300.0	4,292.5	4,291.5	4,282.6	10.2	10.6	-90.49	203.7	-256.7	248.9	228.4	20.45	12.172		
4,400.0	4,392.3	4,391.4	4,382.3	10.5	10.8	-90.78	209.2	-260.9	252.9	232.0	20.95	12.072		
4,500.0	4,492.0	4,491.3	4,481.9	10.7	11.1	-91.05	214.7	-265.2	257.0	235.6	21.46	11.977		
4,600.0	4,591.8	4,591.2	4,581.6	11.0	11.4	-91.32	220.3	-269.5	261.1	239.1	21.97	11.887		
4,700.0	4,691.6	4,691.1	4,681.3	11.2	11.6	-91.58	225.8	-273.7	265.2	242.7	22.47	11.801		
4,800.0	4,791.3	4,791.0	4,780.9	11.5	11.9	-91.83	231.3	-278.0	269.3	246.3	22.98	11.718		
4,900.0	4,891.1	4,891.0	4,880.6	11.8	12.1	-92.08	236.8	-282.3	273.4	249.9	23.49	11.640		
5,000.0	4,990.8	4,990.9	4,980.3	12.0	12.4	-92.31	242.3	-286.5	277.5	253.5	23.99	11.565		
5,100.0	5,090.6	5,090.8	5,079.9	12.3	12.6	-92.54	247.8	-290.8	281.6	257.1	24.50	11.493		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #3													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	5,190.7	5,179.6	12.5	12.9	-92.77	253.3	-295.0	285.7	260.7	25.01	11.424		
5,300.0	5,290.1	5,290.6	5,279.2	12.8	13.2	-92.98	258.8	-299.3	289.8	264.3	25.51	11.358		
5,400.0	5,389.4	5,390.3	5,378.7	13.1	13.4	-93.64	264.3	-303.6	294.1	268.1	26.05	11.291		
5,500.0	5,485.1	5,477.2	5,465.3	13.5	13.7	-96.30	270.2	-308.1	301.3	274.6	26.71	11.281 SF		
5,600.0	5,573.7	5,550.0	5,536.4	14.0	13.9	-98.22	282.4	-317.5	318.2	290.7	27.48	11.578		
5,700.0	5,651.8	5,627.9	5,609.3	14.8	14.3	-99.63	304.0	-334.2	345.5	317.1	28.47	12.139		
5,800.0	5,716.6	5,700.0	5,672.4	15.7	14.8	-99.67	331.4	-355.4	382.6	352.9	29.66	12.900		
5,900.0	5,765.7	5,774.6	5,732.1	16.8	15.4	-98.77	366.7	-382.7	428.1	396.9	31.18	13.730		
6,000.0	5,797.3	5,846.7	5,783.1	18.1	16.1	-96.67	406.9	-413.8	480.4	447.4	33.01	14.555		
6,100.0	5,810.2	5,918.8	5,826.7	19.5	16.9	-93.64	452.3	-449.0	537.9	502.8	35.11	15.321		
6,200.0	5,810.5	5,995.0	5,863.6	20.9	17.8	-96.63	505.0	-489.7	599.9	563.1	36.85	16.279		
6,300.0	5,810.6	6,081.3	5,893.3	22.5	19.1	-99.27	569.0	-539.2	663.8	624.8	38.99	17.027		
6,400.0	5,810.6	6,176.2	5,909.9	24.1	20.6	-100.00	642.8	-596.3	726.3	684.8	41.52	17.491		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #3													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	-66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-66.1	66.1	65.9	0.19	353.395		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-66.1	66.1	65.5	0.64	103.822		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-66.1	66.1	65.0	1.09	60.849		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-66.1	66.1	64.6	1.54	43.036		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-66.1	66.1	64.1	1.99	33.291		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-66.1	66.1	63.7	2.43	27.144		
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-66.1	66.1	63.2	2.88	22.913		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-66.1	66.1	62.8	3.33	19.824		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-66.1	66.1	62.3	3.78	17.468		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-66.1	66.1	61.9	4.23	15.613 CC, ES		
1,100.0	1,100.0	1,098.9	1,098.8	2.3	2.3	-88.72	1.5	-66.9	66.9	62.3	4.68	14.310		
1,200.0	1,200.0	1,197.6	1,197.4	2.6	2.6	-84.24	6.0	-69.4	69.5	64.3	5.12	13.567		
1,300.0	1,299.8	1,297.5	1,297.1	2.8	2.8	-83.63	12.1	-72.7	72.7	67.1	5.57	13.050		
1,400.0	1,399.6	1,397.4	1,396.8	3.0	3.0	-84.44	18.2	-76.1	75.7	69.7	6.03	12.563		
1,500.0	1,499.4	1,497.4	1,496.5	3.2	3.3	-85.19	24.3	-79.4	78.7	72.2	6.49	12.132		
1,600.0	1,599.1	1,597.3	1,596.2	3.5	3.5	-85.88	30.4	-82.8	81.8	74.8	6.96	11.751		
1,700.0	1,698.9	1,697.3	1,695.9	3.7	3.7	-86.53	36.5	-86.1	84.8	77.4	7.43	11.411		
1,800.0	1,798.6	1,797.2	1,795.6	4.0	4.0	-87.13	42.7	-89.5	87.9	80.0	7.91	11.108		
1,900.0	1,898.4	1,897.2	1,895.3	4.2	4.2	-87.68	48.8	-92.8	91.0	82.6	8.40	10.835		
2,000.0	1,998.1	1,997.1	1,995.0	4.4	4.5	-88.21	54.9	-96.2	94.1	85.2	8.88	10.590		
2,100.0	2,097.9	2,097.1	2,094.7	4.7	4.7	-88.70	61.0	-99.5	97.2	87.8	9.37	10.368		
2,200.0	2,197.6	2,197.0	2,194.4	4.9	5.0	-89.15	67.1	-102.8	100.3	90.4	9.86	10.166		
2,300.0	2,297.4	2,297.0	2,294.1	5.2	5.2	-89.58	73.2	-106.2	103.4	93.0	10.35	9.983		
2,400.0	2,397.2	2,396.9	2,393.8	5.4	5.5	-89.99	79.3	-109.5	106.5	95.6	10.85	9.815		
2,500.0	2,496.9	2,496.9	2,493.6	5.7	5.7	-90.37	85.5	-112.9	109.6	98.2	11.34	9.660		
2,600.0	2,596.7	2,596.8	2,593.3	5.9	6.0	-90.74	91.6	-116.2	112.7	100.9	11.84	9.518		
2,700.0	2,696.4	2,696.8	2,693.0	6.2	6.2	-91.08	97.7	-119.6	115.8	103.5	12.34	9.387		
2,800.0	2,796.2	2,796.7	2,792.7	6.4	6.5	-91.40	103.8	-122.9	119.0	106.1	12.84	9.266		
2,900.0	2,895.9	2,896.7	2,892.4	6.7	6.7	-91.71	109.9	-126.3	122.1	108.8	13.34	9.153		
3,000.0	2,995.7	2,996.6	2,992.1	6.9	7.0	-92.00	116.0	-129.6	125.2	111.4	13.84	9.049		
3,100.0	3,095.5	3,096.6	3,091.8	7.2	7.2	-92.28	122.2	-133.0	128.4	114.0	14.34	8.951		
3,200.0	3,195.2	3,196.5	3,191.5	7.4	7.5	-92.54	128.3	-136.3	131.5	116.7	14.84	8.860		
3,300.0	3,295.0	3,296.5	3,291.2	7.7	7.7	-92.80	134.4	-139.7	134.7	119.3	15.35	8.775		
3,400.0	3,394.7	3,396.4	3,390.9	7.9	8.0	-93.04	140.5	-143.0	137.8	122.0	15.85	8.694		
3,500.0	3,494.5	3,496.4	3,490.6	8.2	8.3	-93.27	146.6	-146.4	141.0	124.6	16.35	8.619		
3,600.0	3,594.2	3,596.3	3,590.3	8.5	8.5	-93.49	152.7	-149.7	144.1	127.2	16.86	8.548		
3,700.0	3,694.0	3,696.3	3,690.0	8.7	8.8	-93.70	158.8	-153.1	147.3	129.9	17.36	8.481		
3,800.0	3,793.7	3,796.2	3,789.7	9.0	9.0	-93.90	165.0	-156.4	150.4	132.5	17.87	8.418		
3,900.0	3,893.5	3,896.2	3,889.4	9.2	9.3	-94.09	171.1	-159.8	153.6	135.2	18.37	8.359		
4,000.0	3,993.3	3,996.1	3,989.1	9.5	9.5	-94.28	177.2	-163.1	156.7	137.8	18.88	8.302		
4,100.0	4,093.0	4,096.1	4,088.8	9.7	9.8	-94.46	183.3	-166.5	159.9	140.5	19.38	8.248		
4,200.0	4,192.8	4,196.0	4,188.5	10.0	10.0	-94.63	189.4	-169.8	163.0	143.2	19.89	8.197		
4,300.0	4,292.5	4,296.0	4,288.3	10.2	10.3	-94.79	195.5	-173.2	166.2	145.8	20.40	8.149		
4,400.0	4,392.3	4,395.9	4,388.0	10.5	10.6	-94.95	201.6	-176.5	169.4	148.5	20.90	8.103		
4,500.0	4,492.0	4,495.9	4,487.7	10.7	10.8	-95.10	207.8	-179.9	172.5	151.1	21.41	8.059		
4,600.0	4,591.8	4,595.8	4,587.4	11.0	11.1	-95.25	213.9	-183.2	175.7	153.8	21.92	8.017		
4,700.0	4,691.6	4,695.8	4,687.1	11.2	11.3	-95.39	220.0	-186.6	178.9	156.5	22.42	7.977		
4,800.0	4,791.3	4,795.7	4,786.8	11.5	11.6	-95.53	226.1	-189.9	182.0	159.1	22.93	7.939		
4,900.0	4,891.1	4,895.6	4,886.5	11.8	11.8	-95.66	232.2	-193.3	185.2	161.8	23.44	7.902		
5,000.0	4,990.8	4,995.6	4,986.2	12.0	12.1	-95.79	238.3	-196.6	188.4	164.4	23.95	7.867		
5,100.0	5,090.6	5,095.5	5,085.9	12.3	12.3	-95.91	244.5	-200.0	191.6	167.1	24.46	7.833		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #3													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	5,195.5	5,185.6	12.5	12.6	-96.03	250.6	-203.3	194.7	169.8	24.96	7.801		
5,300.0	5,290.1	5,295.4	5,285.3	12.8	12.9	-96.15	256.7	-206.7	197.9	172.4	25.47	7.770		
5,400.0	5,389.4	5,388.5	5,377.9	13.1	13.1	-96.18	264.6	-211.0	202.5	176.5	26.00	7.788		
5,500.0	5,485.1	5,476.1	5,462.6	13.5	13.5	-96.06	283.8	-221.5	214.3	187.5	26.73	8.016		
5,600.0	5,573.7	5,562.8	5,541.6	14.0	13.9	-95.71	314.8	-238.5	233.4	205.7	27.69	8.428		
5,700.0	5,651.8	5,650.0	5,614.2	14.8	14.5	-95.05	357.1	-261.7	259.4	230.4	28.94	8.961		
5,800.0	5,716.6	5,732.2	5,674.3	15.7	15.2	-93.88	406.2	-288.5	291.2	260.7	30.48	9.554		
5,900.0	5,765.7	5,815.4	5,725.4	16.8	16.1	-92.34	463.6	-320.0	327.8	295.5	32.33	10.140		
6,000.0	5,797.3	5,898.4	5,765.3	18.1	17.1	-90.46	527.3	-354.9	368.2	333.7	34.47	10.683		
6,100.0	5,810.2	5,982.1	5,793.4	19.5	18.3	-88.35	596.4	-392.7	411.1	374.2	36.86	11.153		
6,200.0	5,810.5	6,067.9	5,808.8	20.9	19.6	-89.75	670.4	-433.2	456.9	417.7	39.20	11.657		
6,300.0	5,810.6	6,168.7	5,811.3	22.5	21.2	-90.10	759.0	-481.0	504.5	462.4	42.07	11.992		
6,400.0	5,810.6	6,293.4	5,811.3	24.1	23.1	-90.09	871.7	-534.4	547.3	501.9	45.35	12.069		
6,500.0	5,810.6	6,425.6	5,811.3	25.7	25.3	-90.08	994.7	-582.9	583.9	535.0	48.92	11.936		
6,600.0	5,810.6	6,564.7	5,811.3	27.4	27.6	-90.07	1,127.3	-624.5	613.9	561.1	52.76	11.636		
6,700.0	5,810.6	6,709.5	5,811.3	29.1	29.9	-90.07	1,268.3	-657.4	636.7	579.9	56.81	11.208		
6,800.0	5,810.6	6,858.7	5,811.3	30.8	32.4	-90.06	1,415.7	-680.1	651.9	590.9	61.02	10.684		
6,900.0	5,810.6	7,010.6	5,811.3	32.6	34.8	-90.06	1,567.2	-691.3	659.3	594.0	65.32	10.094		
7,000.0	5,810.6	7,133.1	5,811.3	34.3	36.8	-90.06	1,689.7	-692.5	660.1	590.9	69.15	9.546		
7,100.0	5,810.6	7,233.1	5,811.3	36.1	38.4	-90.06	1,789.7	-692.5	660.0	587.4	72.61	9.090		
7,200.0	5,810.6	7,333.1	5,811.3	37.9	40.0	-90.06	1,889.7	-692.4	660.0	583.9	76.12	8.671		
7,300.0	5,810.6	7,433.1	5,811.3	39.7	41.7	-90.05	1,989.7	-692.4	660.0	580.4	79.65	8.286		
7,400.0	5,810.6	7,533.1	5,811.2	41.5	43.3	-90.05	2,089.7	-692.4	660.0	576.8	83.22	7.932		
7,500.0	5,810.6	7,633.1	5,811.2	43.4	45.0	-90.05	2,189.7	-692.4	660.0	573.2	86.80	7.604		
7,600.0	5,810.7	7,733.1	5,811.2	45.2	46.7	-90.05	2,289.7	-692.4	660.0	569.6	90.41	7.300		
7,700.0	5,810.7	7,833.1	5,811.2	47.1	48.5	-90.05	2,389.7	-692.4	660.0	566.0	94.04	7.019		
7,800.0	5,810.7	7,933.1	5,811.2	48.9	50.2	-90.05	2,489.7	-692.4	660.0	562.4	97.68	6.757		
7,900.0	5,810.7	8,033.1	5,811.2	50.8	51.9	-90.05	2,589.7	-692.4	660.0	558.7	101.34	6.513		
8,000.0	5,810.7	8,133.1	5,811.2	52.6	53.7	-90.05	2,689.7	-692.4	660.0	555.0	105.01	6.286		
8,100.0	5,810.7	8,233.1	5,811.2	54.5	55.5	-90.05	2,789.7	-692.4	660.0	551.3	108.69	6.073		
8,200.0	5,810.7	8,333.1	5,811.2	56.4	57.3	-90.04	2,889.7	-692.4	660.0	547.6	112.38	5.873		
8,300.0	5,810.7	8,433.1	5,811.2	58.2	59.1	-90.04	2,989.7	-692.4	660.0	543.9	116.09	5.686		
8,400.0	5,810.7	8,533.1	5,811.2	60.1	60.9	-90.04	3,089.7	-692.4	660.0	540.2	119.80	5.509		
8,500.0	5,810.7	8,633.1	5,811.2	62.0	62.7	-90.04	3,189.7	-692.4	660.0	536.5	123.52	5.343		
8,600.0	5,810.7	8,733.1	5,811.2	63.9	64.5	-90.04	3,289.7	-692.4	660.0	532.8	127.25	5.187		
8,700.0	5,810.7	8,833.1	5,811.2	65.7	66.3	-90.04	3,389.7	-692.4	660.0	529.0	130.98	5.039		
8,800.0	5,810.7	8,933.1	5,811.2	67.6	68.1	-90.04	3,489.7	-692.4	660.0	525.3	134.72	4.899		
8,900.0	5,810.8	9,033.1	5,811.2	69.5	70.0	-90.04	3,589.7	-692.4	660.0	521.5	138.47	4.767		
9,000.0	5,810.8	9,133.1	5,811.2	71.4	71.8	-90.04	3,689.7	-692.4	660.0	517.8	142.22	4.641		
9,100.0	5,810.8	9,233.1	5,811.2	73.3	73.6	-90.03	3,789.7	-692.3	660.0	514.0	145.97	4.521		
9,200.0	5,810.8	9,333.1	5,811.2	75.2	75.5	-90.03	3,889.7	-692.3	660.0	510.3	149.73	4.408		
9,300.0	5,810.8	9,433.1	5,811.1	77.1	77.3	-90.03	3,989.7	-692.3	660.0	506.5	153.50	4.300		
9,400.0	5,810.8	9,533.1	5,811.1	79.0	79.2	-90.03	4,089.7	-692.3	660.0	502.7	157.27	4.197		
9,500.0	5,810.8	9,633.1	5,811.1	80.9	81.0	-90.03	4,189.7	-692.3	660.0	498.9	161.04	4.098		
9,600.0	5,810.8	9,733.1	5,811.1	82.8	82.9	-90.03	4,289.7	-692.3	660.0	495.2	164.81	4.004		
9,700.0	5,810.8	9,833.1	5,811.1	84.7	84.7	-90.03	4,389.7	-692.3	660.0	491.4	168.59	3.915		
9,800.0	5,810.8	9,933.1	5,811.1	86.6	86.6	-90.03	4,489.7	-692.3	660.0	487.6	172.37	3.829		
9,900.0	5,810.8	10,033.1	5,811.1	88.5	88.5	-90.03	4,589.7	-692.3	660.0	483.8	176.16	3.747		
10,000.0	5,810.8	10,133.1	5,811.1	90.4	90.3	-90.02	4,689.7	-692.3	660.0	480.0	179.94	3.668		
10,100.0	5,810.8	10,233.1	5,811.1	92.3	92.2	-90.02	4,789.7	-692.3	660.0	476.2	183.73	3.592		
10,200.0	5,810.8	10,333.1	5,811.1	94.2	94.1	-90.02	4,889.7	-692.3	660.0	472.4	187.52	3.519		
10,300.0	5,810.9	10,433.1	5,811.1	96.1	96.0	-90.02	4,989.7	-692.3	660.0	468.6	191.32	3.450		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #3												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	5,810.9	10,533.1	5,811.1	98.0	97.8	-90.02	5,089.7	-692.3	660.0	464.9	195.11	3.383	
10,500.0	5,810.9	10,633.1	5,811.1	99.9	99.7	-90.02	5,189.7	-692.3	660.0	461.1	198.91	3.318	
10,600.0	5,810.9	10,733.1	5,811.1	101.8	101.6	-90.02	5,289.7	-692.3	660.0	457.3	202.71	3.256	
10,700.0	5,810.9	10,833.1	5,811.1	103.7	103.5	-90.02	5,389.7	-692.3	660.0	453.4	206.51	3.196	
10,800.0	5,810.9	10,933.1	5,811.1	105.6	105.4	-90.02	5,489.7	-692.3	660.0	449.6	210.31	3.138	
10,900.0	5,810.9	11,033.1	5,811.1	107.5	107.2	-90.01	5,589.7	-692.2	659.9	445.8	214.11	3.082	
11,000.0	5,810.9	11,133.1	5,811.1	109.4	109.1	-90.01	5,689.7	-692.2	659.9	442.0	217.92	3.028	
11,100.0	5,810.9	11,233.1	5,811.1	111.3	111.0	-90.01	5,789.7	-692.2	659.9	438.2	221.72	2.976	
11,200.0	5,810.9	11,333.1	5,811.1	113.2	112.9	-90.01	5,889.7	-692.2	659.9	434.4	225.53	2.926	
11,300.0	5,810.9	11,433.1	5,811.0	115.1	114.8	-90.01	5,989.7	-692.2	659.9	430.6	229.34	2.878	
11,400.0	5,810.9	11,533.1	5,811.0	117.1	116.7	-90.01	6,089.7	-692.2	659.9	426.8	233.15	2.831	
11,500.0	5,810.9	11,633.1	5,811.0	119.0	118.6	-90.01	6,189.7	-692.2	659.9	423.0	236.96	2.785	
11,600.0	5,811.0	11,733.1	5,811.0	120.9	120.5	-90.01	6,289.7	-692.2	659.9	419.2	240.77	2.741	
11,700.0	5,811.0	11,833.1	5,811.0	122.8	122.4	-90.01	6,389.7	-692.2	659.9	415.3	244.58	2.698	
11,800.0	5,811.0	11,933.1	5,811.0	124.7	124.3	-90.00	6,489.7	-692.2	659.9	411.5	248.40	2.657	
11,900.0	5,811.0	12,033.1	5,811.0	126.6	126.1	-90.00	6,589.7	-692.2	659.9	407.7	252.21	2.617	
12,000.0	5,811.0	12,133.1	5,811.0	128.5	128.0	-90.00	6,689.7	-692.2	659.9	403.9	256.03	2.578	
12,100.0	5,811.0	12,233.1	5,811.0	130.4	129.9	-90.00	6,789.7	-692.2	659.9	400.1	259.84	2.540	
12,200.0	5,811.0	12,333.1	5,811.0	132.3	131.8	-90.00	6,889.7	-692.2	659.9	396.3	263.66	2.503	
12,205.6	5,811.0	12,338.7	5,811.0	132.5	131.9	-90.00	6,895.3	-692.2	659.9	396.0	263.87	2.501	
12,208.6	5,811.0	12,338.7	5,811.0	132.5	131.9	-90.00	6,895.3	-692.2	659.9	396.0	263.93	2.500 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #3													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	-89.97	0.0	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.97	0.0	-33.0	33.0	32.9	0.19	176.697		
200.0	200.0	200.0	200.0	0.3	0.3	-89.97	0.0	-33.0	33.0	32.4	0.64	51.911		
300.0	300.0	300.0	300.0	0.5	0.5	-89.97	0.0	-33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	-89.97	0.0	-33.0	33.0	31.5	1.54	21.518		
500.0	500.0	500.0	500.0	1.0	1.0	-89.97	0.0	-33.0	33.0	31.1	1.99	16.645		
600.0	600.0	600.0	600.0	1.2	1.2	-89.97	0.0	-33.0	33.0	30.6	2.43	13.572		
700.0	700.0	700.0	700.0	1.4	1.4	-89.97	0.0	-33.0	33.0	30.2	2.88	11.457		
800.0	800.0	800.0	800.0	1.7	1.7	-89.97	0.0	-33.0	33.0	29.7	3.33	9.912 CC, ES		
900.0	900.0	899.6	899.6	1.9	1.9	-87.14	1.7	-33.6	33.6	29.8	3.78	8.885		
1,000.0	1,000.0	999.0	998.8	2.1	2.1	-79.30	6.6	-35.1	35.7	31.5	4.23	8.445		
1,100.0	1,100.0	1,098.8	1,098.4	2.3	2.3	-70.32	13.3	-37.1	39.5	34.8	4.68	8.428		
1,200.0	1,200.0	1,198.6	1,198.0	2.6	2.6	-62.78	19.9	-39.2	43.2	38.0	5.13	8.410		
1,300.0	1,299.8	1,298.6	1,297.7	2.8	2.8	-62.07	26.6	-41.2	45.5	39.9	5.59	8.137		
1,400.0	1,399.6	1,398.6	1,397.4	3.0	3.1	-63.35	33.3	-43.3	46.9	40.9	6.05	7.761		
1,500.0	1,499.4	1,498.5	1,497.2	3.2	3.3	-64.55	39.9	-45.3	48.4	41.9	6.52	7.435		
1,600.0	1,599.1	1,598.5	1,596.9	3.5	3.5	-65.67	46.6	-47.3	50.0	43.0	6.99	7.150		
1,700.0	1,698.9	1,698.5	1,696.6	3.7	3.8	-66.73	53.3	-49.4	51.5	44.0	7.47	6.900		
1,800.0	1,798.6	1,798.5	1,796.4	4.0	4.0	-67.72	59.9	-51.4	53.1	45.1	7.95	6.679		
1,900.0	1,898.4	1,898.5	1,896.1	4.2	4.3	-68.66	66.6	-53.5	54.6	46.2	8.43	6.482		
2,000.0	1,998.1	1,998.5	1,995.9	4.4	4.5	-69.54	73.3	-55.5	56.2	47.3	8.92	6.307		
2,100.0	2,097.9	2,098.4	2,095.6	4.7	4.8	-70.38	79.9	-57.6	57.8	48.4	9.41	6.149		
2,200.0	2,197.6	2,198.4	2,195.3	4.9	5.0	-71.17	86.6	-59.6	59.5	49.6	9.90	6.007		
2,300.0	2,297.4	2,298.4	2,295.1	5.2	5.3	-71.92	93.3	-61.7	61.1	50.7	10.39	5.878		
2,400.0	2,397.2	2,398.4	2,394.8	5.4	5.6	-72.63	99.9	-63.7	62.7	51.8	10.89	5.760		
2,500.0	2,496.9	2,498.4	2,494.6	5.7	5.8	-73.30	106.6	-65.8	64.4	53.0	11.38	5.653		
2,600.0	2,596.7	2,598.4	2,594.3	5.9	6.1	-73.94	113.3	-67.8	66.0	54.1	11.88	5.555		
2,700.0	2,696.4	2,698.3	2,694.0	6.2	6.3	-74.55	119.9	-69.9	67.7	55.3	12.38	5.465		
2,800.0	2,796.2	2,798.3	2,793.8	6.4	6.6	-75.13	126.6	-71.9	69.3	56.5	12.88	5.382		
2,900.0	2,895.9	2,898.3	2,893.5	6.7	6.8	-75.68	133.3	-74.0	71.0	57.6	13.38	5.306		
3,000.0	2,995.7	2,998.3	2,993.3	6.9	7.1	-76.21	139.9	-76.0	72.7	58.8	13.89	5.235		
3,100.0	3,095.5	3,098.3	3,093.0	7.2	7.3	-76.71	146.6	-78.1	74.4	60.0	14.39	5.169		
3,200.0	3,195.2	3,198.3	3,192.7	7.4	7.6	-77.19	153.3	-80.1	76.1	61.2	14.89	5.108		
3,300.0	3,295.0	3,298.2	3,292.5	7.7	7.8	-77.65	159.9	-82.2	77.8	62.4	15.40	5.050		
3,400.0	3,394.7	3,398.2	3,392.2	7.9	8.1	-78.09	166.6	-84.2	79.5	63.6	15.90	4.997		
3,500.0	3,494.5	3,498.2	3,492.0	8.2	8.4	-78.52	173.3	-86.2	81.2	64.8	16.41	4.947		
3,600.0	3,594.2	3,598.2	3,591.7	8.5	8.6	-78.92	179.9	-88.3	82.9	66.0	16.91	4.900		
3,700.0	3,694.0	3,698.2	3,691.4	8.7	8.9	-79.31	186.6	-90.3	84.6	67.2	17.42	4.856		
3,800.0	3,793.7	3,798.2	3,791.2	9.0	9.1	-79.68	193.3	-92.4	86.3	68.4	17.93	4.814		
3,900.0	3,893.5	3,898.2	3,890.9	9.2	9.4	-80.04	199.9	-94.4	88.0	69.6	18.43	4.775		
4,000.0	3,993.3	3,998.1	3,990.7	9.5	9.6	-80.38	206.6	-96.5	89.8	70.8	18.94	4.738		
4,100.0	4,093.0	4,098.1	4,090.4	9.7	9.9	-80.71	213.3	-98.5	91.5	72.0	19.45	4.703		
4,200.0	4,192.8	4,198.1	4,190.1	10.0	10.1	-81.03	220.0	-100.6	93.2	73.3	19.96	4.670		
4,300.0	4,292.5	4,298.1	4,289.9	10.2	10.4	-81.34	226.6	-102.6	94.9	74.5	20.47	4.639		
4,400.0	4,392.3	4,398.1	4,389.6	10.5	10.7	-81.64	233.3	-104.7	96.7	75.7	20.98	4.609		
4,500.0	4,492.0	4,498.1	4,489.4	10.7	10.9	-81.92	240.0	-106.7	98.4	76.9	21.48	4.581		
4,600.0	4,591.8	4,598.0	4,589.1	11.0	11.2	-82.20	246.6	-108.8	100.2	78.2	21.99	4.554		
4,700.0	4,691.6	4,698.0	4,688.9	11.2	11.4	-82.46	253.3	-110.8	101.9	79.4	22.50	4.528		
4,800.0	4,791.3	4,798.0	4,788.6	11.5	11.7	-82.72	260.0	-112.9	103.6	80.6	23.01	4.504		
4,900.0	4,891.1	4,898.0	4,888.3	11.8	11.9	-82.97	266.6	-114.9	105.4	81.9	23.52	4.481		
5,000.0	4,990.8	4,998.0	4,988.1	12.0	12.2	-83.21	273.3	-117.0	107.1	83.1	24.03	4.458		
5,100.0	5,090.6	5,098.0	5,087.8	12.3	12.4	-83.45	280.0	-119.0	108.9	84.4	24.54	4.437		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #3													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	5,197.9	5,187.6	12.5	12.7	-83.67	286.6	-121.0	110.6	85.6	25.05	4.416		
5,300.0	5,290.1	5,297.9	5,287.3	12.8	13.0	-83.89	293.3	-123.1	112.4	86.8	25.56	4.397		
5,400.0	5,389.4	5,397.7	5,386.9	13.1	13.2	-85.97	299.9	-125.1	113.8	87.7	26.13	4.356		
5,500.0	5,485.1	5,493.2	5,481.8	13.5	13.5	-94.65	309.1	-128.0	116.6	89.7	26.89	4.337		
5,600.0	5,573.7	5,588.9	5,573.9	14.0	13.9	-102.90	333.3	-135.4	126.9	99.2	27.69	4.583		
5,700.0	5,651.8	5,687.6	5,662.5	14.8	14.4	-109.03	374.6	-148.1	144.4	115.9	28.46	5.072		
5,800.0	5,716.6	5,789.7	5,743.8	15.7	15.2	-112.75	433.3	-166.1	167.3	137.9	29.36	5.697		
5,900.0	5,765.7	5,895.4	5,813.8	16.8	16.2	-114.35	508.9	-189.3	194.0	163.3	30.67	6.323		
6,000.0	5,797.3	6,005.2	5,868.0	18.1	17.5	-114.30	599.9	-217.2	222.8	190.1	32.63	6.828		
6,100.0	5,810.2	6,119.2	5,901.9	19.5	19.1	-113.01	703.8	-249.1	252.3	217.0	35.28	7.151		
6,200.0	5,810.5	6,236.2	5,911.6	20.9	20.8	-111.94	815.0	-283.2	280.5	242.3	38.19	7.345		
6,300.0	5,810.6	6,349.1	5,911.6	22.5	22.5	-109.85	924.1	-312.2	304.6	263.0	41.66	7.312		
6,400.0	5,810.6	6,465.2	5,911.6	24.1	24.2	-108.45	1,037.9	-335.3	323.4	278.3	45.12	7.169		
6,500.0	5,810.6	6,583.7	5,911.6	25.7	26.0	-107.56	1,155.3	-351.6	336.6	287.9	48.62	6.922		
6,600.0	5,810.6	6,703.9	5,911.6	27.4	27.8	-107.10	1,275.1	-360.7	343.8	291.7	52.16	6.592		
6,700.0	5,810.6	6,818.5	5,911.6	29.1	29.6	-107.01	1,389.7	-362.6	345.3	289.7	55.60	6.211		
6,800.0	5,810.6	6,918.5	5,911.6	30.8	31.3	-107.01	1,489.7	-362.6	345.3	286.4	58.88	5.865		
6,900.0	5,810.6	7,018.5	5,911.6	32.6	33.0	-107.01	1,589.7	-362.6	345.3	283.1	62.21	5.551		
7,000.0	5,810.6	7,118.5	5,911.6	34.3	34.7	-107.01	1,689.7	-362.6	345.3	279.7	65.57	5.266		
7,100.0	5,810.6	7,218.5	5,911.6	36.1	36.4	-107.01	1,789.7	-362.6	345.3	276.3	68.97	5.006		
7,200.0	5,810.6	7,318.5	5,911.6	37.9	38.1	-107.01	1,889.7	-362.6	345.3	272.9	72.41	4.769		
7,300.0	5,810.6	7,418.5	5,911.6	39.7	39.9	-107.01	1,989.7	-362.6	345.3	269.5	75.86	4.552		
7,400.0	5,810.6	7,518.5	5,911.6	41.5	41.6	-107.01	2,089.7	-362.6	345.3	266.0	79.34	4.352		
7,500.0	5,810.6	7,618.5	5,911.6	43.4	43.4	-107.01	2,189.7	-362.6	345.3	262.5	82.84	4.169		
7,600.0	5,810.7	7,718.5	5,911.7	45.2	45.2	-107.01	2,289.7	-362.6	345.3	259.0	86.35	3.999		
7,700.0	5,810.7	7,818.5	5,911.7	47.1	47.0	-107.01	2,389.7	-362.6	345.3	255.5	89.88	3.842		
7,800.0	5,810.7	7,918.5	5,911.7	48.9	48.8	-107.01	2,489.7	-362.6	345.3	251.9	93.42	3.696		
7,900.0	5,810.7	8,018.5	5,911.7	50.8	50.7	-107.01	2,589.7	-362.6	345.3	248.4	96.98	3.561		
8,000.0	5,810.7	8,118.5	5,911.7	52.6	52.5	-107.01	2,689.7	-362.6	345.3	244.8	100.55	3.435		
8,100.0	5,810.7	8,218.5	5,911.7	54.5	54.3	-107.01	2,789.7	-362.6	345.3	241.2	104.12	3.317		
8,200.0	5,810.7	8,318.5	5,911.7	56.4	56.2	-107.01	2,889.7	-362.6	345.3	237.6	107.70	3.206		
8,300.0	5,810.7	8,418.5	5,911.7	58.2	58.0	-107.01	2,989.7	-362.6	345.3	234.1	111.29	3.103		
8,400.0	5,810.7	8,518.5	5,911.7	60.1	59.9	-107.01	3,089.7	-362.6	345.3	230.5	114.89	3.006		
8,500.0	5,810.7	8,618.5	5,911.7	62.0	61.7	-107.01	3,189.7	-362.6	345.4	226.9	118.50	2.914		
8,600.0	5,810.7	8,718.5	5,911.7	63.9	63.6	-107.01	3,289.7	-362.6	345.4	223.2	122.11	2.828		
8,700.0	5,810.7	8,818.5	5,911.7	65.7	65.4	-107.01	3,389.7	-362.6	345.4	219.6	125.72	2.747		
8,800.0	5,810.7	8,918.5	5,911.7	67.6	67.3	-107.01	3,489.7	-362.6	345.4	216.0	129.34	2.670		
8,900.0	5,810.8	9,018.5	5,911.8	69.5	69.2	-107.00	3,589.7	-362.6	345.4	212.4	132.97	2.597		
9,000.0	5,810.8	9,118.5	5,911.8	71.4	71.1	-107.00	3,689.7	-362.6	345.4	208.8	136.60	2.528		
9,100.0	5,810.8	9,218.5	5,911.8	73.3	72.9	-107.00	3,789.7	-362.6	345.4	205.1	140.23	2.463		
9,200.0	5,810.8	9,318.5	5,911.8	75.2	74.8	-107.00	3,889.7	-362.6	345.4	201.5	143.86	2.401		
9,300.0	5,810.8	9,418.5	5,911.8	77.1	76.7	-107.00	3,989.7	-362.6	345.4	197.9	147.50	2.341		
9,400.0	5,810.8	9,518.5	5,911.8	79.0	78.6	-107.00	4,089.7	-362.6	345.4	194.2	151.15	2.285		
9,500.0	5,810.8	9,618.5	5,911.8	80.9	80.4	-107.00	4,189.7	-362.6	345.4	190.6	154.79	2.231		
9,600.0	5,810.8	9,718.5	5,911.8	82.8	82.3	-107.00	4,289.7	-362.6	345.4	186.9	158.44	2.180		
9,700.0	5,810.8	9,818.5	5,911.8	84.7	84.2	-107.00	4,389.7	-362.6	345.4	183.3	162.09	2.131		
9,800.0	5,810.8	9,918.5	5,911.8	86.6	86.1	-107.00	4,489.7	-362.6	345.4	179.6	165.74	2.084		
9,900.0	5,810.8	10,018.5	5,911.8	88.5	88.0	-107.00	4,589.7	-362.6	345.4	176.0	169.40	2.039		
10,000.0	5,810.8	10,118.5	5,911.8	90.4	89.9	-107.00	4,689.7	-362.6	345.4	172.3	173.05	1.996		
10,100.0	5,810.8	10,218.5	5,911.8	92.3	91.8	-107.00	4,789.7	-362.6	345.4	168.7	176.71	1.955		
10,200.0	5,810.8	10,318.5	5,911.8	94.2	93.7	-107.00	4,889.7	-362.6	345.4	165.0	180.37	1.915		
10,300.0	5,810.9	10,418.5	5,911.9	96.1	95.6	-107.00	4,989.7	-362.6	345.4	161.4	184.03	1.877		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #3												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	5,810.9	10,518.5	5,911.9	98.0	97.5	-107.00	5,089.7	-362.6	345.4	157.7	187.70	1.840	
10,500.0	5,810.9	10,618.5	5,911.9	99.9	99.4	-107.00	5,189.7	-362.6	345.4	154.0	191.36	1.805	
10,600.0	5,810.9	10,718.5	5,911.9	101.8	101.3	-107.00	5,289.7	-362.6	345.4	150.4	195.03	1.771	
10,700.0	5,810.9	10,818.5	5,911.9	103.7	103.2	-107.00	5,389.7	-362.6	345.4	146.7	198.70	1.738	
10,800.0	5,810.9	10,918.5	5,911.9	105.6	105.1	-107.00	5,489.7	-362.6	345.4	143.0	202.36	1.707	
10,900.0	5,810.9	11,018.5	5,911.9	107.5	107.0	-107.00	5,589.7	-362.6	345.4	139.4	206.03	1.676	
11,000.0	5,810.9	11,118.5	5,911.9	109.4	108.9	-107.00	5,689.7	-362.6	345.4	135.7	209.71	1.647	
11,100.0	5,810.9	11,218.5	5,911.9	111.3	110.8	-107.00	5,789.7	-362.6	345.4	132.0	213.38	1.619	
11,200.0	5,810.9	11,318.5	5,911.9	113.2	112.7	-107.00	5,889.7	-362.6	345.4	128.4	217.05	1.591	
11,300.0	5,810.9	11,418.5	5,911.9	115.1	114.6	-107.00	5,989.7	-362.6	345.4	124.7	220.72	1.565	
11,400.0	5,810.9	11,518.5	5,911.9	117.1	116.5	-107.00	6,089.7	-362.6	345.4	121.0	224.40	1.539	
11,500.0	5,810.9	11,618.5	5,911.9	119.0	118.4	-107.00	6,189.7	-362.6	345.4	117.3	228.07	1.515	
11,600.0	5,811.0	11,718.5	5,912.0	120.9	120.3	-107.00	6,289.7	-362.6	345.4	113.7	231.75	1.490 Level 3	
11,700.0	5,811.0	11,818.5	5,912.0	122.8	122.2	-107.00	6,389.7	-362.6	345.4	110.0	235.43	1.467 Level 3	
11,800.0	5,811.0	11,918.5	5,912.0	124.7	124.1	-107.00	6,489.7	-362.6	345.4	106.3	239.11	1.445 Level 3	
11,900.0	5,811.0	12,018.5	5,912.0	126.6	126.0	-107.00	6,589.7	-362.6	345.4	102.6	242.79	1.423 Level 3	
12,000.0	5,811.0	12,118.5	5,912.0	128.5	127.9	-107.00	6,689.7	-362.6	345.4	99.0	246.47	1.402 Level 3	
12,100.0	5,811.0	12,218.5	5,912.0	130.4	129.8	-107.00	6,789.7	-362.6	345.4	95.3	250.15	1.381 Level 3	
12,200.0	5,811.0	12,318.5	5,912.0	132.3	131.7	-107.00	6,889.7	-362.6	345.4	91.6	253.83	1.361 Level 3	
12,200.3	5,811.0	12,318.8	5,912.0	132.3	131.7	-107.00	6,890.0	-362.6	345.4	91.6	253.84	1.361 Level 3	
12,208.6	5,811.0	12,325.1	5,912.0	132.5	131.8	-107.00	6,896.3	-362.6	345.4	91.3	254.11	1.359 Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2													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	180.00	-74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-74.9	0.0	74.9	74.7	0.19	400.464		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-74.9	0.0	74.9	74.3	0.64	117.651		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-74.9	0.0	74.9	73.8	1.09	68.954		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-74.9	0.0	74.9	73.4	1.54	48.769		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-74.9	0.0	74.9	72.9	1.99	37.725		
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-74.9	0.0	74.9	72.5	2.43	30.760		
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-74.9	0.0	74.9	72.0	2.88	25.965		
800.0	800.0	802.5	802.5	1.7	1.7	179.61	-73.1	0.5	73.2	69.8	3.34	21.904		
900.0	900.0	904.7	904.5	1.9	1.9	178.34	-67.9	2.0	68.0	64.2	3.80	17.903		
1,000.0	1,000.0	1,004.5	1,004.0	2.1	2.1	176.41	-61.1	3.8	61.4	57.1	4.25	14.435		
1,100.0	1,100.0	1,104.2	1,103.6	2.3	2.4	174.02	-54.4	5.7	54.9	50.2	4.71	11.657		
1,200.0	1,200.0	1,204.1	1,203.2	2.6	2.6	173.42	-47.7	7.6	50.2	45.0	5.16	9.728		
1,281.0	1,280.9	1,285.1	1,284.0	2.8	2.8	171.23	-42.3	9.1	49.0	43.5	5.52	8.872 CC		
1,300.0	1,299.8	1,304.0	1,302.9	2.8	2.8	170.76	-41.0	9.5	49.1	43.5	5.61	8.750 ES		
1,400.0	1,399.6	1,404.0	1,402.6	3.0	3.1	168.40	-34.3	11.3	49.8	43.7	6.07	8.206		
1,500.0	1,499.4	1,504.0	1,502.4	3.2	3.3	166.11	-27.6	13.2	50.6	44.0	6.53	7.748		
1,600.0	1,599.1	1,604.0	1,602.1	3.5	3.6	163.90	-20.9	15.1	51.4	44.5	6.99	7.359		
1,700.0	1,698.9	1,703.9	1,701.8	3.7	3.8	161.76	-14.2	17.0	52.4	44.9	7.46	7.025		
1,800.0	1,798.6	1,803.9	1,801.6	4.0	4.1	159.70	-7.4	18.8	53.4	45.5	7.93	6.738		
1,900.0	1,898.4	1,903.9	1,901.3	4.2	4.3	157.72	-0.7	20.7	54.5	46.1	8.40	6.487		
2,000.0	1,998.1	2,003.9	2,001.0	4.4	4.6	155.81	6.0	22.6	55.6	46.8	8.88	6.268		
2,100.0	2,097.9	2,103.8	2,100.8	4.7	4.8	153.99	12.7	24.5	56.9	47.5	9.36	6.076		
2,200.0	2,197.6	2,203.8	2,200.5	4.9	5.1	152.25	19.4	26.3	58.1	48.3	9.84	5.906		
2,300.0	2,297.4	2,303.8	2,300.2	5.2	5.3	150.58	26.1	28.2	59.4	49.1	10.32	5.756		
2,400.0	2,397.2	2,403.8	2,400.0	5.4	5.6	148.98	32.9	30.1	60.8	50.0	10.81	5.623		
2,500.0	2,496.9	2,503.8	2,499.7	5.7	5.9	147.45	39.6	32.0	62.2	50.9	11.30	5.504		
2,600.0	2,596.7	2,603.7	2,599.4	5.9	6.1	146.00	46.3	33.8	63.6	51.9	11.79	5.398		
2,700.0	2,696.4	2,703.7	2,699.2	6.2	6.4	144.61	53.0	35.7	65.1	52.8	12.28	5.302		
2,800.0	2,796.2	2,803.7	2,798.9	6.4	6.6	143.28	59.7	37.6	66.7	53.9	12.78	5.216		
2,900.0	2,895.9	2,903.7	2,898.6	6.7	6.9	142.01	66.5	39.5	68.2	54.9	13.28	5.138		
3,000.0	2,995.7	3,003.6	2,998.4	6.9	7.1	140.80	73.2	41.3	69.8	56.0	13.77	5.068		
3,100.0	3,095.5	3,103.6	3,098.1	7.2	7.4	139.64	79.9	43.2	71.4	57.2	14.27	5.004		
3,200.0	3,195.2	3,203.6	3,197.8	7.4	7.6	138.54	86.6	45.1	73.1	58.3	14.77	4.946		
3,300.0	3,295.0	3,303.6	3,297.6	7.7	7.9	137.48	93.3	47.0	74.8	59.5	15.28	4.893		
3,400.0	3,394.7	3,403.5	3,397.3	7.9	8.1	136.47	100.0	48.8	76.5	60.7	15.78	4.845		
3,500.0	3,494.5	3,503.5	3,497.0	8.2	8.4	135.51	106.8	50.7	78.2	61.9	16.28	4.801		
3,600.0	3,594.2	3,603.5	3,596.8	8.5	8.7	134.58	113.5	52.6	79.9	63.1	16.79	4.760		
3,700.0	3,694.0	3,703.5	3,696.5	8.7	8.9	133.70	120.2	54.5	81.7	64.4	17.29	4.723		
3,800.0	3,793.7	3,803.5	3,796.2	9.0	9.2	132.85	126.9	56.3	83.5	65.7	17.80	4.689		
3,900.0	3,893.5	3,903.4	3,895.9	9.2	9.4	132.04	133.6	58.2	85.3	67.0	18.31	4.657		
4,000.0	3,993.3	4,003.4	3,995.7	9.5	9.7	131.27	140.3	60.1	87.1	68.3	18.81	4.628		
4,100.0	4,093.0	4,103.4	4,095.4	9.7	9.9	130.52	147.1	62.0	88.9	69.6	19.32	4.601		
4,200.0	4,192.8	4,203.4	4,195.1	10.0	10.2	129.81	153.8	63.8	90.7	70.9	19.83	4.576		
4,300.0	4,292.5	4,303.3	4,294.9	10.2	10.4	129.12	160.5	65.7	92.6	72.3	20.34	4.553		
4,400.0	4,392.3	4,403.3	4,394.6	10.5	10.7	128.46	167.2	67.6	94.5	73.6	20.85	4.532		
4,500.0	4,492.0	4,503.3	4,494.3	10.7	11.0	127.83	173.9	69.5	96.4	75.0	21.36	4.512		
4,600.0	4,591.8	4,603.3	4,594.1	11.0	11.2	127.22	180.6	71.3	98.3	76.4	21.87	4.493		
4,700.0	4,691.6	4,703.2	4,693.8	11.2	11.5	126.63	187.4	73.2	100.2	77.8	22.38	4.476		
4,800.0	4,791.3	4,803.2	4,793.5	11.5	11.7	126.07	194.1	75.1	102.1	79.2	22.89	4.460		
4,900.0	4,891.1	4,903.2	4,893.3	11.8	12.0	125.53	200.8	77.0	104.0	80.6	23.40	4.445		
5,000.0	4,990.8	5,003.2	4,993.0	12.0	12.2	125.00	207.5	78.8	105.9	82.0	23.91	4.431		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2												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
5,100.0	5,090.6	5,103.1	5,092.7	12.3	12.5	124.50	214.2	80.7	107.9	83.5	24.42	4.417	
5,200.0	5,190.3	5,203.1	5,192.5	12.5	12.7	124.01	220.9	82.6	109.8	84.9	24.93	4.405	
5,300.0	5,290.1	5,303.1	5,292.2	12.8	13.0	123.54	227.7	84.5	111.8	86.3	25.44	4.393	
5,400.0	5,389.4	5,402.9	5,391.8	13.1	13.3	124.40	234.4	86.3	115.9	90.1	25.87	4.482	
5,500.0	5,485.1	5,507.0	5,495.1	13.5	13.6	129.32	245.6	89.5	129.7	103.7	25.96	4.996	
5,600.0	5,573.7	5,617.0	5,599.8	14.0	14.0	131.50	277.5	98.4	148.9	122.9	25.96	5.734	
5,700.0	5,651.8	5,730.0	5,697.7	14.8	14.8	130.77	331.4	113.4	171.5	145.3	26.24	6.538	
5,800.0	5,716.6	5,845.2	5,782.6	15.7	15.7	127.92	406.0	134.3	196.7	169.5	27.23	7.223	
5,900.0	5,765.7	5,961.9	5,849.3	16.8	16.9	123.64	498.0	160.0	223.7	194.5	29.27	7.645	
6,000.0	5,797.3	6,079.5	5,893.3	18.1	18.4	118.48	602.8	189.2	252.0	219.7	32.31	7.799	
6,100.0	5,810.2	6,197.7	5,911.8	19.5	20.1	112.84	715.0	220.5	280.8	244.7	36.05	7.789	
6,200.0	5,810.5	6,311.7	5,912.3	20.9	21.7	109.88	825.3	249.1	306.2	266.6	39.62	7.728	
6,300.0	5,810.6	6,428.0	5,912.3	22.5	23.3	108.51	939.5	271.6	324.5	281.6	42.91	7.561	
6,400.0	5,810.6	6,546.7	5,912.3	24.1	25.0	107.66	1,057.1	287.3	337.1	290.8	46.28	7.283	
6,500.0	5,810.6	6,666.9	5,912.3	25.7	26.8	107.23	1,177.0	295.7	343.7	294.0	49.71	6.915	
6,600.0	5,810.6	6,779.6	5,912.3	27.4	28.6	107.16	1,289.7	297.1	344.9	291.8	53.04	6.502	
6,700.0	5,810.6	6,879.6	5,912.3	29.1	30.2	107.15	1,389.7	297.1	344.9	288.6	56.26	6.130	
6,800.0	5,810.6	6,979.6	5,912.3	30.8	31.8	107.15	1,489.7	297.1	344.9	285.3	59.54	5.792	
6,900.0	5,810.6	7,079.6	5,912.3	32.6	33.5	107.15	1,589.7	297.1	344.9	282.0	62.87	5.486	
7,000.0	5,810.6	7,179.6	5,912.3	34.3	35.2	107.15	1,689.7	297.1	344.9	278.6	66.23	5.207	
7,100.0	5,810.6	7,279.6	5,912.3	36.1	36.9	107.14	1,789.7	297.1	344.9	275.2	69.63	4.953	
7,200.0	5,810.6	7,379.6	5,912.3	37.9	38.7	107.14	1,889.7	297.1	344.9	271.8	73.06	4.720	
7,300.0	5,810.6	7,479.6	5,912.3	39.7	40.4	107.14	1,989.7	297.1	344.9	268.3	76.51	4.507	
7,400.0	5,810.6	7,579.6	5,912.3	41.5	42.2	107.14	2,089.7	297.1	344.8	264.9	79.99	4.311	
7,500.0	5,810.6	7,679.6	5,912.3	43.4	44.0	107.14	2,189.7	297.1	344.8	261.4	83.48	4.131	
7,600.0	5,810.7	7,779.6	5,912.2	45.2	45.8	107.13	2,289.7	297.1	344.8	257.9	86.99	3.964	
7,700.0	5,810.7	7,879.6	5,912.2	47.1	47.6	107.13	2,389.7	297.1	344.8	254.3	90.52	3.810	
7,800.0	5,810.7	7,979.6	5,912.2	48.9	49.4	107.13	2,489.7	297.2	344.8	250.8	94.06	3.666	
7,900.0	5,810.7	8,079.6	5,912.2	50.8	51.3	107.13	2,589.7	297.2	344.8	247.2	97.61	3.533	
8,000.0	5,810.7	8,179.6	5,912.2	52.6	53.1	107.13	2,689.7	297.2	344.8	243.7	101.17	3.408	
8,100.0	5,810.7	8,279.6	5,912.2	54.5	54.9	107.12	2,789.7	297.2	344.8	240.1	104.74	3.292	
8,200.0	5,810.7	8,379.6	5,912.2	56.4	56.8	107.12	2,889.7	297.2	344.8	236.5	108.32	3.183	
8,300.0	5,810.7	8,479.6	5,912.2	58.2	58.6	107.12	2,989.7	297.2	344.8	232.9	111.91	3.081	
8,400.0	5,810.7	8,579.6	5,912.2	60.1	60.5	107.12	3,089.7	297.2	344.8	229.3	115.50	2.985	
8,500.0	5,810.7	8,679.6	5,912.2	62.0	62.3	107.12	3,189.7	297.2	344.8	225.7	119.10	2.895	
8,600.0	5,810.7	8,779.6	5,912.2	63.9	64.2	107.11	3,289.7	297.2	344.8	222.1	122.71	2.810	
8,700.0	5,810.7	8,879.6	5,912.2	65.7	66.1	107.11	3,389.7	297.2	344.8	218.5	126.32	2.730	
8,800.0	5,810.7	8,979.6	5,912.2	67.6	67.9	107.11	3,489.7	297.2	344.8	214.9	129.94	2.654	
8,900.0	5,810.8	9,079.6	5,912.2	69.5	69.8	107.11	3,589.7	297.2	344.8	211.2	133.56	2.582	
9,000.0	5,810.8	9,179.6	5,912.2	71.4	71.7	107.11	3,689.7	297.2	344.8	207.6	137.19	2.513	
9,100.0	5,810.8	9,279.6	5,912.2	73.3	73.5	107.10	3,789.7	297.2	344.8	204.0	140.82	2.448	
9,200.0	5,810.8	9,379.6	5,912.2	75.2	75.4	107.10	3,889.7	297.2	344.8	200.3	144.45	2.387	
9,300.0	5,810.8	9,479.6	5,912.2	77.1	77.3	107.10	3,989.7	297.2	344.8	196.7	148.09	2.328	
9,400.0	5,810.8	9,579.6	5,912.2	79.0	79.2	107.10	4,089.7	297.2	344.8	193.1	151.73	2.272	
9,500.0	5,810.8	9,679.6	5,912.1	80.9	81.1	107.09	4,189.7	297.2	344.8	189.4	155.37	2.219	
9,600.0	5,810.8	9,779.6	5,912.1	82.8	82.9	107.09	4,289.7	297.2	344.8	185.8	159.02	2.168	
9,700.0	5,810.8	9,879.6	5,912.1	84.7	84.8	107.09	4,389.7	297.2	344.8	182.1	162.67	2.120	
9,800.0	5,810.8	9,979.6	5,912.1	86.6	86.7	107.09	4,489.7	297.2	344.8	178.5	166.32	2.073	
9,900.0	5,810.8	10,079.6	5,912.1	88.5	88.6	107.09	4,589.7	297.2	344.8	174.8	169.97	2.028	
10,000.0	5,810.8	10,179.6	5,912.1	90.4	90.5	107.08	4,689.7	297.2	344.8	171.1	173.62	1.986	
10,100.0	5,810.8	10,279.6	5,912.1	92.3	92.4	107.08	4,789.7	297.2	344.8	167.5	177.28	1.945	
10,200.0	5,810.8	10,379.6	5,912.1	94.2	94.3	107.08	4,889.7	297.2	344.8	163.8	180.94	1.905	

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2													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
10,300.0	5,810.9	10,479.6	5,912.1	96.1	96.2	107.08	4,989.7	297.2	344.8	160.2	184.60	1.868	
10,400.0	5,810.9	10,579.6	5,912.1	98.0	98.1	107.08	5,089.7	297.2	344.8	156.5	188.26	1.831	
10,500.0	5,810.9	10,679.6	5,912.1	99.9	100.0	107.07	5,189.7	297.2	344.8	152.8	191.93	1.796	
10,600.0	5,810.9	10,779.6	5,912.1	101.8	101.9	107.07	5,289.7	297.3	344.8	149.2	195.59	1.763	
10,700.0	5,810.9	10,879.6	5,912.1	103.7	103.8	107.07	5,389.7	297.3	344.7	145.5	199.26	1.730	
10,800.0	5,810.9	10,979.6	5,912.1	105.6	105.7	107.07	5,489.7	297.3	344.7	141.8	202.92	1.699	
10,900.0	5,810.9	11,079.6	5,912.1	107.5	107.6	107.07	5,589.7	297.3	344.7	138.1	206.59	1.669	
11,000.0	5,810.9	11,179.6	5,912.1	109.4	109.5	107.06	5,689.7	297.3	344.7	134.5	210.26	1.640	
11,100.0	5,810.9	11,279.6	5,912.1	111.3	111.4	107.06	5,789.7	297.3	344.7	130.8	213.93	1.611	
11,200.0	5,810.9	11,379.6	5,912.1	113.2	113.3	107.06	5,889.7	297.3	344.7	127.1	217.61	1.584	
11,300.0	5,810.9	11,479.6	5,912.0	115.1	115.2	107.06	5,989.7	297.3	344.7	123.4	221.28	1.558	
11,400.0	5,810.9	11,579.6	5,912.0	117.1	117.1	107.05	6,089.7	297.3	344.7	119.8	224.95	1.532	
11,500.0	5,810.9	11,679.6	5,912.0	119.0	119.0	107.05	6,189.7	297.3	344.7	116.1	228.63	1.508	
11,600.0	5,811.0	11,779.6	5,912.0	120.9	120.9	107.05	6,289.7	297.3	344.7	112.4	232.30	1.484	Level 3
11,700.0	5,811.0	11,879.6	5,912.0	122.8	122.8	107.05	6,389.7	297.3	344.7	108.7	235.98	1.461	Level 3
11,800.0	5,811.0	11,979.6	5,912.0	124.7	124.7	107.05	6,489.7	297.3	344.7	105.1	239.66	1.438	Level 3
11,900.0	5,811.0	12,079.6	5,912.0	126.6	126.6	107.04	6,589.7	297.3	344.7	101.4	243.34	1.417	Level 3
12,000.0	5,811.0	12,179.6	5,912.0	128.5	128.5	107.04	6,689.7	297.3	344.7	97.7	247.02	1.395	Level 3
12,100.0	5,811.0	12,279.6	5,912.0	130.4	130.4	107.04	6,789.7	297.3	344.7	94.0	250.70	1.375	Level 3
12,200.0	5,811.0	12,379.6	5,912.0	132.3	132.3	107.04	6,889.7	297.3	344.7	90.3	254.38	1.355	Level 3
12,208.6	5,811.0	12,388.3	5,912.0	132.5	132.5	107.04	6,898.3	297.3	344.7	90.0	254.70	1.353	Level 3, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													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	89.99	0.0	98.4	98.4					
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	98.4	98.4	98.2	0.19	525.982		
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	98.4	98.4	97.7	0.64	154.526		
300.0	300.0	300.0	300.0	0.5	0.5	89.99	0.0	98.4	98.4	97.3	1.09	90.567		
400.0	400.0	400.0	400.0	0.8	0.8	89.99	0.0	98.4	98.4	96.8	1.54	64.054		
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	98.4	98.4	96.4	1.99	49.549		
600.0	600.0	600.0	600.0	1.2	1.2	89.99	0.0	98.4	98.4	95.9	2.43	40.401		
700.0	700.0	700.0	700.0	1.4	1.4	89.99	0.0	98.4	98.4	95.5	2.88	34.104		
800.0	800.0	800.0	800.0	1.7	1.7	89.99	0.0	98.4	98.4	95.0	3.33	29.505		
900.0	900.0	900.0	900.0	1.9	1.9	89.99	0.0	98.4	98.4	94.6	3.78	25.999		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.99	0.0	98.4	98.4	94.1	4.23	23.238		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	89.99	0.0	98.4	98.4	93.7	4.68	21.007 CC		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	93.20	0.0	98.4	98.4	93.3	5.13	19.187 ES		
1,300.0	1,299.8	1,298.6	1,298.5	2.8	2.8	95.26	1.6	99.1	99.5	93.9	5.57	17.854		
1,400.0	1,399.6	1,397.2	1,397.1	3.0	3.0	96.46	6.2	101.3	102.1	96.1	6.02	16.966		
1,500.0	1,499.4	1,497.1	1,496.7	3.2	3.2	96.69	12.4	104.3	105.4	99.0	6.48	16.279		
1,600.0	1,599.1	1,597.1	1,596.4	3.5	3.5	96.91	18.7	107.3	108.7	101.8	6.94	15.668		
1,700.0	1,698.9	1,697.0	1,696.1	3.7	3.7	97.11	25.0	110.2	112.0	104.6	7.41	15.121		
1,800.0	1,798.6	1,797.0	1,795.8	4.0	3.9	97.30	31.3	113.2	115.4	107.5	7.88	14.630		
1,900.0	1,898.4	1,896.9	1,895.5	4.2	4.2	97.49	37.6	116.2	118.7	110.3	8.36	14.188		
2,000.0	1,998.1	1,996.9	1,995.2	4.4	4.4	97.66	43.9	119.2	122.0	113.1	8.85	13.789		
2,100.0	2,097.9	2,096.8	2,094.9	4.7	4.7	97.82	50.2	122.2	125.3	115.9	9.33	13.427		
2,200.0	2,197.6	2,196.7	2,194.6	4.9	4.9	97.97	56.5	125.2	128.6	118.8	9.82	13.098		
2,300.0	2,297.4	2,296.7	2,294.3	5.2	5.1	98.12	62.8	128.2	131.9	121.6	10.31	12.797		
2,400.0	2,397.2	2,396.6	2,394.0	5.4	5.4	98.26	69.1	131.2	135.2	124.4	10.80	12.521		
2,500.0	2,496.9	2,496.6	2,493.7	5.7	5.6	98.39	75.4	134.2	138.5	127.2	11.29	12.268		
2,600.0	2,596.7	2,596.5	2,593.4	5.9	5.9	98.52	81.7	137.2	141.8	130.0	11.79	12.035		
2,700.0	2,696.4	2,696.5	2,693.1	6.2	6.1	98.64	88.0	140.1	145.1	132.9	12.28	11.819		
2,800.0	2,796.2	2,796.4	2,792.8	6.4	6.4	98.75	94.3	143.1	148.5	135.7	12.78	11.619		
2,900.0	2,895.9	2,896.4	2,892.6	6.7	6.6	98.86	100.6	146.1	151.8	138.5	13.28	11.433		
3,000.0	2,995.7	2,996.3	2,992.3	6.9	6.9	98.97	106.9	149.1	155.1	141.3	13.77	11.260		
3,100.0	3,095.5	3,096.2	3,092.0	7.2	7.1	99.07	113.2	152.1	158.4	144.1	14.27	11.098		
3,200.0	3,195.2	3,196.2	3,191.7	7.4	7.4	99.16	119.5	155.1	161.7	147.0	14.77	10.947		
3,300.0	3,295.0	3,296.1	3,291.4	7.7	7.6	99.26	125.8	158.1	165.0	149.8	15.27	10.806		
3,400.0	3,394.7	3,396.1	3,391.1	7.9	7.9	99.34	132.1	161.1	168.4	152.6	15.77	10.673		
3,500.0	3,494.5	3,496.0	3,490.8	8.2	8.1	99.43	138.4	164.1	171.7	155.4	16.28	10.547		
3,600.0	3,594.2	3,596.0	3,590.5	8.5	8.4	99.51	144.7	167.1	175.0	158.2	16.78	10.430		
3,700.0	3,694.0	3,695.9	3,690.2	8.7	8.6	99.59	151.0	170.1	178.3	161.0	17.28	10.318		
3,800.0	3,793.7	3,795.9	3,789.9	9.0	8.9	99.67	157.3	173.0	181.6	163.8	17.78	10.213		
3,900.0	3,893.5	3,895.8	3,889.6	9.2	9.2	99.74	163.6	176.0	184.9	166.7	18.29	10.113		
4,000.0	3,993.3	3,995.7	3,989.3	9.5	9.4	99.81	169.9	179.0	188.3	169.5	18.79	10.019		
4,100.0	4,093.0	4,095.7	4,089.0	9.7	9.7	99.88	176.2	182.0	191.6	172.3	19.30	9.929		
4,200.0	4,192.8	4,195.6	4,188.7	10.0	9.9	99.95	182.5	185.0	194.9	175.1	19.80	9.844		
4,300.0	4,292.5	4,295.6	4,288.4	10.2	10.2	100.01	188.8	188.0	198.2	177.9	20.30	9.763		
4,400.0	4,392.3	4,395.5	4,388.1	10.5	10.4	100.07	195.1	191.0	201.5	180.7	20.81	9.686		
4,500.0	4,492.0	4,495.5	4,487.8	10.7	10.7	100.13	201.4	194.0	204.9	183.6	21.31	9.612		
4,600.0	4,591.8	4,595.4	4,587.5	11.0	10.9	100.19	207.7	197.0	208.2	186.4	21.82	9.542		
4,700.0	4,691.6	4,695.4	4,687.2	11.2	11.2	100.25	214.0	200.0	211.5	189.2	22.32	9.474		
4,800.0	4,791.3	4,795.3	4,786.9	11.5	11.4	100.30	220.3	202.9	214.8	192.0	22.83	9.410		
4,900.0	4,891.1	4,895.3	4,886.6	11.8	11.7	100.36	226.6	205.9	218.2	194.8	23.34	9.348		
5,000.0	4,990.8	4,995.2	4,986.3	12.0	11.9	100.41	232.9	208.9	221.5	197.6	23.84	9.289		
5,100.0	5,090.6	5,095.1	5,086.0	12.3	12.2	100.46	239.2	211.9	224.8	200.4	24.35	9.233		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													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	5,195.1	5,185.7	12.5	12.5	100.50	245.5	214.9	228.1	203.3	24.85	9.178		
5,300.0	5,290.1	5,295.0	5,285.4	12.8	12.7	100.55	251.8	217.9	231.4	206.1	25.36	9.126		
5,400.0	5,389.4	5,388.1	5,377.9	13.1	13.0	100.42	260.0	221.8	236.3	210.5	25.88	9.131		
5,500.0	5,485.1	5,475.8	5,462.7	13.5	13.3	99.89	279.9	231.2	248.9	222.3	26.58	9.364		
5,600.0	5,573.7	5,562.3	5,541.6	14.0	13.8	98.96	311.8	246.4	269.3	241.7	27.51	9.788		
5,700.0	5,651.8	5,650.0	5,614.4	14.8	14.3	97.65	355.7	267.2	296.7	268.0	28.73	10.327		
5,800.0	5,716.6	5,731.0	5,673.6	15.7	15.0	95.79	405.5	290.9	330.2	299.9	30.23	10.922		
5,900.0	5,765.7	5,813.5	5,724.4	16.8	15.8	93.60	464.2	318.7	368.6	336.5	32.04	11.502		
6,000.0	5,797.3	5,895.5	5,764.1	18.1	16.7	91.11	528.9	349.5	410.7	376.6	34.12	12.038		
6,100.0	5,810.2	5,978.1	5,792.2	19.5	17.8	88.45	599.0	382.8	455.4	419.0	36.41	12.506		
6,200.0	5,810.5	6,064.4	5,808.1	20.9	19.0	89.69	675.6	419.1	499.8	460.8	38.97	12.825		
6,300.0	5,810.6	6,169.2	5,810.8	22.5	20.5	90.03	770.4	463.4	542.2	500.3	41.81	12.966		
6,400.0	5,810.6	6,300.5	5,810.8	24.1	22.3	90.03	892.3	512.4	579.5	534.4	45.05	12.862		
6,500.0	5,810.6	6,438.8	5,810.8	25.7	24.3	90.02	1,023.9	554.7	610.1	561.5	48.58	12.559		
6,600.0	5,810.6	6,583.0	5,810.8	27.4	26.5	90.02	1,164.0	588.6	633.7	581.3	52.35	12.103		
6,700.0	5,810.6	6,731.7	5,810.8	29.1	28.8	90.02	1,310.7	612.4	649.7	593.3	56.34	11.531		
6,800.0	5,810.6	6,883.2	5,810.8	30.8	31.1	90.02	1,461.7	624.9	657.9	597.4	60.48	10.877		
6,900.0	5,810.6	7,011.2	5,810.8	32.6	33.1	90.02	1,589.7	626.6	659.0	594.7	64.31	10.247		
7,000.0	5,810.6	7,111.2	5,810.8	34.3	34.7	90.02	1,689.7	626.6	659.0	591.3	67.73	9.731		
7,100.0	5,810.6	7,211.2	5,810.8	36.1	36.3	90.02	1,789.7	626.6	659.0	587.8	71.18	9.259		
7,200.0	5,810.6	7,311.2	5,810.8	37.9	38.0	90.02	1,889.7	626.6	659.0	584.4	74.67	8.825		
7,300.0	5,810.6	7,411.2	5,810.8	39.7	39.6	90.02	1,989.7	626.6	659.0	580.8	78.20	8.428		
7,400.0	5,810.6	7,511.2	5,810.8	41.5	41.3	90.02	2,089.7	626.6	659.0	577.3	81.75	8.061		
7,500.0	5,810.6	7,611.2	5,810.8	43.4	43.0	90.02	2,189.7	626.6	659.0	573.7	85.33	7.723		
7,600.0	5,810.7	7,711.2	5,810.8	45.2	44.7	90.02	2,289.7	626.6	659.0	570.1	88.94	7.410		
7,700.0	5,810.7	7,811.2	5,810.8	47.1	46.5	90.02	2,389.7	626.7	659.0	566.5	92.56	7.120		
7,800.0	5,810.7	7,911.2	5,810.8	48.9	48.2	90.01	2,489.7	626.7	659.0	562.8	96.20	6.851		
7,900.0	5,810.7	8,011.2	5,810.8	50.8	50.0	90.01	2,589.7	626.7	659.0	559.2	99.85	6.600		
8,000.0	5,810.7	8,111.2	5,810.8	52.6	51.8	90.01	2,689.7	626.7	659.0	555.5	103.52	6.366		
8,100.0	5,810.7	8,211.2	5,810.8	54.5	53.5	90.01	2,789.7	626.7	659.0	551.9	107.20	6.148		
8,200.0	5,810.7	8,311.2	5,810.9	56.4	55.3	90.01	2,889.7	626.7	659.1	548.2	110.89	5.943		
8,300.0	5,810.7	8,411.2	5,810.9	58.2	57.1	90.01	2,989.7	626.7	659.1	544.5	114.59	5.751		
8,400.0	5,810.7	8,511.2	5,810.9	60.1	59.0	90.01	3,089.7	626.7	659.1	540.8	118.30	5.571		
8,500.0	5,810.7	8,611.2	5,810.9	62.0	60.8	90.01	3,189.7	626.7	659.1	537.0	122.02	5.401		
8,600.0	5,810.7	8,711.2	5,810.9	63.9	62.6	90.01	3,289.7	626.7	659.1	533.3	125.75	5.241		
8,700.0	5,810.7	8,811.2	5,810.9	65.7	64.4	90.01	3,389.7	626.7	659.1	529.6	129.48	5.090		
8,800.0	5,810.7	8,911.2	5,810.9	67.6	66.3	90.01	3,489.7	626.7	659.1	525.8	133.22	4.947		
8,900.0	5,810.8	9,011.2	5,810.9	69.5	68.1	90.01	3,589.7	626.7	659.1	522.1	136.96	4.812		
9,000.0	5,810.8	9,111.2	5,810.9	71.4	69.9	90.01	3,689.7	626.7	659.1	518.4	140.71	4.684		
9,100.0	5,810.8	9,211.2	5,810.9	73.3	71.8	90.01	3,789.7	626.7	659.1	514.6	144.47	4.562		
9,200.0	5,810.8	9,311.2	5,810.9	75.2	73.6	90.01	3,889.7	626.7	659.1	510.8	148.23	4.446		
9,300.0	5,810.8	9,411.2	5,810.9	77.1	75.5	90.01	3,989.7	626.7	659.1	507.1	151.99	4.336		
9,400.0	5,810.8	9,511.2	5,810.9	79.0	77.4	90.01	4,089.7	626.7	659.1	503.3	155.76	4.231		
9,500.0	5,810.8	9,611.2	5,810.9	80.9	79.2	90.01	4,189.7	626.7	659.1	499.5	159.53	4.131		
9,600.0	5,810.8	9,711.2	5,810.9	82.8	81.1	90.01	4,289.7	626.7	659.1	495.8	163.31	4.036		
9,700.0	5,810.8	9,811.2	5,810.9	84.7	82.9	90.01	4,389.7	626.8	659.1	492.0	167.09	3.945		
9,800.0	5,810.8	9,911.2	5,810.9	86.6	84.8	90.01	4,489.7	626.8	659.1	488.2	170.87	3.857		
9,900.0	5,810.8	10,011.2	5,810.9	88.5	86.7	90.01	4,589.7	626.8	659.1	484.4	174.65	3.774		
10,000.0	5,810.8	10,111.2	5,810.9	90.4	88.6	90.01	4,689.7	626.8	659.1	480.7	178.44	3.694		
10,100.0	5,810.8	10,211.2	5,810.9	92.3	90.4	90.01	4,789.7	626.8	659.1	476.9	182.23	3.617		
10,200.0	5,810.8	10,311.2	5,810.9	94.2	92.3	90.01	4,889.7	626.8	659.1	473.1	186.02	3.543		
10,300.0	5,810.9	10,411.2	5,810.9	96.1	94.2	90.01	4,989.7	626.8	659.1	469.3	189.81	3.472		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2												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	
10,400.0	5,810.9	10,511.2	5,810.9	98.0	96.1	90.01	5,089.7	626.8	659.1	465.5	193.60	3.404	
10,500.0	5,810.9	10,611.2	5,810.9	99.9	98.0	90.01	5,189.7	626.8	659.1	461.7	197.40	3.339	
10,600.0	5,810.9	10,711.2	5,810.9	101.8	99.8	90.01	5,289.7	626.8	659.1	457.9	201.20	3.276	
10,700.0	5,810.9	10,811.2	5,810.9	103.7	101.7	90.01	5,389.7	626.8	659.1	454.1	205.00	3.215	
10,800.0	5,810.9	10,911.2	5,810.9	105.6	103.6	90.00	5,489.7	626.8	659.1	450.3	208.80	3.157	
10,900.0	5,810.9	11,011.2	5,811.0	107.5	105.5	90.00	5,589.7	626.8	659.1	446.5	212.61	3.100	
11,000.0	5,810.9	11,111.2	5,811.0	109.4	107.4	90.00	5,689.7	626.8	659.1	442.7	216.41	3.046	
11,100.0	5,810.9	11,211.2	5,811.0	111.3	109.3	90.00	5,789.7	626.8	659.1	438.9	220.22	2.993	
11,200.0	5,810.9	11,311.2	5,811.0	113.2	111.2	90.00	5,889.7	626.8	659.1	435.1	224.02	2.942	
11,300.0	5,810.9	11,411.2	5,811.0	115.1	113.1	90.00	5,989.7	626.8	659.1	431.3	227.83	2.893	
11,400.0	5,810.9	11,511.2	5,811.0	117.1	115.0	90.00	6,089.7	626.8	659.1	427.5	231.64	2.845	
11,500.0	5,810.9	11,611.2	5,811.0	119.0	116.9	90.00	6,189.7	626.8	659.1	423.7	235.45	2.799	
11,600.0	5,811.0	11,711.2	5,811.0	120.9	118.8	90.00	6,289.7	626.8	659.1	419.9	239.27	2.755	
11,700.0	5,811.0	11,811.2	5,811.0	122.8	120.7	90.00	6,389.7	626.9	659.1	416.1	243.08	2.712	
11,800.0	5,811.0	11,911.2	5,811.0	124.7	122.5	90.00	6,489.7	626.9	659.1	412.2	246.89	2.670	
11,900.0	5,811.0	12,011.2	5,811.0	126.6	124.4	90.00	6,589.7	626.9	659.1	408.4	250.71	2.629	
12,000.0	5,811.0	12,111.2	5,811.0	128.5	126.3	90.00	6,689.7	626.9	659.1	404.6	254.52	2.590	
12,100.0	5,811.0	12,211.2	5,811.0	130.4	128.2	90.00	6,789.7	626.9	659.1	400.8	258.34	2.551	
12,200.0	5,811.0	12,311.2	5,811.0	132.3	130.1	90.00	6,889.7	626.9	659.1	397.0	262.16	2.514	
12,208.6	5,811.0	12,319.8	5,811.0	132.5	130.3	90.00	6,898.3	626.9	659.1	396.7	262.49	2.511 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2													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	138.91	-74.9	65.3	99.4					
100.0	100.0	100.0	100.0	0.1	0.1	138.91	-74.9	65.3	99.4	99.2	0.19	531.450		
200.0	200.0	200.0	200.0	0.3	0.3	138.91	-74.9	65.3	99.4	98.7	0.64	156.133		
300.0	300.0	300.0	300.0	0.5	0.5	138.91	-74.9	65.3	99.4	98.3	1.09	91.508		
400.0	400.0	400.0	400.0	0.8	0.8	138.91	-74.9	65.3	99.4	97.8	1.54	64.720		
500.0	500.0	500.0	500.0	1.0	1.0	138.91	-74.9	65.3	99.4	97.4	1.99	50.064		
600.0	600.0	600.0	600.0	1.2	1.2	138.91	-74.9	65.3	99.4	96.9	2.43	40.821		
700.0	700.0	700.0	700.0	1.4	1.4	138.91	-74.9	65.3	99.4	96.5	2.88	34.458		
800.0	800.0	800.0	800.0	1.7	1.7	138.91	-74.9	65.3	99.4	96.1	3.33	29.812		
900.0	900.0	900.7	900.7	1.9	1.9	137.91	-73.5	66.4	99.0	95.3	3.78	26.188		
1,000.0	1,000.0	1,001.1	1,000.9	2.1	2.1	134.88	-69.3	69.6	98.2	94.0	4.23	23.213		
1,100.0	1,100.0	1,100.8	1,100.4	2.3	2.3	130.82	-63.7	73.8	97.5	92.8	4.68	20.819		
1,115.9	1,115.9	1,116.7	1,116.2	2.4	2.4	132.39	-62.9	74.4	97.5	92.7	4.75	20.497 CC, ES		
1,200.0	1,200.0	1,200.7	1,200.0	2.6	2.6	129.70	-58.2	78.0	98.4	93.3	5.14	19.146		
1,300.0	1,299.8	1,300.6	1,299.7	2.8	2.8	127.99	-52.6	82.2	101.7	96.1	5.60	18.171		
1,400.0	1,399.6	1,400.5	1,399.3	3.0	3.1	127.19	-47.1	86.4	106.2	100.1	6.07	17.509		
1,500.0	1,499.4	1,500.4	1,499.0	3.2	3.3	126.46	-41.5	90.6	110.7	104.2	6.54	16.931		
1,600.0	1,599.1	1,600.2	1,598.6	3.5	3.5	125.78	-36.0	94.8	115.2	108.2	7.01	16.422		
1,700.0	1,698.9	1,700.1	1,698.3	3.7	3.8	125.15	-30.4	99.0	119.7	112.2	7.49	15.972		
1,800.0	1,798.6	1,800.0	1,797.9	4.0	4.0	124.57	-24.8	103.2	124.2	116.3	7.98	15.572		
1,900.0	1,898.4	1,899.9	1,897.6	4.2	4.3	124.04	-19.3	107.4	128.8	120.3	8.46	15.215		
2,000.0	1,998.1	1,999.8	1,997.2	4.4	4.5	123.53	-13.7	111.6	133.3	124.4	8.95	14.894		
2,100.0	2,097.9	2,099.7	2,096.9	4.7	4.8	123.06	-8.2	115.8	137.9	128.4	9.44	14.605		
2,200.0	2,197.6	2,199.6	2,196.5	4.9	5.0	122.63	-2.6	120.0	142.5	132.5	9.93	14.342		
2,300.0	2,297.4	2,299.5	2,296.1	5.2	5.3	122.21	2.9	124.2	147.0	136.6	10.43	14.103		
2,400.0	2,397.2	2,399.4	2,395.8	5.4	5.5	121.83	8.5	128.5	151.6	140.7	10.92	13.885		
2,500.0	2,496.9	2,499.3	2,495.4	5.7	5.8	121.46	14.0	132.7	156.2	144.8	11.41	13.685		
2,600.0	2,596.7	2,599.1	2,595.1	5.9	6.1	121.12	19.6	136.9	160.8	148.9	11.91	13.501		
2,700.0	2,696.4	2,699.0	2,694.7	6.2	6.3	120.80	25.2	141.1	165.4	153.0	12.41	13.331		
2,800.0	2,796.2	2,798.9	2,794.4	6.4	6.6	120.49	30.7	145.3	170.0	157.1	12.90	13.174		
2,900.0	2,895.9	2,898.8	2,894.0	6.7	6.8	120.20	36.3	149.5	174.6	161.2	13.40	13.029		
3,000.0	2,995.7	2,998.7	2,993.7	6.9	7.1	119.92	41.8	153.7	179.2	165.3	13.90	12.893		
3,100.0	3,095.5	3,098.6	3,093.3	7.2	7.3	119.66	47.4	157.9	183.9	169.5	14.40	12.767		
3,200.0	3,195.2	3,198.5	3,193.0	7.4	7.6	119.41	52.9	162.1	188.5	173.6	14.90	12.649		
3,300.0	3,295.0	3,298.4	3,292.6	7.7	7.8	119.18	58.5	166.3	193.1	177.7	15.40	12.539		
3,400.0	3,394.7	3,398.3	3,392.3	7.9	8.1	118.95	64.0	170.5	197.7	181.8	15.90	12.435		
3,500.0	3,494.5	3,498.1	3,491.9	8.2	8.3	118.74	69.6	174.7	202.4	186.0	16.40	12.338		
3,600.0	3,594.2	3,598.0	3,591.5	8.5	8.6	118.53	75.1	178.9	207.0	190.1	16.90	12.246		
3,700.0	3,694.0	3,697.9	3,691.2	8.7	8.8	118.33	80.7	183.1	211.6	194.2	17.41	12.159		
3,800.0	3,793.7	3,797.8	3,790.8	9.0	9.1	118.14	86.3	187.3	216.3	198.4	17.91	12.078		
3,900.0	3,893.5	3,897.7	3,890.5	9.2	9.4	117.96	91.8	191.5	220.9	202.5	18.41	12.001		
4,000.0	3,993.3	3,997.6	3,990.1	9.5	9.6	117.79	97.4	195.7	225.6	206.7	18.91	11.927		
4,100.0	4,093.0	4,097.5	4,089.8	9.7	9.9	117.63	102.9	200.0	230.2	210.8	19.42	11.858		
4,200.0	4,192.8	4,197.4	4,189.4	10.0	10.1	117.47	108.5	204.2	234.9	215.0	19.92	11.792		
4,300.0	4,292.5	4,297.3	4,289.1	10.2	10.4	117.31	114.0	208.4	239.5	219.1	20.42	11.729		
4,400.0	4,392.3	4,397.2	4,388.7	10.5	10.6	117.17	119.6	212.6	244.2	223.3	20.92	11.670		
4,500.0	4,492.0	4,497.0	4,488.4	10.7	10.9	117.02	125.1	216.8	248.8	227.4	21.43	11.613		
4,600.0	4,591.8	4,596.9	4,588.0	11.0	11.1	116.89	130.7	221.0	253.5	231.6	21.93	11.558		
4,700.0	4,691.6	4,696.8	4,687.7	11.2	11.4	116.75	136.3	225.2	258.1	235.7	22.43	11.506		
4,800.0	4,791.3	4,796.7	4,787.3	11.5	11.7	116.63	141.8	229.4	262.8	239.9	22.94	11.457		
4,900.0	4,891.1	4,896.6	4,887.0	11.8	11.9	116.51	147.4	233.6	267.5	244.0	23.44	11.409		
5,000.0	4,990.8	4,996.5	4,986.6	12.0	12.2	116.39	152.9	237.8	272.1	248.2	23.95	11.364		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2													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		
5,100.0	5,090.6	5,096.4	5,086.2	12.3	12.4	116.27	158.5	242.0	276.8	252.3	24.45	11.320		
5,200.0	5,190.3	5,196.3	5,185.9	12.5	12.7	116.16	164.0	246.2	281.4	256.5	24.95	11.278		
5,300.0	5,290.1	5,296.2	5,285.5	12.8	12.9	116.05	169.6	250.4	286.1	260.6	25.46	11.238 SF		
5,400.0	5,389.4	5,395.8	5,385.0	13.1	13.2	116.18	175.1	254.6	292.5	266.6	25.92	11.286		
5,500.0	5,485.1	5,488.0	5,476.7	13.5	13.5	117.50	182.2	259.9	307.8	281.5	26.28	11.709		
5,600.0	5,573.7	5,575.2	5,561.1	14.0	13.8	117.57	199.3	272.9	334.9	308.2	26.70	12.544		
5,700.0	5,651.8	5,660.9	5,639.4	14.8	14.3	116.13	226.9	293.8	373.1	345.7	27.36	13.635		
5,800.0	5,716.6	5,744.3	5,709.2	15.7	14.8	113.27	263.2	321.3	420.5	392.0	28.48	14.764		
5,900.0	5,765.7	5,825.4	5,769.2	16.8	15.5	109.11	306.5	354.1	475.4	445.2	30.18	15.753		
6,000.0	5,797.3	5,904.7	5,819.1	18.1	16.3	103.88	355.6	391.2	536.1	503.7	32.39	16.549		
6,100.0	5,810.2	5,983.5	5,858.9	19.5	17.3	97.91	409.7	432.3	600.6	565.7	34.90	17.210		
6,200.0	5,810.5	6,067.8	5,889.5	20.9	18.4	98.77	472.3	479.6	665.3	628.2	37.11	17.930		
6,300.0	5,810.6	6,162.5	5,908.4	22.5	19.8	99.78	546.1	535.5	727.2	687.8	39.47	18.423		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3													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	-119.53	-74.9	-132.2	151.9					
100.0	100.0	100.0	100.0	0.1	0.1	-119.53	-74.9	-132.2	151.9	151.7	0.19	812.308		
200.0	200.0	200.0	200.0	0.3	0.3	-119.53	-74.9	-132.2	151.9	151.3	0.64	238.651		
300.0	300.0	300.0	300.0	0.5	0.5	-119.53	-74.9	-132.2	151.9	150.8	1.09	139.871		
400.0	400.0	400.0	400.0	0.8	0.8	-119.53	-74.9	-132.2	151.9	150.4	1.54	98.925		
500.0	500.0	500.0	500.0	1.0	1.0	-119.53	-74.9	-132.2	151.9	149.9	1.99	76.523		
600.0	600.0	600.0	600.0	1.2	1.2	-119.53	-74.9	-132.2	151.9	149.5	2.43	62.394		
700.0	700.0	700.0	700.0	1.4	1.4	-119.53	-74.9	-132.2	151.9	149.0	2.88	52.669		
800.0	800.0	800.0	800.0	1.7	1.7	-119.53	-74.9	-132.2	151.9	148.6	3.33	45.567		
900.0	900.0	900.0	900.0	1.9	1.9	-119.53	-74.9	-132.2	151.9	148.1	3.78	40.153		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-119.53	-74.9	-132.2	151.9	147.7	4.23	35.888	CC, ES	
1,100.0	1,100.0	1,095.1	1,095.1	2.3	2.3	-119.70	-76.0	-133.3	153.5	148.9	4.65	33.022		
1,200.0	1,200.0	1,189.9	1,189.8	2.6	2.5	-118.40	-79.4	-136.6	159.1	154.1	5.05	31.507		
1,300.0	1,299.8	1,288.8	1,288.4	2.8	2.7	-120.42	-84.3	-141.3	168.4	163.0	5.46	30.826		
1,400.0	1,399.6	1,387.9	1,387.3	3.0	2.9	-122.85	-89.3	-146.1	178.9	173.0	5.88	30.413		
1,500.0	1,499.4	1,487.1	1,486.3	3.2	3.1	-125.00	-94.3	-151.0	189.7	183.4	6.31	30.064		
1,600.0	1,599.1	1,586.3	1,585.2	3.5	3.3	-126.93	-99.3	-155.8	200.7	194.0	6.74	29.769		
1,700.0	1,698.9	1,685.5	1,684.1	3.7	3.5	-128.65	-104.2	-160.6	211.9	204.8	7.18	29.519		
1,800.0	1,798.6	1,784.6	1,783.1	4.0	3.8	-130.20	-109.2	-165.4	223.3	215.7	7.62	29.306		
1,900.0	1,898.4	1,883.8	1,882.0	4.2	4.0	-131.59	-114.2	-170.2	234.9	226.8	8.06	29.124		
2,000.0	1,998.1	1,983.0	1,980.9	4.4	4.3	-132.86	-119.1	-175.0	246.5	238.0	8.51	28.968		
2,100.0	2,097.9	2,082.2	2,079.9	4.7	4.5	-134.01	-124.1	-179.8	258.3	249.3	8.96	28.834		
2,200.0	2,197.6	2,181.4	2,178.8	4.9	4.7	-135.06	-129.1	-184.6	270.1	260.7	9.41	28.717		
2,300.0	2,297.4	2,280.5	2,277.7	5.2	5.0	-136.03	-134.1	-189.4	282.1	272.2	9.86	28.615		
2,400.0	2,397.2	2,379.7	2,376.7	5.4	5.2	-136.91	-139.0	-194.3	294.1	283.8	10.31	28.525		
2,500.0	2,496.9	2,478.9	2,475.6	5.7	5.5	-137.73	-144.0	-199.1	306.2	295.4	10.76	28.446		
2,600.0	2,596.7	2,578.1	2,574.5	5.9	5.7	-138.48	-149.0	-203.9	318.3	307.1	11.22	28.376		
2,700.0	2,696.4	2,677.2	2,673.5	6.2	6.0	-139.18	-153.9	-208.7	330.5	318.8	11.67	28.314		
2,800.0	2,796.2	2,776.4	2,772.4	6.4	6.2	-139.83	-158.9	-213.5	342.7	330.6	12.13	28.258		
2,900.0	2,895.9	2,875.6	2,871.3	6.7	6.5	-140.43	-163.9	-218.3	355.0	342.4	12.59	28.209		
3,000.0	2,995.7	2,974.8	2,970.3	6.9	6.7	-140.99	-168.9	-223.1	367.3	354.3	13.04	28.164		
3,100.0	3,095.5	3,073.9	3,069.2	7.2	7.0	-141.52	-173.8	-227.9	379.7	366.2	13.50	28.123		
3,200.0	3,195.2	3,173.1	3,168.2	7.4	7.2	-142.01	-178.8	-232.7	392.0	378.1	13.96	28.087		
3,300.0	3,295.0	3,272.3	3,267.1	7.7	7.5	-142.48	-183.8	-237.6	404.4	390.0	14.42	28.053		
3,400.0	3,394.7	3,371.5	3,366.0	7.9	7.8	-142.91	-188.7	-242.4	416.9	402.0	14.88	28.023		
3,500.0	3,494.5	3,470.7	3,465.0	8.2	8.0	-143.32	-193.7	-247.2	429.3	414.0	15.33	27.995		
3,600.0	3,594.2	3,569.8	3,563.9	8.5	8.3	-143.71	-198.7	-252.0	441.8	426.0	15.79	27.970		
3,700.0	3,694.0	3,669.0	3,662.8	8.7	8.5	-144.08	-203.7	-256.8	454.3	438.0	16.25	27.946		
3,800.0	3,793.7	3,768.2	3,761.8	9.0	8.8	-144.42	-208.6	-261.6	466.8	450.0	16.71	27.925		
3,900.0	3,893.5	3,867.4	3,860.7	9.2	9.0	-144.75	-213.6	-266.4	479.3	462.1	17.18	27.905		
4,000.0	3,993.3	3,966.5	3,959.6	9.5	9.3	-145.06	-218.6	-271.2	491.8	474.2	17.64	27.886		
4,100.0	4,093.0	4,065.7	4,058.6	9.7	9.6	-145.36	-223.5	-276.0	504.3	486.3	18.10	27.869		
4,200.0	4,192.8	4,164.9	4,157.5	10.0	9.8	-145.64	-228.5	-280.9	516.9	498.3	18.56	27.853		
4,300.0	4,292.5	4,264.1	4,256.4	10.2	10.1	-145.91	-233.5	-285.7	529.5	510.5	19.02	27.838		
4,400.0	4,392.3	4,363.2	4,355.4	10.5	10.3	-146.17	-238.5	-290.5	542.1	522.6	19.48	27.824		
4,500.0	4,492.0	4,462.4	4,454.3	10.7	10.6	-146.41	-243.4	-295.3	554.6	534.7	19.94	27.811		
4,600.0	4,591.8	4,561.6	4,553.2	11.0	10.8	-146.64	-248.4	-300.1	567.2	546.8	20.41	27.799		
4,700.0	4,691.6	4,660.8	4,652.2	11.2	11.1	-146.87	-253.4	-304.9	579.9	559.0	20.87	27.788		
4,800.0	4,791.3	4,760.0	4,751.1	11.5	11.4	-147.08	-258.3	-309.7	592.5	571.1	21.33	27.777		
4,900.0	4,891.1	4,859.1	4,850.1	11.8	11.6	-147.29	-263.3	-314.5	605.1	583.3	21.79	27.767		
5,000.0	4,990.8	4,958.3	4,949.0	12.0	11.9	-147.48	-268.3	-319.3	617.7	595.5	22.25	27.757		
5,100.0	5,090.6	5,057.5	5,047.9	12.3	12.1	-147.67	-273.3	-324.2	630.4	607.7	22.72	27.749		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3												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
5,200.0	5,190.3	5,156.7	5,146.9	12.5	12.4	-147.85	-278.2	-329.0	643.0	619.8	23.18	27.740	
5,300.0	5,290.1	5,255.8	5,245.8	12.8	12.7	-148.03	-283.2	-333.8	655.7	632.0	23.64	27.732 SF	
5,400.0	5,389.4	5,344.7	5,334.5	13.1	12.9	-147.62	-287.7	-338.1	671.8	647.9	23.84	28.181	
5,500.0	5,485.1	5,385.4	5,374.8	13.5	13.0	-145.75	-291.3	-341.6	707.4	684.0	23.43	30.186	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2													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	-127.07	-74.9	-99.1	124.2					
100.0	100.0	100.0	100.0	0.1	0.1	-127.07	-74.9	-99.1	124.2	124.0	0.19	664.318		
200.0	200.0	200.0	200.0	0.3	0.3	-127.07	-74.9	-99.1	124.2	123.6	0.64	195.167		
300.0	300.0	300.0	300.0	0.5	0.5	-127.07	-74.9	-99.1	124.2	123.1	1.09	114.386		
400.0	400.0	400.0	400.0	0.8	0.8	-127.07	-74.9	-99.1	124.2	122.7	1.54	80.901		
500.0	500.0	500.0	500.0	1.0	1.0	-127.07	-74.9	-99.1	124.2	122.2	1.99	62.581		
600.0	600.0	600.0	600.0	1.2	1.2	-127.07	-74.9	-99.1	124.2	121.8	2.43	51.026		
700.0	700.0	700.0	700.0	1.4	1.4	-127.07	-74.9	-99.1	124.2	121.3	2.88	43.073		
800.0	800.0	800.0	800.0	1.7	1.7	-127.07	-74.9	-99.1	124.2	120.9	3.33	37.265		
900.0	900.0	900.0	900.0	1.9	1.9	-127.07	-74.9	-99.1	124.2	120.4	3.78	32.837		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-127.07	-74.9	-99.1	124.2	120.0	4.23	29.350		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-127.07	-74.9	-99.1	124.2	119.5	4.68	26.532 CC, ES		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-125.50	-74.9	-99.1	125.2	120.1	5.13	24.409		
1,300.0	1,299.8	1,295.7	1,295.7	2.8	2.8	-127.44	-76.2	-100.0	130.0	124.4	5.55	23.436		
1,400.0	1,399.6	1,390.7	1,390.6	3.0	2.9	-130.14	-80.1	-102.8	139.2	133.2	5.95	23.406 SF		
1,500.0	1,499.4	1,489.4	1,489.0	3.2	3.1	-132.72	-85.7	-106.7	150.6	144.3	6.36	23.683		
1,600.0	1,599.1	1,588.5	1,587.9	3.5	3.3	-134.95	-91.4	-110.7	162.4	155.6	6.78	23.953		
1,700.0	1,698.9	1,687.6	1,686.8	3.7	3.5	-136.88	-97.0	-114.6	174.3	167.1	7.20	24.202		
1,800.0	1,798.6	1,786.8	1,785.6	4.0	3.7	-138.56	-102.7	-118.6	186.4	178.8	7.63	24.432		
1,900.0	1,898.4	1,885.9	1,884.5	4.2	4.0	-140.04	-108.4	-122.5	198.6	190.6	8.06	24.643		
2,000.0	1,998.1	1,985.0	1,983.4	4.4	4.2	-141.34	-114.0	-126.5	211.0	202.5	8.50	24.837		
2,100.0	2,097.9	2,084.1	2,082.3	4.7	4.4	-142.50	-119.7	-130.5	223.4	214.5	8.93	25.015		
2,200.0	2,197.6	2,183.3	2,181.2	4.9	4.6	-143.53	-125.4	-134.4	236.0	226.6	9.37	25.179		
2,300.0	2,297.4	2,282.4	2,280.1	5.2	4.9	-144.47	-131.0	-138.4	248.6	238.8	9.81	25.330		
2,400.0	2,397.2	2,381.5	2,379.0	5.4	5.1	-145.31	-136.7	-142.4	261.2	251.0	10.26	25.470		
2,500.0	2,496.9	2,480.6	2,477.8	5.7	5.4	-146.07	-142.4	-146.3	274.0	263.3	10.70	25.599		
2,600.0	2,596.7	2,579.8	2,576.7	5.9	5.6	-146.77	-148.1	-150.3	286.7	275.6	11.15	25.718		
2,700.0	2,696.4	2,678.9	2,675.6	6.2	5.8	-147.40	-153.7	-154.2	299.5	287.9	11.60	25.829		
2,800.0	2,796.2	2,778.0	2,774.5	6.4	6.1	-147.99	-159.4	-158.2	312.3	300.3	12.04	25.932		
2,900.0	2,895.9	2,877.1	2,873.4	6.7	6.3	-148.53	-165.1	-162.2	325.2	312.7	12.49	26.029		
3,000.0	2,995.7	2,976.3	2,972.3	6.9	6.6	-149.02	-170.7	-166.1	338.1	325.1	12.94	26.118		
3,100.0	3,095.5	3,075.4	3,071.1	7.2	6.8	-149.48	-176.4	-170.1	351.0	337.6	13.40	26.202		
3,200.0	3,195.2	3,174.5	3,170.0	7.4	7.1	-149.91	-182.1	-174.0	363.9	350.1	13.85	26.281		
3,300.0	3,295.0	3,273.6	3,268.9	7.7	7.3	-150.31	-187.7	-178.0	376.9	362.6	14.30	26.355		
3,400.0	3,394.7	3,372.8	3,367.8	7.9	7.6	-150.68	-193.4	-182.0	389.8	375.1	14.75	26.424		
3,500.0	3,494.5	3,471.9	3,466.7	8.2	7.8	-151.03	-199.1	-185.9	402.8	387.6	15.21	26.489		
3,600.0	3,594.2	3,571.0	3,565.6	8.5	8.1	-151.36	-204.7	-189.9	415.8	400.1	15.66	26.551		
3,700.0	3,694.0	3,670.1	3,664.4	8.7	8.3	-151.67	-210.4	-193.8	428.8	412.7	16.11	26.609		
3,800.0	3,793.7	3,769.3	3,763.3	9.0	8.6	-151.95	-216.1	-197.8	441.8	425.2	16.57	26.663		
3,900.0	3,893.5	3,868.4	3,862.2	9.2	8.9	-152.23	-221.7	-201.8	454.8	437.8	17.03	26.715		
4,000.0	3,993.3	3,967.5	3,961.1	9.5	9.1	-152.48	-227.4	-205.7	467.9	450.4	17.48	26.764		
4,100.0	4,093.0	4,066.6	4,060.0	9.7	9.4	-152.73	-233.1	-209.7	480.9	463.0	17.94	26.811		
4,200.0	4,192.8	4,165.8	4,158.9	10.0	9.6	-152.96	-238.7	-213.7	494.0	475.6	18.39	26.855		
4,300.0	4,292.5	4,264.9	4,257.8	10.2	9.9	-153.18	-244.4	-217.6	507.0	488.2	18.85	26.898		
4,400.0	4,392.3	4,364.0	4,356.6	10.5	10.1	-153.38	-250.1	-221.6	520.1	500.8	19.31	26.938		
4,500.0	4,492.0	4,463.1	4,455.5	10.7	10.4	-153.58	-255.7	-225.5	533.2	513.4	19.76	26.976		
4,600.0	4,591.8	4,562.3	4,554.4	11.0	10.6	-153.77	-261.4	-229.5	546.2	526.0	20.22	27.013		
4,700.0	4,691.6	4,661.4	4,653.3	11.2	10.9	-153.95	-267.1	-233.5	559.3	538.6	20.68	27.047		
4,800.0	4,791.3	4,760.5	4,752.2	11.5	11.2	-154.12	-272.7	-237.4	572.4	551.3	21.14	27.081		
4,900.0	4,891.1	4,859.6	4,851.1	11.8	11.4	-154.28	-278.4	-241.4	585.5	563.9	21.60	27.113		
5,000.0	4,990.8	4,958.8	4,949.9	12.0	11.7	-154.44	-284.1	-245.3	598.6	576.5	22.05	27.143		
5,100.0	5,090.6	5,057.9	5,048.8	12.3	11.9	-154.59	-289.7	-249.3	611.7	589.2	22.51	27.173		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2												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
5,200.0	5,190.3	5,157.0	5,147.7	12.5	12.2	-154.73	-295.4	-253.3	624.8	601.8	22.97	27.201	
5,300.0	5,290.1	5,256.1	5,246.6	12.8	12.5	-154.87	-301.1	-257.2	637.9	614.5	23.43	27.228	
5,400.0	5,389.4	5,354.6	5,344.8	13.1	12.7	-154.58	-306.7	-261.2	654.5	630.9	23.61	27.724	
5,500.0	5,485.1	5,442.6	5,432.6	13.5	12.9	-153.77	-311.8	-264.7	687.0	663.8	23.13	29.702	
5,600.0	5,573.7	5,478.6	5,468.4	14.0	13.1	-151.29	-315.1	-267.0	738.9	716.7	22.16	33.341	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3													Offset Site Error: 0.0 usft	
Survey Program: 0-ICWSA 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	-138.57	-74.9	-66.1	99.9					
100.0	100.0	100.0	100.0	0.1	0.1	-138.57	-74.9	-66.1	99.9	99.7	0.19	534.029		
200.0	200.0	200.0	200.0	0.3	0.3	-138.57	-74.9	-66.1	99.9	99.2	0.64	156.894		
300.0	300.0	300.0	300.0	0.5	0.5	-138.57	-74.9	-66.1	99.9	98.8	1.09	91.954		
400.0	400.0	400.0	400.0	0.8	0.8	-138.57	-74.9	-66.1	99.9	98.3	1.54	65.035		
500.0	500.0	500.0	500.0	1.0	1.0	-138.57	-74.9	-66.1	99.9	97.9	1.99	50.308	CC, ES	
600.0	600.0	596.7	596.7	1.2	1.2	-138.84	-76.4	-66.7	101.5	99.1	2.40	42.229		
700.0	700.0	693.3	693.1	1.4	1.4	-139.63	-80.8	-68.7	106.3	103.5	2.81	37.810		
800.0	800.0	792.8	792.4	1.7	1.6	-140.63	-87.2	-71.5	113.0	109.8	3.24	34.932		
900.0	900.0	892.5	891.9	1.9	1.8	-141.52	-93.5	-74.4	119.8	116.1	3.66	32.688		
1,000.0	1,000.0	992.3	991.4	2.1	2.0	-142.31	-99.9	-77.2	126.5	122.4	4.10	30.875		
1,100.0	1,100.0	1,092.0	1,090.9	2.3	2.3	-143.03	-106.3	-80.0	133.3	128.8	4.54	29.386		
1,200.0	1,200.0	1,191.7	1,190.3	2.6	2.5	-141.81	-112.6	-82.8	141.5	136.5	4.98	28.428		
1,300.0	1,299.8	1,291.0	1,289.4	2.8	2.8	-143.44	-118.9	-85.6	152.5	147.1	5.42	28.155	SF	
1,400.0	1,399.6	1,390.0	1,388.2	3.0	3.0	-145.31	-125.3	-88.4	165.0	159.2	5.86	28.172		
1,500.0	1,499.4	1,489.1	1,487.0	3.2	3.3	-146.92	-131.6	-91.2	177.7	171.4	6.30	28.197		
1,600.0	1,599.1	1,588.2	1,585.9	3.5	3.5	-148.31	-137.9	-94.0	190.5	183.8	6.75	28.228		
1,700.0	1,698.9	1,687.3	1,684.7	3.7	3.8	-149.53	-144.2	-96.8	203.4	196.2	7.20	28.262		
1,800.0	1,798.6	1,786.3	1,783.5	4.0	4.0	-150.60	-150.5	-99.6	216.4	208.8	7.65	28.297		
1,900.0	1,898.4	1,885.4	1,882.4	4.2	4.3	-151.55	-156.9	-102.4	229.5	221.4	8.10	28.333		
2,000.0	1,998.1	1,984.5	1,981.2	4.4	4.5	-152.40	-163.2	-105.2	242.6	234.0	8.55	28.368		
2,100.0	2,097.9	2,083.6	2,080.0	4.7	4.8	-153.16	-169.5	-108.0	255.7	246.7	9.00	28.403		
2,200.0	2,197.6	2,182.6	2,178.9	4.9	5.1	-153.85	-175.8	-110.8	268.9	259.5	9.46	28.437		
2,300.0	2,297.4	2,281.7	2,277.7	5.2	5.3	-154.47	-182.1	-113.6	282.2	272.3	9.91	28.469		
2,400.0	2,397.2	2,380.8	2,376.5	5.4	5.6	-155.04	-188.4	-116.4	295.4	285.1	10.37	28.500		
2,500.0	2,496.9	2,479.9	2,475.4	5.7	5.8	-155.56	-194.8	-119.2	308.7	297.9	10.82	28.530		
2,600.0	2,596.7	2,579.0	2,574.2	5.9	6.1	-156.03	-201.1	-122.0	322.0	310.7	11.28	28.559		
2,700.0	2,696.4	2,678.0	2,673.1	6.2	6.3	-156.47	-207.4	-124.8	335.3	323.6	11.73	28.586		
2,800.0	2,796.2	2,777.1	2,771.9	6.4	6.6	-156.87	-213.7	-127.6	348.7	336.5	12.19	28.612		
2,900.0	2,895.9	2,876.2	2,870.7	6.7	6.9	-157.25	-220.0	-130.4	362.1	349.4	12.64	28.637		
3,000.0	2,995.7	2,975.3	2,969.6	6.9	7.1	-157.60	-226.4	-133.2	375.4	362.3	13.10	28.661		
3,100.0	3,095.5	3,074.3	3,068.4	7.2	7.4	-157.92	-232.7	-136.0	388.8	375.3	13.56	28.684		
3,200.0	3,195.2	3,173.4	3,167.2	7.4	7.7	-158.22	-239.0	-138.8	402.2	388.2	14.01	28.705		
3,300.0	3,295.0	3,272.5	3,266.1	7.7	7.9	-158.50	-245.3	-141.6	415.6	401.2	14.47	28.726		
3,400.0	3,394.7	3,371.6	3,364.9	7.9	8.2	-158.77	-251.6	-144.4	429.1	414.1	14.93	28.745		
3,500.0	3,494.5	3,470.6	3,463.7	8.2	8.4	-159.02	-258.0	-147.2	442.5	427.1	15.38	28.764		
3,600.0	3,594.2	3,569.7	3,562.6	8.5	8.7	-159.25	-264.3	-150.0	455.9	440.1	15.84	28.782		
3,700.0	3,694.0	3,668.8	3,661.4	8.7	9.0	-159.47	-270.6	-152.8	469.4	453.1	16.30	28.799		
3,800.0	3,793.7	3,767.9	3,760.2	9.0	9.2	-159.68	-276.9	-155.6	482.8	466.1	16.76	28.816		
3,900.0	3,893.5	3,866.9	3,859.1	9.2	9.5	-159.88	-283.2	-158.4	496.3	479.1	17.21	28.832		
4,000.0	3,993.3	3,966.0	3,957.9	9.5	9.7	-160.07	-289.5	-161.2	509.7	492.1	17.67	28.847		
4,100.0	4,093.0	4,065.1	4,056.7	9.7	10.0	-160.24	-295.9	-164.0	523.2	505.1	18.13	28.861		
4,200.0	4,192.8	4,164.2	4,155.6	10.0	10.3	-160.41	-302.2	-166.8	536.7	518.1	18.59	28.875		
4,300.0	4,292.5	4,263.3	4,254.4	10.2	10.5	-160.57	-308.5	-169.6	550.2	531.1	19.04	28.888		
4,400.0	4,392.3	4,362.3	4,353.2	10.5	10.8	-160.72	-314.8	-172.4	563.6	544.1	19.50	28.901		
4,500.0	4,492.0	4,461.4	4,452.1	10.7	11.0	-160.87	-321.1	-175.2	577.1	557.2	19.96	28.914		
4,600.0	4,591.8	4,560.5	4,550.9	11.0	11.3	-161.01	-327.5	-178.0	590.6	570.2	20.42	28.925		
4,700.0	4,691.6	4,659.6	4,649.8	11.2	11.6	-161.14	-333.8	-180.8	604.1	583.2	20.88	28.937		
4,800.0	4,791.3	4,758.6	4,748.6	11.5	11.8	-161.27	-340.1	-183.6	617.6	596.3	21.33	28.948		
4,900.0	4,891.1	4,857.7	4,847.4	11.8	12.1	-161.39	-346.4	-186.4	631.1	609.3	21.79	28.958		
5,000.0	4,990.8	4,956.8	4,946.3	12.0	12.4	-161.50	-352.7	-189.2	644.6	622.3	22.25	28.969		
5,100.0	5,090.6	5,055.9	5,045.1	12.3	12.6	-161.62	-359.0	-192.0	658.1	635.4	22.71	28.979		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3												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	5,154.9	5,143.9	12.5	12.9	-161.72	-365.4	-194.8	671.6	648.4	23.17	28.988	
5,300.0	5,290.1	5,254.0	5,242.8	12.8	13.1	-161.82	-371.7	-197.6	685.1	661.5	23.63	28.997	
5,400.0	5,389.4	5,344.2	5,332.7	13.1	13.4	-161.56	-377.5	-200.2	702.4	678.6	23.74	29.585	
5,500.0	5,485.1	5,383.0	5,371.3	13.5	13.5	-160.31	-381.7	-202.0	740.5	717.5	23.02	32.163	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2												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
0.0	0.0	0.0	0.0	0.0	0.0	-156.19	-74.9	-33.0	81.9				
100.0	100.0	100.0	100.0	0.1	0.1	-156.19	-74.9	-33.0	81.9	81.7	0.19	437.714	
200.0	200.0	200.0	200.0	0.3	0.3	-156.19	-74.9	-33.0	81.9	81.2	0.64	128.594	
300.0	300.0	300.0	300.0	0.5	0.5	-156.19	-74.9	-33.0	81.9	80.8	1.09	75.368	
400.0	400.0	400.0	400.0	0.8	0.8	-156.19	-74.9	-33.0	81.9	80.3	1.54	53.305	
500.0	500.0	500.0	500.0	1.0	1.0	-156.19	-74.9	-33.0	81.9	79.9	1.99	41.234	
600.0	600.0	600.0	600.0	1.2	1.2	-156.19	-74.9	-33.0	81.9	79.4	2.43	33.621	
700.0	700.0	700.0	700.0	1.4	1.4	-156.19	-74.9	-33.0	81.9	79.0	2.88	28.381	
800.0	800.0	800.0	800.0	1.7	1.7	-156.19	-74.9	-33.0	81.9	78.5	3.33	24.554	
900.0	900.0	900.0	900.0	1.9	1.9	-156.19	-74.9	-33.0	81.9	78.1	3.78	21.636	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-156.19	-74.9	-33.0	81.9	77.6	4.23	19.338	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-156.19	-74.9	-33.0	81.9	77.2	4.68	17.482 CC, ES	
1,200.0	1,200.0	1,197.2	1,197.1	2.6	2.5	-154.69	-76.5	-33.4	85.1	80.0	5.10	16.689 SF	
1,300.0	1,299.8	1,293.7	1,293.5	2.8	2.7	-156.49	-81.3	-34.4	94.8	89.4	5.50	17.257	
1,400.0	1,399.6	1,392.5	1,392.1	3.0	2.9	-158.54	-88.0	-35.9	108.2	102.3	5.90	18.321	
1,500.0	1,499.4	1,491.5	1,490.9	3.2	3.1	-160.15	-94.8	-37.3	121.6	115.3	6.32	19.256	
1,600.0	1,599.1	1,590.6	1,589.7	3.5	3.3	-161.43	-101.5	-38.8	135.1	128.4	6.73	20.071	
1,700.0	1,698.9	1,689.6	1,688.5	3.7	3.5	-162.49	-108.3	-40.2	148.7	141.5	7.15	20.785	
1,800.0	1,798.6	1,788.7	1,787.3	4.0	3.7	-163.36	-115.0	-41.7	162.3	154.7	7.58	21.413	
1,900.0	1,898.4	1,887.7	1,886.1	4.2	3.9	-164.10	-121.8	-43.1	175.9	167.9	8.01	21.970	
2,000.0	1,998.1	1,986.7	1,984.9	4.4	4.2	-164.73	-128.6	-44.5	189.6	181.2	8.44	22.464	
2,100.0	2,097.9	2,085.8	2,083.7	4.7	4.4	-165.28	-135.3	-46.0	203.3	194.4	8.87	22.906	
2,200.0	2,197.6	2,184.8	2,182.5	4.9	4.6	-165.76	-142.1	-47.4	217.0	207.7	9.31	23.304	
2,300.0	2,297.4	2,283.9	2,281.3	5.2	4.9	-166.18	-148.8	-48.9	230.7	220.9	9.75	23.662	
2,400.0	2,397.2	2,382.9	2,380.1	5.4	5.1	-166.56	-155.6	-50.3	244.4	234.2	10.19	23.987	
2,500.0	2,496.9	2,482.0	2,478.9	5.7	5.4	-166.89	-162.3	-51.8	258.1	247.5	10.63	24.283	
2,600.0	2,596.7	2,581.0	2,577.7	5.9	5.6	-167.19	-169.1	-53.2	271.9	260.8	11.07	24.553	
2,700.0	2,696.4	2,680.0	2,676.5	6.2	5.9	-167.47	-175.8	-54.7	285.6	274.1	11.52	24.800	
2,800.0	2,796.2	2,779.1	2,775.3	6.4	6.1	-167.71	-182.6	-56.1	299.4	287.4	11.96	25.027	
2,900.0	2,895.9	2,878.1	2,874.1	6.7	6.4	-167.94	-189.4	-57.6	313.1	300.7	12.41	25.237	
3,000.0	2,995.7	2,977.2	2,972.9	6.9	6.6	-168.15	-196.1	-59.0	326.9	314.1	12.85	25.431	
3,100.0	3,095.5	3,076.2	3,071.7	7.2	6.9	-168.34	-202.9	-60.5	340.7	327.4	13.30	25.610	
3,200.0	3,195.2	3,175.2	3,170.5	7.4	7.1	-168.51	-209.6	-61.9	354.4	340.7	13.75	25.777	
3,300.0	3,295.0	3,274.3	3,269.3	7.7	7.4	-168.67	-216.4	-63.4	368.2	354.0	14.20	25.933	
3,400.0	3,394.7	3,373.3	3,368.1	7.9	7.6	-168.82	-223.1	-64.8	382.0	367.3	14.65	26.078	
3,500.0	3,494.5	3,472.4	3,466.9	8.2	7.9	-168.96	-229.9	-66.3	395.8	380.7	15.10	26.214	
3,600.0	3,594.2	3,571.4	3,565.7	8.5	8.1	-169.09	-236.6	-67.7	409.6	394.0	15.55	26.342	
3,700.0	3,694.0	3,670.5	3,664.5	8.7	8.4	-169.21	-243.4	-69.2	423.3	407.3	16.00	26.462	
3,800.0	3,793.7	3,769.5	3,763.3	9.0	8.6	-169.33	-250.1	-70.6	437.1	420.7	16.45	26.574	
3,900.0	3,893.5	3,868.5	3,862.1	9.2	8.9	-169.44	-256.9	-72.1	450.9	434.0	16.90	26.681	
4,000.0	3,993.3	3,967.6	3,960.9	9.5	9.1	-169.54	-263.7	-73.5	464.7	447.3	17.35	26.781	
4,100.0	4,093.0	4,066.6	4,059.7	9.7	9.4	-169.63	-270.4	-75.0	478.5	460.7	17.80	26.876	
4,200.0	4,192.8	4,165.7	4,158.5	10.0	9.6	-169.72	-277.2	-76.4	492.3	474.0	18.26	26.966	
4,300.0	4,292.5	4,264.7	4,257.3	10.2	9.9	-169.81	-283.9	-77.9	506.1	487.3	18.71	27.051	
4,400.0	4,392.3	4,363.7	4,356.1	10.5	10.2	-169.89	-290.7	-79.3	519.8	500.7	19.16	27.132	
4,500.0	4,492.0	4,462.8	4,454.9	10.7	10.4	-169.96	-297.4	-80.8	533.6	514.0	19.61	27.209	
4,600.0	4,591.8	4,561.8	4,553.7	11.0	10.7	-170.04	-304.2	-82.2	547.4	527.4	20.07	27.282	
4,700.0	4,691.6	4,660.9	4,652.5	11.2	10.9	-170.10	-310.9	-83.7	561.2	540.7	20.52	27.352	
4,800.0	4,791.3	4,759.9	4,751.3	11.5	11.2	-170.17	-317.7	-85.1	575.0	554.0	20.97	27.419	
4,900.0	4,891.1	4,859.0	4,850.1	11.8	11.5	-170.23	-324.5	-86.5	588.8	567.4	21.43	27.482	
5,000.0	4,990.8	4,958.0	4,948.9	12.0	11.7	-170.29	-331.2	-88.0	602.6	580.7	21.88	27.543	
5,100.0	5,090.6	5,057.0	5,047.7	12.3	12.0	-170.35	-338.0	-89.4	616.4	594.1	22.33	27.601	

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2													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	5,156.1	5,146.5	12.5	12.2	-170.40	-344.7	-90.9	630.2	607.4	22.79	27.657		
5,300.0	5,290.1	5,255.1	5,245.3	12.8	12.5	-170.46	-351.5	-92.3	644.0	620.8	23.24	27.710		
5,400.0	5,389.4	5,353.5	5,343.4	13.1	12.7	-170.33	-358.2	-93.8	661.6	638.3	23.36	28.323		
5,500.0	5,485.1	5,441.9	5,431.6	13.5	13.0	-169.96	-364.2	-95.1	696.3	673.6	22.65	30.746		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3													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	180.00	-74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-74.9	0.0	74.9	74.7	0.19	400.377		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-74.9	0.0	74.9	74.2	0.64	117.628		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-74.9	0.0	74.9	73.8	1.09	68.940		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-74.9	0.0	74.9	73.3	1.54	48.759		
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-74.9	0.0	74.9	72.9	1.99	37.717		
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-74.9	0.0	74.9	72.4	2.43	30.753		
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-74.9	0.0	74.9	72.0	2.88	25.960		
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-74.9	0.0	74.9	71.5	3.33	22.459		
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-74.9	0.0	74.9	71.1	3.78	19.791 CC, ES		
1,000.0	1,000.0	997.4	997.4	2.1	2.1	179.89	-76.5	0.2	76.6	72.4	4.20	18.229		
1,100.0	1,100.0	1,094.6	1,094.5	2.3	2.3	179.57	-81.5	0.6	81.6	77.0	4.60	17.747 SF		
1,200.0	1,200.0	1,194.1	1,193.7	2.6	2.4	-178.63	-88.4	1.2	90.3	85.3	5.01	18.015		
1,300.0	1,299.8	1,293.3	1,292.7	2.8	2.6	-178.99	-95.3	1.9	102.5	97.1	5.43	18.887		
1,400.0	1,399.6	1,392.4	1,391.5	3.0	2.9	-179.30	-102.1	2.5	116.4	110.6	5.84	19.916		
1,500.0	1,499.4	1,491.4	1,490.3	3.2	3.1	-179.53	-109.0	3.1	130.3	124.0	6.27	20.791		
1,600.0	1,599.1	1,590.4	1,589.1	3.5	3.3	-179.73	-115.9	3.8	144.2	137.5	6.69	21.542		
1,700.0	1,698.9	1,689.4	1,687.8	3.7	3.5	-179.88	-122.8	4.4	158.1	151.0	7.13	22.191		
1,800.0	1,798.6	1,788.5	1,786.6	4.0	3.8	179.98	-129.6	5.0	172.0	164.5	7.56	22.757		
1,900.0	1,898.4	1,887.5	1,885.4	4.2	4.0	179.87	-136.5	5.7	185.9	177.9	8.00	23.255		
2,000.0	1,998.1	1,986.5	1,984.2	4.4	4.2	179.77	-143.4	6.3	199.8	191.4	8.43	23.696		
2,100.0	2,097.9	2,085.5	2,083.0	4.7	4.5	179.69	-150.3	6.9	213.7	204.9	8.87	24.088		
2,200.0	2,197.6	2,184.6	2,181.8	4.9	4.7	179.61	-157.2	7.6	227.7	218.3	9.32	24.439		
2,300.0	2,297.4	2,283.6	2,280.6	5.2	5.0	179.55	-164.0	8.2	241.6	231.8	9.76	24.755		
2,400.0	2,397.2	2,382.6	2,379.3	5.4	5.2	179.49	-170.9	8.8	255.5	245.3	10.20	25.041		
2,500.0	2,496.9	2,481.7	2,478.1	5.7	5.5	179.44	-177.8	9.5	269.4	258.7	10.65	25.300		
2,600.0	2,596.7	2,580.7	2,576.9	5.9	5.7	179.39	-184.7	10.1	283.3	272.2	11.09	25.537		
2,700.0	2,696.4	2,679.7	2,675.7	6.2	6.0	179.35	-191.6	10.7	297.2	285.7	11.54	25.753		
2,800.0	2,796.2	2,778.7	2,774.5	6.4	6.2	179.31	-198.4	11.4	311.1	299.1	11.99	25.952		
2,900.0	2,895.9	2,877.8	2,873.3	6.7	6.5	179.27	-205.3	12.0	325.0	312.6	12.44	26.136		
3,000.0	2,995.7	2,976.8	2,972.1	6.9	6.7	179.24	-212.2	12.6	338.9	326.1	12.88	26.305		
3,100.0	3,095.5	3,075.8	3,070.8	7.2	7.0	179.21	-219.1	13.2	352.8	339.5	13.33	26.462		
3,200.0	3,195.2	3,174.9	3,169.6	7.4	7.3	179.18	-225.9	13.9	366.8	353.0	13.78	26.608		
3,300.0	3,295.0	3,273.9	3,268.4	7.7	7.5	179.15	-232.8	14.5	380.7	366.4	14.23	26.744		
3,400.0	3,394.7	3,372.9	3,367.2	7.9	7.8	179.13	-239.7	15.1	394.6	379.9	14.68	26.871		
3,500.0	3,494.5	3,471.9	3,466.0	8.2	8.0	179.11	-246.6	15.8	408.5	393.4	15.14	26.990		
3,600.0	3,594.2	3,571.0	3,564.8	8.5	8.3	179.09	-253.5	16.4	422.4	406.8	15.59	27.101		
3,700.0	3,694.0	3,670.0	3,663.6	8.7	8.5	179.07	-260.3	17.0	436.3	420.3	16.04	27.206		
3,800.0	3,793.7	3,769.0	3,762.4	9.0	8.8	179.05	-267.2	17.7	450.2	433.7	16.49	27.304		
3,900.0	3,893.5	3,868.0	3,861.1	9.2	9.1	179.03	-274.1	18.3	464.1	447.2	16.94	27.397		
4,000.0	3,993.3	3,967.1	3,959.9	9.5	9.3	179.01	-281.0	18.9	478.1	460.7	17.39	27.485		
4,100.0	4,093.0	4,066.1	4,058.7	9.7	9.6	179.00	-287.9	19.6	492.0	474.1	17.85	27.568		
4,200.0	4,192.8	4,165.1	4,157.5	10.0	9.8	178.99	-294.7	20.2	505.9	487.6	18.30	27.646		
4,300.0	4,292.5	4,264.2	4,256.3	10.2	10.1	178.97	-301.6	20.8	519.8	501.0	18.75	27.721		
4,400.0	4,392.3	4,363.2	4,355.1	10.5	10.3	178.96	-308.5	21.5	533.7	514.5	19.20	27.792		
4,500.0	4,492.0	4,462.2	4,453.9	10.7	10.6	178.95	-315.4	22.1	547.6	528.0	19.66	27.859		
4,600.0	4,591.8	4,561.2	4,552.6	11.0	10.9	178.93	-322.3	22.7	561.5	541.4	20.11	27.923		
4,700.0	4,691.6	4,660.3	4,651.4	11.2	11.1	178.92	-329.1	23.4	575.4	554.9	20.56	27.984		
4,800.0	4,791.3	4,759.3	4,750.2	11.5	11.4	178.91	-336.0	24.0	589.3	568.3	21.02	28.043		
4,900.0	4,891.1	4,858.3	4,849.0	11.8	11.6	178.90	-342.9	24.6	603.3	581.8	21.47	28.098		
5,000.0	4,990.8	4,957.3	4,947.8	12.0	11.9	178.89	-349.8	25.3	617.2	595.2	21.92	28.151		
5,100.0	5,090.6	5,056.4	5,046.6	12.3	12.2	178.88	-356.6	25.9	631.1	608.7	22.38	28.202		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design													S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3		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	5,155.4	5,145.4	12.5	12.4	178.87	-363.5	26.5	645.0	622.2	22.83	28.251					
5,300.0	5,290.1	5,254.4	5,244.1	12.8	12.7	178.87	-370.4	27.2	658.9	635.6	23.28	28.298					
5,400.0	5,389.4	5,343.9	5,333.3	13.1	12.9	178.83	-376.7	27.7	676.8	653.4	23.37	28.960					
5,500.0	5,485.1	5,383.1	5,372.3	13.5	13.0	178.74	-381.4	28.2	716.5	694.0	22.51	31.829					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													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	156.69	-74.9	32.3	81.6					
100.0	100.0	100.0	100.0	0.1	0.1	156.69	-74.9	32.3	81.6	81.4	0.19	436.110		
200.0	200.0	200.0	200.0	0.3	0.3	156.69	-74.9	32.3	81.6	80.9	0.64	128.123		
300.0	300.0	300.0	300.0	0.5	0.5	156.69	-74.9	32.3	81.6	80.5	1.09	75.092		
400.0	400.0	400.0	400.0	0.8	0.8	156.69	-74.9	32.3	81.6	80.0	1.54	53.110		
500.0	500.0	500.0	500.0	1.0	1.0	156.69	-74.9	32.3	81.6	79.6	1.99	41.083		
600.0	600.0	600.0	600.0	1.2	1.2	156.69	-74.9	32.3	81.6	79.1	2.43	33.497		
700.0	700.0	700.0	700.0	1.4	1.4	156.69	-74.9	32.3	81.6	78.7	2.88	28.277		
800.0	800.0	800.0	800.0	1.7	1.7	156.69	-74.9	32.3	81.6	78.2	3.33	24.464		
900.0	900.0	900.0	900.0	1.9	1.9	156.69	-74.9	32.3	81.6	77.8	3.78	21.557		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	156.69	-74.9	32.3	81.6	77.3	4.23	19.267 CC, ES		
1,100.0	1,100.0	1,097.2	1,097.2	2.3	2.3	156.77	-76.5	32.8	83.2	78.6	4.65	17.903		
1,200.0	1,200.0	1,194.0	1,193.9	2.6	2.5	159.52	-81.1	34.5	89.9	84.9	5.05	17.807 SF		
1,300.0	1,299.8	1,293.1	1,292.7	2.8	2.7	160.69	-87.6	36.8	101.8	96.4	5.46	18.647		
1,400.0	1,399.6	1,392.2	1,391.5	3.0	2.9	161.96	-94.1	39.0	115.4	109.5	5.87	19.649		
1,500.0	1,499.4	1,491.2	1,490.4	3.2	3.1	162.96	-100.6	41.3	129.0	122.7	6.29	20.506		
1,600.0	1,599.1	1,590.3	1,589.2	3.5	3.3	163.77	-107.2	43.6	142.6	135.9	6.71	21.245		
1,700.0	1,698.9	1,689.3	1,688.0	3.7	3.5	164.44	-113.7	45.9	156.3	149.1	7.14	21.887		
1,800.0	1,798.6	1,788.4	1,786.8	4.0	3.7	165.00	-120.2	48.2	169.9	162.4	7.57	22.448		
1,900.0	1,898.4	1,887.4	1,885.6	4.2	4.0	165.47	-126.7	50.5	183.6	175.6	8.00	22.941		
2,000.0	1,998.1	1,986.5	1,984.4	4.4	4.2	165.88	-133.2	52.8	197.3	188.9	8.44	23.379		
2,100.0	2,097.9	2,085.5	2,083.2	4.7	4.5	166.24	-139.7	55.1	211.0	202.1	8.88	23.769		
2,200.0	2,197.6	2,184.6	2,182.0	4.9	4.7	166.56	-146.3	57.4	224.7	215.4	9.32	24.118		
2,300.0	2,297.4	2,283.6	2,280.8	5.2	4.9	166.83	-152.8	59.7	238.4	228.7	9.76	24.432		
2,400.0	2,397.2	2,382.7	2,379.6	5.4	5.2	167.08	-159.3	62.0	252.2	242.0	10.20	24.717		
2,500.0	2,496.9	2,481.7	2,478.4	5.7	5.4	167.30	-165.8	64.3	265.9	255.2	10.65	24.975		
2,600.0	2,596.7	2,580.8	2,577.2	5.9	5.7	167.50	-172.3	66.6	279.6	268.5	11.09	25.210		
2,700.0	2,696.4	2,679.8	2,676.0	6.2	5.9	167.69	-178.8	68.9	293.3	281.8	11.54	25.425		
2,800.0	2,796.2	2,778.9	2,774.8	6.4	6.2	167.85	-185.4	71.2	307.1	295.1	11.98	25.623		
2,900.0	2,895.9	2,877.9	2,873.7	6.7	6.4	168.00	-191.9	73.5	320.8	308.4	12.43	25.805		
3,000.0	2,995.7	2,977.0	2,972.5	6.9	6.7	168.14	-198.4	75.8	334.6	321.7	12.88	25.974		
3,100.0	3,095.5	3,076.0	3,071.3	7.2	6.9	168.27	-204.9	78.1	348.3	335.0	13.33	26.130		
3,200.0	3,195.2	3,175.1	3,170.1	7.4	7.2	168.39	-211.4	80.4	362.0	348.3	13.78	26.274		
3,300.0	3,295.0	3,274.1	3,268.9	7.7	7.4	168.50	-217.9	82.7	375.8	361.5	14.23	26.409		
3,400.0	3,394.7	3,373.1	3,367.7	7.9	7.7	168.60	-224.5	84.9	389.5	374.8	14.68	26.535		
3,500.0	3,494.5	3,472.2	3,466.5	8.2	8.0	168.69	-231.0	87.2	403.3	388.1	15.13	26.653		
3,600.0	3,594.2	3,571.2	3,565.3	8.5	8.2	168.78	-237.5	89.5	417.0	401.4	15.58	26.763		
3,700.0	3,694.0	3,670.3	3,664.1	8.7	8.5	168.87	-244.0	91.8	430.8	414.7	16.03	26.867		
3,800.0	3,793.7	3,769.3	3,762.9	9.0	8.7	168.94	-250.5	94.1	444.5	428.0	16.48	26.965		
3,900.0	3,893.5	3,868.4	3,861.7	9.2	9.0	169.02	-257.0	96.4	458.3	441.3	16.94	27.057		
4,000.0	3,993.3	3,967.4	3,960.5	9.5	9.2	169.09	-263.6	98.7	472.0	454.6	17.39	27.143		
4,100.0	4,093.0	4,066.5	4,059.3	9.7	9.5	169.15	-270.1	101.0	485.8	467.9	17.84	27.226		
4,200.0	4,192.8	4,165.5	4,158.2	10.0	9.8	169.21	-276.6	103.3	499.5	481.2	18.30	27.303		
4,300.0	4,292.5	4,264.6	4,257.0	10.2	10.0	169.27	-283.1	105.6	513.3	494.5	18.75	27.377		
4,400.0	4,392.3	4,363.6	4,355.8	10.5	10.3	169.32	-289.6	107.9	527.0	507.8	19.20	27.447		
4,500.0	4,492.0	4,462.7	4,454.6	10.7	10.5	169.38	-296.2	110.2	540.8	521.1	19.65	27.513		
4,600.0	4,591.8	4,561.7	4,553.4	11.0	10.8	169.43	-302.7	112.5	554.5	534.4	20.11	27.577		
4,700.0	4,691.6	4,660.8	4,652.2	11.2	11.0	169.47	-309.2	114.8	568.3	547.7	20.56	27.637		
4,800.0	4,791.3	4,759.8	4,751.0	11.5	11.3	169.52	-315.7	117.1	582.0	561.0	21.02	27.694		
4,900.0	4,891.1	4,858.9	4,849.8	11.8	11.6	169.56	-322.2	119.4	595.8	574.3	21.47	27.749		
5,000.0	4,990.8	4,957.9	4,948.6	12.0	11.8	169.60	-328.7	121.7	609.5	587.6	21.92	27.802		
5,100.0	5,090.6	5,057.0	5,047.4	12.3	12.1	169.64	-335.3	124.0	623.3	600.9	22.38	27.852		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design													S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2		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	5,156.0	5,146.2	12.5	12.3	169.68	-341.8	126.3	637.1	614.2	22.83	27.900					
5,300.0	5,290.1	5,255.1	5,245.0	12.8	12.6	169.72	-348.3	128.6	650.8	627.5	23.29	27.946					
5,400.0	5,389.4	5,353.4	5,343.1	13.1	12.9	169.56	-354.8	130.8	668.4	645.0	23.41	28.556					
5,500.0	5,485.1	5,441.9	5,431.4	13.5	13.1	169.14	-360.6	132.9	703.0	680.3	22.69	30.979					

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Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #3													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	138.90	-74.9	65.3	99.4					
100.0	100.0	100.0	100.0	0.1	0.1	138.90	-74.9	65.3	99.4	99.2	0.19	531.319		
200.0	200.0	200.0	200.0	0.3	0.3	138.90	-74.9	65.3	99.4	98.7	0.64	156.098		
300.0	300.0	300.0	300.0	0.5	0.5	138.90	-74.9	65.3	99.4	98.3	1.09	91.487		
400.0	400.0	400.0	400.0	0.8	0.8	138.90	-74.9	65.3	99.4	97.8	1.54	64.705 CC, ES		
500.0	500.0	496.7	496.6	1.0	1.0	139.08	-76.3	66.1	101.0	99.1	1.96	51.669		
600.0	600.0	593.1	593.0	1.2	1.2	139.59	-80.5	68.6	106.0	103.6	2.37	44.731		
700.0	700.0	692.6	692.2	1.4	1.4	140.24	-86.5	72.0	112.8	110.0	2.80	40.334		
800.0	800.0	792.4	791.8	1.7	1.6	140.82	-92.6	75.5	119.7	116.5	3.23	37.075		
900.0	900.0	892.1	891.3	1.9	1.8	141.33	-98.6	78.9	126.6	122.9	3.67	34.535		
1,000.0	1,000.0	991.9	990.8	2.1	2.1	141.79	-104.7	82.4	133.5	129.4	4.11	32.508		
1,100.0	1,100.0	1,091.7	1,090.3	2.3	2.3	142.21	-110.7	85.8	140.4	135.9	4.55	30.857		
1,200.0	1,200.0	1,191.3	1,189.7	2.6	2.6	145.08	-116.7	89.3	148.7	143.7	5.00	29.766		
1,300.0	1,299.8	1,290.6	1,288.7	2.8	2.8	146.34	-122.7	92.7	160.0	154.5	5.44	29.418		
1,400.0	1,399.6	1,389.7	1,387.6	3.0	3.1	147.86	-128.7	96.2	172.8	166.9	5.88	29.370		
1,500.0	1,499.4	1,488.7	1,486.4	3.2	3.3	149.17	-134.7	99.6	185.7	179.3	6.33	29.334		
1,600.0	1,599.1	1,587.8	1,585.2	3.5	3.6	150.31	-140.7	103.0	198.6	191.9	6.78	29.307		
1,700.0	1,698.9	1,686.9	1,684.1	3.7	3.9	151.31	-146.7	106.5	211.7	204.5	7.23	29.287		
1,800.0	1,798.6	1,786.0	1,782.9	4.0	4.1	152.19	-152.7	109.9	224.8	217.1	7.68	29.271		
1,900.0	1,898.4	1,885.1	1,881.8	4.2	4.4	152.98	-158.7	113.3	237.9	229.8	8.13	29.260		
2,000.0	1,998.1	1,984.1	1,980.6	4.4	4.6	153.68	-164.7	116.8	251.1	242.5	8.58	29.252		
2,100.0	2,097.9	2,083.2	2,079.5	4.7	4.9	154.31	-170.7	120.2	264.3	255.3	9.04	29.246		
2,200.0	2,197.6	2,182.3	2,178.3	4.9	5.2	154.89	-176.7	123.6	277.6	268.1	9.49	29.243		
2,300.0	2,297.4	2,281.4	2,277.1	5.2	5.4	155.41	-182.7	127.1	290.9	280.9	9.95	29.240		
2,400.0	2,397.2	2,380.5	2,376.0	5.4	5.7	155.88	-188.7	130.5	304.1	293.7	10.40	29.239		
2,500.0	2,496.9	2,479.6	2,474.8	5.7	5.9	156.32	-194.7	133.9	317.5	306.6	10.86	29.239 SF		
2,600.0	2,596.7	2,578.6	2,573.7	5.9	6.2	156.72	-200.7	137.4	330.8	319.5	11.31	29.240		
2,700.0	2,696.4	2,677.7	2,672.5	6.2	6.5	157.09	-206.7	140.8	344.1	332.4	11.77	29.241		
2,800.0	2,796.2	2,776.8	2,771.3	6.4	6.7	157.43	-212.7	144.3	357.5	345.3	12.23	29.242		
2,900.0	2,895.9	2,875.9	2,870.2	6.7	7.0	157.75	-218.7	147.7	370.9	358.2	12.68	29.244		
3,000.0	2,995.7	2,975.0	2,969.0	6.9	7.2	158.04	-224.7	151.1	384.2	371.1	13.14	29.246		
3,100.0	3,095.5	3,074.0	3,067.9	7.2	7.5	158.32	-230.7	154.6	397.6	384.0	13.59	29.248		
3,200.0	3,195.2	3,173.1	3,166.7	7.4	7.8	158.57	-236.7	158.0	411.0	397.0	14.05	29.251		
3,300.0	3,295.0	3,272.2	3,265.5	7.7	8.0	158.82	-242.7	161.4	424.4	409.9	14.51	29.253		
3,400.0	3,394.7	3,371.3	3,364.4	7.9	8.3	159.04	-248.7	164.9	437.8	422.9	14.97	29.256		
3,500.0	3,494.5	3,470.4	3,463.2	8.2	8.5	159.26	-254.7	168.3	451.3	435.8	15.42	29.259		
3,600.0	3,594.2	3,569.5	3,562.1	8.5	8.8	159.46	-260.7	171.7	464.7	448.8	15.88	29.261		
3,700.0	3,694.0	3,668.5	3,660.9	8.7	9.1	159.65	-266.7	175.2	478.1	461.8	16.34	29.264		
3,800.0	3,793.7	3,767.6	3,759.7	9.0	9.3	159.82	-272.7	178.6	491.6	474.8	16.80	29.267		
3,900.0	3,893.5	3,866.7	3,858.6	9.2	9.6	159.99	-278.7	182.0	505.0	487.7	17.25	29.269		
4,000.0	3,993.3	3,965.8	3,957.4	9.5	9.9	160.15	-284.7	185.5	518.4	500.7	17.71	29.272		
4,100.0	4,093.0	4,064.9	4,056.3	9.7	10.1	160.31	-290.7	188.9	531.9	513.7	18.17	29.275		
4,200.0	4,192.8	4,164.0	4,155.1	10.0	10.4	160.45	-296.7	192.3	545.3	526.7	18.63	29.277		
4,300.0	4,292.5	4,263.0	4,254.0	10.2	10.6	160.59	-302.7	195.8	558.8	539.7	19.08	29.280		
4,400.0	4,392.3	4,362.1	4,352.8	10.5	10.9	160.72	-308.7	199.2	572.2	552.7	19.54	29.282		
4,500.0	4,492.0	4,461.2	4,451.6	10.7	11.2	160.85	-314.7	202.6	585.7	565.7	20.00	29.285		
4,600.0	4,591.8	4,560.3	4,550.5	11.0	11.4	160.97	-320.7	206.1	599.2	578.7	20.46	29.287		
4,700.0	4,691.6	4,659.4	4,649.3	11.2	11.7	161.08	-326.7	209.5	612.6	591.7	20.92	29.289		
4,800.0	4,791.3	4,758.4	4,748.2	11.5	11.9	161.19	-332.6	212.9	626.1	604.7	21.37	29.292		
4,900.0	4,891.1	4,857.5	4,847.0	11.8	12.2	161.30	-338.6	216.4	639.6	617.7	21.83	29.294		
5,000.0	4,990.8	4,956.6	4,945.8	12.0	12.5	161.40	-344.6	219.8	653.0	630.7	22.29	29.296		
5,100.0	5,090.6	5,055.7	5,044.7	12.3	12.7	161.49	-350.6	223.3	666.5	643.7	22.75	29.298		

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

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Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design												S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #3		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	5,154.8	5,143.5	12.5	13.0	161.59	-356.6	226.7	680.0	656.8	23.21	29.300					
5,300.0	5,290.1	5,253.9	5,242.4	12.8	13.3	161.68	-362.6	230.1	693.4	669.8	23.67	29.302					
5,400.0	5,389.4	5,344.1	5,332.4	13.1	13.5	161.39	-368.1	233.3	710.7	686.9	23.78	29.890					
5,500.0	5,485.1	5,382.8	5,370.8	13.5	13.6	160.13	-372.1	235.5	748.8	725.7	23.05	32.479					

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Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - 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	127.29	-74.9	98.4	123.6					
100.0	100.0	100.0	100.0	0.1	0.1	127.29	-74.9	98.4	123.6	123.4	0.19	661.133		
200.0	200.0	200.0	200.0	0.3	0.3	127.29	-74.9	98.4	123.6	123.0	0.64	194.232		
300.0	300.0	300.0	300.0	0.5	0.5	127.29	-74.9	98.4	123.6	122.5	1.09	113.838		
400.0	400.0	400.0	400.0	0.8	0.8	127.29	-74.9	98.4	123.6	122.1	1.54	80.513		
500.0	500.0	500.0	500.0	1.0	1.0	127.29	-74.9	98.4	123.6	121.7	1.99	62.281		
600.0	600.0	600.0	600.0	1.2	1.2	127.29	-74.9	98.4	123.6	121.2	2.43	50.781		
700.0	700.0	700.0	700.0	1.4	1.4	127.29	-74.9	98.4	123.6	120.8	2.88	42.867		
800.0	800.0	800.0	800.0	1.7	1.7	127.29	-74.9	98.4	123.6	120.3	3.33	37.086		
866.7	866.7	866.7	866.7	1.8	1.8	127.29	-74.9	98.4	123.6	120.0	3.63	34.027 CC		
900.0	900.0	900.0	900.0	1.9	1.9	127.29	-74.9	98.4	123.6	119.9	3.78	32.680 ES		
1,000.0	1,000.0	995.9	995.9	2.1	2.1	127.45	-76.1	99.4	125.3	121.1	4.20	29.825		
1,100.0	1,100.0	1,091.6	1,091.5	2.3	2.3	127.92	-79.8	102.5	130.2	125.6	4.60	28.280		
1,200.0	1,200.0	1,190.9	1,190.5	2.6	2.5	131.16	-85.1	106.9	138.1	133.1	5.02	27.521		
1,300.0	1,299.8	1,290.2	1,289.6	2.8	2.7	133.04	-90.4	111.3	148.5	143.1	5.44	27.317 SF		
1,400.0	1,399.6	1,389.4	1,388.5	3.0	2.9	135.26	-95.7	115.8	160.3	154.4	5.86	27.354		
1,500.0	1,499.4	1,488.5	1,487.4	3.2	3.1	137.17	-101.1	120.2	172.2	165.9	6.29	27.391		
1,600.0	1,599.1	1,587.6	1,586.3	3.5	3.3	138.83	-106.4	124.6	184.4	177.6	6.72	27.429		
1,700.0	1,698.9	1,686.7	1,685.2	3.7	3.6	140.28	-111.7	129.1	196.6	189.5	7.16	27.467		
1,800.0	1,798.6	1,785.9	1,784.0	4.0	3.8	141.56	-117.0	133.5	209.0	201.4	7.60	27.503		
1,900.0	1,898.4	1,885.0	1,882.9	4.2	4.0	142.70	-122.3	137.9	221.5	213.4	8.04	27.539		
2,000.0	1,998.1	1,984.1	1,981.8	4.4	4.3	143.72	-127.6	142.4	234.0	225.5	8.49	27.574		
2,100.0	2,097.9	2,083.3	2,080.7	4.7	4.5	144.64	-132.9	146.8	246.6	237.7	8.93	27.608		
2,200.0	2,197.6	2,182.4	2,179.6	4.9	4.8	145.46	-138.2	151.2	259.3	249.9	9.38	27.640		
2,300.0	2,297.4	2,281.5	2,278.5	5.2	5.0	146.21	-143.5	155.7	272.0	262.2	9.83	27.671		
2,400.0	2,397.2	2,380.6	2,377.4	5.4	5.3	146.89	-148.8	160.1	284.8	274.5	10.28	27.700		
2,500.0	2,496.9	2,479.8	2,476.2	5.7	5.5	147.51	-154.1	164.5	297.6	286.9	10.73	27.727		
2,600.0	2,596.7	2,578.9	2,575.1	5.9	5.8	148.09	-159.4	169.0	310.4	299.2	11.18	27.753		
2,700.0	2,696.4	2,678.0	2,674.0	6.2	6.0	148.61	-164.7	173.4	323.3	311.6	11.64	27.778		
2,800.0	2,796.2	2,777.2	2,772.9	6.4	6.3	149.10	-170.0	177.9	336.1	324.1	12.09	27.802		
2,900.0	2,895.9	2,876.3	2,871.8	6.7	6.5	149.55	-175.3	182.3	349.1	336.5	12.54	27.824		
3,000.0	2,995.7	2,975.4	2,970.7	6.9	6.8	149.97	-180.7	186.7	362.0	349.0	13.00	27.845		
3,100.0	3,095.5	3,074.5	3,069.6	7.2	7.1	150.36	-186.0	191.2	374.9	361.5	13.45	27.865		
3,200.0	3,195.2	3,173.7	3,168.5	7.4	7.3	150.72	-191.3	195.6	387.9	374.0	13.91	27.884		
3,300.0	3,295.0	3,272.8	3,267.3	7.7	7.6	151.06	-196.6	200.0	400.8	386.5	14.37	27.902		
3,400.0	3,394.7	3,371.9	3,366.2	7.9	7.8	151.38	-201.9	204.5	413.8	399.0	14.82	27.919		
3,500.0	3,494.5	3,471.1	3,465.1	8.2	8.1	151.68	-207.2	208.9	426.8	411.5	15.28	27.936		
3,600.0	3,594.2	3,570.2	3,564.0	8.5	8.3	151.96	-212.5	213.3	439.8	424.1	15.74	27.951		
3,700.0	3,694.0	3,669.3	3,662.9	8.7	8.6	152.22	-217.8	217.8	452.8	436.6	16.19	27.966		
3,800.0	3,793.7	3,768.4	3,761.8	9.0	8.9	152.47	-223.1	222.2	465.9	449.2	16.65	27.980		
3,900.0	3,893.5	3,867.6	3,860.7	9.2	9.1	152.71	-228.4	226.6	478.9	461.8	17.11	27.994		
4,000.0	3,993.3	3,966.7	3,959.6	9.5	9.4	152.94	-233.7	231.1	491.9	474.4	17.56	28.006		
4,100.0	4,093.0	4,065.8	4,058.4	9.7	9.6	153.15	-239.0	235.5	505.0	487.0	18.02	28.019		
4,200.0	4,192.8	4,165.0	4,157.3	10.0	9.9	153.35	-244.3	239.9	518.0	499.5	18.48	28.031		
4,300.0	4,292.5	4,264.1	4,256.2	10.2	10.1	153.54	-249.6	244.4	531.1	512.1	18.94	28.042		
4,400.0	4,392.3	4,363.2	4,355.1	10.5	10.4	153.72	-254.9	248.8	544.2	524.8	19.40	28.053		
4,500.0	4,492.0	4,462.3	4,454.0	10.7	10.7	153.90	-260.2	253.2	557.2	537.4	19.86	28.063		
4,600.0	4,591.8	4,561.5	4,552.9	11.0	10.9	154.07	-265.6	257.7	570.3	550.0	20.31	28.073		
4,700.0	4,691.6	4,660.6	4,651.8	11.2	11.2	154.22	-270.9	262.1	583.4	562.6	20.77	28.082		
4,800.0	4,791.3	4,759.7	4,750.6	11.5	11.4	154.38	-276.2	266.5	596.5	575.2	21.23	28.092		
4,900.0	4,891.1	4,858.9	4,849.5	11.8	11.7	154.52	-281.5	271.0	609.5	587.9	21.69	28.100		
5,000.0	4,990.8	4,958.0	4,948.4	12.0	12.0	154.66	-286.8	275.4	622.6	600.5	22.15	28.109		

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 #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - 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	5,057.1	5,047.3	12.3	12.2	154.79	-292.1	279.8	635.7	613.1	22.61	28.117	
5,200.0	5,190.3	5,156.2	5,146.2	12.5	12.5	154.92	-297.4	284.3	648.8	625.8	23.07	28.125	
5,300.0	5,290.1	5,255.4	5,245.1	12.8	12.7	155.05	-302.7	288.7	661.9	638.4	23.53	28.132	
5,400.0	5,389.4	5,353.8	5,343.3	13.1	13.0	154.74	-308.0	293.1	678.5	654.8	23.70	28.630	
5,500.0	5,485.1	5,442.2	5,431.4	13.5	13.2	153.91	-312.7	297.1	711.0	687.8	23.20	30.644	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2													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	127.29	-74.9	98.4	123.6					
100.0	100.0	100.0	100.0	0.1	0.1	127.29	-74.9	98.4	123.6	123.4	0.19	661.133		
200.0	200.0	200.0	200.0	0.3	0.3	127.29	-74.9	98.4	123.6	123.0	0.64	194.232		
300.0	300.0	300.0	300.0	0.5	0.5	127.29	-74.9	98.4	123.6	122.5	1.09	113.838		
400.0	400.0	400.0	400.0	0.8	0.8	127.29	-74.9	98.4	123.6	122.1	1.54	80.513		
500.0	500.0	500.0	500.0	1.0	1.0	127.29	-74.9	98.4	123.6	121.7	1.99	62.281		
600.0	600.0	600.0	600.0	1.2	1.2	127.29	-74.9	98.4	123.6	121.2	2.43	50.781		
700.0	700.0	700.0	700.0	1.4	1.4	127.29	-74.9	98.4	123.6	120.8	2.88	42.867		
800.0	800.0	800.0	800.0	1.7	1.7	127.29	-74.9	98.4	123.6	120.3	3.33	37.086		
866.7	866.7	866.7	866.7	1.8	1.8	127.29	-74.9	98.4	123.6	120.0	3.63	34.027 CC		
900.0	900.0	900.0	900.0	1.9	1.9	127.29	-74.9	98.4	123.6	119.9	3.78	32.680 ES		
1,000.0	1,000.0	995.9	995.9	2.1	2.1	127.45	-76.1	99.4	125.3	121.1	4.20	29.825		
1,100.0	1,100.0	1,091.6	1,091.5	2.3	2.3	127.92	-79.8	102.5	130.2	125.6	4.60	28.280		
1,200.0	1,200.0	1,190.9	1,190.5	2.6	2.5	131.16	-85.1	106.9	138.1	133.1	5.02	27.521		
1,300.0	1,299.8	1,290.2	1,289.6	2.8	2.7	133.04	-90.4	111.3	148.5	143.1	5.44	27.317 SF		
1,400.0	1,399.6	1,389.4	1,388.5	3.0	2.9	135.26	-95.7	115.8	160.3	154.4	5.86	27.354		
1,500.0	1,499.4	1,488.5	1,487.4	3.2	3.1	137.17	-101.1	120.2	172.2	165.9	6.29	27.391		
1,600.0	1,599.1	1,587.6	1,586.3	3.5	3.3	138.83	-106.4	124.6	184.4	177.6	6.72	27.429		
1,700.0	1,698.9	1,686.7	1,685.2	3.7	3.6	140.28	-111.7	129.1	196.6	189.5	7.16	27.467		
1,800.0	1,798.6	1,785.9	1,784.0	4.0	3.8	141.56	-117.0	133.5	209.0	201.4	7.60	27.503		
1,900.0	1,898.4	1,885.0	1,882.9	4.2	4.0	142.70	-122.3	137.9	221.5	213.4	8.04	27.539		
2,000.0	1,998.1	1,984.1	1,981.8	4.4	4.3	143.72	-127.6	142.4	234.0	225.5	8.49	27.574		
2,100.0	2,097.9	2,083.3	2,080.7	4.7	4.5	144.64	-132.9	146.8	246.6	237.7	8.93	27.608		
2,200.0	2,197.6	2,182.4	2,179.6	4.9	4.8	145.46	-138.2	151.2	259.3	249.9	9.38	27.640		
2,300.0	2,297.4	2,281.5	2,278.5	5.2	5.0	146.21	-143.5	155.7	272.0	262.2	9.83	27.671		
2,400.0	2,397.2	2,380.6	2,377.4	5.4	5.3	146.89	-148.8	160.1	284.8	274.5	10.28	27.700		
2,500.0	2,496.9	2,479.8	2,476.2	5.7	5.5	147.51	-154.1	164.5	297.6	286.9	10.73	27.727		
2,600.0	2,596.7	2,578.9	2,575.1	5.9	5.8	148.09	-159.4	169.0	310.4	299.2	11.18	27.753		
2,700.0	2,696.4	2,678.0	2,674.0	6.2	6.0	148.61	-164.7	173.4	323.3	311.6	11.64	27.778		
2,800.0	2,796.2	2,777.2	2,772.9	6.4	6.3	149.10	-170.0	177.9	336.1	324.1	12.09	27.802		
2,900.0	2,895.9	2,876.3	2,871.8	6.7	6.5	149.55	-175.3	182.3	349.1	336.5	12.54	27.824		
3,000.0	2,995.7	2,975.4	2,970.7	6.9	6.8	149.97	-180.7	186.7	362.0	349.0	13.00	27.845		
3,100.0	3,095.5	3,074.5	3,069.6	7.2	7.1	150.36	-186.0	191.2	374.9	361.5	13.45	27.865		
3,200.0	3,195.2	3,173.7	3,168.5	7.4	7.3	150.72	-191.3	195.6	387.9	374.0	13.91	27.884		
3,300.0	3,295.0	3,272.8	3,267.3	7.7	7.6	151.06	-196.6	200.0	400.8	386.5	14.37	27.902		
3,400.0	3,394.7	3,371.9	3,366.2	7.9	7.8	151.38	-201.9	204.5	413.8	399.0	14.82	27.919		
3,500.0	3,494.5	3,471.1	3,465.1	8.2	8.1	151.68	-207.2	208.9	426.8	411.5	15.28	27.936		
3,600.0	3,594.2	3,570.2	3,564.0	8.5	8.3	151.96	-212.5	213.3	439.8	424.1	15.74	27.951		
3,700.0	3,694.0	3,669.3	3,662.9	8.7	8.6	152.22	-217.8	217.8	452.8	436.6	16.19	27.966		
3,800.0	3,793.7	3,768.4	3,761.8	9.0	8.9	152.47	-223.1	222.2	465.9	449.2	16.65	27.980		
3,900.0	3,893.5	3,867.6	3,860.7	9.2	9.1	152.71	-228.4	226.6	478.9	461.8	17.11	27.994		
4,000.0	3,993.3	3,966.7	3,959.6	9.5	9.4	152.94	-233.7	231.1	491.9	474.4	17.56	28.006		
4,100.0	4,093.0	4,065.8	4,058.4	9.7	9.6	153.15	-239.0	235.5	505.0	487.0	18.02	28.019		
4,200.0	4,192.8	4,165.0	4,157.3	10.0	9.9	153.35	-244.3	239.9	518.0	499.5	18.48	28.031		
4,300.0	4,292.5	4,264.1	4,256.2	10.2	10.1	153.54	-249.6	244.4	531.1	512.1	18.94	28.042		
4,400.0	4,392.3	4,363.2	4,355.1	10.5	10.4	153.72	-254.9	248.8	544.2	524.8	19.40	28.053		
4,500.0	4,492.0	4,462.3	4,454.0	10.7	10.7	153.90	-260.2	253.2	557.2	537.4	19.86	28.063		
4,600.0	4,591.8	4,561.5	4,552.9	11.0	10.9	154.07	-265.6	257.7	570.3	550.0	20.31	28.073		
4,700.0	4,691.6	4,660.6	4,651.8	11.2	11.2	154.22	-270.9	262.1	583.4	562.6	20.77	28.082		
4,800.0	4,791.3	4,759.7	4,750.6	11.5	11.4	154.38	-276.2	266.5	596.5	575.2	21.23	28.092		
4,900.0	4,891.1	4,858.9	4,849.5	11.8	11.7	154.52	-281.5	271.0	609.5	587.9	21.69	28.100		
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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 #12F-0105A
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Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2												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
5,100.0	5,090.6	5,057.1	5,047.3	12.3	12.2	154.79	-292.1	279.8	635.7	613.1	22.61	28.117	
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5,400.0	5,389.4	5,353.8	5,343.3	13.1	13.0	154.74	-308.0	293.1	678.5	654.8	23.70	28.630	
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Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
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Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6usft (Original Well Elev)
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Reference Well:	Razor #12F-0105A	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 #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4953.6usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #12F-0105A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.09°

