

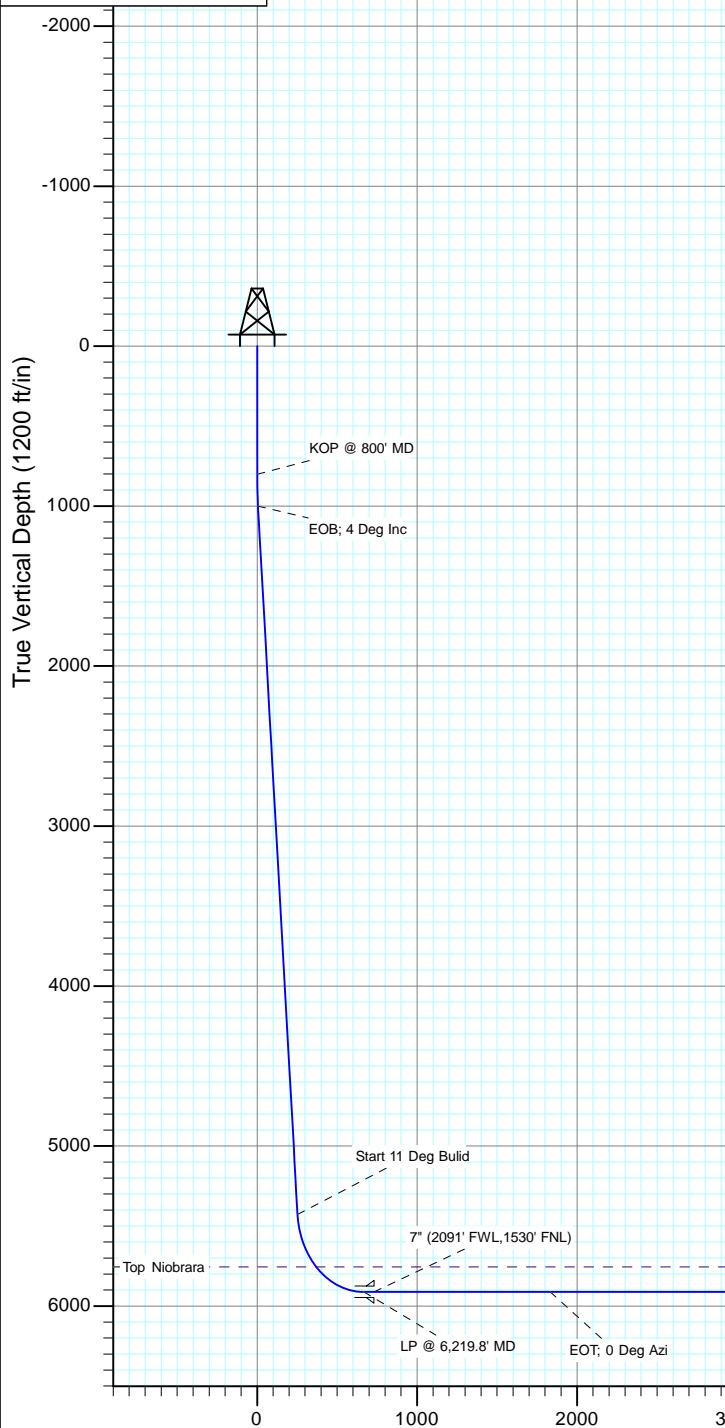
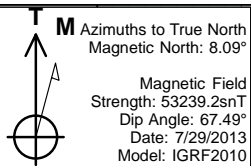


Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor #12F-0108B
Wellbore: HZ
Design: Plan #3

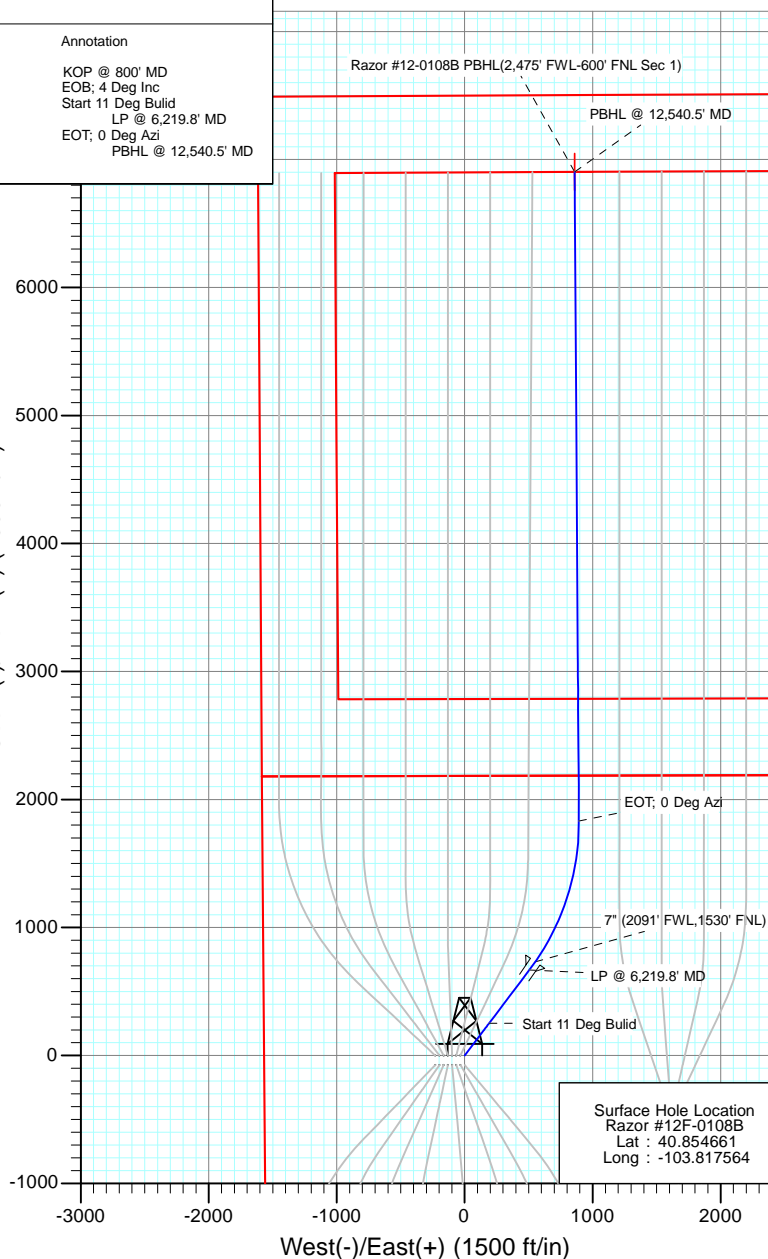


SECTION DETAILS

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 @ 800' MD
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	EOB; 4 Deg Inc
3	1000.0	4.00	37.13	999.8	5.6	4.2	2.00	37.13	5.6	Start 11 Deg Build
4	5438.0	4.00	37.13	5427.0	252.4	191.1	0.00	0.00	252.4	LP @ 6,219.8' MD
5	6219.8	90.00	37.13	5911.6	666.6	504.7	11.00	0.00	666.6	EOT; 0 Deg Azi
6	7469.9	90.00	359.63	5911.6	1831.9	891.9	3.00	-90.01	1831.9	PBHL @ 12,540.5' MD
7	12540.5	90.00	359.63	5912.0	6902.4	858.9	0.00	0.00	6902.4	



South(-)/North(+) (1500 ft/in)



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5755.0	5805.1	Top Niobrara

Plan #3
Razor #12F-0108B
WELL @ 4953.6ft (Original Well Elev)
Ground Elevation @ 4936.8
North American Datum 1983
Well Razor #12F-0108B, True North

Razor #12-0108B PBHL(2,475' FWL-600' FNL Sec 1)

PBHL @ 12,540.5' MD

Vertical Section at 0.00° (1200 ft/in)

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0108B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0108B	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:	1,558,541.09 ft	Latitude:	40.854456
From:	Lat/Long	Easting:	3,465,183.08 ft	Longitude:	-103.818397
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.09 °

Well	Razor #12F-0108B					
Well Position	+N/-S	0.0 ft	Northing:	1,558,620.29 ft	Latitude:	40.854661
	+E/-W	0.0 ft	Easting:	3,465,412.12 ft	Longitude:	-103.817564
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,936.8 ft

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)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	0.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	4.00	37.13	999.8	5.6	4.2	2.00	2.00	0.00	37.13	
5,438.0	4.00	37.13	5,427.0	252.4	191.1	0.00	0.00	0.00	0.00	
6,219.8	90.00	37.13	5,911.6	666.6	504.7	11.00	11.00	0.00	0.00	
7,469.9	90.00	359.63	5,911.6	1,831.9	891.9	3.00	0.00	-3.00	-90.01	
12,540.5	90.00	359.63	5,912.0	6,902.4	858.9	0.00	0.00	0.00	0.00	Razor #12-0108B PBI

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0108B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	KOP @ 800' MD
900.0	2.00	37.13	900.0	1.4	1.1	1.4	2.00	2.00	
1,000.0	4.00	37.13	999.8	5.6	4.2	5.6	2.00	2.00	EOB; 4 Deg Inc
1,100.0	4.00	37.13	1,099.6	11.1	8.4	11.1	0.00	0.00	
1,200.0	4.00	37.13	1,199.4	16.7	12.6	16.7	0.00	0.00	
1,300.0	4.00	37.13	1,299.1	22.2	16.8	22.2	0.00	0.00	
1,400.0	4.00	37.13	1,398.9	27.8	21.1	27.8	0.00	0.00	
1,500.0	4.00	37.13	1,498.6	33.4	25.3	33.4	0.00	0.00	
1,600.0	4.00	37.13	1,598.4	38.9	29.5	38.9	0.00	0.00	
1,700.0	4.00	37.13	1,698.1	44.5	33.7	44.5	0.00	0.00	
1,800.0	4.00	37.13	1,797.9	50.1	37.9	50.1	0.00	0.00	
1,900.0	4.00	37.13	1,897.6	55.6	42.1	55.6	0.00	0.00	
2,000.0	4.00	37.13	1,997.4	61.2	46.3	61.2	0.00	0.00	
2,100.0	4.00	37.13	2,097.2	66.7	50.5	66.7	0.00	0.00	
2,200.0	4.00	37.13	2,196.9	72.3	54.7	72.3	0.00	0.00	
2,300.0	4.00	37.13	2,296.7	77.9	59.0	77.9	0.00	0.00	
2,400.0	4.00	37.13	2,396.4	83.4	63.2	83.4	0.00	0.00	
2,500.0	4.00	37.13	2,496.2	89.0	67.4	89.0	0.00	0.00	
2,600.0	4.00	37.13	2,595.9	94.5	71.6	94.5	0.00	0.00	
2,700.0	4.00	37.13	2,695.7	100.1	75.8	100.1	0.00	0.00	
2,800.0	4.00	37.13	2,795.5	105.7	80.0	105.7	0.00	0.00	
2,900.0	4.00	37.13	2,895.2	111.2	84.2	111.2	0.00	0.00	
3,000.0	4.00	37.13	2,995.0	116.8	88.4	116.8	0.00	0.00	
3,100.0	4.00	37.13	3,094.7	122.4	92.6	122.4	0.00	0.00	
3,200.0	4.00	37.13	3,194.5	127.9	96.8	127.9	0.00	0.00	
3,300.0	4.00	37.13	3,294.2	133.5	101.1	133.5	0.00	0.00	
3,400.0	4.00	37.13	3,394.0	139.0	105.3	139.0	0.00	0.00	
3,500.0	4.00	37.13	3,493.7	144.6	109.5	144.6	0.00	0.00	
3,600.0	4.00	37.13	3,593.5	150.2	113.7	150.2	0.00	0.00	
3,700.0	4.00	37.13	3,693.3	155.7	117.9	155.7	0.00	0.00	
3,800.0	4.00	37.13	3,793.0	161.3	122.1	161.3	0.00	0.00	
3,900.0	4.00	37.13	3,892.8	166.8	126.3	166.8	0.00	0.00	
4,000.0	4.00	37.13	3,992.5	172.4	130.5	172.4	0.00	0.00	
4,100.0	4.00	37.13	4,092.3	178.0	134.7	178.0	0.00	0.00	
4,200.0	4.00	37.13	4,192.0	183.5	139.0	183.5	0.00	0.00	
4,300.0	4.00	37.13	4,291.8	189.1	143.2	189.1	0.00	0.00	
4,400.0	4.00	37.13	4,391.6	194.7	147.4	194.7	0.00	0.00	
4,500.0	4.00	37.13	4,491.3	200.2	151.6	200.2	0.00	0.00	
4,600.0	4.00	37.13	4,591.1	205.8	155.8	205.8	0.00	0.00	
4,700.0	4.00	37.13	4,690.8	211.3	160.0	211.3	0.00	0.00	
4,800.0	4.00	37.13	4,790.6	216.9	164.2	216.9	0.00	0.00	
4,900.0	4.00	37.13	4,890.3	222.5	168.4	222.5	0.00	0.00	
5,000.0	4.00	37.13	4,990.1	228.0	172.6	228.0	0.00	0.00	
5,100.0	4.00	37.13	5,089.9	233.6	176.9	233.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0108B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	37.13	5,189.6	239.1	181.1	239.1	0.00	0.00	
5,300.0	4.00	37.13	5,289.4	244.7	185.3	244.7	0.00	0.00	
5,400.0	4.00	37.13	5,389.1	250.3	189.5	250.3	0.00	0.00	
5,438.0	4.00	37.13	5,427.0	252.4	191.1	252.4	0.00	0.00	Start 11 Deg Bulid
5,450.0	5.32	37.13	5,439.0	253.2	191.7	253.2	11.00	11.00	
5,500.0	10.82	37.13	5,488.5	258.8	195.9	258.8	11.00	11.00	
5,550.0	16.32	37.13	5,537.1	268.1	203.0	268.1	11.00	11.00	
5,600.0	21.82	37.13	5,584.3	281.1	212.8	281.1	11.00	11.00	
5,650.0	27.32	37.13	5,629.8	297.7	225.4	297.7	11.00	11.00	
5,700.0	32.82	37.13	5,673.0	317.7	240.5	317.7	11.00	11.00	
5,750.0	38.32	37.13	5,713.7	340.8	258.0	340.8	11.00	11.00	
5,800.0	43.82	37.13	5,751.3	367.0	277.9	367.0	11.00	11.00	
5,805.1	44.38	37.13	5,755.0	369.8	280.0	369.8	11.00	11.00	Top Niobrara
5,850.0	49.32	37.13	5,785.7	395.9	299.8	395.9	11.00	11.00	
5,900.0	54.82	37.13	5,816.4	427.4	323.6	427.4	11.00	11.00	
5,950.0	60.32	37.13	5,843.2	461.0	349.0	461.0	11.00	11.00	
6,000.0	65.82	37.13	5,865.9	496.5	375.9	496.5	11.00	11.00	
6,050.0	71.32	37.13	5,884.1	533.6	404.0	533.6	11.00	11.00	
6,100.0	76.82	37.13	5,897.9	571.9	433.0	571.9	11.00	11.00	
6,150.0	82.32	37.13	5,906.9	611.1	462.7	611.1	11.00	11.00	
6,200.0	87.82	37.13	5,911.2	650.8	492.8	650.8	11.00	11.00	
6,219.8	90.00	37.13	5,911.6	666.6	504.7	666.6	11.00	11.00	LP @ 6,219.8' MD
6,300.0	90.00	34.72	5,911.6	731.6	551.8	731.6	3.00	0.00	7" (2091' FWL, 1530' FNL)
6,400.0	90.00	31.72	5,911.6	815.2	606.6	815.2	3.00	0.00	
6,500.0	90.00	28.72	5,911.6	901.6	656.9	901.6	3.00	0.00	
6,600.0	90.00	25.72	5,911.6	990.5	702.6	990.5	3.00	0.00	
6,700.0	90.00	22.72	5,911.6	1,081.7	743.7	1,081.7	3.00	0.00	
6,800.0	90.00	19.72	5,911.6	1,174.9	779.9	1,174.9	3.00	0.00	
6,900.0	90.00	16.72	5,911.6	1,269.9	811.1	1,269.9	3.00	0.00	
7,000.0	90.00	13.72	5,911.6	1,366.3	837.4	1,366.3	3.00	0.00	
7,100.0	90.00	10.72	5,911.6	1,464.1	858.6	1,464.1	3.00	0.00	
7,200.0	90.00	7.72	5,911.6	1,562.8	874.6	1,562.8	3.00	0.00	
7,300.0	90.00	4.72	5,911.6	1,662.2	885.4	1,662.2	3.00	0.00	
7,400.0	90.00	1.72	5,911.6	1,762.0	891.1	1,762.0	3.00	0.00	
7,469.9	90.00	359.63	5,911.6	1,831.9	891.9	1,831.9	3.00	0.00	EOT; 0 Deg Azi
7,500.0	90.00	359.63	5,911.6	1,862.0	891.7	1,862.0	0.00	0.00	
7,600.0	90.00	359.63	5,911.6	1,962.0	891.0	1,962.0	0.00	0.00	
7,700.0	90.00	359.63	5,911.6	2,062.0	890.4	2,062.0	0.00	0.00	
7,800.0	90.00	359.63	5,911.6	2,162.0	889.7	2,162.0	0.00	0.00	
7,900.0	90.00	359.63	5,911.7	2,262.0	889.1	2,262.0	0.00	0.00	
8,000.0	90.00	359.63	5,911.7	2,362.0	888.4	2,362.0	0.00	0.00	
8,100.0	90.00	359.63	5,911.7	2,462.0	887.8	2,462.0	0.00	0.00	
8,200.0	90.00	359.63	5,911.7	2,562.0	887.1	2,562.0	0.00	0.00	
8,300.0	90.00	359.63	5,911.7	2,662.0	886.5	2,662.0	0.00	0.00	
8,400.0	90.00	359.63	5,911.7	2,762.0	885.8	2,762.0	0.00	0.00	
8,500.0	90.00	359.63	5,911.7	2,862.0	885.2	2,862.0	0.00	0.00	
8,600.0	90.00	359.63	5,911.7	2,962.0	884.5	2,962.0	0.00	0.00	
8,700.0	90.00	359.63	5,911.7	3,062.0	883.9	3,062.0	0.00	0.00	
8,800.0	90.00	359.63	5,911.7	3,162.0	883.2	3,162.0	0.00	0.00	
8,900.0	90.00	359.63	5,911.7	3,262.0	882.6	3,262.0	0.00	0.00	
9,000.0	90.00	359.63	5,911.7	3,362.0	881.9	3,362.0	0.00	0.00	
9,100.0	90.00	359.63	5,911.7	3,462.0	881.3	3,462.0	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,200.0	90.00	359.63	5,911.8	3,562.0	880.6	3,562.0	0.00	0.00	
9,300.0	90.00	359.63	5,911.8	3,661.9	880.0	3,661.9	0.00	0.00	
9,400.0	90.00	359.63	5,911.8	3,761.9	879.3	3,761.9	0.00	0.00	
9,500.0	90.00	359.63	5,911.8	3,861.9	878.7	3,861.9	0.00	0.00	
9,600.0	90.00	359.63	5,911.8	3,961.9	878.0	3,961.9	0.00	0.00	
9,700.0	90.00	359.63	5,911.8	4,061.9	877.4	4,061.9	0.00	0.00	
9,800.0	90.00	359.63	5,911.8	4,161.9	876.7	4,161.9	0.00	0.00	
9,900.0	90.00	359.63	5,911.8	4,261.9	876.1	4,261.9	0.00	0.00	
10,000.0	90.00	359.63	5,911.8	4,361.9	875.4	4,361.9	0.00	0.00	
10,100.0	90.00	359.63	5,911.8	4,461.9	874.8	4,461.9	0.00	0.00	
10,200.0	90.00	359.63	5,911.8	4,561.9	874.1	4,561.9	0.00	0.00	
10,300.0	90.00	359.63	5,911.8	4,661.9	873.5	4,661.9	0.00	0.00	
10,400.0	90.00	359.63	5,911.8	4,761.9	872.8	4,761.9	0.00	0.00	
10,500.0	90.00	359.63	5,911.9	4,861.9	872.2	4,861.9	0.00	0.00	
10,600.0	90.00	359.63	5,911.9	4,961.9	871.5	4,961.9	0.00	0.00	
10,700.0	90.00	359.63	5,911.9	5,061.9	870.9	5,061.9	0.00	0.00	
10,800.0	90.00	359.63	5,911.9	5,161.9	870.2	5,161.9	0.00	0.00	
10,900.0	90.00	359.63	5,911.9	5,261.9	869.6	5,261.9	0.00	0.00	
11,000.0	90.00	359.63	5,911.9	5,361.9	868.9	5,361.9	0.00	0.00	
11,100.0	90.00	359.63	5,911.9	5,461.9	868.3	5,461.9	0.00	0.00	
11,200.0	90.00	359.63	5,911.9	5,561.9	867.6	5,561.9	0.00	0.00	
11,300.0	90.00	359.63	5,911.9	5,661.9	867.0	5,661.9	0.00	0.00	
11,400.0	90.00	359.63	5,911.9	5,761.9	866.3	5,761.9	0.00	0.00	
11,500.0	90.00	359.63	5,911.9	5,861.9	865.7	5,861.9	0.00	0.00	
11,600.0	90.00	359.63	5,911.9	5,961.9	865.0	5,961.9	0.00	0.00	
11,700.0	90.00	359.63	5,911.9	6,061.9	864.4	6,061.9	0.00	0.00	
11,800.0	90.00	359.63	5,912.0	6,161.9	863.7	6,161.9	0.00	0.00	
11,900.0	90.00	359.63	5,912.0	6,261.9	863.1	6,261.9	0.00	0.00	
12,000.0	90.00	359.63	5,912.0	6,361.9	862.4	6,361.9	0.00	0.00	
12,100.0	90.00	359.63	5,912.0	6,461.9	861.8	6,461.9	0.00	0.00	
12,200.0	90.00	359.63	5,912.0	6,561.9	861.1	6,561.9	0.00	0.00	
12,300.0	90.00	359.63	5,912.0	6,661.9	860.5	6,661.9	0.00	0.00	
12,400.0	90.00	359.63	5,912.0	6,761.9	859.8	6,761.9	0.00	0.00	
12,500.0	90.00	359.63	5,912.0	6,861.9	859.2	6,861.9	0.00	0.00	
12,540.5	90.00	359.63	5,912.0	6,902.4	858.9	6,902.4	0.00	0.00	PBHL @ 12,540.5' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Razor #12-0108B PBHL	0.00	0.00	5,912.0	6,902.4	858.9	1,565,537.75	3,466,139.94	40.873606	-103.814458
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #12F-0108B
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,300.0	5,911.6	7" (2091' FWL,1530' FNL)	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,805.1	5,755.0	Top Niobrara		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
800.0	800.0	0.0	0.0	KOP @ 800' MD
1,000.0	999.8	5.6	4.2	EOB; 4 Deg Inc
5,438.0	5,427.0	252.4	191.1	Start 11 Deg Bulid
6,219.8	5,911.6	666.6	504.7	LP @ 6,219.8' MD
7,469.9	5,911.6	1,831.9	891.9	EOT; 0 Deg Azi
12,540.5	5,912.0	6,902.4	858.9	PBHL @ 12,540.5' MD

Whiting Petroleum Corporation

Weld County, CO

S12-T10N-R58W

Razor #12F-0108B

HZ

Plan #3

Anticollision Report

08 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/8/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,540.5	Plan #3 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance		Separation Factor	Warning
			Between Centres (ft)	Between Ellipses (ft)		
S12-T10N-R58W						
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY						Out of range
Razor #12F-0101A - HZ - Plan #3	500.0	500.0	230.5	228.5	116.116	CC, ES
Razor #12F-0101A - HZ - Plan #3	3,600.0	3,575.8	496.1	479.4	29.828	SF
Razor #12F-0102B - HZ - Plan #3	500.0	500.0	197.5	195.5	99.470	CC, ES
Razor #12F-0102B - HZ - Plan #3	4,300.0	4,278.6	498.3	478.1	24.681	SF
Razor #12F-0103A - HZ - Plan #3	800.0	800.0	164.4	161.1	49.319	CC, ES
Razor #12F-0103A - HZ - Plan #3	5,400.0	5,367.4	498.5	473.0	19.522	SF
Razor #12F-0104B - HZ - Plan #3	800.0	800.0	131.4	128.0	39.408	CC, ES
Razor #12F-0104B - HZ - Plan #3	5,400.0	5,388.2	415.8	390.0	16.076	SF
Razor #12F-0105A - HZ - Plan #3	800.0	800.0	98.3	95.0	29.496	CC, ES
Razor #12F-0105A - HZ - Plan #3	5,400.0	5,389.7	302.6	276.7	11.679	SF
Razor #12F-0106B - HZ - Plan #3	852.4	853.2	65.4	61.9	18.344	CC
Razor #12F-0106B - HZ - Plan #3	900.0	900.9	65.6	61.8	17.359	ES
Razor #12F-0106B - HZ - Plan #3	5,400.0	5,399.2	187.1	160.7	7.111	SF
Razor #12F-0107A - HZ - Plan #2	800.0	800.0	33.0	29.7	9.903	CC, ES
Razor #12F-0107A - HZ - Plan #2	12,540.5	12,323.6	345.4	96.7	1.389	Level 3, SF
Razor #12G-0109A - HZ - Plan #1	7,465.7	7,530.2	337.1	256.5	4.182	CC
Razor #12G-0109A - HZ - Plan #1	12,540.5	12,604.9	368.5	107.6	1.412	Level 3, ES, SF
Razor #12G-0110B - HZ - Plan #1						Out of range
Razor #12G-0111A - HZ - Plan #1						Out of range
Razor #12G-0112B - HZ - Plan #1						Out of range
Razor #12H-0113A - HZ - Plan #1						Out of range
Razor #12H-0115A - HZ - Plan #1						Out of range
Razor #12H-0116B - HZ - Plan #1						Out of range
RAZOR 12-0141H (EXISTING) - WHTING WELL - SURV						Out of range
Razor Federal #12F-1301A - HZ - Plan #3	800.0	800.0	242.4	239.0	72.697	CC, ES
Razor Federal #12F-1301A - HZ - Plan #3	2,900.0	2,866.2	486.7	474.2	39.023	SF
Razor Federal #12F-1302B - HZ - Plan #2	800.0	800.0	211.2	207.8	63.344	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	3,300.0	3,265.5	496.1	481.9	34.933	SF
Razor Federal #12F-1303A - HZ - Plan #3	500.0	500.0	180.7	178.7	91.004	CC, ES
Razor Federal #12F-1303A - HZ - Plan #3	3,200.0	3,167.8	496.9	482.8	35.447	SF
Razor Federal #12F-1304B - HZ - Plan #2	800.0	800.0	151.2	147.9	45.357	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	3,700.0	3,667.7	491.5	475.4	30.597	SF
Razor Federal #12F-1305A - HZ - Plan #3	800.0	800.0	123.6	120.2	37.069	CC, ES
Razor Federal #12F-1305A - HZ - Plan #3	3,900.0	3,870.3	487.8	470.6	28.378	SF
Razor Federal #12F-1306B - HZ - Plan #2	800.0	800.0	99.8	96.5	29.950	CC, ES
Razor Federal #12F-1306B - HZ - Plan #2	1,200.0	1,194.9	124.3	119.2	24.658	SF
Razor Federal #12F-1307A - HZ - Plan #3	400.0	400.0	81.8	80.3	53.273	CC, ES
Razor Federal #12F-1307A - HZ - Plan #3	4,300.0	4,272.6	495.2	475.5	25.176	SF
Razor Federal #12G-1309A - HZ - Plan #1						Out of range
Razor Federal #12G-1310B - HZ - Plan #1						Out of range
Razor Federal #12G-1311A - HZ - Plan #1						Out of range
Razor Federal #12G-1312B - HZ - Plan #1						Out of range
Razor Federal #12H-1313A - HZ - Plan #1						Out of range
Razor Federal #12H-1314B - HZ - Plan #1						Out of range
Razor Federal #12H-1315A - HZ - Plan #1						Out of range
Razor Federal #12H-1316B - HZ - Plan #1						Out of range
Razor Federal #12F-1308B - HZ - Plan #2	800.0	800.0	74.9	71.5	22.461	CC, ES
Razor Federal #12F-1308B - HZ - Plan #2	1,000.0	997.8	81.8	77.6	19.475	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3														Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Between Centres (ft)	Between Ellipses (ft)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-230.5	230.5	230.5	0.19	1,232.611			
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-230.5	230.5	230.3	0.64	362.123			
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-230.5	230.5	229.9	1.09	212.238			
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-230.5	230.5	229.4	1.54	150.107			
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-230.5	230.5	229.0	1.99	116.116	CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-230.5	230.5	228.5					
600.0	600.0	594.4	594.4	1.2	1.2	-89.73	1.1	-231.6	231.7	229.3	2.42	95.806			
700.0	700.0	688.7	688.5	1.4	1.4	-88.95	4.3	-235.0	235.3	232.5	2.85	82.482			
800.0	800.0	787.7	787.3	1.7	1.6	-87.85	9.0	-240.0	240.5	237.2	3.31	72.741			
900.0	900.0	887.5	886.9	1.9	1.9	-124.14	13.8	-245.1	246.8	243.1	3.75	65.788			
1,000.0	999.8	987.1	986.3	2.1	2.1	-123.97	18.5	-250.2	255.1	250.9	4.20	60.710			
1,100.0	1,099.6	1,086.7	1,085.6	2.3	2.4	-124.24	23.3	-255.2	264.3	259.7	4.66	56.764			
1,200.0	1,199.4	1,186.3	1,184.9	2.6	2.6	-124.50	28.1	-260.3	273.5	268.4	5.12	53.458			
1,300.0	1,299.1	1,285.8	1,284.2	2.8	2.9	-124.75	32.8	-265.3	282.8	277.2	5.58	50.659			
1,400.0	1,398.9	1,385.4	1,383.6	3.1	3.1	-124.97	37.6	-270.4	292.0	286.0	6.05	48.263			
1,500.0	1,498.6	1,485.0	1,482.9	3.3	3.4	-125.18	42.3	-275.5	301.3	294.8	6.52	46.192			
1,600.0	1,598.4	1,584.5	1,582.2	3.5	3.6	-125.38	47.1	-280.5	310.5	303.5	7.00	44.388			
1,700.0	1,698.1	1,684.1	1,681.5	3.8	3.9	-125.57	51.9	-285.6	319.8	312.3	7.47	42.803			
1,800.0	1,797.9	1,783.6	1,780.8	4.0	4.1	-125.75	56.6	-290.6	329.0	321.1	7.95	41.401			
1,900.0	1,897.6	1,883.2	1,880.2	4.3	4.4	-125.92	61.4	-295.7	338.3	329.9	8.43	40.152			
2,000.0	1,997.4	1,982.8	1,979.5	4.5	4.6	-126.08	66.1	-300.8	347.6	338.7	8.90	39.033			
2,100.0	2,097.2	2,082.3	2,078.8	4.8	4.9	-126.23	70.9	-305.8	356.8	347.5	9.38	38.025			
2,200.0	2,196.9	2,181.9	2,178.1	5.0	5.2	-126.37	75.7	-310.9	366.1	356.2	9.86	37.113			
2,300.0	2,296.7	2,281.5	2,277.5	5.3	5.4	-126.51	80.4	-315.9	375.4	365.0	10.35	36.284			
2,400.0	2,396.4	2,381.0	2,376.8	5.5	5.7	-126.64	85.2	-321.0	384.7	373.8	10.83	35.526			
2,500.0	2,496.2	2,480.6	2,476.1	5.8	5.9	-126.76	89.9	-326.0	393.9	382.6	11.31	34.832			
2,600.0	2,595.9	2,580.2	2,575.4	6.1	6.2	-126.88	94.7	-331.1	403.2	391.4	11.79	34.194			
2,700.0	2,695.7	2,679.7	2,674.7	6.3	6.4	-126.99	99.5	-336.2	412.5	400.2	12.27	33.605			
2,800.0	2,795.5	2,779.3	2,774.1	6.6	6.7	-127.10	104.2	-341.2	421.8	409.0	12.76	33.060			
2,900.0	2,895.2	2,878.9	2,873.4	6.8	6.9	-127.20	109.0	-346.3	431.0	417.8	13.24	32.554			
3,000.0	2,995.0	2,978.4	2,972.7	7.1	7.2	-127.30	113.7	-351.3	440.3	426.6	13.72	32.083			
3,100.0	3,094.7	3,078.0	3,072.0	7.3	7.5	-127.39	118.5	-356.4	449.6	435.4	14.21	31.644			
3,200.0	3,194.5	3,177.6	3,171.4	7.6	7.7	-127.48	123.3	-361.4	458.9	444.2	14.69	31.233			
3,300.0	3,294.2	3,277.1	3,270.7	7.8	8.0	-127.57	128.0	-366.5	468.2	453.0	15.18	30.849			
3,400.0	3,394.0	3,376.7	3,370.0	8.1	8.2	-127.66	132.8	-371.6	477.5	461.8	15.66	30.488			
3,500.0	3,493.7	3,476.3	3,469.3	8.3	8.5	-127.74	137.5	-376.6	486.8	470.6	16.15	30.148			
3,600.0	3,593.5	3,575.8	3,568.7	8.6	8.7	-127.81	142.3	-381.7	496.1	479.4	16.63	29.828	SF		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #3														Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-197.5	197.5						
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-197.5	197.5	0.19	1,055.913				
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-197.5	197.5	0.64	310.212				
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-197.5	197.5	1.09	181.813				
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-197.5	197.5	1.54	128.589				
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-197.5	197.5	1.99	99.470 CC, ES				
600.0	600.0	595.9	595.9	1.2	1.2	-89.62	1.3	-198.4	198.5	2.42	81.921				
700.0	700.0	691.6	691.5	1.4	1.4	-88.55	5.1	-201.4	201.6	2.86	70.433				
800.0	800.0	791.0	790.6	1.7	1.7	-87.05	10.6	-205.6	206.1	3.32	62.100				
900.0	900.0	890.8	890.1	1.9	1.9	-123.05	16.1	-209.9	211.7	3.77	56.191				
1,000.0	999.8	990.5	989.6	2.1	2.1	-122.71	21.6	-214.1	219.2	4.22	51.934				
1,100.0	1,099.6	1,090.1	1,089.0	2.3	2.4	-122.88	27.1	-218.4	227.6	4.68	48.648				
1,200.0	1,199.4	1,189.8	1,188.4	2.6	2.6	-123.04	32.6	-222.6	236.1	5.14	45.895				
1,300.0	1,299.1	1,289.4	1,287.8	2.8	2.9	-123.19	38.1	-226.9	244.5	5.61	43.562				
1,400.0	1,398.9	1,389.0	1,387.2	3.1	3.1	-123.33	43.6	-231.1	253.0	6.09	41.566				
1,500.0	1,498.6	1,488.7	1,486.6	3.3	3.4	-123.46	49.1	-235.4	261.4	6.56	39.840				
1,600.0	1,598.4	1,588.3	1,586.0	3.5	3.6	-123.58	54.6	-239.6	269.9	7.04	38.337				
1,700.0	1,698.1	1,688.0	1,685.4	3.8	3.9	-123.70	60.1	-243.9	278.3	7.52	37.016				
1,800.0	1,797.9	1,787.6	1,784.8	4.0	4.1	-123.81	65.6	-248.1	286.8	8.00	35.847				
1,900.0	1,897.6	1,887.2	1,884.2	4.3	4.4	-123.91	71.1	-252.4	295.2	8.48	34.805				
2,000.0	1,997.4	1,986.9	1,983.6	4.5	4.7	-124.01	76.6	-256.7	303.7	8.97	33.872				
2,100.0	2,097.2	2,086.5	2,083.0	4.8	4.9	-124.10	82.1	-260.9	312.1	9.45	33.032				
2,200.0	2,196.9	2,186.2	2,182.4	5.0	5.2	-124.18	87.6	-265.2	320.6	9.93	32.271				
2,300.0	2,296.7	2,285.8	2,281.8	5.3	5.4	-124.26	93.1	-269.4	329.0	10.42	31.579				
2,400.0	2,396.4	2,385.4	2,381.2	5.5	5.7	-124.34	98.6	-273.7	337.5	10.91	30.948				
2,500.0	2,496.2	2,485.1	2,480.6	5.8	5.9	-124.42	104.1	-277.9	346.0	11.39	30.369				
2,600.0	2,595.9	2,584.7	2,580.0	6.1	6.2	-124.49	109.6	-282.2	354.4	11.88	29.836				
2,700.0	2,695.7	2,684.4	2,679.4	6.3	6.4	-124.55	115.1	-286.4	362.9	12.37	29.345				
2,800.0	2,795.5	2,784.0	2,778.8	6.6	6.7	-124.62	120.6	-290.7	371.3	12.85	28.890				
2,900.0	2,895.2	2,883.7	2,878.2	6.8	7.0	-124.68	126.1	-294.9	379.8	13.34	28.468				
3,000.0	2,995.0	2,983.3	2,977.6	7.1	7.2	-124.74	131.6	-299.2	388.3	13.83	28.075				
3,100.0	3,094.7	3,082.9	3,077.0	7.3	7.5	-124.79	137.1	-303.4	396.7	14.32	27.708				
3,200.0	3,194.5	3,182.6	3,176.4	7.6	7.7	-124.85	142.5	-307.7	405.2	14.81	27.366				
3,300.0	3,294.2	3,282.2	3,275.8	7.8	8.0	-124.90	148.0	-311.9	413.7	15.30	27.044				
3,400.0	3,394.0	3,381.9	3,375.2	8.1	8.2	-124.95	153.5	-316.2	422.1	15.78	26.743				
3,500.0	3,493.7	3,481.5	3,474.6	8.3	8.5	-124.99	159.0	-320.4	430.6	16.27	26.459				
3,600.0	3,593.5	3,581.1	3,574.0	8.6	8.7	-125.04	164.5	-324.7	439.0	16.76	26.192				
3,700.0	3,693.3	3,680.8	3,673.4	8.9	9.0	-125.08	170.0	-328.9	447.5	17.25	25.940				
3,800.0	3,793.0	3,780.4	3,772.8	9.1	9.3	-125.13	175.5	-333.2	456.0	17.74	25.701				
3,900.0	3,892.8	3,880.1	3,872.1	9.4	9.5	-125.17	181.0	-337.4	464.4	18.23	25.475				
4,000.0	3,992.5	3,979.7	3,971.5	9.6	9.8	-125.21	186.5	-341.7	472.9	18.72	25.261				
4,100.0	4,092.3	4,079.3	4,070.9	9.9	10.0	-125.24	192.0	-346.0	481.4	19.21	25.058				
4,200.0	4,192.0	4,179.0	4,170.3	10.1	10.3	-125.28	197.5	-350.2	489.8	19.70	24.865				
4,300.0	4,291.8	4,278.6	4,269.7	10.4	10.5	-125.32	203.0	-354.5	498.3	20.19	24.681 SF				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-164.4	164.4					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-164.4	164.4	164.2	0.19	879.215		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-164.4	164.4	163.8	0.64	258.301		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-164.4	164.4	163.3	1.09	151.388		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-164.4	164.4	162.9	1.54	107.071		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-164.4	164.4	162.4	1.99	82.825		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-164.4	164.4	162.0	2.43	67.532		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-164.4	164.4	161.5	2.88	57.007		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-164.4	164.4	161.1	3.33	49.319 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	-127.59	0.0	-164.4	165.5	161.7	3.78	43.779		
1,000.0	999.8	999.8	999.8	2.1	2.1	-128.94	0.0	-164.4	168.7	164.5	4.22	39.949		
1,100.0	1,099.6	1,097.1	1,097.1	2.3	2.3	-130.20	1.5	-165.2	173.9	169.3	4.66	37.292		
1,200.0	1,199.4	1,194.3	1,194.1	2.6	2.6	-130.43	5.8	-167.6	180.6	175.5	5.11	35.360		
1,300.0	1,299.1	1,293.8	1,293.4	2.8	2.8	-130.13	11.9	-170.9	188.1	182.6	5.56	33.814		
1,400.0	1,398.9	1,393.5	1,392.9	3.1	3.0	-129.85	18.0	-174.3	195.6	189.6	6.02	32.473		
1,500.0	1,498.6	1,493.3	1,492.4	3.3	3.2	-129.59	24.1	-177.6	203.2	196.7	6.49	31.299		
1,600.0	1,598.4	1,593.0	1,591.8	3.5	3.5	-129.35	30.2	-180.9	210.7	203.7	6.96	30.265		
1,700.0	1,698.1	1,692.7	1,691.3	3.8	3.7	-129.12	36.3	-184.3	218.2	210.8	7.44	29.349		
1,800.0	1,797.9	1,792.4	1,790.8	4.0	4.0	-128.91	42.4	-187.6	225.8	217.8	7.91	28.534		
1,900.0	1,897.6	1,892.1	1,890.3	4.3	4.2	-128.71	48.5	-191.0	233.3	224.9	8.39	27.804		
2,000.0	1,997.4	1,991.8	1,989.7	4.5	4.5	-128.53	54.6	-194.3	240.8	232.0	8.87	27.147		
2,100.0	2,097.2	2,091.5	2,089.2	4.8	4.7	-128.36	60.7	-197.6	248.4	239.0	9.35	26.554		
2,200.0	2,196.9	2,191.2	2,188.7	5.0	5.0	-128.19	66.8	-201.0	255.9	246.1	9.84	26.015		
2,300.0	2,296.7	2,291.0	2,288.1	5.3	5.2	-128.04	72.9	-204.3	263.5	253.1	10.32	25.524		
2,400.0	2,396.4	2,390.7	2,387.6	5.5	5.5	-127.90	79.0	-207.7	271.0	260.2	10.81	25.075		
2,500.0	2,496.2	2,490.4	2,487.1	5.8	5.7	-127.76	85.1	-211.0	278.6	267.3	11.29	24.663		
2,600.0	2,595.9	2,590.1	2,586.5	6.1	6.0	-127.63	91.2	-214.4	286.1	274.3	11.78	24.284		
2,700.0	2,695.7	2,689.8	2,686.0	6.3	6.2	-127.51	97.3	-217.7	293.7	281.4	12.27	23.933		
2,800.0	2,795.5	2,789.5	2,785.5	6.6	6.5	-127.39	103.4	-221.0	301.2	288.5	12.76	23.608		
2,900.0	2,895.2	2,889.2	2,885.0	6.8	6.7	-127.28	109.5	-224.4	308.8	295.5	13.25	23.306		
3,000.0	2,995.0	2,988.9	2,984.4	7.1	7.0	-127.17	115.6	-227.7	316.3	302.6	13.74	23.025		
3,100.0	3,094.7	3,088.7	3,083.9	7.3	7.2	-127.07	121.7	-231.1	323.9	309.6	14.23	22.763		
3,200.0	3,194.5	3,188.4	3,183.4	7.6	7.5	-126.98	127.8	-234.4	331.4	316.7	14.72	22.518		
3,300.0	3,294.2	3,288.1	3,282.8	7.8	7.7	-126.88	133.9	-237.7	339.0	323.8	15.21	22.288		
3,400.0	3,394.0	3,387.8	3,382.3	8.1	8.0	-126.80	140.0	-241.1	346.5	330.8	15.70	22.072		
3,500.0	3,493.7	3,487.5	3,481.8	8.3	8.2	-126.71	146.1	-244.4	354.1	337.9	16.19	21.869		
3,600.0	3,593.5	3,587.2	3,581.2	8.6	8.5	-126.63	152.2	-247.8	361.7	345.0	16.68	21.678		
3,700.0	3,693.3	3,686.9	3,680.7	8.9	8.7	-126.55	158.3	-251.1	369.2	352.1	17.18	21.497		
3,800.0	3,793.0	3,786.6	3,780.2	9.1	9.0	-126.48	164.4	-254.4	376.8	359.1	17.67	21.326		
3,900.0	3,892.8	3,886.4	3,879.6	9.4	9.3	-126.41	170.5	-257.8	384.4	366.2	18.16	21.164		
4,000.0	3,992.5	3,986.1	3,979.1	9.6	9.5	-126.34	176.6	-261.1	391.9	373.3	18.65	21.011		
4,100.0	4,092.3	4,085.8	4,078.6	9.9	9.8	-126.27	182.7	-264.5	399.5	380.3	19.15	20.865		
4,200.0	4,192.0	4,185.5	4,178.1	10.1	10.0	-126.21	188.8	-267.8	407.0	387.4	19.64	20.727		
4,300.0	4,291.8	4,285.2	4,277.5	10.4	10.3	-126.15	194.9	-271.2	414.6	394.5	20.13	20.595		
4,400.0	4,391.6	4,384.9	4,377.0	10.6	10.5	-126.09	201.0	-274.5	422.2	401.5	20.62	20.469		
4,500.0	4,491.3	4,484.6	4,476.5	10.9	10.8	-126.03	207.1	-277.8	429.7	408.6	21.12	20.349		
4,600.0	4,591.1	4,584.3	4,575.9	11.2	11.0	-125.98	213.2	-281.2	437.3	415.7	21.61	20.235		
4,700.0	4,690.8	4,684.1	4,675.4	11.4	11.3	-125.92	219.3	-284.5	444.9	422.8	22.10	20.125		
4,800.0	4,790.6	4,783.8	4,774.9	11.7	11.5	-125.87	225.4	-287.9	452.4	429.8	22.60	20.020		
4,900.0	4,890.3	4,883.5	4,874.3	11.9	11.8	-125.82	231.5	-291.2	460.0	436.9	23.09	19.920		
5,000.0	4,990.1	4,983.2	4,973.8	12.2	12.1	-125.78	237.6	-294.5	467.6	444.0	23.59	19.824		
5,100.0	5,089.9	5,082.9	5,073.3	12.4	12.3	-125.73	243.7	-297.9	475.1	451.0	24.08	19.731		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #3		Offset Site Error:		0.0 ft
Survey Program:													0-ISCWSA MWD		Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)							
5,200.0	5,189.6	5,182.6	5,172.8	12.7	12.6	-125.68	249.8	-301.2	482.7	458.1	24.57	19.643					
5,300.0	5,289.4	5,282.3	5,272.2	13.0	12.8	-125.64	255.9	-304.6	490.3	465.2	25.07	19.558					
5,400.0	5,389.1	5,367.4	5,357.0	13.2	13.1	-125.52	261.9	-307.8	498.5	473.0	25.53	19.522 SF					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-89.98	0.0	-131.4	131.4					
100.0	100.0	100.0	100.0	0.1	0.1	-89.98	0.0	-131.4	131.4	131.2	0.19	702.518		
200.0	200.0	200.0	200.0	0.3	0.3	-89.98	0.0	-131.4	131.4	130.7	0.64	206.390		
300.0	300.0	300.0	300.0	0.5	0.5	-89.98	0.0	-131.4	131.4	130.3	1.09	120.963		
400.0	400.0	400.0	400.0	0.8	0.8	-89.98	0.0	-131.4	131.4	129.8	1.54	85.553		
500.0	500.0	500.0	500.0	1.0	1.0	-89.98	0.0	-131.4	131.4	129.4	1.99	66.179		
600.0	600.0	600.0	600.0	1.2	1.2	-89.98	0.0	-131.4	131.4	128.9	2.43	53.960		
700.0	700.0	700.0	700.0	1.4	1.4	-89.98	0.0	-131.4	131.4	128.5	2.88	45.550		
800.0	800.0	800.0	800.0	1.7	1.7	-89.98	0.0	-131.4	131.4	128.0	3.33	39.408	CC, ES	
900.0	900.0	898.6	898.6	1.9	1.9	-126.98	1.7	-131.9	132.9	129.2	3.78	35.208		
1,000.0	999.8	997.1	997.0	2.1	2.1	-126.60	6.5	-133.4	137.6	133.4	4.22	32.633		
1,100.0	1,099.6	1,096.9	1,096.5	2.3	2.3	-126.18	13.2	-135.4	143.9	139.2	4.67	30.812		
1,200.0	1,199.4	1,196.7	1,196.1	2.6	2.6	-125.79	19.8	-137.5	150.2	145.0	5.13	29.266		
1,300.0	1,299.1	1,296.5	1,295.6	2.8	2.8	-125.44	26.5	-139.5	156.4	150.8	5.60	27.943		
1,400.0	1,398.9	1,396.3	1,395.2	3.1	3.1	-125.11	33.1	-141.5	162.7	156.7	6.07	26.802		
1,500.0	1,498.6	1,496.1	1,494.7	3.3	3.3	-124.81	39.8	-143.6	169.0	162.5	6.55	25.810		
1,600.0	1,598.4	1,595.9	1,594.3	3.5	3.5	-124.53	46.5	-145.6	175.3	168.3	7.03	24.942		
1,700.0	1,698.1	1,695.7	1,693.8	3.8	3.8	-124.27	53.1	-147.7	181.6	174.1	7.51	24.177		
1,800.0	1,797.9	1,795.5	1,793.4	4.0	4.0	-124.02	59.8	-149.7	187.9	179.9	8.00	23.498		
1,900.0	1,897.6	1,895.3	1,892.9	4.3	4.3	-123.80	66.4	-151.8	194.2	185.7	8.48	22.892		
2,000.0	1,997.4	1,995.1	1,992.5	4.5	4.5	-123.58	73.1	-153.8	200.5	191.6	8.97	22.349		
2,100.0	2,097.2	2,094.9	2,092.1	4.8	4.8	-123.38	79.7	-155.8	206.8	197.4	9.46	21.859		
2,200.0	2,196.9	2,194.7	2,191.6	5.0	5.0	-123.19	86.4	-157.9	213.2	203.2	9.95	21.415		
2,300.0	2,296.7	2,294.5	2,291.2	5.3	5.3	-123.02	93.0	-159.9	219.5	209.0	10.45	21.012		
2,400.0	2,396.4	2,394.3	2,390.7	5.5	5.5	-122.85	99.7	-162.0	225.8	214.9	10.94	20.643		
2,500.0	2,496.2	2,494.1	2,490.3	5.8	5.8	-122.69	106.3	-164.0	232.1	220.7	11.43	20.305		
2,600.0	2,595.9	2,593.9	2,589.8	6.1	6.0	-122.54	113.0	-166.1	238.4	226.5	11.93	19.994		
2,700.0	2,695.7	2,693.7	2,689.4	6.3	6.3	-122.40	119.7	-168.1	244.8	232.3	12.42	19.707		
2,800.0	2,795.5	2,793.5	2,788.9	6.6	6.6	-122.26	126.3	-170.1	251.1	238.2	12.92	19.441		
2,900.0	2,895.2	2,893.3	2,888.5	6.8	6.8	-122.13	133.0	-172.2	257.4	244.0	13.41	19.194		
3,000.0	2,995.0	2,993.1	2,988.0	7.1	7.1	-122.01	139.6	-174.2	263.7	249.8	13.91	18.965		
3,100.0	3,094.7	3,092.9	3,087.6	7.3	7.3	-121.89	146.3	-176.3	270.1	255.7	14.40	18.751		
3,200.0	3,194.5	3,192.7	3,187.2	7.6	7.6	-121.78	152.9	-178.3	276.4	261.5	14.90	18.551		
3,300.0	3,294.2	3,292.5	3,286.7	7.8	7.8	-121.68	159.6	-180.4	282.7	267.3	15.40	18.363		
3,400.0	3,394.0	3,392.3	3,386.3	8.1	8.1	-121.57	166.2	-182.4	289.1	273.2	15.89	18.187		
3,500.0	3,493.7	3,492.1	3,485.8	8.3	8.3	-121.48	172.9	-184.5	295.4	279.0	16.39	18.022		
3,600.0	3,593.5	3,591.9	3,585.4	8.6	8.6	-121.38	179.5	-186.5	301.7	284.8	16.89	17.866		
3,700.0	3,693.3	3,691.7	3,684.9	8.9	8.8	-121.29	186.2	-188.5	308.1	290.7	17.39	17.719		
3,800.0	3,793.0	3,791.5	3,784.5	9.1	9.1	-121.21	192.9	-190.6	314.4	296.5	17.88	17.580		
3,900.0	3,892.8	3,891.2	3,884.0	9.4	9.4	-121.13	199.5	-192.6	320.7	302.4	18.38	17.448		
4,000.0	3,992.5	3,991.0	3,983.6	9.6	9.6	-121.05	206.2	-194.7	327.1	308.2	18.88	17.323		
4,100.0	4,092.3	4,090.8	4,083.2	9.9	9.9	-120.97	212.8	-196.7	333.4	314.0	19.38	17.205		
4,200.0	4,192.0	4,190.6	4,182.7	10.1	10.1	-120.90	219.5	-198.8	339.7	319.9	19.88	17.092		
4,300.0	4,291.8	4,290.4	4,282.3	10.4	10.4	-120.83	226.1	-200.8	346.1	325.7	20.38	16.985		
4,400.0	4,391.6	4,390.2	4,381.8	10.6	10.6	-120.76	232.8	-202.8	352.4	331.5	20.87	16.883		
4,500.0	4,491.3	4,490.0	4,481.4	10.9	10.9	-120.69	239.4	-204.9	358.8	337.4	21.37	16.785		
4,600.0	4,591.1	4,589.8	4,580.9	11.2	11.1	-120.63	246.1	-206.9	365.1	343.2	21.87	16.692		
4,700.0	4,690.8	4,689.6	4,680.5	11.4	11.4	-120.57	252.8	-209.0	371.4	349.1	22.37	16.603		
4,800.0	4,790.6	4,789.4	4,780.0	11.7	11.7	-120.51	259.4	-211.0	377.8	354.9	22.87	16.518		
4,900.0	4,890.3	4,889.2	4,879.6	11.9	11.9	-120.45	266.1	-213.1	384.1	360.8	23.37	16.437		
5,000.0	4,990.1	4,989.0	4,979.1	12.2	12.2	-120.40	272.7	-215.1	390.5	366.6	23.87	16.359		
5,100.0	5,089.9	5,088.8	5,078.7	12.4	12.4	-120.34	279.4	-217.1	396.8	372.4	24.37	16.284		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design												S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #3		Offset Site Error:		0.0 ft	
Survey Program:												0-ISWWSA MWD		Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)							
5,200.0	5,189.6	5,188.6	5,178.3	12.7	12.7	-120.29	286.0	-219.2	403.1	378.3	24.87	16.212					
5,300.0	5,289.4	5,288.4	5,277.8	13.0	12.9	-120.24	292.7	-221.2	409.5	384.1	25.37	16.143					
5,400.0	5,389.1	5,388.2	5,377.4	13.2	13.2	-120.19	299.3	-223.3	415.8	390.0	25.87	16.076	SF				
5,500.0	5,488.5	5,475.5	5,464.3	13.5	13.4	-119.69	306.4	-225.5	424.7	398.5	26.28	16.160					
5,600.0	5,584.3	5,550.0	5,537.1	13.9	13.7	-118.00	321.5	-230.1	447.3	420.6	26.65	16.784					
5,700.0	5,673.0	5,617.5	5,600.5	14.5	14.0	-115.08	343.6	-236.9	483.5	456.4	27.15	17.811					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #3													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-98.3	98.3					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-98.3	98.3	98.1	0.19	525.820		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-98.3	98.3	97.7	0.64	154.478		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-98.3	98.3	97.2	1.09	90.539		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-98.3	98.3	96.8	1.54	64.034		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-98.3	98.3	96.3	1.99	49.534		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-98.3	98.3	95.9	2.43	40.388		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-98.3	98.3	95.4	2.88	34.093		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-98.3	98.3	95.0	3.33	29.496	CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	-127.90	0.0	-98.3	99.4	95.6	3.78	26.296		
1,000.0	999.8	999.8	999.8	2.1	2.1	-130.15	0.0	-98.3	102.7	98.5	4.22	24.316		
1,100.0	1,099.6	1,099.6	1,099.6	2.3	2.3	-133.00	0.0	-98.3	107.3	102.7	4.67	22.981		
1,200.0	1,199.4	1,199.7	1,199.7	2.6	2.6	-134.73	1.8	-98.4	112.0	106.9	5.12	21.879		
1,300.0	1,299.1	1,300.0	1,299.9	2.8	2.8	-134.60	7.0	-98.6	116.4	110.9	5.57	20.891		
1,400.0	1,398.9	1,399.9	1,399.5	3.1	3.0	-133.66	14.0	-98.9	120.7	114.7	6.03	20.007		
1,500.0	1,498.6	1,499.8	1,499.2	3.3	3.2	-132.79	20.9	-99.1	125.0	118.5	6.50	19.233		
1,600.0	1,598.4	1,599.7	1,598.8	3.5	3.5	-131.97	27.9	-99.4	129.4	122.4	6.97	18.553		
1,700.0	1,698.1	1,699.6	1,698.4	3.8	3.7	-131.20	34.9	-99.7	133.7	126.3	7.45	17.951		
1,800.0	1,797.9	1,799.5	1,798.1	4.0	4.0	-130.49	41.8	-99.9	138.1	130.2	7.93	17.417		
1,900.0	1,897.6	1,899.4	1,897.7	4.3	4.2	-129.82	48.8	-100.2	142.5	134.1	8.41	16.940		
2,000.0	1,997.4	1,999.3	1,997.4	4.5	4.4	-129.18	55.7	-100.5	146.9	138.0	8.90	16.512		
2,100.0	2,097.2	2,099.1	2,097.0	4.8	4.7	-128.59	62.7	-100.7	151.3	141.9	9.38	16.127		
2,200.0	2,196.9	2,199.0	2,196.7	5.0	4.9	-128.03	69.7	-101.0	155.8	145.9	9.87	15.778		
2,300.0	2,296.7	2,298.9	2,296.3	5.3	5.2	-127.50	76.6	-101.3	160.2	149.9	10.36	15.460		
2,400.0	2,396.4	2,398.8	2,396.0	5.5	5.4	-127.00	83.6	-101.5	164.7	153.8	10.86	15.171		
2,500.0	2,496.2	2,498.7	2,495.6	5.8	5.7	-126.52	90.6	-101.8	169.2	157.8	11.35	14.906		
2,600.0	2,595.9	2,598.6	2,595.3	6.1	5.9	-126.07	97.5	-102.1	173.7	161.8	11.85	14.663		
2,700.0	2,695.7	2,698.5	2,694.9	6.3	6.2	-125.64	104.5	-102.3	178.2	165.9	12.34	14.439		
2,800.0	2,795.5	2,798.4	2,794.6	6.6	6.4	-125.24	111.4	-102.6	182.7	169.9	12.84	14.232		
2,900.0	2,895.2	2,898.3	2,894.2	6.8	6.7	-124.85	118.4	-102.9	187.2	173.9	13.34	14.040		
3,000.0	2,995.0	2,998.2	2,993.9	7.1	6.9	-124.48	125.4	-103.1	191.8	177.9	13.83	13.862		
3,100.0	3,094.7	3,098.0	3,093.5	7.3	7.2	-124.13	132.3	-103.4	196.3	182.0	14.33	13.696		
3,200.0	3,194.5	3,197.9	3,193.1	7.6	7.4	-123.80	139.3	-103.7	200.9	186.0	14.83	13.542		
3,300.0	3,294.2	3,297.8	3,292.8	7.8	7.7	-123.48	146.3	-103.9	205.4	190.1	15.33	13.397		
3,400.0	3,394.0	3,397.7	3,392.4	8.1	7.9	-123.17	153.2	-104.2	210.0	194.1	15.83	13.262		
3,500.0	3,493.7	3,497.6	3,492.1	8.3	8.2	-122.87	160.2	-104.5	214.5	198.2	16.33	13.134		
3,600.0	3,593.5	3,597.5	3,591.7	8.6	8.4	-122.59	167.1	-104.8	219.1	202.3	16.84	13.015		
3,700.0	3,693.3	3,697.4	3,691.4	8.9	8.7	-122.32	174.1	-105.0	223.7	206.3	17.34	12.902		
3,800.0	3,793.0	3,797.3	3,791.0	9.1	9.0	-122.06	181.1	-105.3	228.3	210.4	17.84	12.796		
3,900.0	3,892.8	3,897.2	3,890.7	9.4	9.2	-121.82	188.0	-105.6	232.9	214.5	18.34	12.696		
4,000.0	3,992.5	3,997.0	3,990.3	9.6	9.5	-121.58	195.0	-105.8	237.4	218.6	18.84	12.601		
4,100.0	4,092.3	4,096.9	4,090.0	9.9	9.7	-121.35	202.0	-106.1	242.0	222.7	19.35	12.511		
4,200.0	4,192.0	4,196.8	4,189.6	10.1	10.0	-121.12	208.9	-106.4	246.6	226.8	19.85	12.426		
4,300.0	4,291.8	4,296.7	4,289.3	10.4	10.2	-120.91	215.9	-106.6	251.2	230.9	20.35	12.344		
4,400.0	4,391.6	4,396.6	4,388.9	10.6	10.5	-120.71	222.8	-106.9	255.8	235.0	20.86	12.267		
4,500.0	4,491.3	4,496.5	4,488.5	10.9	10.7	-120.51	229.8	-107.2	260.4	239.1	21.36	12.194		
4,600.0	4,591.1	4,596.4	4,588.2	11.2	11.0	-120.32	236.8	-107.4	265.1	243.2	21.86	12.124		
4,700.0	4,690.8	4,696.3	4,687.8	11.4	11.2	-120.13	243.7	-107.7	269.7	247.3	22.37	12.057		
4,800.0	4,790.6	4,796.2	4,787.5	11.7	11.5	-119.95	250.7	-108.0	274.3	251.4	22.87	11.993		
4,900.0	4,890.3	4,896.1	4,887.1	11.9	11.7	-119.78	257.7	-108.2	278.9	255.5	23.37	11.932		
5,000.0	4,990.1	4,995.9	4,986.8	12.2	12.0	-119.61	264.6	-108.5	283.5	259.6	23.88	11.874		
5,100.0	5,089.9	5,095.8	5,086.4	12.4	12.3	-119.45	271.6	-108.8	288.2	263.8	24.38	11.818		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #3		Offset Site Error:		0.0 ft
Survey Program:													0-ISWWSA MWD		Offset Well Error:		0.0 ft
Reference				Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor					
5,200.0	5,189.6	5,195.7	5,186.1	12.7	12.5	-119.29	278.6	-109.0	292.8	267.9	24.89	11.764					
5,300.0	5,289.4	5,295.6	5,285.7	13.0	12.8	-119.14	285.5	-109.3	297.4	272.0	25.39	11.713					
5,400.0	5,389.1	5,389.7	5,379.3	13.2	13.0	-118.48	294.8	-109.7	302.6	276.7	25.91	11.679 SF					
5,500.0	5,488.5	5,477.1	5,463.7	13.5	13.4	-115.19	317.0	-110.5	312.9	286.4	26.49	11.811					
5,600.0	5,584.3	5,560.1	5,539.4	13.9	13.8	-110.70	350.8	-111.8	335.1	307.9	27.18	12.329					
5,700.0	5,673.0	5,638.5	5,605.1	14.5	14.3	-105.68	393.3	-113.4	368.3	340.1	28.11	13.101					
5,800.0	5,751.3	5,712.0	5,660.3	15.3	14.9	-100.30	441.8	-115.3	410.5	381.1	29.35	13.986					
5,900.0	5,816.4	5,781.2	5,705.5	16.3	15.5	-94.67	494.1	-117.3	459.5	428.6	30.86	14.891					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #3														Offset Site Error:	0.0 ft
Survey Program: 0-ISCSA MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	-89.96	0.0	-66.1	66.1						
100.0	100.0	100.0	100.0	0.1	0.1	-89.96	0.0	-66.1	66.1	65.9	0.19	353.231			
200.0	200.0	200.0	200.0	0.3	0.3	-89.96	0.0	-66.1	66.1	65.4	0.64	103.774			
300.0	300.0	300.0	300.0	0.5	0.5	-89.96	0.0	-66.1	66.1	65.0	1.09	60.821			
400.0	400.0	400.0	400.0	0.8	0.8	-89.96	0.0	-66.1	66.1	64.5	1.54	43.017			
500.0	500.0	500.0	500.0	1.0	1.0	-89.96	0.0	-66.1	66.1	64.1	1.99	33.275			
600.0	600.0	600.0	600.0	1.2	1.2	-89.96	0.0	-66.1	66.1	63.6	2.43	27.132			
700.0	700.0	700.0	700.0	1.4	1.4	-89.96	0.0	-66.1	66.1	63.2	2.88	22.903			
800.0	800.0	800.5	800.5	1.7	1.7	-88.47	1.8	-65.6	65.6	62.3	3.33	19.687			
852.4	852.4	853.2	853.1	1.8	1.8	-123.95	4.0	-65.1	65.4	61.9	3.57	18.344 CC			
900.0	900.0	900.9	900.7	1.9	1.9	-122.34	6.9	-64.3	65.6	61.8	3.78	17.359 ES			
1,000.0	999.8	1,000.8	1,000.4	2.1	2.1	-120.22	13.6	-62.6	67.3	63.1	4.23	15.916			
1,100.0	1,099.6	1,100.8	1,100.2	2.3	2.4	-119.49	20.4	-60.9	70.0	65.3	4.69	14.912			
1,200.0	1,199.4	1,200.8	1,199.9	2.6	2.6	-118.81	27.2	-59.2	72.6	67.4	5.16	14.066			
1,300.0	1,299.1	1,300.7	1,299.6	2.8	2.8	-118.18	33.9	-57.5	75.2	69.6	5.64	13.348			
1,400.0	1,398.9	1,400.7	1,399.3	3.1	3.1	-117.59	40.7	-55.8	77.9	71.8	6.12	12.732			
1,500.0	1,498.6	1,500.7	1,499.0	3.3	3.3	-117.04	47.4	-54.1	80.6	74.0	6.60	12.200			
1,600.0	1,598.4	1,600.6	1,598.7	3.5	3.6	-116.53	54.2	-52.4	83.3	76.2	7.09	11.735			
1,700.0	1,698.1	1,700.6	1,698.5	3.8	3.8	-116.05	61.0	-50.7	85.9	78.3	7.59	11.328			
1,800.0	1,797.9	1,800.5	1,798.2	4.0	4.1	-115.60	67.7	-48.9	88.6	80.5	8.08	10.968			
1,900.0	1,897.6	1,900.5	1,897.9	4.3	4.3	-115.17	74.5	-47.2	91.3	82.7	8.58	10.647			
2,000.0	1,997.4	2,000.5	1,997.6	4.5	4.6	-114.77	81.2	-45.5	94.0	84.9	9.07	10.360			
2,100.0	2,097.2	2,100.4	2,097.3	4.8	4.8	-114.39	88.0	-43.8	96.7	87.1	9.57	10.102			
2,200.0	2,196.9	2,200.4	2,197.1	5.0	5.1	-114.03	94.8	-42.1	99.4	89.3	10.07	9.869			
2,300.0	2,296.7	2,300.3	2,296.8	5.3	5.3	-113.69	101.5	-40.4	102.1	91.6	10.57	9.658			
2,400.0	2,396.4	2,400.3	2,396.5	5.5	5.6	-113.37	108.3	-38.7	104.8	93.8	11.08	9.465			
2,500.0	2,496.2	2,500.3	2,496.2	5.8	5.8	-113.07	115.0	-37.0	107.6	96.0	11.58	9.288			
2,600.0	2,595.9	2,600.2	2,595.9	6.1	6.1	-112.77	121.8	-35.3	110.3	98.2	12.08	9.126			
2,700.0	2,695.7	2,700.2	2,695.6	6.3	6.4	-112.50	128.6	-33.6	113.0	100.4	12.59	8.977			
2,800.0	2,795.5	2,800.2	2,795.4	6.6	6.6	-112.24	135.3	-31.9	115.7	102.6	13.09	8.838			
2,900.0	2,895.2	2,900.1	2,895.1	6.8	6.9	-111.98	142.1	-30.1	118.4	104.8	13.60	8.710			
3,000.0	2,995.0	3,000.1	2,994.8	7.1	7.1	-111.74	148.8	-28.4	121.2	107.1	14.10	8.592			
3,100.0	3,094.7	3,100.0	3,094.5	7.3	7.4	-111.51	155.6	-26.7	123.9	109.3	14.61	8.481			
3,200.0	3,194.5	3,200.0	3,194.2	7.6	7.6	-111.30	162.4	-25.0	126.6	111.5	15.12	8.377			
3,300.0	3,294.2	3,300.0	3,294.0	7.8	7.9	-111.08	169.1	-23.3	129.4	113.7	15.62	8.281			
3,400.0	3,394.0	3,399.9	3,393.7	8.1	8.1	-110.88	175.9	-21.6	132.1	116.0	16.13	8.190			
3,500.0	3,493.7	3,499.9	3,493.4	8.3	8.4	-110.69	182.6	-19.9	134.8	118.2	16.64	8.105			
3,600.0	3,593.5	3,599.8	3,593.1	8.6	8.6	-110.50	189.4	-18.2	137.6	120.4	17.15	8.025			
3,700.0	3,693.3	3,699.8	3,692.8	8.9	8.9	-110.33	196.2	-16.5	140.3	122.7	17.65	7.949			
3,800.0	3,793.0	3,799.8	3,792.5	9.1	9.2	-110.15	202.9	-14.8	143.1	124.9	18.16	7.878			
3,900.0	3,892.8	3,899.7	3,892.3	9.4	9.4	-109.99	209.7	-13.0	145.8	127.1	18.67	7.810			
4,000.0	3,992.5	3,999.7	3,992.0	9.6	9.7	-109.83	216.4	-11.3	148.5	129.4	19.18	7.746			
4,100.0	4,092.3	4,099.7	4,091.7	9.9	9.9	-109.68	223.2	-9.6	151.3	131.6	19.69	7.685			
4,200.0	4,192.0	4,199.6	4,191.4	10.1	10.2	-109.53	230.0	-7.9	154.0	133.8	20.19	7.628			
4,300.0	4,291.8	4,299.6	4,291.1	10.4	10.4	-109.39	236.7	-6.2	156.8	136.1	20.70	7.573			
4,400.0	4,391.6	4,399.5	4,390.8	10.6	10.7	-109.25	243.5	-4.5	159.5	138.3	21.21	7.521			
4,500.0	4,491.3	4,499.5	4,490.6	10.9	10.9	-109.12	250.2	-2.8	162.3	140.6	21.72	7.471			
4,600.0	4,591.1	4,599.5	4,590.3	11.2	11.2	-108.99	257.0	-1.1	165.0	142.8	22.23	7.424			
4,700.0	4,690.8	4,699.4	4,690.0	11.4	11.5	-108.86	263.8	0.6	167.8	145.0	22.74	7.379			
4,800.0	4,790.6	4,799.4	4,789.7	11.7	11.7	-108.74	270.5	2.3	170.5	147.3	23.25	7.335			
4,900.0	4,890.3	4,899.3	4,889.4	11.9	12.0	-108.63	277.3	4.0	173.3	149.5	23.76	7.294			
5,000.0	4,990.1	4,999.3	4,989.2	12.2	12.2	-108.51	284.0	5.8	176.0	151.8	24.27	7.254			

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,089.9	5,099.3	5,088.9	12.4	12.5	-108.40	290.8	7.5	178.8	154.0	24.78	7.216		
5,200.0	5,189.6	5,199.2	5,188.6	12.7	12.7	-108.30	297.6	9.2	181.5	156.3	25.29	7.180		
5,300.0	5,289.4	5,299.2	5,288.3	13.0	13.0	-108.19	304.3	10.9	184.3	158.5	25.80	7.144		
5,400.0	5,389.1	5,399.2	5,388.0	13.2	13.2	-108.09	311.1	12.6	187.1	160.7	26.31	7.111 SF		
5,500.0	5,488.5	5,497.3	5,485.6	13.5	13.5	-107.72	320.9	15.1	191.2	164.4	26.84	7.125		
5,600.0	5,584.3	5,593.6	5,578.1	13.9	13.9	-106.52	346.1	21.4	202.2	174.6	27.57	7.335		
5,700.0	5,673.0	5,688.7	5,663.3	14.5	14.5	-104.63	386.8	31.7	220.1	191.5	28.58	7.701		
5,800.0	5,751.3	5,782.3	5,738.3	15.3	15.2	-102.22	440.8	45.4	244.3	214.3	29.96	8.154		
5,900.0	5,816.4	5,874.3	5,801.3	16.3	16.0	-99.45	505.8	61.8	273.7	241.9	31.72	8.628		
6,000.0	5,865.9	5,965.2	5,850.9	17.5	17.0	-96.44	579.5	80.5	307.3	273.4	33.85	9.076		
6,100.0	5,897.9	6,055.5	5,886.3	18.8	18.1	-93.33	659.9	100.8	343.9	307.6	36.29	9.476		
6,200.0	5,911.2	6,145.9	5,906.9	20.3	19.3	-90.23	745.1	122.3	382.3	343.3	38.93	9.818		
6,300.0	5,911.6	6,235.1	5,912.3	21.9	20.6	-90.11	831.4	144.1	419.7	378.0	41.73	10.058		
6,400.0	5,911.6	6,311.3	5,912.3	23.3	21.7	-90.10	905.7	160.7	454.9	410.6	44.32	10.264		
6,500.0	5,911.6	6,386.7	5,912.3	24.9	22.7	-90.09	979.9	174.3	488.9	442.0	46.91	10.423		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-89.94	0.0	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.94	0.0	-33.0	33.0	32.8	0.19	176.534		
200.0	200.0	200.0	200.0	0.3	0.3	-89.94	0.0	-33.0	33.0	32.4	0.64	51.863		
300.0	300.0	300.0	300.0	0.5	0.5	-89.94	0.0	-33.0	33.0	31.9	1.09	30.397		
400.0	400.0	400.0	400.0	0.8	0.8	-89.94	0.0	-33.0	33.0	31.5	1.54	21.498		
500.0	500.0	500.0	500.0	1.0	1.0	-89.94	0.0	-33.0	33.0	31.0	1.99	16.630		
600.0	600.0	600.0	600.0	1.2	1.2	-89.94	0.0	-33.0	33.0	30.6	2.43	13.559		
700.0	700.0	700.0	700.0	1.4	1.4	-89.94	0.0	-33.0	33.0	30.1	2.88	11.446		
800.0	800.0	800.0	800.0	1.7	1.7	-89.94	0.0	-33.0	33.0	29.7	3.33	9.903	CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	-129.39	0.0	-33.0	34.1	30.3	3.78	9.020		
1,000.0	999.8	999.8	999.8	2.1	2.1	-135.51	0.0	-33.0	37.6	33.4	4.22	8.911		
1,100.0	1,099.6	1,099.6	1,099.6	2.3	2.3	-142.04	0.0	-33.0	42.9	38.2	4.67	9.187		
1,200.0	1,199.4	1,199.4	1,199.4	2.6	2.6	-147.11	0.0	-33.0	48.6	43.5	5.12	9.496		
1,300.0	1,299.1	1,300.5	1,300.5	2.8	2.8	-149.90	1.6	-32.3	53.3	47.7	5.57	9.571		
1,400.0	1,398.9	1,401.9	1,401.7	3.1	3.0	-149.88	6.5	-30.0	55.4	49.4	6.02	9.204		
1,500.0	1,498.6	1,501.9	1,501.5	3.3	3.2	-148.71	12.8	-27.0	56.2	49.8	6.47	8.691		
1,600.0	1,598.4	1,601.9	1,601.2	3.5	3.5	-147.57	19.1	-24.0	57.1	50.2	6.93	8.242		
1,700.0	1,698.1	1,701.9	1,701.0	3.8	3.7	-146.46	25.4	-21.0	58.0	50.6	7.39	7.849		
1,800.0	1,797.9	1,801.9	1,800.7	4.0	3.9	-145.39	31.7	-18.0	58.9	51.1	7.85	7.500		
1,900.0	1,897.6	1,901.9	1,900.5	4.3	4.2	-144.35	38.0	-15.0	59.8	51.5	8.32	7.190		
2,000.0	1,997.4	2,001.8	2,000.2	4.5	4.4	-143.34	44.3	-12.0	60.8	52.0	8.79	6.913		
2,100.0	2,097.2	2,101.8	2,100.0	4.8	4.7	-142.37	50.6	-9.0	61.8	52.5	9.27	6.665		
2,200.0	2,196.9	2,201.8	2,199.7	5.0	4.9	-141.42	56.9	-6.0	62.8	53.0	9.75	6.440		
2,300.0	2,296.7	2,301.8	2,299.5	5.3	5.2	-140.51	63.2	-3.0	63.8	53.5	10.22	6.237		
2,400.0	2,396.4	2,401.8	2,399.2	5.5	5.4	-139.62	69.5	0.0	64.8	54.1	10.71	6.052		
2,500.0	2,496.2	2,501.8	2,499.0	5.8	5.6	-138.77	75.8	2.9	65.8	54.6	11.19	5.883		
2,600.0	2,595.9	2,601.8	2,598.7	6.1	5.9	-137.93	82.1	5.9	66.9	55.2	11.67	5.728		
2,700.0	2,695.7	2,701.8	2,698.4	6.3	6.1	-137.13	88.4	8.9	67.9	55.8	12.16	5.586		
2,800.0	2,795.5	2,801.8	2,798.2	6.6	6.4	-136.35	94.7	11.9	69.0	56.4	12.65	5.455		
2,900.0	2,895.2	2,901.8	2,897.9	6.8	6.6	-135.59	101.0	14.9	70.1	57.0	13.14	5.335		
3,000.0	2,995.0	3,001.7	2,997.7	7.1	6.9	-134.86	107.3	17.9	71.2	57.6	13.63	5.223		
3,100.0	3,094.7	3,101.7	3,097.4	7.3	7.1	-134.15	113.6	20.9	72.3	58.2	14.13	5.119		
3,200.0	3,194.5	3,201.7	3,197.2	7.6	7.4	-133.46	119.9	23.9	73.4	58.8	14.62	5.023		
3,300.0	3,294.2	3,301.7	3,296.9	7.8	7.7	-132.79	126.2	26.9	74.6	59.5	15.12	4.933		
3,400.0	3,394.0	3,401.7	3,396.7	8.1	7.9	-132.14	132.5	29.9	75.7	60.1	15.62	4.850		
3,500.0	3,493.7	3,501.7	3,496.4	8.3	8.2	-131.51	138.8	32.9	76.9	60.8	16.11	4.771		
3,600.0	3,593.5	3,601.7	3,596.2	8.6	8.4	-130.90	145.1	35.9	78.0	61.4	16.61	4.698		
3,700.0	3,693.3	3,701.7	3,695.9	8.9	8.7	-130.31	151.4	38.8	79.2	62.1	17.11	4.629		
3,800.0	3,793.0	3,801.7	3,795.7	9.1	8.9	-129.74	157.7	41.8	80.4	62.8	17.61	4.564		
3,900.0	3,892.8	3,901.7	3,895.4	9.4	9.2	-129.18	164.0	44.8	81.6	63.5	18.12	4.503		
4,000.0	3,992.5	4,001.6	3,995.1	9.6	9.4	-128.63	170.3	47.8	82.8	64.2	18.62	4.446		
4,100.0	4,092.3	4,101.6	4,094.9	9.9	9.7	-128.11	176.6	50.8	84.0	64.9	19.12	4.392		
4,200.0	4,192.0	4,201.6	4,194.6	10.1	9.9	-127.60	182.9	53.8	85.2	65.6	19.63	4.341		
4,300.0	4,291.8	4,301.6	4,294.4	10.4	10.2	-127.10	189.2	56.8	86.4	66.3	20.13	4.292		
4,400.0	4,391.6	4,401.6	4,394.1	10.6	10.4	-126.62	195.5	59.8	87.6	67.0	20.64	4.246		
4,500.0	4,491.3	4,501.6	4,493.9	10.9	10.7	-126.15	201.8	62.8	88.9	67.7	21.14	4.203		
4,600.0	4,591.1	4,601.6	4,593.6	11.2	10.9	-125.69	208.1	65.8	90.1	68.4	21.65	4.162		
4,700.0	4,690.8	4,701.6	4,693.4	11.4	11.2	-125.24	214.4	68.8	91.3	69.2	22.15	4.122		
4,800.0	4,790.6	4,801.6	4,793.1	11.7	11.5	-124.81	220.7	71.8	92.6	69.9	22.66	4.085		
4,900.0	4,890.3	4,901.6	4,892.9	11.9	11.7	-124.39	227.0	74.8	93.8	70.7	23.17	4.049		
5,000.0	4,990.1	5,001.5	4,992.6	12.2	12.0	-123.98	233.3	77.7	95.1	71.4	23.68	4.016		
5,100.0	5,089.9	5,101.5	5,092.4	12.4	12.2	-123.58	239.6	80.7	96.3	72.2	24.19	3.983		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
5,200.0	5,189.6	5,201.5	5,192.1	12.7	12.5	-123.19	245.9	83.7	97.6	72.9	24.69	3.952		
5,300.0	5,289.4	5,301.5	5,291.8	13.0	12.7	-122.81	252.2	86.7	98.9	73.7	25.20	3.923		
5,400.0	5,389.1	5,405.9	5,395.4	13.2	13.0	-119.88	263.0	91.8	98.7	72.8	25.82	3.821		
5,488.9	5,477.3	5,497.6	5,483.1	13.5	13.4	-110.72	286.8	103.1	97.2	70.5	26.63	3.648		
5,500.0	5,488.5	5,508.1	5,492.9	13.5	13.5	-108.13	290.4	104.9	96.5	69.7	26.77	3.605		
5,600.0	5,584.3	5,605.8	5,578.8	13.9	14.0	-95.39	332.2	124.7	102.0	74.1	27.90	3.656		
5,700.0	5,673.0	5,700.0	5,652.0	14.5	14.7	-84.48	385.5	150.0	115.0	85.9	29.11	3.952		
5,800.0	5,751.3	5,789.8	5,710.9	15.3	15.6	-76.37	446.6	179.0	133.2	103.0	30.23	4.406		
5,900.0	5,816.4	5,877.2	5,756.2	16.3	16.5	-70.64	514.0	211.0	154.3	122.9	31.32	4.926		
6,000.0	5,865.9	5,962.3	5,787.8	17.5	17.6	-66.76	585.4	244.9	176.5	144.0	32.53	5.426		
6,100.0	5,897.9	6,045.8	5,805.8	18.8	18.7	-64.23	658.9	279.8	198.7	164.7	34.04	5.838		
6,200.0	5,911.2	6,129.0	5,810.8	20.3	19.9	-62.72	733.8	315.4	220.1	184.1	35.99	6.115		
6,300.0	5,911.6	6,217.1	5,810.8	21.9	21.2	-64.61	814.5	350.9	239.6	200.5	39.04	6.137		
6,400.0	5,911.6	6,300.0	5,810.8	23.3	22.3	-66.55	891.8	380.8	258.8	216.8	41.99	6.164		
6,500.0	5,911.6	6,391.1	5,810.8	24.9	23.6	-68.32	978.1	409.8	277.6	232.5	45.07	6.160		
6,600.0	5,911.6	6,477.0	5,810.8	26.4	24.9	-69.74	1,060.8	433.4	296.0	247.9	48.01	6.165		
6,700.0	5,911.6	6,562.4	5,810.8	28.0	26.2	-70.96	1,143.8	453.1	313.8	262.9	50.87	6.168		
6,800.0	5,911.6	6,647.1	5,810.8	29.6	27.5	-72.01	1,227.0	468.9	331.0	277.3	53.65	6.169		
6,900.0	5,911.6	6,731.3	5,810.8	31.2	28.8	-72.91	1,310.4	481.0	347.5	291.2	56.31	6.171		
7,000.0	5,911.6	6,815.0	5,810.8	32.7	30.1	-73.69	1,393.6	489.4	363.3	304.5	58.86	6.172		
7,100.0	5,911.6	6,900.0	5,810.8	34.3	31.4	-74.39	1,478.5	494.2	378.4	317.0	61.31	6.171		
7,200.0	5,911.6	6,986.7	5,810.8	35.8	32.7	-75.00	1,565.1	495.4	392.3	328.7	63.66	6.164		
7,300.0	5,911.6	7,086.1	5,810.8	37.3	34.3	-75.45	1,664.6	496.0	402.2	336.2	66.05	6.090		
7,400.0	5,911.6	7,186.0	5,810.8	38.9	35.9	-75.66	1,764.5	496.7	407.1	338.8	68.26	5.964		
7,500.0	5,911.6	7,286.0	5,810.8	40.3	37.6	-75.66	1,864.4	497.3	407.1	336.4	70.65	5.762		
7,600.0	5,911.6	7,386.0	5,810.8	41.8	39.2	-75.62	1,964.4	497.9	405.9	332.0	73.86	5.495		
7,700.0	5,911.6	7,486.0	5,810.8	43.3	40.9	-75.57	2,064.4	498.5	404.6	327.5	77.12	5.247		
7,800.0	5,911.6	7,586.0	5,810.8	44.8	42.6	-75.53	2,164.4	499.1	403.4	323.0	80.41	5.017		
7,900.0	5,911.7	7,686.0	5,810.8	46.4	44.3	-75.48	2,264.4	499.8	402.2	318.4	83.74	4.803		
8,000.0	5,911.7	7,786.0	5,810.8	48.0	46.1	-75.43	2,364.4	500.4	400.9	313.8	87.10	4.603		
8,100.0	5,911.7	7,886.0	5,810.8	49.6	47.8	-75.39	2,464.4	501.0	399.7	309.2	90.48	4.417		
8,200.0	5,911.7	7,985.9	5,810.9	51.2	49.6	-75.34	2,564.4	501.6	398.5	304.6	93.89	4.244		
8,300.0	5,911.7	8,085.9	5,810.9	52.9	51.3	-75.29	2,664.4	502.3	397.2	299.9	97.33	4.082		
8,400.0	5,911.7	8,185.9	5,810.9	54.5	53.1	-75.25	2,764.4	502.9	396.0	295.2	100.78	3.930		
8,500.0	5,911.7	8,285.9	5,810.9	56.2	54.9	-75.20	2,864.3	503.5	394.8	290.5	104.24	3.787		
8,600.0	5,911.7	8,385.9	5,810.9	57.9	56.7	-75.15	2,964.3	504.1	393.6	285.8	107.73	3.653		
8,700.0	5,911.7	8,485.9	5,810.9	59.6	58.5	-75.10	3,064.3	504.7	392.3	281.1	111.22	3.528		
8,800.0	5,911.7	8,585.9	5,810.9	61.3	60.3	-75.06	3,164.3	505.4	391.1	276.4	114.73	3.409		
8,900.0	5,911.7	8,685.9	5,810.9	63.1	62.2	-75.01	3,264.3	506.0	389.9	271.6	118.25	3.297		
9,000.0	5,911.7	8,785.9	5,810.9	64.8	64.0	-74.96	3,364.3	506.6	388.7	266.9	121.78	3.192		
9,100.0	5,911.7	8,885.9	5,810.9	66.6	65.8	-74.91	3,464.3	507.2	387.4	262.1	125.31	3.092		
9,200.0	5,911.8	8,985.9	5,810.9	68.3	67.7	-74.86	3,564.3	507.8	386.2	257.3	128.86	2.997		
9,300.0	5,911.8	9,085.9	5,810.9	70.1	69.5	-74.81	3,664.3	508.5	385.0	252.6	132.41	2.907		
9,400.0	5,911.8	9,185.8	5,810.9	71.9	71.4	-74.76	3,764.3	509.1	383.7	247.8	135.97	2.822		
9,500.0	5,911.8	9,285.8	5,810.9	73.7	73.2	-74.71	3,864.2	509.7	382.5	243.0	139.53	2.741		
9,600.0	5,911.8	9,385.8	5,810.9	75.5	75.1	-74.66	3,964.2	510.3	381.3	238.2	143.10	2.665		
9,700.0	5,911.8	9,485.8	5,810.9	77.3	76.9	-74.61	4,064.2	511.0	380.1	233.4	146.67	2.591		
9,800.0	5,911.8	9,585.8	5,810.9	79.1	78.8	-74.55	4,164.2	511.6	378.8	228.6	150.25	2.521		
9,900.0	5,911.8	9,685.8	5,810.9	80.9	80.6	-74.50	4,264.2	512.2	377.6	223.8	153.83	2.455		
10,000.0	5,911.8	9,785.8	5,810.9	82.7	82.5	-74.45	4,364.2	512.8	376.4	219.0	157.42	2.391		
10,100.0	5,911.8	9,885.8	5,810.9	84.5	84.4	-74.40	4,464.2	513.4	375.2	214.2	161.00	2.330		
10,200.0	5,911.8	9,985.8	5,810.9	86.3	86.2	-74.34	4,564.2	514.1	374.0	209.4	164.59	2.272		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2												Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
10,300.0	5,911.8	10,085.8	5,810.9	88.2	88.1	-74.29	4,664.2	514.7	372.7	204.5	168.18	2.216	
10,400.0	5,911.8	10,185.8	5,810.9	90.0	90.0	-74.24	4,764.2	515.3	371.5	199.7	171.78	2.163	
10,500.0	5,911.9	10,285.8	5,810.9	91.8	91.9	-74.18	4,864.1	515.9	370.3	194.9	175.37	2.111	
10,600.0	5,911.9	10,385.8	5,810.9	93.7	93.8	-74.13	4,964.1	516.5	369.1	190.1	178.97	2.062	
10,700.0	5,911.9	10,485.7	5,810.9	95.5	95.6	-74.07	5,064.1	517.2	367.8	185.3	182.57	2.015	
10,800.0	5,911.9	10,585.7	5,810.9	97.4	97.5	-74.02	5,164.1	517.8	366.6	180.5	186.17	1.969	
10,900.0	5,911.9	10,685.7	5,811.0	99.2	99.4	-73.96	5,264.1	518.4	365.4	175.6	189.77	1.926	
11,000.0	5,911.9	10,785.7	5,811.0	101.1	101.3	-73.91	5,364.1	519.0	364.2	170.8	193.37	1.883	
11,100.0	5,911.9	10,885.7	5,811.0	102.9	103.2	-73.85	5,464.1	519.7	363.0	166.0	196.97	1.843	
11,200.0	5,911.9	10,985.7	5,811.0	104.8	105.1	-73.79	5,564.1	520.3	361.7	161.2	200.57	1.804	
11,300.0	5,911.9	11,085.7	5,811.0	106.7	106.9	-73.74	5,664.1	520.9	360.5	156.3	204.17	1.766	
11,400.0	5,911.9	11,185.7	5,811.0	108.5	108.8	-73.68	5,764.1	521.5	359.3	151.5	207.77	1.729	
11,500.0	5,911.9	11,285.7	5,811.0	110.4	110.7	-73.62	5,864.0	522.1	358.1	146.7	211.37	1.694	
11,600.0	5,911.9	11,385.7	5,811.0	112.3	112.6	-73.56	5,964.0	522.8	356.9	141.9	214.97	1.660	
11,700.0	5,911.9	11,485.7	5,811.0	114.1	114.5	-73.51	6,064.0	523.4	355.6	137.1	218.56	1.627	
11,800.0	5,912.0	11,585.7	5,811.0	116.0	116.4	-73.45	6,164.0	524.0	354.4	132.3	222.16	1.595	
11,900.0	5,912.0	11,685.6	5,811.0	117.9	118.3	-73.39	6,264.0	524.6	353.2	127.4	225.76	1.565	
12,000.0	5,912.0	11,785.6	5,811.0	119.7	120.2	-73.33	6,364.0	525.2	352.0	122.6	229.36	1.535	
12,100.0	5,912.0	11,885.6	5,811.0	121.6	122.1	-73.27	6,464.0	525.9	350.8	117.8	232.95	1.506	
12,200.0	5,912.0	11,985.6	5,811.0	123.5	124.0	-73.21	6,564.0	526.5	349.6	113.0	236.55	1.478 Level 3	
12,300.0	5,912.0	12,085.6	5,811.0	125.4	125.9	-73.15	6,664.0	527.1	348.3	108.2	240.14	1.451 Level 3	
12,400.0	5,912.0	12,185.6	5,811.0	127.3	127.8	-73.08	6,764.0	527.7	347.1	103.4	243.73	1.424 Level 3	
12,500.0	5,912.0	12,285.6	5,811.0	129.1	129.7	-73.02	6,863.9	528.4	345.9	98.6	247.32	1.399 Level 3	
12,540.5	5,912.0	12,323.6	5,811.0	129.9	130.4	-73.00	6,902.0	528.6	345.4	96.7	248.73	1.389 Level 3, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0109A - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
6,700.0	5,911.6	6,784.2	5,812.1	28.0	30.5	74.84	1,081.7	1,208.6	479.3	423.2	56.13	8.539		
6,800.0	5,911.6	6,877.4	5,812.1	29.6	32.0	73.93	1,174.9	1,208.6	444.2	384.7	59.58	7.457		
6,900.0	5,911.6	6,972.4	5,812.1	31.2	33.6	73.02	1,269.9	1,208.6	414.1	351.2	62.98	6.576		
7,000.0	5,911.6	7,068.9	5,812.1	32.7	35.2	72.13	1,366.4	1,208.6	389.0	322.7	66.30	5.868		
7,100.0	5,911.6	7,166.6	5,812.1	34.3	36.9	71.33	1,464.1	1,208.6	368.9	299.3	69.53	5.305		
7,200.0	5,911.6	7,265.3	5,812.1	35.8	38.6	70.65	1,562.8	1,208.6	353.7	281.0	72.66	4.868		
7,300.0	5,911.6	7,364.7	5,812.1	37.3	40.3	70.15	1,662.2	1,208.6	343.5	267.8	75.71	4.537		
7,400.0	5,911.6	7,464.5	5,812.1	38.9	42.1	69.88	1,762.0	1,208.6	338.2	259.5	78.67	4.299		
7,465.7	5,911.6	7,530.2	5,812.1	39.8	43.3	69.82	1,827.7	1,208.6	337.1	256.5	80.60	4.182 CC		
7,500.0	5,911.6	7,564.5	5,812.1	40.3	43.9	69.85	1,862.0	1,208.6	337.6	255.9	81.66	4.134		
7,600.0	5,911.6	7,664.5	5,812.1	41.8	45.7	69.89	1,962.0	1,208.6	338.2	253.3	84.91	3.983		
7,700.0	5,911.6	7,764.5	5,812.1	43.3	47.5	69.93	2,062.0	1,208.6	338.8	250.6	88.20	3.841		
7,800.0	5,911.6	7,864.5	5,812.1	44.8	49.3	69.96	2,162.0	1,208.6	339.4	247.9	91.52	3.709		
7,900.0	5,911.7	7,964.5	5,812.0	46.4	51.1	70.00	2,262.0	1,208.6	340.0	245.2	94.87	3.584		
8,000.0	5,911.7	8,064.5	5,812.0	48.0	52.9	70.03	2,362.0	1,208.6	340.6	242.4	98.24	3.467		
8,100.0	5,911.7	8,164.5	5,812.0	49.6	54.7	70.07	2,462.0	1,208.6	341.2	239.6	101.64	3.358		
8,200.0	5,911.7	8,264.5	5,812.0	51.2	56.6	70.10	2,562.0	1,208.6	341.9	236.8	105.05	3.254		
8,300.0	5,911.7	8,364.5	5,812.0	52.9	58.4	70.14	2,662.0	1,208.6	342.5	234.0	108.49	3.157		
8,400.0	5,911.7	8,464.5	5,812.0	54.5	60.3	70.18	2,762.0	1,208.6	343.1	231.1	111.94	3.065		
8,500.0	5,911.7	8,564.5	5,812.0	56.2	62.1	70.21	2,862.0	1,208.6	343.7	228.3	115.41	2.978		
8,600.0	5,911.7	8,664.5	5,812.0	57.9	64.0	70.25	2,962.0	1,208.6	344.3	225.4	118.89	2.896		
8,700.0	5,911.7	8,764.5	5,812.0	59.6	65.8	70.28	3,062.0	1,208.6	344.9	222.5	122.39	2.818		
8,800.0	5,911.7	8,864.5	5,812.0	61.3	67.7	70.32	3,162.0	1,208.6	345.5	219.6	125.89	2.745		
8,900.0	5,911.7	8,964.5	5,812.0	63.1	69.6	70.35	3,262.0	1,208.6	346.1	216.7	129.41	2.675		
9,000.0	5,911.7	9,064.5	5,812.0	64.8	71.4	70.39	3,362.0	1,208.6	346.8	213.8	132.94	2.608		
9,100.0	5,911.7	9,164.5	5,812.0	66.6	73.3	70.42	3,462.0	1,208.6	347.4	210.9	136.48	2.545		
9,200.0	5,911.8	9,264.5	5,812.0	68.3	75.2	70.45	3,562.0	1,208.6	348.0	208.0	140.02	2.485		
9,300.0	5,911.8	9,364.5	5,812.0	70.1	77.1	70.49	3,662.0	1,208.6	348.6	205.0	143.58	2.428		
9,400.0	5,911.8	9,464.5	5,812.0	71.9	78.9	70.52	3,762.0	1,208.6	349.2	202.1	147.14	2.373		
9,500.0	5,911.8	9,564.5	5,812.0	73.7	80.8	70.56	3,862.0	1,208.6	349.8	199.1	150.71	2.321		
9,600.0	5,911.8	9,664.5	5,812.0	75.5	82.7	70.59	3,962.0	1,208.6	350.4	196.2	154.28	2.271		
9,700.0	5,911.8	9,764.5	5,812.0	77.3	84.6	70.62	4,061.9	1,208.5	351.0	193.2	157.86	2.224		
9,800.0	5,911.8	9,864.5	5,812.0	79.1	86.5	70.66	4,161.9	1,208.5	351.7	190.2	161.45	2.178		
9,900.0	5,911.8	9,964.5	5,812.0	80.9	88.4	70.69	4,261.9	1,208.5	352.3	187.2	165.04	2.134		
10,000.0	5,911.8	10,064.5	5,812.0	82.7	90.3	70.73	4,361.9	1,208.5	352.9	184.2	168.64	2.093		
10,100.0	5,911.8	10,164.5	5,812.0	84.5	92.2	70.76	4,461.9	1,208.5	353.5	181.3	172.25	2.052		
10,200.0	5,911.8	10,264.5	5,812.0	86.3	94.0	70.79	4,561.9	1,208.5	354.1	178.3	175.85	2.014		
10,300.0	5,911.8	10,364.5	5,812.0	88.2	95.9	70.82	4,661.9	1,208.5	354.7	175.3	179.47	1.977		
10,400.0	5,911.8	10,464.5	5,812.0	90.0	97.8	70.86	4,761.9	1,208.5	355.3	172.3	183.08	1.941		
10,500.0	5,911.9	10,564.5	5,812.0	91.8	99.7	70.89	4,861.9	1,208.5	356.0	169.3	186.70	1.907		
10,600.0	5,911.9	10,664.4	5,812.0	93.7	101.6	70.92	4,961.9	1,208.5	356.6	166.2	190.33	1.873		
10,700.0	5,911.9	10,764.4	5,812.0	95.5	103.5	70.96	5,061.9	1,208.5	357.2	163.2	193.96	1.842		
10,800.0	5,911.9	10,864.4	5,812.0	97.4	105.4	70.99	5,161.9	1,208.5	357.8	160.2	197.59	1.811		
10,900.0	5,911.9	10,964.4	5,812.0	99.2	107.3	71.02	5,261.9	1,208.5	358.4	157.2	201.23	1.781		
11,000.0	5,911.9	11,064.4	5,812.0	101.1	109.2	71.05	5,361.9	1,208.5	359.0	154.2	204.86	1.753		
11,100.0	5,911.9	11,164.4	5,812.0	102.9	111.1	71.09	5,461.9	1,208.5	359.6	151.1	208.51	1.725		
11,200.0	5,911.9	11,264.4	5,812.0	104.8	113.0	71.12	5,561.9	1,208.5	360.3	148.1	212.15	1.698		
11,300.0	5,911.9	11,364.4	5,812.0	106.7	114.9	71.15	5,661.9	1,208.5	360.9	145.1	215.80	1.672		
11,400.0	5,911.9	11,464.4	5,812.0	108.5	116.8	71.18	5,761.9	1,208.5	361.5	142.0	219.45	1.647		
11,500.0	5,911.9	11,564.4	5,812.0	110.4	118.7	71.21	5,861.9	1,208.5	362.1	139.0	223.10	1.623		
11,600.0	5,911.9	11,664.4	5,812.0	112.3	120.6	71.24	5,961.9	1,208.5	362.7	136.0	226.76	1.600		
11,700.0	5,911.9	11,764.4	5,812.0	114.1	122.5	71.28	6,061.9	1,208.5	363.3	132.9	230.42	1.577		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design												S12-T10N-R58W - Razor #12G-0109A - HZ - Plan #1		Offset Site Error:		0.0 ft
Survey Program:												0-ISCWSA MWD		Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor				
11,800.0	5,912.0	11,864.4	5,812.0	116.0	124.4	71.31	6,161.9	1,208.5	364.0	129.9	234.08	1.555				
11,900.0	5,912.0	11,964.4	5,812.0	117.9	126.3	71.34	6,261.9	1,208.5	364.6	126.8	237.74	1.533				
12,000.0	5,912.0	12,064.4	5,812.0	119.7	128.2	71.37	6,361.9	1,208.5	365.2	123.8	241.41	1.513				
12,100.0	5,912.0	12,164.4	5,812.0	121.6	130.2	71.40	6,461.9	1,208.5	365.8	120.7	245.07	1.493	Level 3			
12,200.0	5,912.0	12,264.4	5,812.0	123.5	132.1	71.43	6,561.9	1,208.5	366.4	117.7	248.74	1.473	Level 3			
12,300.0	5,912.0	12,364.4	5,812.0	125.4	134.0	71.46	6,661.9	1,208.5	367.0	114.6	252.42	1.454	Level 3			
12,400.0	5,912.0	12,464.4	5,812.0	127.3	135.9	71.49	6,761.9	1,208.5	367.6	111.6	256.09	1.436	Level 3			
12,500.0	5,912.0	12,564.4	5,812.0	129.1	137.6	71.53	6,861.9	1,208.5	368.3	108.7	259.55	1.419	Level 3			
12,540.5	5,912.0	12,604.9	5,812.0	129.9	138.2	71.54	6,902.4	1,208.5	368.5	107.6	260.90	1.412	Level 3, ES, SF			

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty	Separation			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-107.99	-74.8	-230.5	242.4					
100.0	100.0	100.0	100.0	0.1	0.1	-107.99	-74.8	-230.5	242.4	242.2	0.19	1,295.955		
200.0	200.0	200.0	200.0	0.3	0.3	-107.99	-74.8	-230.5	242.4	241.7	0.64	380.744		
300.0	300.0	300.0	300.0	0.5	0.5	-107.99	-74.8	-230.5	242.4	241.3	1.09	223.149		
400.0	400.0	400.0	400.0	0.8	0.8	-107.99	-74.8	-230.5	242.4	240.8	1.54	157.824		
500.0	500.0	500.0	500.0	1.0	1.0	-107.99	-74.8	-230.5	242.4	240.4	1.99	122.085		
600.0	600.0	600.0	600.0	1.2	1.2	-107.99	-74.8	-230.5	242.4	239.9	2.43	99.543		
700.0	700.0	700.0	700.0	1.4	1.4	-107.99	-74.8	-230.5	242.4	239.5	2.88	84.028		
800.0	800.0	800.0	800.0	1.7	1.7	-107.99	-74.8	-230.5	242.4	239.0	3.33	72.697 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	-145.34	-74.8	-230.5	243.8	240.0	3.78	64.493		
1,000.0	999.8	999.8	999.8	2.1	2.1	-145.98	-74.8	-230.5	248.1	243.9	4.22	58.753		
1,100.0	1,099.6	1,092.2	1,092.2	2.3	2.3	-146.94	-75.9	-231.5	255.4	250.7	4.63	55.140		
1,200.0	1,199.4	1,184.0	1,183.9	2.6	2.5	-148.12	-79.1	-234.6	265.6	260.6	5.03	52.817		
1,300.0	1,299.1	1,281.7	1,281.3	2.8	2.7	-149.46	-84.0	-239.3	277.9	272.4	5.44	51.064		
1,400.0	1,398.9	1,380.7	1,380.1	3.1	2.9	-150.70	-88.9	-244.1	290.3	284.5	5.86	49.543		
1,500.0	1,498.6	1,479.7	1,478.9	3.3	3.1	-151.85	-93.9	-248.9	302.9	296.6	6.28	48.202		
1,600.0	1,598.4	1,578.8	1,577.7	3.5	3.3	-152.90	-98.8	-253.7	315.6	308.9	6.71	47.013		
1,700.0	1,698.1	1,677.8	1,676.5	3.8	3.5	-153.87	-103.8	-258.5	328.4	321.3	7.15	45.957		
1,800.0	1,797.9	1,776.8	1,775.2	4.0	3.8	-154.76	-108.8	-263.3	341.3	333.7	7.58	45.015		
1,900.0	1,897.6	1,875.8	1,874.0	4.3	4.0	-155.60	-113.7	-268.1	354.3	346.2	8.02	44.170		
2,000.0	1,997.4	1,974.9	1,972.8	4.5	4.2	-156.37	-118.7	-272.9	367.3	358.8	8.46	43.413		
2,100.0	2,097.2	2,073.9	2,071.6	4.8	4.5	-157.09	-123.7	-277.8	380.4	371.5	8.90	42.729		
2,200.0	2,196.9	2,172.9	2,170.4	5.0	4.7	-157.76	-128.6	-282.6	393.5	384.2	9.34	42.109		
2,300.0	2,296.7	2,272.0	2,269.2	5.3	5.0	-158.39	-133.6	-287.4	406.7	396.9	9.79	41.546		
2,400.0	2,396.4	2,371.0	2,368.0	5.5	5.2	-158.98	-138.6	-292.2	419.9	409.7	10.23	41.032		
2,500.0	2,496.2	2,470.0	2,466.8	5.8	5.5	-159.53	-143.5	-297.0	433.2	422.5	10.68	40.561		
2,600.0	2,595.9	2,569.1	2,565.6	6.1	5.7	-160.05	-148.5	-301.8	446.5	435.4	11.13	40.129		
2,700.0	2,695.7	2,668.1	2,664.4	6.3	6.0	-160.54	-153.5	-306.6	459.9	448.3	11.57	39.731		
2,800.0	2,795.5	2,767.1	2,763.1	6.6	6.2	-161.01	-158.4	-311.4	473.3	461.2	12.02	39.363		
2,900.0	2,895.2	2,866.2	2,861.9	6.8	6.5	-161.45	-163.4	-316.2	486.7	474.2	12.47	39.023 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-110.76	-74.9	-197.5	211.2					
100.0	100.0	100.0	100.0	0.1	0.1	-110.76	-74.9	-197.5	211.2	211.0	0.19	1,129.235		
200.0	200.0	200.0	200.0	0.3	0.3	-110.76	-74.9	-197.5	211.2	210.5	0.64	331.753		
300.0	300.0	300.0	300.0	0.5	0.5	-110.76	-74.9	-197.5	211.2	210.1	1.09	194.438		
400.0	400.0	400.0	400.0	0.8	0.8	-110.76	-74.9	-197.5	211.2	209.6	1.54	137.518		
500.0	500.0	500.0	500.0	1.0	1.0	-110.76	-74.9	-197.5	211.2	209.2	1.99	106.377		
600.0	600.0	600.0	600.0	1.2	1.2	-110.76	-74.9	-197.5	211.2	208.7	2.43	86.736		
700.0	700.0	700.0	700.0	1.4	1.4	-110.76	-74.9	-197.5	211.2	208.3	2.88	73.217		
800.0	800.0	800.0	800.0	1.7	1.7	-110.76	-74.9	-197.5	211.2	207.8	3.33	63.344 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	-148.12	-74.9	-197.5	212.7	208.9	3.78	56.256		
1,000.0	999.8	999.8	999.8	2.1	2.1	-148.81	-74.9	-197.5	217.1	212.9	4.22	51.413		
1,100.0	1,099.6	1,099.6	1,099.6	2.3	2.3	-149.73	-74.9	-197.5	223.1	218.4	4.67	47.795		
1,200.0	1,199.4	1,199.4	1,199.4	2.6	2.6	-150.61	-74.9	-197.5	229.2	224.1	5.12	44.796		
1,300.0	1,299.1	1,292.5	1,292.5	2.8	2.8	-151.58	-76.1	-198.3	236.7	231.1	5.53	42.812		
1,400.0	1,398.9	1,385.1	1,384.9	3.1	2.9	-152.83	-79.7	-200.9	247.0	241.1	5.92	41.696		
1,500.0	1,498.6	1,483.0	1,482.6	3.3	3.1	-154.26	-85.3	-204.8	259.3	253.0	6.33	40.945		
1,600.0	1,598.4	1,582.0	1,581.4	3.5	3.3	-155.58	-91.0	-208.7	271.9	265.1	6.75	40.283		
1,700.0	1,698.1	1,681.0	1,680.2	3.8	3.5	-156.79	-96.6	-212.7	284.5	277.3	7.17	39.687		
1,800.0	1,797.9	1,780.0	1,779.0	4.0	3.7	-157.89	-102.3	-216.6	297.3	289.7	7.59	39.148		
1,900.0	1,897.6	1,879.1	1,877.7	4.3	3.9	-158.90	-108.0	-220.6	310.1	302.1	8.02	38.660		
2,000.0	1,997.4	1,978.1	1,976.5	4.5	4.2	-159.83	-113.6	-224.6	323.1	314.6	8.45	38.218		
2,100.0	2,097.2	2,077.1	2,075.3	4.8	4.4	-160.69	-119.3	-228.5	336.1	327.2	8.89	37.817		
2,200.0	2,196.9	2,176.2	2,174.1	5.0	4.6	-161.48	-124.9	-232.5	349.2	339.8	9.32	37.452		
2,300.0	2,296.7	2,275.2	2,272.9	5.3	4.9	-162.22	-130.6	-236.4	362.3	352.6	9.76	37.119		
2,400.0	2,396.4	2,374.2	2,371.7	5.5	5.1	-162.91	-136.3	-240.4	375.5	365.3	10.20	36.814		
2,500.0	2,496.2	2,473.2	2,470.5	5.8	5.3	-163.55	-141.9	-244.3	388.8	378.1	10.64	36.534		
2,600.0	2,595.9	2,572.3	2,569.2	6.1	5.6	-164.15	-147.6	-248.3	402.1	391.0	11.08	36.277		
2,700.0	2,695.7	2,671.3	2,668.0	6.3	5.8	-164.70	-153.3	-252.3	415.4	403.9	11.53	36.040		
2,800.0	2,795.5	2,770.3	2,766.8	6.6	6.1	-165.23	-158.9	-256.2	428.8	416.8	11.97	35.820		
2,900.0	2,895.2	2,869.3	2,865.6	6.8	6.3	-165.72	-164.6	-260.2	442.2	429.8	12.42	35.617		
3,000.0	2,995.0	2,968.4	2,964.4	7.1	6.6	-166.18	-170.2	-264.1	455.7	442.8	12.86	35.427		
3,100.0	3,094.7	3,067.4	3,063.2	7.3	6.8	-166.62	-175.9	-268.1	469.1	455.8	13.31	35.251		
3,200.0	3,194.5	3,166.4	3,162.0	7.6	7.1	-167.03	-181.6	-272.0	482.6	468.9	13.75	35.087		
3,300.0	3,294.2	3,265.5	3,260.7	7.8	7.3	-167.42	-187.2	-276.0	496.1	481.9	14.20	34.933 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-114.48	-74.8	-164.4	180.7					
100.0	100.0	100.0	100.0	0.1	0.1	-114.48	-74.8	-164.4	180.7	180.5	0.19	966.024		
200.0	200.0	200.0	200.0	0.3	0.3	-114.48	-74.8	-164.4	180.7	180.0	0.64	283.812		
300.0	300.0	300.0	300.0	0.5	0.5	-114.48	-74.8	-164.4	180.7	179.6	1.09	166.339		
400.0	400.0	400.0	400.0	0.8	0.8	-114.48	-74.8	-164.4	180.7	179.1	1.54	117.644		
500.0	500.0	500.0	500.0	1.0	1.0	-114.48	-74.8	-164.4	180.7	178.7	1.99	91.004 CC, ES		
600.0	600.0	595.5	595.4	1.2	1.2	-114.81	-76.3	-165.1	181.9	179.5	2.40	75.767		
700.0	700.0	690.7	690.6	1.4	1.4	-115.78	-80.6	-167.0	185.7	182.9	2.81	66.125		
800.0	800.0	790.0	789.6	1.7	1.6	-117.12	-87.0	-169.8	191.0	187.8	3.23	59.142		
900.0	900.0	889.6	889.0	1.9	1.8	-155.68	-93.3	-172.6	198.1	194.4	3.67	54.042		
1,000.0	999.8	988.9	988.0	2.1	2.0	-157.35	-99.7	-175.4	208.5	204.4	4.10	50.834		
1,100.0	1,099.6	1,087.9	1,086.8	2.3	2.3	-159.10	-106.0	-178.2	220.7	216.2	4.54	48.628		
1,200.0	1,199.4	1,187.0	1,185.6	2.6	2.5	-160.67	-112.3	-181.0	233.1	228.1	4.98	46.803		
1,300.0	1,299.1	1,286.0	1,284.4	2.8	2.7	-162.08	-118.6	-183.8	245.6	240.2	5.42	45.277		
1,400.0	1,398.9	1,385.0	1,383.2	3.1	3.0	-163.36	-124.9	-186.6	258.3	252.4	5.87	43.989		
1,500.0	1,498.6	1,484.1	1,482.0	3.3	3.2	-164.51	-131.2	-189.4	271.0	264.7	6.32	42.889		
1,600.0	1,598.4	1,583.1	1,580.8	3.5	3.5	-165.56	-137.5	-192.2	283.9	277.1	6.77	41.944		
1,700.0	1,698.1	1,682.2	1,679.6	3.8	3.8	-166.52	-143.9	-195.0	296.9	289.6	7.22	41.123		
1,800.0	1,797.9	1,781.2	1,778.4	4.0	4.0	-167.39	-150.2	-197.8	309.9	302.2	7.67	40.404		
1,900.0	1,897.6	1,880.2	1,877.2	4.3	4.3	-168.20	-156.5	-200.6	323.0	314.9	8.12	39.771		
2,000.0	1,997.4	1,979.3	1,976.0	4.5	4.5	-168.95	-162.8	-203.4	336.1	327.6	8.57	39.209		
2,100.0	2,097.2	2,078.3	2,074.8	4.8	4.8	-169.63	-169.1	-206.2	349.3	340.3	9.03	38.707		
2,200.0	2,196.9	2,177.4	2,173.6	5.0	5.0	-170.27	-175.4	-209.0	362.6	353.1	9.48	38.257		
2,300.0	2,296.7	2,276.4	2,272.4	5.3	5.3	-170.87	-181.8	-211.8	375.9	366.0	9.93	37.850		
2,400.0	2,396.4	2,375.4	2,371.2	5.5	5.6	-171.42	-188.1	-214.6	389.2	378.8	10.38	37.482		
2,500.0	2,496.2	2,474.5	2,470.0	5.8	5.8	-171.93	-194.4	-217.4	402.6	391.8	10.84	37.147		
2,600.0	2,595.9	2,573.5	2,568.8	6.1	6.1	-172.42	-200.7	-220.2	416.0	404.7	11.29	36.841		
2,700.0	2,695.7	2,672.6	2,667.6	6.3	6.3	-172.87	-207.0	-223.0	429.4	417.7	11.75	36.560		
2,800.0	2,795.5	2,771.6	2,766.4	6.6	6.6	-173.29	-213.3	-225.8	442.9	430.7	12.20	36.302		
2,900.0	2,895.2	2,870.6	2,865.2	6.8	6.9	-173.70	-219.7	-228.6	456.3	443.7	12.65	36.063		
3,000.0	2,995.0	2,969.7	2,964.0	7.1	7.1	-174.07	-226.0	-231.4	469.8	456.7	13.11	35.843		
3,100.0	3,094.7	3,068.7	3,062.8	7.3	7.4	-174.43	-232.3	-234.2	483.3	469.8	13.56	35.638		
3,200.0	3,194.5	3,167.8	3,161.6	7.6	7.6	-174.77	-238.6	-237.0	496.9	482.8	14.02	35.447 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	-119.68	-74.9	-131.4	151.2					
100.0	100.0	100.0	100.0	0.1	0.1	-119.68	-74.9	-131.4	151.2	151.0	0.19	808.579		
200.0	200.0	200.0	200.0	0.3	0.3	-119.68	-74.9	-131.4	151.2	150.6	0.64	237.549		
300.0	300.0	300.0	300.0	0.5	0.5	-119.68	-74.9	-131.4	151.2	150.1	1.09	139.226		
400.0	400.0	400.0	400.0	0.8	0.8	-119.68	-74.9	-131.4	151.2	149.7	1.54	98.469		
500.0	500.0	500.0	500.0	1.0	1.0	-119.68	-74.9	-131.4	151.2	149.2	1.99	76.171		
600.0	600.0	600.0	600.0	1.2	1.2	-119.68	-74.9	-131.4	151.2	148.8	2.43	62.107		
700.0	700.0	700.0	700.0	1.4	1.4	-119.68	-74.9	-131.4	151.2	148.3	2.88	52.427		
800.0	800.0	800.0	800.0	1.7	1.7	-119.68	-74.9	-131.4	151.2	147.9	3.33	45.357 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	-157.05	-74.9	-131.4	152.8	149.0	3.78	40.424		
1,000.0	999.8	999.8	999.8	2.1	2.1	-157.76	-74.9	-131.4	157.6	153.4	4.22	37.330		
1,100.0	1,099.6	1,099.6	1,099.6	2.3	2.3	-158.68	-74.9	-131.4	164.1	159.5	4.67	35.162		
1,200.0	1,199.4	1,195.3	1,195.3	2.6	2.5	-159.87	-76.4	-131.7	171.8	166.7	5.08	33.822		
1,300.0	1,299.1	1,290.4	1,290.3	2.8	2.7	-161.66	-81.1	-132.7	182.0	176.5	5.47	33.237		
1,400.0	1,398.9	1,389.1	1,388.7	3.1	2.9	-163.71	-87.8	-134.1	193.8	187.9	5.88	32.940		
1,500.0	1,498.6	1,488.1	1,487.5	3.3	3.1	-165.53	-94.5	-135.6	205.8	199.5	6.30	32.684		
1,600.0	1,598.4	1,587.2	1,586.3	3.5	3.3	-167.15	-101.3	-137.0	218.0	211.3	6.72	32.457		
1,700.0	1,698.1	1,686.3	1,685.2	3.8	3.5	-168.60	-108.0	-138.5	230.4	223.2	7.14	32.254		
1,800.0	1,797.9	1,785.4	1,784.0	4.0	3.7	-169.90	-114.8	-139.9	242.9	235.3	7.57	32.072		
1,900.0	1,897.6	1,884.4	1,882.8	4.3	3.9	-171.07	-121.5	-141.4	255.5	247.5	8.01	31.910		
2,000.0	1,997.4	1,983.5	1,981.7	4.5	4.2	-172.13	-128.3	-142.8	268.2	259.8	8.44	31.764		
2,100.0	2,097.2	2,082.6	2,080.5	4.8	4.4	-173.09	-135.1	-144.3	281.0	272.1	8.88	31.635		
2,200.0	2,196.9	2,181.6	2,179.3	5.0	4.6	-173.98	-141.8	-145.7	293.8	284.5	9.32	31.518		
2,300.0	2,296.7	2,280.7	2,278.2	5.3	4.9	-174.78	-148.6	-147.2	306.8	297.0	9.77	31.412		
2,400.0	2,396.4	2,379.8	2,377.0	5.5	5.1	-175.53	-155.3	-148.6	319.7	309.5	10.21	31.317		
2,500.0	2,496.2	2,478.9	2,475.8	5.8	5.4	-176.21	-162.1	-150.1	332.8	322.1	10.66	31.230		
2,600.0	2,595.9	2,577.9	2,574.7	6.1	5.6	-176.84	-168.9	-151.5	345.8	334.7	11.10	31.151		
2,700.0	2,695.7	2,677.0	2,673.5	6.3	5.8	-177.43	-175.6	-153.0	359.0	347.4	11.55	31.078		
2,800.0	2,795.5	2,776.1	2,772.3	6.6	6.1	-177.97	-182.4	-154.4	372.1	360.1	12.00	31.012		
2,900.0	2,895.2	2,875.2	2,871.2	6.8	6.3	-178.48	-189.1	-155.9	385.3	372.8	12.45	30.951		
3,000.0	2,995.0	2,974.2	2,970.0	7.1	6.6	-178.96	-195.9	-157.3	398.5	385.6	12.90	30.894		
3,100.0	3,094.7	3,073.3	3,068.8	7.3	6.8	-179.40	-202.6	-158.8	411.7	398.3	13.35	30.842		
3,200.0	3,194.5	3,172.4	3,167.6	7.6	7.1	-179.82	-209.4	-160.2	424.9	411.1	13.80	30.794		
3,300.0	3,294.2	3,271.4	3,266.5	7.8	7.3	-179.79	-216.2	-161.7	438.2	424.0	14.25	30.749		
3,400.0	3,394.0	3,370.5	3,365.3	8.1	7.6	-179.42	-222.9	-163.1	451.5	436.8	14.70	30.707		
3,500.0	3,493.7	3,469.6	3,464.1	8.3	7.9	-179.08	-229.7	-164.6	464.8	449.7	15.16	30.668		
3,600.0	3,593.5	3,568.7	3,563.0	8.6	8.1	-178.75	-236.4	-166.0	478.1	462.5	15.61	30.631		
3,700.0	3,693.3	3,667.7	3,661.8	8.9	8.4	-178.44	-243.2	-167.5	491.5	475.4	16.06	30.597 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty	Separation			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-127.28	-74.8	-98.3	123.6					
100.0	100.0	100.0	100.0	0.1	0.1	-127.28	-74.8	-98.3	123.6	123.4	0.19	660.816		
200.0	200.0	200.0	200.0	0.3	0.3	-127.28	-74.8	-98.3	123.6	122.9	0.64	194.144		
300.0	300.0	300.0	300.0	0.5	0.5	-127.28	-74.8	-98.3	123.6	122.5	1.09	113.785		
400.0	400.0	400.0	400.0	0.8	0.8	-127.28	-74.8	-98.3	123.6	122.0	1.54	80.476		
500.0	500.0	500.0	500.0	1.0	1.0	-127.28	-74.8	-98.3	123.6	121.6	1.99	62.252		
600.0	600.0	600.0	600.0	1.2	1.2	-127.28	-74.8	-98.3	123.6	121.1	2.43	50.758		
700.0	700.0	700.0	700.0	1.4	1.4	-127.28	-74.8	-98.3	123.6	120.7	2.88	42.847		
800.0	800.0	800.0	800.0	1.7	1.7	-127.28	-74.8	-98.3	123.6	120.2	3.33	37.069	CC, ES	
900.0	900.0	900.0	900.0	1.9	1.9	-164.61	-74.8	-98.3	125.3	121.5	3.78	33.133		
1,000.0	999.8	997.4	997.4	2.1	2.1	-165.79	-76.5	-98.2	131.2	127.0	4.19	31.308		
1,100.0	1,099.6	1,094.1	1,094.0	2.3	2.3	-168.14	-81.4	-97.7	140.9	136.3	4.59	30.714		
1,200.0	1,199.4	1,193.1	1,192.7	2.6	2.4	-170.80	-88.3	-97.1	152.0	147.0	5.00	30.400		
1,300.0	1,299.1	1,292.3	1,291.6	2.8	2.6	-173.11	-95.2	-96.5	163.3	157.9	5.42	30.140		
1,400.0	1,398.9	1,391.4	1,390.6	3.1	2.9	-175.11	-102.0	-95.8	174.9	169.1	5.85	29.917		
1,500.0	1,498.6	1,490.6	1,489.5	3.3	3.1	-176.86	-108.9	-95.2	186.7	180.4	6.28	29.725		
1,600.0	1,598.4	1,589.7	1,588.4	3.5	3.3	-178.41	-115.8	-94.6	198.6	191.9	6.72	29.561		
1,700.0	1,698.1	1,688.9	1,687.3	3.8	3.5	-179.77	-122.7	-93.9	210.6	203.5	7.16	29.419		
1,800.0	1,797.9	1,788.0	1,786.2	4.0	3.8	179.01	-129.6	-93.3	222.8	215.2	7.60	29.296		
1,900.0	1,897.6	1,887.2	1,885.1	4.3	4.0	177.91	-136.5	-92.7	235.0	226.9	8.05	29.190		
2,000.0	1,997.4	1,986.4	1,984.0	4.5	4.2	176.93	-143.4	-92.0	247.3	238.8	8.50	29.097		
2,100.0	2,097.2	2,085.5	2,082.9	4.8	4.5	176.03	-150.3	-91.4	259.7	250.7	8.95	29.015		
2,200.0	2,196.9	2,184.7	2,181.9	5.0	4.7	175.22	-157.1	-90.8	272.1	262.7	9.40	28.943		
2,300.0	2,296.7	2,283.8	2,280.8	5.3	5.0	174.48	-164.0	-90.1	284.6	274.7	9.85	28.879		
2,400.0	2,396.4	2,383.0	2,379.7	5.5	5.2	173.80	-170.9	-89.5	297.1	286.8	10.31	28.821		
2,500.0	2,496.2	2,482.1	2,478.6	5.8	5.5	173.18	-177.8	-88.9	309.7	298.9	10.76	28.770		
2,600.0	2,595.9	2,581.3	2,577.5	6.1	5.7	172.61	-184.7	-88.2	322.3	311.0	11.22	28.723		
2,700.0	2,695.7	2,680.4	2,676.4	6.3	6.0	172.08	-191.6	-87.6	334.9	323.2	11.68	28.681		
2,800.0	2,795.5	2,779.6	2,775.3	6.6	6.2	171.58	-198.5	-87.0	347.5	335.4	12.13	28.643		
2,900.0	2,895.2	2,878.7	2,874.2	6.8	6.5	171.13	-205.4	-86.3	360.2	347.6	12.59	28.608		
3,000.0	2,995.0	2,977.9	2,973.2	7.1	6.7	170.70	-212.2	-85.7	372.9	359.9	13.05	28.576		
3,100.0	3,094.7	3,077.0	3,072.1	7.3	7.0	170.30	-219.1	-85.1	385.6	372.1	13.51	28.547		
3,200.0	3,194.5	3,176.2	3,171.0	7.6	7.3	169.93	-226.0	-84.4	398.4	384.4	13.97	28.520		
3,300.0	3,294.2	3,275.4	3,269.9	7.8	7.5	169.58	-232.9	-83.8	411.1	396.7	14.43	28.495		
3,400.0	3,394.0	3,374.5	3,368.8	8.1	7.8	169.25	-239.8	-83.2	423.9	409.0	14.89	28.472		
3,500.0	3,493.7	3,473.7	3,467.7	8.3	8.0	168.94	-246.7	-82.5	436.6	421.3	15.35	28.450		
3,600.0	3,593.5	3,572.8	3,566.6	8.6	8.3	168.65	-253.6	-81.9	449.4	433.6	15.81	28.430		
3,700.0	3,693.3	3,672.0	3,665.5	8.9	8.5	168.37	-260.5	-81.3	462.2	445.9	16.27	28.412		
3,800.0	3,793.0	3,771.1	3,764.5	9.1	8.8	168.11	-267.3	-80.6	475.0	458.3	16.73	28.394		
3,900.0	3,892.8	3,870.3	3,863.4	9.4	9.1	167.86	-274.2	-80.0	487.8	470.6	17.19	28.378	SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-138.58	-74.9	-66.1	99.8					
100.0	100.0	100.0	100.0	0.1	0.1	-138.58	-74.9	-66.1	99.8	99.7	0.19	533.922		
200.0	200.0	200.0	200.0	0.3	0.3	-138.58	-74.9	-66.1	99.8	99.2	0.64	156.859		
300.0	300.0	300.0	300.0	0.5	0.5	-138.58	-74.9	-66.1	99.8	98.8	1.09	91.934		
400.0	400.0	400.0	400.0	0.8	0.8	-138.58	-74.9	-66.1	99.8	98.3	1.54	65.021		
500.0	500.0	500.0	500.0	1.0	1.0	-138.58	-74.9	-66.1	99.8	97.9	1.99	50.297		
600.0	600.0	600.0	600.0	1.2	1.2	-138.58	-74.9	-66.1	99.8	97.4	2.43	41.010		
700.0	700.0	700.0	700.0	1.4	1.4	-138.58	-74.9	-66.1	99.8	97.0	2.88	34.618		
800.0	800.0	800.0	800.0	1.7	1.7	-138.58	-74.9	-66.1	99.8	96.5	3.33	29.950 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	-175.78	-74.9	-66.1	101.6	97.8	3.78	26.870		
1,000.0	999.8	999.8	999.8	2.1	2.1	-175.98	-74.9	-66.1	106.8	102.6	4.22	25.286		
1,100.0	1,099.6	1,097.6	1,097.6	2.3	2.3	-176.95	-76.4	-65.5	114.6	110.0	4.64	24.707		
1,200.0	1,199.4	1,194.9	1,194.8	2.6	2.5	-179.10	-81.1	-63.9	124.3	119.2	5.04	24.658 SF		
1,300.0	1,299.1	1,294.1	1,293.7	2.8	2.7	178.37	-87.6	-61.6	135.1	129.6	5.45	24.777		
1,400.0	1,398.9	1,393.3	1,392.7	3.1	2.9	176.21	-94.2	-59.3	146.2	140.3	5.87	24.882		
1,500.0	1,498.6	1,492.6	1,491.7	3.3	3.1	174.36	-100.7	-57.0	157.4	151.1	6.30	24.972		
1,600.0	1,598.4	1,591.8	1,590.7	3.5	3.3	172.76	-107.2	-54.7	168.8	162.1	6.74	25.048		
1,700.0	1,698.1	1,691.1	1,689.7	3.8	3.5	171.35	-113.8	-52.4	180.3	173.2	7.18	25.115		
1,800.0	1,797.9	1,790.3	1,788.7	4.0	3.8	170.12	-120.3	-50.1	191.9	184.3	7.62	25.173		
1,900.0	1,897.6	1,889.5	1,887.7	4.3	4.0	169.03	-126.8	-47.8	203.6	195.5	8.07	25.223		
2,000.0	1,997.4	1,988.8	1,986.7	4.5	4.2	168.06	-133.4	-45.5	215.4	206.8	8.52	25.269		
2,100.0	2,097.2	2,088.0	2,085.7	4.8	4.5	167.19	-139.9	-43.2	227.2	218.2	8.98	25.310		
2,200.0	2,196.9	2,187.3	2,184.7	5.0	4.7	166.40	-146.4	-40.9	239.0	229.6	9.43	25.347		
2,300.0	2,296.7	2,286.5	2,283.7	5.3	4.9	165.69	-152.9	-38.6	250.9	241.0	9.89	25.380		
2,400.0	2,396.4	2,385.8	2,382.7	5.5	5.2	165.04	-159.5	-36.3	262.8	252.5	10.34	25.410		
2,500.0	2,496.2	2,485.0	2,481.7	5.8	5.4	164.45	-166.0	-34.0	274.8	264.0	10.80	25.438		
2,600.0	2,595.9	2,584.3	2,580.7	6.1	5.7	163.91	-172.5	-31.7	286.7	275.5	11.26	25.463		
2,700.0	2,695.7	2,683.5	2,679.7	6.3	5.9	163.41	-179.1	-29.4	298.7	287.0	11.72	25.486		
2,800.0	2,795.5	2,782.7	2,778.7	6.6	6.2	162.95	-185.6	-27.1	310.8	298.6	12.18	25.508		
2,900.0	2,895.2	2,882.0	2,877.7	6.8	6.4	162.53	-192.1	-24.8	322.8	310.2	12.65	25.527		
3,000.0	2,995.0	2,981.2	2,976.7	7.1	6.7	162.13	-198.7	-22.5	334.9	321.8	13.11	25.546		
3,100.0	3,094.7	3,080.5	3,075.7	7.3	7.0	161.76	-205.2	-20.2	346.9	333.4	13.57	25.563		
3,200.0	3,194.5	3,179.7	3,174.7	7.6	7.2	161.42	-211.7	-17.9	359.0	345.0	14.04	25.579		
3,300.0	3,294.2	3,279.0	3,273.7	7.8	7.5	161.10	-218.2	-15.6	371.1	356.6	14.50	25.594		
3,400.0	3,394.0	3,378.2	3,372.7	8.1	7.7	160.80	-224.8	-13.3	383.2	368.3	14.97	25.608		
3,500.0	3,493.7	3,477.5	3,471.8	8.3	8.0	160.52	-231.3	-11.0	395.3	379.9	15.43	25.621		
3,600.0	3,593.5	3,576.7	3,570.8	8.6	8.2	160.25	-237.8	-8.7	407.5	391.6	15.90	25.633		
3,700.0	3,693.3	3,676.0	3,669.8	8.9	8.5	160.00	-244.4	-6.4	419.6	403.2	16.36	25.645		
3,800.0	3,793.0	3,775.2	3,768.8	9.1	8.7	159.77	-250.9	-4.1	431.7	414.9	16.83	25.655		
3,900.0	3,892.8	3,874.4	3,867.8	9.4	9.0	159.55	-257.4	-1.8	443.9	426.6	17.29	25.666		
4,000.0	3,992.5	3,973.7	3,966.8	9.6	9.3	159.33	-264.0	0.5	456.0	438.3	17.76	25.675		
4,100.0	4,092.3	4,072.9	4,065.8	9.9	9.5	159.13	-270.5	2.8	468.2	450.0	18.23	25.685		
4,200.0	4,192.0	4,172.2	4,164.8	10.1	9.8	158.94	-277.0	5.1	480.4	461.7	18.70	25.693		
4,300.0	4,291.8	4,271.4	4,263.8	10.4	10.0	158.76	-283.5	7.4	492.5	473.4	19.16	25.702		

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-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-156.20	-74.8	-33.0	81.8					
100.0	100.0	100.0	100.0	0.1	0.1	-156.20	-74.8	-33.0	81.8	81.6	0.19	437.447		
200.0	200.0	200.0	200.0	0.3	0.3	-156.20	-74.8	-33.0	81.8	81.2	0.64	128.519		
300.0	300.0	300.0	300.0	0.5	0.5	-156.20	-74.8	-33.0	81.8	80.7	1.09	75.324		
400.0	400.0	400.0	400.0	0.8	0.8	-156.20	-74.8	-33.0	81.8	80.3	1.54	53.273 CC, ES		
500.0	500.0	498.3	498.3	1.0	1.0	-157.14	-76.3	-32.2	82.8	80.9	1.96	42.292		
600.0	600.0	596.3	596.2	1.2	1.2	-159.81	-80.7	-29.7	86.1	83.7	2.38	36.209		
700.0	700.0	696.0	695.6	1.4	1.4	-163.18	-86.7	-26.2	90.7	87.9	2.81	32.331		
800.0	800.0	795.8	795.2	1.7	1.6	-166.22	-92.8	-22.8	95.6	92.4	3.24	29.546		
900.0	900.0	895.5	894.6	1.9	1.8	154.30	-98.8	-19.3	102.4	98.7	3.70	27.649		
1,000.0	999.8	995.0	993.8	2.1	2.1	153.02	-104.8	-15.9	112.3	108.2	4.15	27.064		
1,100.0	1,099.6	1,094.3	1,092.9	2.3	2.3	152.41	-110.8	-12.4	123.9	119.3	4.60	26.922		
1,200.0	1,199.4	1,193.6	1,192.0	2.6	2.6	151.90	-116.8	-9.0	135.5	130.4	5.06	26.784		
1,300.0	1,299.1	1,292.9	1,291.1	2.8	2.8	151.47	-122.8	-5.5	147.0	141.5	5.52	26.654		
1,400.0	1,398.9	1,392.2	1,390.2	3.1	3.1	151.10	-128.9	-2.1	158.6	152.6	5.98	26.534		
1,500.0	1,498.6	1,491.6	1,489.2	3.3	3.4	150.79	-134.9	1.4	170.2	163.8	6.44	26.422		
1,600.0	1,598.4	1,590.9	1,588.3	3.5	3.6	150.51	-140.9	4.8	181.8	174.9	6.91	26.320		
1,700.0	1,698.1	1,690.2	1,687.4	3.8	3.9	150.27	-146.9	8.2	193.4	186.0	7.37	26.227		
1,800.0	1,797.9	1,789.5	1,786.5	4.0	4.1	150.06	-152.9	11.7	205.0	197.1	7.84	26.141		
1,900.0	1,897.6	1,888.9	1,885.6	4.3	4.4	149.86	-158.9	15.1	216.6	208.3	8.31	26.062		
2,000.0	1,997.4	1,988.2	1,984.6	4.5	4.6	149.69	-164.9	18.6	228.2	219.4	8.78	25.989		
2,100.0	2,097.2	2,087.5	2,083.7	4.8	4.9	149.53	-170.9	22.0	239.8	230.5	9.25	25.922		
2,200.0	2,196.9	2,186.8	2,182.8	5.0	5.2	149.39	-177.0	25.5	251.4	241.6	9.72	25.860		
2,300.0	2,296.7	2,286.1	2,281.9	5.3	5.4	149.26	-183.0	28.9	263.0	252.8	10.19	25.803		
2,400.0	2,396.4	2,385.5	2,381.0	5.5	5.7	149.15	-189.0	32.4	274.6	263.9	10.66	25.750		
2,500.0	2,496.2	2,484.8	2,480.0	5.8	5.9	149.04	-195.0	35.8	286.2	275.1	11.14	25.700		
2,600.0	2,595.9	2,584.1	2,579.1	6.1	6.2	148.94	-201.0	39.2	297.8	286.2	11.61	25.654		
2,700.0	2,695.7	2,683.4	2,678.2	6.3	6.5	148.84	-207.0	42.7	309.4	297.3	12.08	25.611		
2,800.0	2,795.5	2,782.8	2,777.3	6.6	6.7	148.76	-213.0	46.1	321.0	308.5	12.55	25.570		
2,900.0	2,895.2	2,882.1	2,876.4	6.8	7.0	148.68	-219.0	49.6	332.6	319.6	13.03	25.533		
3,000.0	2,995.0	2,981.4	2,975.4	7.1	7.3	148.60	-225.1	53.0	344.2	330.7	13.50	25.497		
3,100.0	3,094.7	3,080.7	3,074.5	7.3	7.5	148.53	-231.1	56.5	355.8	341.9	13.97	25.463		
3,200.0	3,194.5	3,180.1	3,173.6	7.6	7.8	148.47	-237.1	59.9	367.5	353.0	14.45	25.432		
3,300.0	3,294.2	3,279.4	3,272.7	7.8	8.0	148.41	-243.1	63.3	379.1	364.1	14.92	25.402		
3,400.0	3,394.0	3,378.7	3,371.8	8.1	8.3	148.35	-249.1	66.8	390.7	375.3	15.40	25.374		
3,500.0	3,493.7	3,478.0	3,470.8	8.3	8.6	148.30	-255.1	70.2	402.3	386.4	15.87	25.347		
3,600.0	3,593.5	3,577.3	3,569.9	8.6	8.8	148.24	-261.1	73.7	413.9	397.6	16.35	25.322		
3,700.0	3,693.3	3,676.7	3,669.0	8.9	9.1	148.20	-267.1	77.1	425.5	408.7	16.82	25.298		
3,800.0	3,793.0	3,776.0	3,768.1	9.1	9.3	148.15	-273.2	80.6	437.1	419.8	17.30	25.275		
3,900.0	3,892.8	3,875.3	3,867.2	9.4	9.6	148.11	-279.2	84.0	448.7	431.0	17.77	25.253		
4,000.0	3,992.5	3,974.6	3,966.3	9.6	9.9	148.07	-285.2	87.4	460.4	442.1	18.24	25.232		
4,100.0	4,092.3	4,074.0	4,065.3	9.9	10.1	148.03	-291.2	90.9	472.0	453.3	18.72	25.213		
4,200.0	4,192.0	4,173.3	4,164.4	10.1	10.4	147.99	-297.2	94.3	483.6	464.4	19.19	25.194		
4,300.0	4,291.8	4,272.6	4,263.5	10.4	10.7	147.95	-303.2	97.8	495.2	475.5	19.67	25.176 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #12F-0108B
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor #12F-0108B	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	179.98	-74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	179.98	-74.9	0.0	74.9	74.7	0.19	400.418		
200.0	200.0	200.0	200.0	0.3	0.3	179.98	-74.9	0.0	74.9	74.2	0.64	117.637		
300.0	300.0	300.0	300.0	0.5	0.5	179.98	-74.9	0.0	74.9	73.8	1.09	68.946		
400.0	400.0	400.0	400.0	0.8	0.8	179.98	-74.9	0.0	74.9	73.3	1.54	48.763		
500.0	500.0	500.0	500.0	1.0	1.0	179.98	-74.9	0.0	74.9	72.9	1.99	37.721		
600.0	600.0	600.0	600.0	1.2	1.2	179.98	-74.9	0.0	74.9	72.4	2.43	30.756		
700.0	700.0	700.0	700.0	1.4	1.4	179.98	-74.9	0.0	74.9	72.0	2.88	25.962		
800.0	800.0	800.0	800.0	1.7	1.7	179.98	-74.9	0.0	74.9	71.5	3.33	22.461 CC, ES		
900.0	900.0	900.0	900.0	1.9	1.9	143.62	-74.9	0.0	76.3	72.5	3.78	20.174		
1,000.0	999.8	997.8	997.8	2.1	2.1	144.93	-76.2	1.1	81.8	77.6	4.20	19.475 SF		
1,100.0	1,099.6	1,095.2	1,095.0	2.3	2.3	145.29	-80.0	4.3	91.3	86.7	4.61	19.803		
1,200.0	1,199.4	1,194.4	1,194.1	2.6	2.5	144.88	-85.3	8.7	102.2	97.2	5.03	20.298		
1,300.0	1,299.1	1,293.8	1,293.2	2.8	2.7	144.54	-90.6	13.2	113.1	107.6	5.47	20.690		
1,400.0	1,398.9	1,393.3	1,392.4	3.1	2.9	144.27	-95.9	17.6	124.0	118.1	5.90	20.998		
1,500.0	1,498.6	1,492.7	1,491.5	3.3	3.1	144.04	-101.3	22.1	134.8	128.5	6.35	21.243		
1,600.0	1,598.4	1,592.1	1,590.7	3.5	3.3	143.85	-106.6	26.5	145.7	138.9	6.80	21.440		
1,700.0	1,698.1	1,691.5	1,689.9	3.8	3.6	143.68	-111.9	31.0	156.6	149.4	7.25	21.600		
1,800.0	1,797.9	1,790.9	1,789.0	4.0	3.8	143.53	-117.2	35.4	167.5	159.8	7.71	21.732		
1,900.0	1,897.6	1,890.3	1,888.2	4.3	4.1	143.40	-122.5	39.9	178.4	170.3	8.17	21.842		
2,000.0	1,997.4	1,989.7	1,987.3	4.5	4.3	143.29	-127.9	44.3	189.3	180.7	8.63	21.934		
2,100.0	2,097.2	2,089.1	2,086.5	4.8	4.6	143.19	-133.2	48.7	200.2	191.1	9.10	22.012		
2,200.0	2,196.9	2,188.5	2,185.7	5.0	4.8	143.10	-138.5	53.2	211.1	201.5	9.56	22.079		
2,300.0	2,296.7	2,287.9	2,284.8	5.3	5.0	143.01	-143.8	57.6	222.0	212.0	10.03	22.136		
2,400.0	2,396.4	2,387.3	2,384.0	5.5	5.3	142.94	-149.1	62.1	232.9	222.4	10.50	22.185		
2,500.0	2,496.2	2,486.7	2,483.2	5.8	5.5	142.87	-154.5	66.5	243.8	232.8	10.97	22.228		
2,600.0	2,595.9	2,586.1	2,582.3	6.1	5.8	142.81	-159.8	71.0	254.7	243.3	11.44	22.265		
2,700.0	2,695.7	2,685.5	2,681.5	6.3	6.1	142.75	-165.1	75.4	265.6	253.7	11.91	22.298		
2,800.0	2,795.5	2,784.9	2,780.6	6.6	6.3	142.70	-170.4	79.9	276.5	264.1	12.38	22.327		
2,900.0	2,895.2	2,884.3	2,879.8	6.8	6.6	142.65	-175.8	84.3	287.4	274.5	12.86	22.353		
3,000.0	2,995.0	2,983.7	2,979.0	7.1	6.8	142.61	-181.1	88.8	298.3	285.0	13.33	22.376		
3,100.0	3,094.7	3,083.1	3,078.1	7.3	7.1	142.57	-186.4	93.2	309.2	295.4	13.81	22.397		
3,200.0	3,194.5	3,182.5	3,177.3	7.6	7.3	142.53	-191.7	97.6	320.1	305.8	14.28	22.415		
3,300.0	3,294.2	3,281.9	3,276.5	7.8	7.6	142.49	-197.0	102.1	331.0	316.2	14.76	22.432		
3,400.0	3,394.0	3,381.3	3,375.6	8.1	7.8	142.46	-202.4	106.5	341.9	326.7	15.23	22.447		
3,500.0	3,493.7	3,480.7	3,474.8	8.3	8.1	142.43	-207.7	111.0	352.8	337.1	15.71	22.460		
3,600.0	3,593.5	3,580.1	3,573.9	8.6	8.4	142.40	-213.0	115.4	363.7	347.5	16.18	22.472		
3,700.0	3,693.3	3,679.5	3,673.1	8.9	8.6	142.37	-218.3	119.9	374.6	357.9	16.66	22.484		
3,800.0	3,793.0	3,779.0	3,772.3	9.1	8.9	142.34	-223.6	124.3	385.5	368.4	17.14	22.494		
3,900.0	3,892.8	3,878.4	3,871.4	9.4	9.1	142.32	-229.0	128.8	396.4	378.8	17.61	22.503		
4,000.0	3,992.5	3,977.8	3,970.6	9.6	9.4	142.29	-234.3	133.2	407.3	389.2	18.09	22.512		
4,100.0	4,092.3	4,077.2	4,069.7	9.9	9.7	142.27	-239.6	137.7	418.2	399.6	18.57	22.519		
4,200.0	4,192.0	4,176.6	4,168.9	10.1	9.9	142.25	-244.9	142.1	429.1	410.0	19.05	22.527		
4,300.0	4,291.8	4,276.0	4,268.1	10.4	10.2	142.23	-250.2	146.6	440.0	420.5	19.53	22.533		
4,400.0	4,391.6	4,375.4	4,367.2	10.6	10.4	142.21	-255.6	151.0	450.9	430.9	20.00	22.540		
4,500.0	4,491.3	4,474.8	4,466.4	10.9	10.7	142.19	-260.9	155.4	461.8	441.3	20.48	22.545		
4,600.0	4,591.1	4,574.2	4,565.6	11.2	11.0	142.17	-266.2	159.9	472.7	451.7	20.96	22.551		
4,700.0	4,690.8	4,673.6	4,664.7	11.4	11.2	142.16	-271.5	164.3	483.6	462.2	21.44	22.555		
4,800.0	4,790.6	4,773.0	4,763.9	11.7	11.5	142.14	-276.9	168.8	494.5	472.6	21.92	22.560		

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

Cathedral Energy Services

Anticollision Report

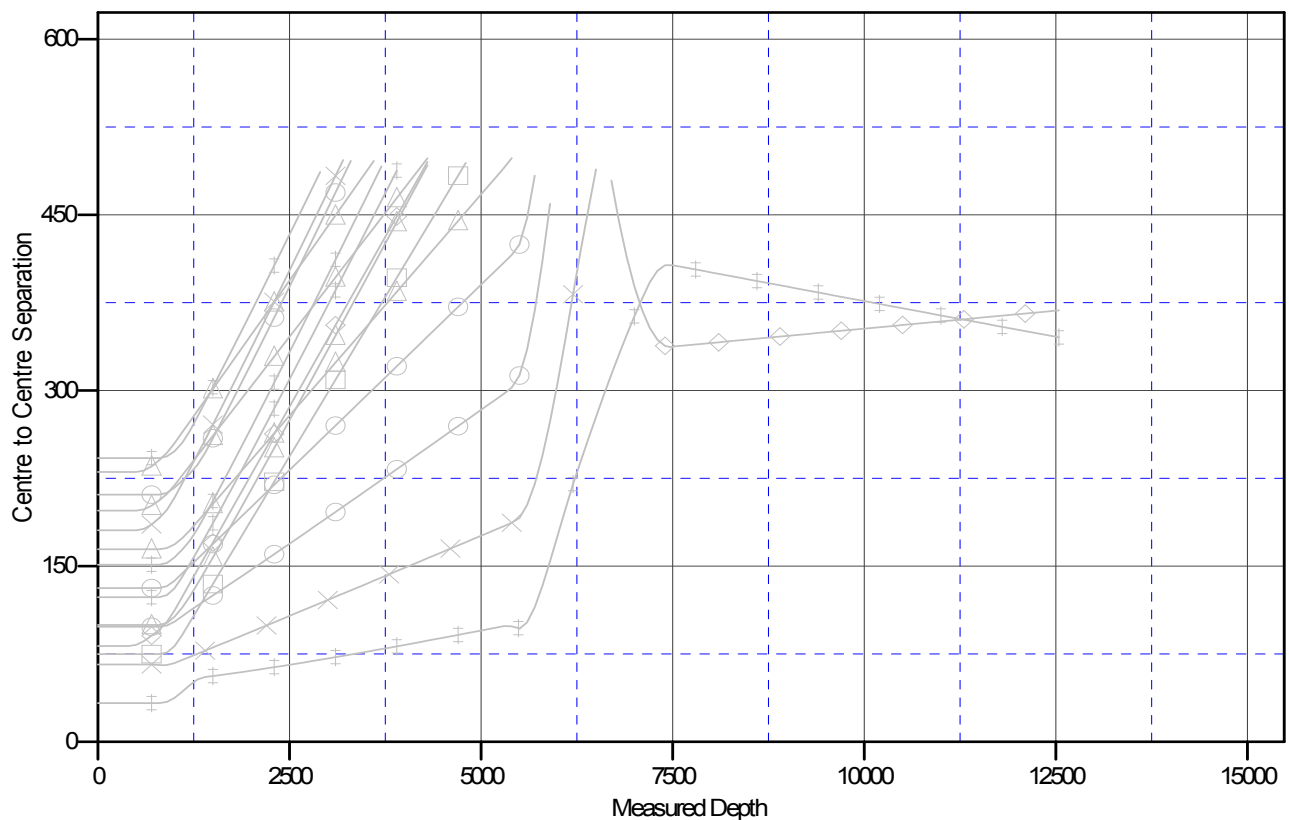
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S12-T10N-R58W
Site Error: 0.0ft
Reference Well: Razor #12F-0108B
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #3

Local Co-ordinate Reference: Well Razor #12F-0108B
TVD Reference: WELL @ 4953.6ft (Original Well Elev)
MD Reference: WELL @ 4953.6ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4953.6ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor #12F-0108B
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.09°

Ladder Plot



LEGEND

- | | | |
|-----------------------------------|---|---|
| ▲ Razor#12F-0101A, HZ, Plan #3 V0 | ◆ Razor#12F-0107A, HZ, Plan #2 V0 | ◆ Razor Federal#12F-1305A, HZ, Plan #3 V0 |
| ▲ Razor#12F-0102B, HZ, Plan #3 V0 | ◆ Razor#12G-0109A, HZ, Plan #1 V0 | ▲ Razor Federal#12F-1306B, HZ, Plan #2 V0 |
| ▲ Razor#12F-0103A, HZ, Plan #3 V0 | ◆ Razor Federal#12F-1301A, HZ, Plan #3 V0 | ◆ Razor Federal#12F-1307A, HZ, Plan #3 V0 |
| ○ Razor#12F-0104B, HZ, Plan #3 V0 | ○ Razor Federal#12F-1302B, HZ, Plan #2 V0 | ■ Razor Federal#12F-1308B, HZ, Plan #2 V0 |
| ○ Razor#12F-0105A, HZ, Plan #3 V0 | × Razor Federal#12F-1303A, HZ, Plan #3 V0 | |
| × Razor#12F-0106B, HZ, Plan #3 V0 | ◆ Razor Federal#12F-1304B, HZ, Plan #2 V0 | |