

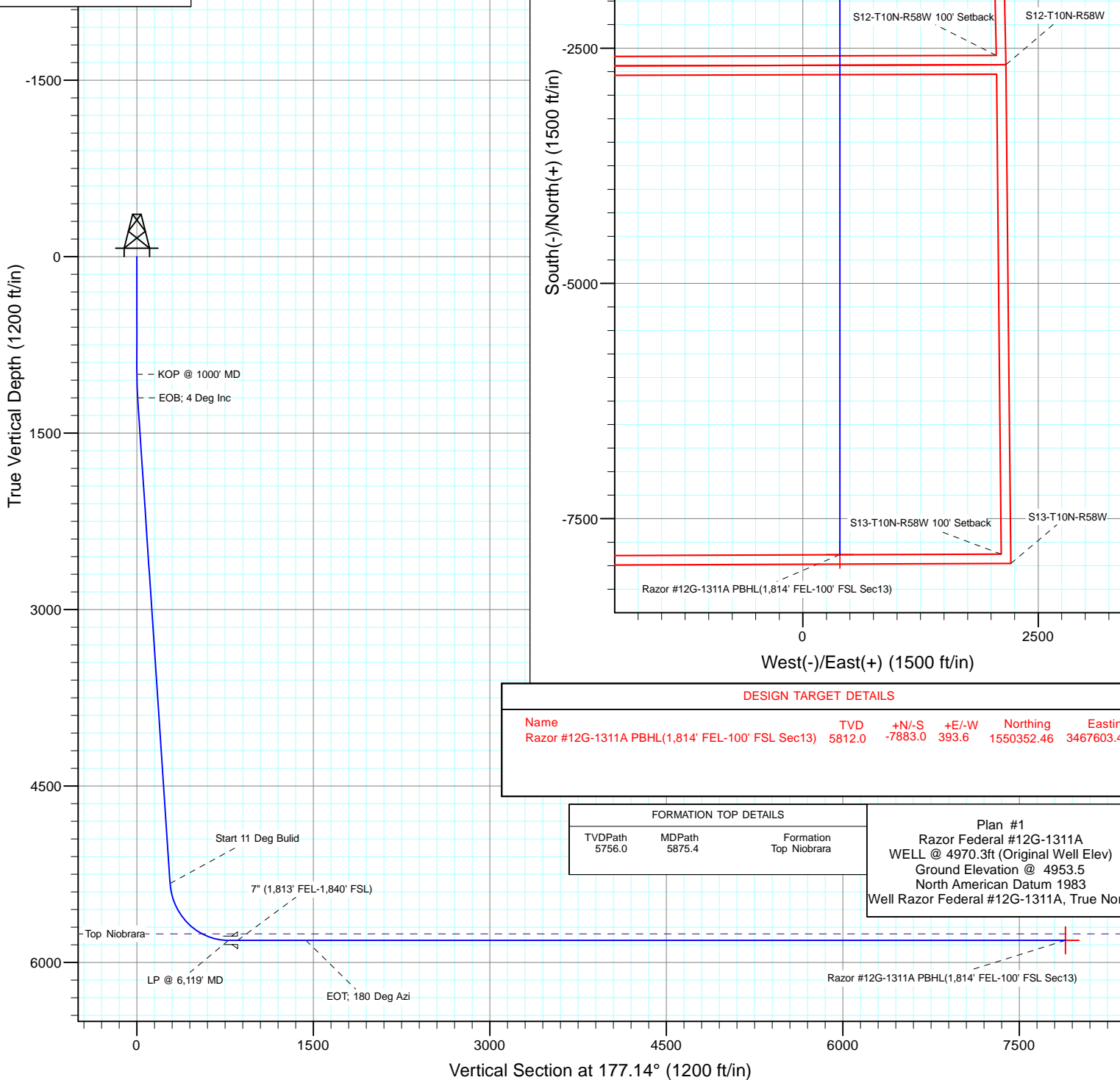
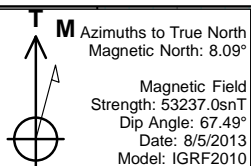


Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor Federal #12G-1311A
Wellbore: HZ
Design: Plan #1



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 @ 1000' MD
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	EOB; 4 Deg Inc
3	1200.0	4.00	160.00	1199.8	-6.6	2.4	2.00	160.00	6.7	Start 11 Deg Build
4	5338.0	4.00	160.00	5327.8	-277.8	101.1	0.00	0.00	282.5	LP @ 6,119' MD
5	6119.8	90.00	160.00	5812.3	-766.1	278.8	11.00	0.00	779.0	EOT; 180 Deg Azi
6	6786.6	90.00	180.00	5812.3	-1419.4	394.0	3.00	89.99	1437.3	PBHL @ 13,250' MD
7	13250.2	90.00	180.00	5812.0	-7883.0	393.6	0.00	0.00	7892.8	



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor #12G-1311A PBHL(1,814' FEL-100' FSL Sec13)	5812.0	-7883.0	393.6	1550352.46	3467603.42

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5756.0	5875.4	Top Niobrara

Plan #1
Razor Federal #12G-1311A
WELL @ 4970.3ft (Original Well Elev)
Ground Elevation @ 4953.5
North American Datum 1983
Well Razor Federal #12G-1311A, True North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		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 Federal #12G-1311A					
Well Position	+N/-S	0.0 ft	Northing:	1,558,226.49 ft	Latitude:	40.853494
	+E/-W	0.0 ft	Easting:	3,467,059.83 ft	Longitude:	-103.811636
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,953.5 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	8/5/2013	8.09	67.49	53,237

Design	Plan #1			
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	177.14

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	4.00	160.00	1,199.8	-6.6	2.4	2.00	2.00	0.00	160.00	
5,338.0	4.00	160.00	5,327.8	-277.8	101.1	0.00	0.00	0.00	0.00	
6,119.8	90.00	160.00	5,812.3	-766.1	278.8	11.00	11.00	0.00	0.00	
6,786.6	90.00	180.00	5,812.3	-1,419.4	394.0	3.00	0.00	3.00	89.99	
13,250.2	90.00	180.00	5,812.0	-7,883.0	393.6	0.00	0.00	0.00	0.00	Razor #12G-1311A PI

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1000' MD
1,100.0	2.00	160.00	1,100.0	-1.6	0.6	1.7	2.00	2.00	
1,200.0	4.00	160.00	1,199.8	-6.6	2.4	6.7	2.00	2.00	EOB; 4 Deg Inc
1,300.0	4.00	160.00	1,299.6	-13.1	4.8	13.3	0.00	0.00	
1,400.0	4.00	160.00	1,399.4	-19.7	7.2	20.0	0.00	0.00	
1,500.0	4.00	160.00	1,499.1	-26.2	9.5	26.7	0.00	0.00	
1,600.0	4.00	160.00	1,598.9	-32.8	11.9	33.3	0.00	0.00	
1,700.0	4.00	160.00	1,698.6	-39.3	14.3	40.0	0.00	0.00	
1,800.0	4.00	160.00	1,798.4	-45.9	16.7	46.7	0.00	0.00	
1,900.0	4.00	160.00	1,898.1	-52.4	19.1	53.3	0.00	0.00	
2,000.0	4.00	160.00	1,997.9	-59.0	21.5	60.0	0.00	0.00	
2,100.0	4.00	160.00	2,097.6	-65.6	23.9	66.7	0.00	0.00	
2,200.0	4.00	160.00	2,197.4	-72.1	26.2	73.3	0.00	0.00	
2,300.0	4.00	160.00	2,297.2	-78.7	28.6	80.0	0.00	0.00	
2,400.0	4.00	160.00	2,396.9	-85.2	31.0	86.7	0.00	0.00	
2,500.0	4.00	160.00	2,496.7	-91.8	33.4	93.3	0.00	0.00	
2,600.0	4.00	160.00	2,596.4	-98.3	35.8	100.0	0.00	0.00	
2,700.0	4.00	160.00	2,696.2	-104.9	38.2	106.7	0.00	0.00	
2,800.0	4.00	160.00	2,795.9	-111.4	40.6	113.3	0.00	0.00	
2,900.0	4.00	160.00	2,895.7	-118.0	42.9	120.0	0.00	0.00	
3,000.0	4.00	160.00	2,995.5	-124.5	45.3	126.7	0.00	0.00	
3,100.0	4.00	160.00	3,095.2	-131.1	47.7	133.3	0.00	0.00	
3,200.0	4.00	160.00	3,195.0	-137.7	50.1	140.0	0.00	0.00	
3,300.0	4.00	160.00	3,294.7	-144.2	52.5	146.6	0.00	0.00	
3,400.0	4.00	160.00	3,394.5	-150.8	54.9	153.3	0.00	0.00	
3,500.0	4.00	160.00	3,494.2	-157.3	57.3	160.0	0.00	0.00	
3,600.0	4.00	160.00	3,594.0	-163.9	59.6	166.6	0.00	0.00	
3,700.0	4.00	160.00	3,693.7	-170.4	62.0	173.3	0.00	0.00	
3,800.0	4.00	160.00	3,793.5	-177.0	64.4	180.0	0.00	0.00	
3,900.0	4.00	160.00	3,893.3	-183.5	66.8	186.6	0.00	0.00	
4,000.0	4.00	160.00	3,993.0	-190.1	69.2	193.3	0.00	0.00	
4,100.0	4.00	160.00	4,092.8	-196.7	71.6	200.0	0.00	0.00	
4,200.0	4.00	160.00	4,192.5	-203.2	74.0	206.6	0.00	0.00	
4,300.0	4.00	160.00	4,292.3	-209.8	76.3	213.3	0.00	0.00	
4,400.0	4.00	160.00	4,392.0	-216.3	78.7	220.0	0.00	0.00	
4,500.0	4.00	160.00	4,491.8	-222.9	81.1	226.6	0.00	0.00	
4,600.0	4.00	160.00	4,591.6	-229.4	83.5	233.3	0.00	0.00	
4,700.0	4.00	160.00	4,691.3	-236.0	85.9	240.0	0.00	0.00	
4,800.0	4.00	160.00	4,791.1	-242.5	88.3	246.6	0.00	0.00	
4,900.0	4.00	160.00	4,890.8	-249.1	90.7	253.3	0.00	0.00	
5,000.0	4.00	160.00	4,990.6	-255.6	93.0	260.0	0.00	0.00	
5,100.0	4.00	160.00	5,090.3	-262.2	95.4	266.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	160.00	5,190.1	-268.8	97.8	273.3	0.00	0.00	
5,300.0	4.00	160.00	5,289.9	-275.3	100.2	280.0	0.00	0.00	
5,338.0	4.00	160.00	5,327.8	-277.8	101.1	282.5	0.00	0.00	Start 11 Deg Build
5,350.0	5.32	160.00	5,339.7	-278.7	101.4	283.4	11.00	11.00	
5,400.0	10.82	160.00	5,389.2	-285.3	103.8	290.1	11.00	11.00	
5,450.0	16.32	160.00	5,437.8	-296.3	107.9	301.3	11.00	11.00	
5,500.0	21.82	160.00	5,485.0	-311.7	113.4	316.9	11.00	11.00	
5,550.0	27.32	160.00	5,530.5	-331.2	120.5	336.8	11.00	11.00	
5,600.0	32.82	160.00	5,573.7	-354.7	129.1	360.7	11.00	11.00	
5,650.0	38.32	160.00	5,614.4	-382.1	139.1	388.5	11.00	11.00	
5,700.0	43.82	160.00	5,652.1	-412.9	150.3	419.9	11.00	11.00	
5,750.0	49.32	160.00	5,686.4	-447.0	162.7	454.6	11.00	11.00	
5,800.0	54.82	160.00	5,717.2	-484.1	176.2	492.2	11.00	11.00	
5,850.0	60.32	160.00	5,744.0	-523.7	190.6	532.6	11.00	11.00	
5,875.4	63.12	160.00	5,756.0	-544.7	198.3	554.0	11.00	11.00	Top Niobrara
5,900.0	65.82	160.00	5,766.6	-565.6	205.9	575.1	11.00	11.00	
5,950.0	71.32	160.00	5,784.9	-609.3	221.8	619.6	11.00	11.00	
6,000.0	76.82	160.00	5,798.6	-654.5	238.2	665.5	11.00	11.00	
6,050.0	82.32	160.00	5,807.6	-700.6	255.0	712.5	11.00	11.00	
6,100.0	87.82	160.00	5,811.9	-747.4	272.0	760.1	11.00	11.00	
6,119.8	90.00	160.00	5,812.3	-766.1	278.8	779.0	11.00	11.00	LP @ 6,119' MD
6,200.0	90.00	162.41	5,812.3	-842.0	304.7	856.1	3.00	0.00	7" (1,813' FEL-1,840' FSL)
6,300.0	90.00	165.41	5,812.3	-938.0	332.4	953.4	3.00	0.00	
6,400.0	90.00	168.41	5,812.3	-1,035.4	355.0	1,051.8	3.00	0.00	
6,500.0	90.00	171.41	5,812.3	-1,133.9	372.6	1,151.0	3.00	0.00	
6,600.0	90.00	174.41	5,812.3	-1,233.1	384.9	1,250.7	3.00	0.00	
6,700.0	90.00	177.41	5,812.3	-1,332.8	392.0	1,350.7	3.00	0.00	
6,786.6	90.00	180.00	5,812.3	-1,419.4	394.0	1,437.3	3.00	0.00	EOT; 180 Deg Azi
6,800.0	90.00	180.00	5,812.3	-1,432.8	394.0	1,450.6	0.00	0.00	
6,900.0	90.00	180.00	5,812.3	-1,532.8	394.0	1,550.5	0.00	0.00	
7,000.0	90.00	180.00	5,812.3	-1,632.8	394.0	1,650.4	0.00	0.00	
7,100.0	90.00	180.00	5,812.3	-1,732.8	394.0	1,750.3	0.00	0.00	
7,200.0	90.00	180.00	5,812.3	-1,832.8	394.0	1,850.1	0.00	0.00	
7,300.0	90.00	180.00	5,812.3	-1,932.8	394.0	1,950.0	0.00	0.00	
7,400.0	90.00	180.00	5,812.3	-2,032.8	394.0	2,049.9	0.00	0.00	
7,500.0	90.00	180.00	5,812.3	-2,132.8	394.0	2,149.8	0.00	0.00	
7,600.0	90.00	180.00	5,812.3	-2,232.8	394.0	2,249.6	0.00	0.00	
7,700.0	90.00	180.00	5,812.3	-2,332.8	393.9	2,349.5	0.00	0.00	
7,800.0	90.00	180.00	5,812.2	-2,432.8	393.9	2,449.4	0.00	0.00	
7,900.0	90.00	180.00	5,812.2	-2,532.8	393.9	2,549.3	0.00	0.00	
8,000.0	90.00	180.00	5,812.2	-2,632.8	393.9	2,649.2	0.00	0.00	
8,100.0	90.00	180.00	5,812.2	-2,732.8	393.9	2,749.0	0.00	0.00	
8,200.0	90.00	180.00	5,812.2	-2,832.8	393.9	2,848.9	0.00	0.00	
8,300.0	90.00	180.00	5,812.2	-2,932.8	393.9	2,948.8	0.00	0.00	
8,400.0	90.00	180.00	5,812.2	-3,032.8	393.9	3,048.7	0.00	0.00	
8,500.0	90.00	180.00	5,812.2	-3,132.8	393.9	3,148.5	0.00	0.00	
8,600.0	90.00	180.00	5,812.2	-3,232.8	393.9	3,248.4	0.00	0.00	
8,700.0	90.00	180.00	5,812.2	-3,332.8	393.9	3,348.3	0.00	0.00	
8,800.0	90.00	180.00	5,812.2	-3,432.8	393.9	3,448.2	0.00	0.00	
8,900.0	90.00	180.00	5,812.2	-3,532.8	393.9	3,548.0	0.00	0.00	
9,000.0	90.00	180.00	5,812.2	-3,632.8	393.9	3,647.9	0.00	0.00	
9,100.0	90.00	180.00	5,812.2	-3,732.8	393.9	3,747.8	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	180.00	5,812.2	-3,832.8	393.8	3,847.7	0.00	0.00	
9,300.0	90.00	180.00	5,812.2	-3,932.8	393.8	3,947.5	0.00	0.00	
9,400.0	90.00	180.00	5,812.2	-4,032.8	393.8	4,047.4	0.00	0.00	
9,500.0	90.00	180.00	5,812.2	-4,132.8	393.8	4,147.3	0.00	0.00	
9,600.0	90.00	180.00	5,812.2	-4,232.8	393.8	4,247.2	0.00	0.00	
9,700.0	90.00	180.00	5,812.2	-4,332.8	393.8	4,347.0	0.00	0.00	
9,800.0	90.00	180.00	5,812.2	-4,432.8	393.8	4,446.9	0.00	0.00	
9,900.0	90.00	180.00	5,812.2	-4,532.8	393.8	4,546.8	0.00	0.00	
10,000.0	90.00	180.00	5,812.2	-4,632.8	393.8	4,646.7	0.00	0.00	
10,100.0	90.00	180.00	5,812.1	-4,732.8	393.8	4,746.5	0.00	0.00	
10,200.0	90.00	180.00	5,812.1	-4,832.8	393.8	4,846.4	0.00	0.00	
10,300.0	90.00	180.00	5,812.1	-4,932.8	393.8	4,946.3	0.00	0.00	
10,400.0	90.00	180.00	5,812.1	-5,032.8	393.8	5,046.2	0.00	0.00	
10,500.0	90.00	180.00	5,812.1	-5,132.8	393.8	5,146.0	0.00	0.00	
10,600.0	90.00	180.00	5,812.1	-5,232.8	393.8	5,245.9	0.00	0.00	
10,700.0	90.00	180.00	5,812.1	-5,332.8	393.7	5,345.8	0.00	0.00	
10,800.0	90.00	180.00	5,812.1	-5,432.8	393.7	5,445.7	0.00	0.00	
10,900.0	90.00	180.00	5,812.1	-5,532.8	393.7	5,545.5	0.00	0.00	
11,000.0	90.00	180.00	5,812.1	-5,632.8	393.7	5,645.4	0.00	0.00	
11,100.0	90.00	180.00	5,812.1	-5,732.8	393.7	5,745.3	0.00	0.00	
11,200.0	90.00	180.00	5,812.1	-5,832.8	393.7	5,845.2	0.00	0.00	
11,300.0	90.00	180.00	5,812.1	-5,932.8	393.7	5,945.0	0.00	0.00	
11,400.0	90.00	180.00	5,812.1	-6,032.8	393.7	6,044.9	0.00	0.00	
11,500.0	90.00	180.00	5,812.1	-6,132.8	393.7	6,144.8	0.00	0.00	
11,600.0	90.00	180.00	5,812.1	-6,232.8	393.7	6,244.7	0.00	0.00	
11,700.0	90.00	180.00	5,812.1	-6,332.8	393.7	6,344.5	0.00	0.00	
11,800.0	90.00	180.00	5,812.1	-6,432.8	393.7	6,444.4	0.00	0.00	
11,900.0	90.00	180.00	5,812.1	-6,532.8	393.7	6,544.3	0.00	0.00	
12,000.0	90.00	180.00	5,812.1	-6,632.8	393.7	6,644.2	0.00	0.00	
12,100.0	90.00	180.00	5,812.1	-6,732.8	393.7	6,744.0	0.00	0.00	
12,200.0	90.00	180.00	5,812.1	-6,832.8	393.6	6,843.9	0.00	0.00	
12,300.0	90.00	180.00	5,812.1	-6,932.8	393.6	6,943.8	0.00	0.00	
12,400.0	90.00	180.00	5,812.0	-7,032.8	393.6	7,043.7	0.00	0.00	
12,500.0	90.00	180.00	5,812.0	-7,132.8	393.6	7,143.5	0.00	0.00	
12,600.0	90.00	180.00	5,812.0	-7,232.8	393.6	7,243.4	0.00	0.00	
12,700.0	90.00	180.00	5,812.0	-7,332.8	393.6	7,343.3	0.00	0.00	
12,800.0	90.00	180.00	5,812.0	-7,432.8	393.6	7,443.2	0.00	0.00	
12,900.0	90.00	180.00	5,812.0	-7,532.8	393.6	7,543.0	0.00	0.00	
13,000.0	90.00	180.00	5,812.0	-7,632.8	393.6	7,642.9	0.00	0.00	
13,100.0	90.00	180.00	5,812.0	-7,732.8	393.6	7,742.8	0.00	0.00	
13,200.0	90.00	180.00	5,812.0	-7,832.8	393.6	7,842.7	0.00	0.00	
13,250.2	90.00	180.00	5,812.0	-7,883.0	393.6	7,892.8	0.00	0.00	PBHL @ 13,250' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Razor #12G-1311A PBH	0.00	0.00	5,812.0	-7,883.0	393.6	1,550,352.46	3,467,603.42	40.831858	-103.810214
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(in)	(in)
6,200.0	5,812.3	7" (1,813' FEL-1,840' FSL)	7.000	7.500

Formations				
Measured Depth	Vertical Depth	Name	Lithology	Dip
(ft)	(ft)			(°)
5,875.4	5,756.0	Top Niobrara		0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1000' MD
1,200.0	1,199.8	-6.6	2.4	EOB; 4 Deg Inc
5,338.0	5,327.8	-277.8	101.1	Start 11 Deg Bulid
6,119.8	5,812.3	-766.1	278.8	LP @ 6,119' MD
6,786.6	5,812.3	-1,419.4	394.0	EOT; 180 Deg Azi
13,250.2	5,812.0	-7,883.0	393.6	PBHL @ 13,250' MD

Whiting Petroleum Corporation

Weld County, CO

S12-T10N-R58W

Razor Federal #12G-1311A

HZ

Plan #1

Anticollision Report

18 October, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	10/15/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,249.5	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance		Separation Factor	Warning
Offset Well - Wellbore - Design			Between Centres (ft)	Between Ellipses (ft)		
S12-T10N-R58W						
Razor #12G-0109A - HZ - Plan #1	900.0	900.0	99.4	95.6	26.320	CC, ES
Razor #12G-0109A - HZ - Plan #1	1,100.0	1,093.4	107.3	102.7	23.148	SF
Razor #12G-0110B - HZ - Plan #1	1,000.0	1,000.0	81.9	77.6	19.374	CC, ES
Razor #12G-0110B - HZ - Plan #1	1,100.0	1,097.3	85.2	80.6	18.356	SF
Razor #12G-0111A - HZ - Plan #1	1,000.0	1,000.0	74.9	70.7	17.723	CC, ES
Razor #12G-0111A - HZ - Plan #1	1,100.0	1,100.0	76.5	71.9	16.468	SF
Razor #12G-0112B - HZ - Plan #1	1,000.0	1,000.0	81.9	77.6	19.369	CC, ES
Razor #12G-0112B - HZ - Plan #1	1,200.0	1,199.8	87.0	82.0	17.238	SF
Razor Federal #12G-1309A - HZ - Plan #1	1,000.0	1,000.0	66.1	61.9	15.613	CC, ES
Razor Federal #12G-1309A - HZ - Plan #1	13,250.2	13,219.5	660.3	357.1	2.178	SF
Razor Federal #12G-1310B - HZ - Plan #1	1,000.0	1,000.0	33.0	28.8	7.807	CC, ES
Razor Federal #12G-1310B - HZ - Plan #1	13,250.2	13,291.5	345.1	52.8	1.181	Level 2, SF
Razor Federal #12G-1312B - HZ - Plan #1	900.0	900.0	33.0	29.3	8.750	CC, ES
Razor Federal #12G-1312B - HZ - Plan #1	13,250.2	13,435.8	344.3	53.6	1.184	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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-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	-41.09	74.9	-65.3	99.4					
100.0	100.0	100.0	100.0	0.1	0.1	-41.09	74.9	-65.3	99.4	99.2	0.18	552.089		
200.0	200.0	200.0	200.0	0.3	0.3	-41.09	74.9	-65.3	99.4	98.8	0.63	157.874		
300.0	300.0	300.0	300.0	0.5	0.5	-41.09	74.9	-65.3	99.4	98.3	1.08	92.106		
400.0	400.0	400.0	400.0	0.8	0.8	-41.09	74.9	-65.3	99.4	97.9	1.53	65.020		
500.0	500.0	500.0	500.0	1.0	1.0	-41.09	74.9	-65.3	99.4	97.4	1.98	50.244		
600.0	600.0	600.0	600.0	1.2	1.2	-41.09	74.9	-65.3	99.4	97.0	2.43	40.941		
700.0	700.0	700.0	700.0	1.4	1.4	-41.09	74.9	-65.3	99.4	96.5	2.88	34.544		
800.0	800.0	800.0	800.0	1.7	1.7	-41.09	74.9	-65.3	99.4	96.1	3.33	29.876		
900.0	900.0	900.0	900.0	1.9	1.9	-41.09	74.9	-65.3	99.4	95.6	3.78	26.320 CC, ES		
1,000.0	1,000.0	996.9	996.8	2.1	2.1	-40.73	76.5	-65.8	101.0	96.7	4.22	23.929		
1,100.0	1,100.0	1,093.4	1,093.2	2.3	2.3	160.52	81.1	-67.4	107.3	102.7	4.64	23.148 SF		
1,200.0	1,199.8	1,192.4	1,192.0	2.5	2.5	162.47	87.6	-69.6	118.8	113.8	5.04	23.592		
1,300.0	1,299.6	1,291.4	1,290.8	2.7	2.8	164.35	94.2	-71.9	132.1	126.7	5.44	24.283		
1,400.0	1,399.4	1,390.4	1,389.6	2.9	3.0	165.89	100.7	-74.1	145.5	139.7	5.85	24.865		
1,500.0	1,499.1	1,489.5	1,488.3	3.1	3.3	167.16	107.2	-76.3	159.1	152.8	6.27	25.359		
1,600.0	1,598.9	1,588.5	1,587.1	3.3	3.5	168.24	113.8	-78.5	172.6	165.9	6.70	25.782		
1,700.0	1,698.6	1,687.5	1,685.9	3.5	3.7	169.15	120.3	-80.7	186.2	179.1	7.12	26.146		
1,800.0	1,798.4	1,786.5	1,784.7	3.8	4.0	169.95	126.9	-83.0	199.9	192.4	7.55	26.463		
1,900.0	1,898.1	1,885.6	1,883.5	4.0	4.2	170.64	133.4	-85.2	213.6	205.6	7.99	26.741		
2,000.0	1,997.9	1,984.6	1,982.3	4.2	4.5	171.25	139.9	-87.4	227.3	218.9	8.42	26.986		
2,100.0	2,097.6	2,083.6	2,081.1	4.5	4.7	171.78	146.5	-89.6	241.1	232.2	8.86	27.203		
2,200.0	2,197.4	2,182.6	2,179.8	4.7	5.0	172.26	153.0	-91.9	254.8	245.5	9.30	27.396		
2,300.0	2,297.2	2,281.7	2,278.6	5.0	5.2	172.70	159.6	-94.1	268.6	258.9	9.74	27.570		
2,400.0	2,396.9	2,380.7	2,377.4	5.2	5.5	173.09	166.1	-96.3	282.4	272.2	10.19	27.726		
2,500.0	2,496.7	2,479.7	2,476.2	5.5	5.7	173.44	172.7	-98.5	296.2	285.6	10.63	27.867		
2,600.0	2,596.4	2,578.8	2,575.0	5.7	6.0	173.76	179.2	-100.7	310.0	299.0	11.07	27.995		
2,700.0	2,696.2	2,677.8	2,673.8	6.0	6.2	174.05	185.7	-103.0	323.9	312.3	11.52	28.112		
2,800.0	2,795.9	2,776.8	2,772.6	6.2	6.5	174.32	192.3	-105.2	337.7	325.7	11.97	28.220		
2,900.0	2,895.7	2,875.8	2,871.3	6.5	6.7	174.57	198.8	-107.4	351.5	339.1	12.41	28.318		
3,000.0	2,995.5	2,974.9	2,970.1	6.7	7.0	174.80	205.4	-109.6	365.4	352.5	12.86	28.409		
3,100.0	3,095.2	3,073.9	3,068.9	7.0	7.2	175.02	211.9	-111.8	379.2	365.9	13.31	28.492		
3,200.0	3,195.0	3,172.9	3,167.7	7.3	7.5	175.21	218.4	-114.1	393.1	379.3	13.76	28.570		
3,300.0	3,294.7	3,271.9	3,266.5	7.5	7.7	175.40	225.0	-116.3	406.9	392.7	14.21	28.642		
3,400.0	3,394.5	3,371.0	3,365.3	7.8	8.0	175.57	231.5	-118.5	420.8	406.1	14.66	28.709		
3,500.0	3,494.2	3,470.0	3,464.1	8.0	8.2	175.73	238.1	-120.7	434.6	419.5	15.11	28.772		
3,600.0	3,594.0	3,569.0	3,562.8	8.3	8.5	175.88	244.6	-123.0	448.5	433.0	15.56	28.830		
3,700.0	3,693.8	3,668.0	3,661.6	8.5	8.7	176.03	251.1	-125.2	462.4	446.4	16.01	28.885		
3,800.0	3,793.5	3,767.1	3,760.4	8.8	9.0	176.16	257.7	-127.4	476.3	459.8	16.46	28.937		
3,900.0	3,893.3	3,866.1	3,859.2	9.1	9.2	176.29	264.2	-129.6	490.1	473.2	16.91	28.985		
4,000.0	3,993.0	3,965.1	3,958.0	9.3	9.5	176.41	270.8	-131.8	504.0	486.7	17.36	29.031		
4,100.0	4,092.8	4,064.2	4,056.8	9.6	9.7	176.52	277.3	-134.1	517.9	500.1	17.81	29.074		
4,200.0	4,192.5	4,163.2	4,155.6	9.8	10.0	176.63	283.8	-136.3	531.8	513.5	18.27	29.114		
4,300.0	4,292.3	4,262.2	4,254.3	10.1	10.2	176.73	290.4	-138.5	545.7	526.9	18.72	29.153		
4,400.0	4,392.1	4,361.2	4,353.1	10.4	10.5	176.83	296.9	-140.7	559.6	540.4	19.17	29.189		
4,500.0	4,491.8	4,460.3	4,451.9	10.6	10.8	176.92	303.5	-142.9	573.4	553.8	19.62	29.224		
4,600.0	4,591.6	4,559.3	4,550.7	10.9	11.0	177.01	310.0	-145.2	587.3	567.3	20.07	29.257		
4,700.0	4,691.3	4,658.3	4,649.5	11.2	11.3	177.09	316.5	-147.4	601.2	580.7	20.53	29.288		
4,800.0	4,791.1	4,757.3	4,748.3	11.4	11.5	177.17	323.1	-149.6	615.1	594.1	20.98	29.318		
4,900.0	4,890.8	4,856.4	4,847.1	11.7	11.8	177.25	329.6	-151.8	629.0	607.6	21.43	29.346		
5,000.0	4,990.6	4,955.4	4,945.8	11.9	12.0	177.32	336.2	-154.1	642.9	621.0	21.89	29.374		
5,100.0	5,090.3	5,054.4	5,044.6	12.2	12.3	177.39	342.7	-156.3	656.8	634.4	22.34	29.400		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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		
5,200.0	5,190.1	5,153.5	5,143.4	12.5	12.5	177.46	349.3	-158.5	670.7	647.9	22.79	29.424		
5,300.0	5,289.9	5,252.5	5,242.2	12.7	12.8	177.52	355.8	-160.7	684.6	661.3	23.25	29.448		
5,338.0	5,327.8	5,290.1	5,279.7	12.8	12.9	177.54	358.3	-161.6	689.9	666.4	23.42	29.457		
5,350.0	5,339.7	5,302.0	5,291.6	12.9	12.9	177.54	359.1	-161.8	691.7	668.2	23.43	29.516		
5,400.0	5,389.2	5,343.5	5,333.0	13.0	13.0	177.53	361.8	-162.8	702.2	678.8	23.35	30.068		
5,450.0	5,437.8	5,350.0	5,339.5	13.2	13.0	177.45	362.4	-163.0	718.9	696.0	23.00	31.260		
5,500.0	5,485.0	5,382.1	5,371.3	13.5	13.1	177.38	366.1	-164.2	741.2	718.7	22.51	32.923		
5,550.0	5,530.5	5,400.0	5,389.0	13.8	13.2	177.26	369.0	-165.2	769.4	747.6	21.81	35.278		
5,600.0	5,573.7	5,400.0	5,389.0	14.1	13.2	177.01	369.0	-165.2	802.9	782.0	20.89	38.430		
5,650.0	5,614.4	5,426.7	5,415.0	14.5	13.3	176.79	374.4	-167.0	840.0	820.2	19.87	42.281		
5,700.0	5,652.1	5,450.0	5,437.5	14.9	13.4	176.48	380.1	-169.0	881.4	862.7	18.69	47.166		
5,750.0	5,686.4	5,450.0	5,437.5	15.4	13.4	175.80	380.1	-169.0	925.3	907.9	17.35	53.330		
5,800.0	5,717.2	5,450.0	5,437.5	16.0	13.4	174.65	380.1	-169.0	971.7	955.7	15.96	60.885		
5,850.0	5,744.0	5,450.0	5,437.5	16.5	13.4	172.38	380.1	-169.0	1,019.9	1,005.2	14.67	69.519		
5,900.0	5,766.6	5,450.0	5,437.5	17.2	13.4	166.10	380.1	-169.0	1,069.2	1,054.7	14.49	73.782		
5,950.0	5,784.9	5,450.0	5,437.5	17.9	13.4	111.88	380.1	-169.0	1,119.0	1,089.1	29.98	37.330		
6,000.0	5,798.6	5,450.0	5,437.5	18.6	13.4	16.35	380.1	-169.0	1,169.0	1,156.0	12.97	90.159		
6,050.0	5,807.6	5,450.0	5,437.5	19.4	13.4	7.74	380.1	-169.0	1,218.5	1,208.9	9.64	126.450		
6,100.0	5,811.9	5,450.0	5,437.5	20.1	13.4	5.01	380.1	-169.0	1,267.3	1,258.8	8.52	148.791		
6,119.8	5,812.3	5,450.0	5,437.5	20.5	13.4	4.39	380.1	-169.0	1,286.4	1,278.0	8.33	154.443		
6,200.0	5,812.3	5,450.0	5,437.5	21.7	13.4	12.35	380.1	-169.0	1,363.2	1,352.1	11.05	123.328		
6,300.0	5,812.3	5,450.0	5,437.5	23.1	13.4	22.21	380.1	-169.0	1,459.2	1,443.2	16.07	90.813		
6,400.0	5,812.3	5,450.0	5,437.5	24.6	13.4	31.41	380.1	-169.0	1,555.2	1,533.7	21.59	72.045		
6,500.0	5,812.3	5,427.9	5,416.2	26.1	13.3	37.88	374.7	-167.1	1,650.4	1,624.6	25.76	64.063		
6,600.0	5,812.3	5,422.5	5,411.0	27.7	13.3	44.35	373.5	-166.7	1,745.4	1,715.5	29.93	58.317		
6,700.0	5,812.3	5,400.0	5,389.0	29.2	13.2	48.56	369.0	-165.2	1,840.1	1,807.3	32.85	56.023		
6,786.6	5,812.3	5,400.0	5,389.0	30.6	13.2	52.87	369.0	-165.2	1,921.0	1,885.4	35.64	53.908		
6,800.0	5,812.3	5,400.0	5,389.0	30.8	13.2	52.87	369.0	-165.2	1,933.5	1,897.7	35.83	53.966		
6,900.0	5,812.3	5,400.0	5,389.0	32.5	13.2	52.87	369.0	-165.2	2,027.0	1,989.7	37.32	54.320		
7,000.0	5,812.3	5,400.0	5,389.0	34.2	13.2	52.87	369.0	-165.2	2,121.1	2,082.3	38.82	54.635		
7,100.0	5,812.3	5,400.0	5,389.0	35.9	13.2	52.87	369.0	-165.2	2,215.7	2,175.4	40.35	54.918		
7,200.0	5,812.3	5,400.0	5,389.0	37.6	13.2	52.87	369.0	-165.2	2,310.8	2,268.9	41.88	55.172		
7,300.0	5,812.3	5,400.0	5,389.0	39.4	13.2	52.87	369.0	-165.2	2,406.3	2,362.8	43.43	55.403		
7,400.0	5,812.3	5,400.0	5,389.0	41.1	13.2	52.87	369.0	-165.2	2,502.1	2,457.1	44.99	55.612		
7,500.0	5,812.3	5,400.0	5,389.0	42.9	13.2	52.87	369.0	-165.2	2,598.2	2,551.7	46.56	55.804		
7,600.0	5,812.3	5,400.0	5,389.0	44.7	13.2	52.87	369.0	-165.2	2,694.7	2,646.5	48.14	55.980		
7,700.0	5,812.3	5,400.0	5,389.0	46.5	13.2	52.87	369.0	-165.2	2,791.3	2,741.6	49.72	56.142		
7,800.0	5,812.2	5,400.0	5,389.0	48.3	13.2	52.87	369.0	-165.2	2,888.2	2,836.9	51.31	56.292		
7,900.0	5,812.2	5,400.0	5,389.0	50.1	13.2	52.87	369.0	-165.2	2,985.3	2,932.4	52.90	56.431		
8,000.0	5,812.2	5,377.9	5,367.2	52.0	13.1	51.42	365.5	-164.0	3,082.1	3,028.6	53.50	57.607		
8,100.0	5,812.2	5,375.9	5,365.2	53.8	13.1	51.30	365.3	-163.9	3,179.5	3,124.5	54.99	57.818		
8,200.0	5,812.2	5,374.1	5,363.4	55.6	13.1	51.18	365.0	-163.8	3,277.0	3,220.5	56.48	58.017		
8,300.0	5,812.2	5,372.3	5,361.6	57.5	13.1	51.06	364.8	-163.8	3,374.6	3,316.6	57.98	58.204		
8,400.0	5,812.2	5,350.0	5,339.5	59.3	13.0	49.67	362.4	-163.0	3,472.9	3,414.4	58.47	59.393		
8,500.0	5,812.2	5,350.0	5,339.5	61.2	13.0	49.67	362.4	-163.0	3,570.7	3,510.6	60.03	59.478		
8,600.0	5,812.2	5,350.0	5,339.5	63.1	13.0	49.67	362.4	-163.0	3,668.6	3,607.0	61.60	59.559		
8,700.0	5,812.2	5,350.0	5,339.5	64.9	13.0	49.67	362.4	-163.0	3,766.7	3,703.5	63.16	59.635		
8,800.0	5,812.2	5,350.0	5,339.5	66.8	13.0	49.67	362.4	-163.0	3,864.8	3,800.1	64.73	59.707		
8,900.0	5,812.2	5,350.0	5,339.5	68.7	13.0	49.67	362.4	-163.0	3,963.1	3,896.8	66.30	59.776		
9,000.0	5,812.2	5,350.0	5,339.5	70.5	13.0	49.67	362.4	-163.0	4,061.4	3,993.5	67.87	59.841		
9,100.0	5,812.2	5,350.0	5,339.5	72.4	13.0	49.67	362.4	-163.0	4,159.8	4,090.4	69.44	59.902		
9,200.0	5,812.2	5,350.0	5,339.5	74.3	13.0	49.67	362.4	-163.0	4,258.3	4,187.3	71.02	59.961		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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-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		
9,300.0	5,812.2	5,350.0	5,339.5	76.2	13.0	49.67	362.4	-163.0	4,356.8	4,284.2	72.59	60.017		
9,400.0	5,812.2	5,350.0	5,339.5	78.0	13.0	49.67	362.4	-163.0	4,455.4	4,381.3	74.17	60.071		
9,500.0	5,812.2	5,350.0	5,339.5	79.9	13.0	49.67	362.4	-163.0	4,554.1	4,478.4	75.75	60.122		
9,600.0	5,812.2	5,350.0	5,339.5	81.8	13.0	49.67	362.4	-163.0	4,652.8	4,575.5	77.33	60.171		
9,700.0	5,812.2	5,350.0	5,339.5	83.7	13.0	49.67	362.4	-163.0	4,751.6	4,672.7	78.91	60.218		
9,800.0	5,812.2	5,350.0	5,339.5	85.6	13.0	49.67	362.4	-163.0	4,850.5	4,770.0	80.49	60.263		
9,900.0	5,812.2	5,350.0	5,339.5	87.5	13.0	49.67	362.4	-163.0	4,949.4	4,867.3	82.07	60.307		
10,000.0	5,812.2	5,350.0	5,339.5	89.4	13.0	49.67	362.4	-163.0	5,048.3	4,964.6	83.65	60.348		
10,100.0	5,812.1	5,350.0	5,339.5	91.2	13.0	49.67	362.4	-163.0	5,147.2	5,062.0	85.24	60.388		
10,200.0	5,812.1	5,350.0	5,339.5	93.1	13.0	49.67	362.4	-163.0	5,246.3	5,159.4	86.82	60.426		
10,300.0	5,812.1	5,350.0	5,339.5	95.0	13.0	49.67	362.4	-163.0	5,345.3	5,256.9	88.41	60.463		
10,400.0	5,812.1	5,350.0	5,339.5	96.9	13.0	49.67	362.4	-163.0	5,444.4	5,354.4	89.99	60.499		
10,500.0	5,812.1	5,350.0	5,339.5	98.8	13.0	49.67	362.4	-163.0	5,543.5	5,451.9	91.58	60.533		
10,600.0	5,812.1	5,350.0	5,339.5	100.7	13.0	49.67	362.4	-163.0	5,642.6	5,549.5	93.16	60.567		
10,700.0	5,812.1	5,350.0	5,339.5	102.6	13.0	49.67	362.4	-163.0	5,741.8	5,647.0	94.75	60.599		
10,800.0	5,812.1	5,350.0	5,339.5	104.5	13.0	49.67	362.4	-163.0	5,841.0	5,744.7	96.34	60.630		
10,900.0	5,812.1	5,350.0	5,339.5	106.4	13.0	49.67	362.4	-163.0	5,940.2	5,842.3	97.93	60.660		
11,000.0	5,812.1	5,344.1	5,333.6	108.3	13.0	49.32	361.9	-162.8	6,039.4	5,940.4	99.06	60.965		
11,100.0	5,812.1	5,338.0	5,327.5	110.2	13.0	48.95	361.4	-162.6	6,138.7	6,038.6	100.17	61.281		
11,200.0	5,812.1	5,338.0	5,327.5	112.1	13.0	48.95	361.4	-162.6	6,238.0	6,136.3	101.75	61.308		
11,300.0	5,812.1	5,338.0	5,327.5	114.0	13.0	48.95	361.4	-162.6	6,337.3	6,234.0	103.33	61.333		
11,400.0	5,812.1	5,338.0	5,327.5	115.9	13.0	48.95	361.4	-162.6	6,436.7	6,331.8	104.90	61.358		
11,500.0	5,812.1	5,338.0	5,327.5	117.8	13.0	48.95	361.4	-162.6	6,536.0	6,429.5	106.48	61.382		
11,600.0	5,812.1	5,338.0	5,327.5	119.7	13.0	48.95	361.4	-162.6	6,635.4	6,527.3	108.06	61.406		
11,700.0	5,812.1	5,338.0	5,327.5	121.7	13.0	48.95	361.4	-162.6	6,734.8	6,625.1	109.64	61.429		
11,800.0	5,812.1	5,338.0	5,327.5	123.6	13.0	48.95	361.4	-162.6	6,834.2	6,723.0	111.21	61.451		
11,900.0	5,812.1	5,338.0	5,327.5	125.5	13.0	48.95	361.4	-162.6	6,933.6	6,820.8	112.79	61.472		
12,000.0	5,812.1	5,338.0	5,327.5	127.4	13.0	48.95	361.4	-162.6	7,033.1	6,918.7	114.37	61.493		
12,100.0	5,812.1	5,338.0	5,327.5	129.3	13.0	48.95	361.4	-162.6	7,132.5	7,016.6	115.95	61.513		
12,200.0	5,812.1	5,333.7	5,323.2	131.2	13.0	48.69	361.2	-162.5	7,232.0	7,114.8	117.14	61.736		
12,300.0	5,812.1	5,327.1	5,316.6	133.1	13.0	48.31	360.7	-162.4	7,331.5	7,213.3	118.12	62.066		
12,400.0	5,812.0	5,320.5	5,310.0	135.0	13.0	47.92	360.3	-162.2	7,430.9	7,311.8	119.09	62.397		
12,500.0	5,812.0	5,313.9	5,303.4	136.9	12.9	47.54	359.8	-162.1	7,530.4	7,410.4	120.05	62.728		
12,600.0	5,812.0	5,307.3	5,296.9	138.8	12.9	47.17	359.4	-161.9	7,629.9	7,508.9	120.99	63.060		
12,700.0	5,812.0	5,300.7	5,290.3	140.7	12.9	46.80	359.0	-161.8	7,729.4	7,607.5	121.93	63.392		
12,800.0	5,812.0	5,294.0	5,283.7	142.6	12.9	46.43	358.5	-161.7	7,829.0	7,706.1	122.86	63.725		
12,900.0	5,812.0	5,287.4	5,277.1	144.5	12.9	46.07	358.1	-161.5	7,928.5	7,804.7	123.77	64.058		
13,000.0	5,812.0	5,280.8	5,270.5	146.5	12.9	45.71	357.7	-161.4	8,028.0	7,903.3	124.68	64.391		
13,100.0	5,812.0	5,274.2	5,263.9	148.4	12.8	45.36	357.2	-161.2	8,127.5	8,002.0	125.57	64.725		
13,200.0	5,812.0	5,267.6	5,257.3	150.3	12.8	45.01	356.8	-161.1	8,227.1	8,100.6	126.46	65.059		
13,250.2	5,812.0	5,264.3	5,254.0	151.1	12.8	44.83	356.6	-161.0	8,277.0	8,150.3	126.74	65.309		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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	-23.80	74.9	-33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	-23.80	74.9	-33.0	81.9	81.7	0.18	454.763		
200.0	200.0	200.0	200.0	0.3	0.3	-23.80	74.9	-33.0	81.9	81.2	0.63	130.043		
300.0	300.0	300.0	300.0	0.5	0.5	-23.80	74.9	-33.0	81.9	80.8	1.08	75.869		
400.0	400.0	400.0	400.0	0.8	0.8	-23.80	74.9	-33.0	81.9	80.3	1.53	53.558		
500.0	500.0	500.0	500.0	1.0	1.0	-23.80	74.9	-33.0	81.9	79.9	1.98	41.387		
600.0	600.0	600.0	600.0	1.2	1.2	-23.80	74.9	-33.0	81.9	79.4	2.43	33.723		
700.0	700.0	700.0	700.0	1.4	1.4	-23.80	74.9	-33.0	81.9	79.0	2.88	28.454		
800.0	800.0	800.0	800.0	1.7	1.7	-23.80	74.9	-33.0	81.9	78.5	3.33	24.609		
900.0	900.0	900.0	900.0	1.9	1.9	-23.80	74.9	-33.0	81.9	78.1	3.78	21.680		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-23.80	74.9	-33.0	81.9	77.6	4.23	19.374 CC, ES		
1,100.0	1,100.0	1,097.3	1,097.2	2.3	2.3	176.64	76.6	-33.2	85.2	80.6	4.64	18.356 SF		
1,200.0	1,199.8	1,193.9	1,193.7	2.5	2.5	177.77	81.4	-33.5	95.3	90.2	5.04	18.900		
1,300.0	1,299.6	1,292.7	1,292.3	2.7	2.8	179.03	88.3	-34.1	108.9	103.4	5.45	19.978		
1,400.0	1,399.4	1,391.8	1,391.1	2.9	3.0	-179.98	95.2	-34.6	122.5	116.6	5.86	20.901		
1,500.0	1,499.1	1,490.8	1,489.9	3.1	3.2	-179.19	102.1	-35.1	136.2	129.9	6.28	21.687		
1,600.0	1,598.9	1,589.8	1,588.7	3.3	3.5	-178.55	109.0	-35.7	149.9	143.2	6.70	22.361		
1,700.0	1,698.6	1,688.9	1,687.5	3.5	3.7	-178.01	115.9	-36.2	163.6	156.5	7.13	22.943		
1,800.0	1,798.4	1,787.9	1,786.3	3.8	4.0	-177.56	122.8	-36.7	177.3	169.8	7.56	23.450		
1,900.0	1,898.1	1,887.0	1,885.1	4.0	4.2	-177.17	129.6	-37.3	191.0	183.1	8.00	23.895		
2,000.0	1,997.9	1,986.0	1,983.9	4.2	4.4	-176.84	136.5	-37.8	204.8	196.4	8.43	24.289		
2,100.0	2,097.6	2,085.1	2,082.7	4.5	4.7	-176.54	143.4	-38.3	218.5	209.7	8.87	24.638		
2,200.0	2,197.4	2,184.1	2,181.5	4.7	4.9	-176.29	150.3	-38.8	232.3	223.0	9.31	24.950		
2,300.0	2,297.2	2,283.2	2,280.4	5.0	5.2	-176.06	157.2	-39.4	246.0	236.3	9.75	25.230		
2,400.0	2,396.9	2,382.2	2,379.2	5.2	5.4	-175.85	164.1	-39.9	259.8	249.6	10.19	25.483		
2,500.0	2,496.7	2,481.2	2,478.0	5.5	5.7	-175.67	171.0	-40.4	273.6	262.9	10.64	25.713		
2,600.0	2,596.4	2,580.3	2,576.8	5.7	5.9	-175.50	177.9	-41.0	287.3	276.2	11.08	25.922		
2,700.0	2,696.2	2,679.3	2,675.6	6.0	6.2	-175.35	184.8	-41.5	301.1	289.6	11.53	26.112		
2,800.0	2,795.9	2,778.4	2,774.4	6.2	6.4	-175.21	191.6	-42.0	314.9	302.9	11.98	26.287		
2,900.0	2,895.7	2,877.4	2,873.2	6.5	6.7	-175.08	198.5	-42.6	328.6	316.2	12.43	26.448		
3,000.0	2,995.5	2,976.5	2,972.0	6.7	6.9	-174.96	205.4	-43.1	342.4	329.5	12.87	26.597		
3,100.0	3,095.2	3,075.5	3,070.8	7.0	7.2	-174.86	212.3	-43.6	356.2	342.9	13.32	26.734		
3,200.0	3,195.0	3,174.6	3,169.6	7.3	7.4	-174.76	219.2	-44.1	370.0	356.2	13.77	26.862		
3,300.0	3,294.7	3,273.6	3,268.4	7.5	7.7	-174.66	226.1	-44.7	383.7	369.5	14.22	26.980		
3,400.0	3,394.5	3,372.6	3,367.2	7.8	7.9	-174.58	233.0	-45.2	397.5	382.8	14.67	27.091		
3,500.0	3,494.2	3,471.7	3,466.0	8.0	8.2	-174.50	239.9	-45.7	411.3	396.2	15.12	27.195		
3,600.0	3,594.0	3,570.7	3,564.8	8.3	8.4	-174.42	246.7	-46.3	425.1	409.5	15.58	27.291		
3,700.0	3,693.8	3,669.8	3,663.6	8.5	8.7	-174.35	253.6	-46.8	438.8	422.8	16.03	27.382		
3,800.0	3,793.5	3,768.8	3,762.4	8.8	8.9	-174.29	260.5	-47.3	452.6	436.2	16.48	27.468		
3,900.0	3,893.3	3,867.9	3,861.2	9.1	9.2	-174.22	267.4	-47.9	466.4	449.5	16.93	27.548		
4,000.0	3,993.0	3,966.9	3,960.0	9.3	9.4	-174.17	274.3	-48.4	480.2	462.8	17.38	27.624		
4,100.0	4,092.8	4,066.0	4,058.8	9.6	9.7	-174.11	281.2	-48.9	494.0	476.1	17.84	27.696		
4,200.0	4,192.5	4,165.0	4,157.6	9.8	9.9	-174.06	288.1	-49.4	507.8	489.5	18.29	27.764		
4,300.0	4,292.3	4,264.1	4,256.4	10.1	10.2	-174.01	295.0	-50.0	521.5	502.8	18.74	27.828		
4,400.0	4,392.1	4,363.1	4,355.2	10.4	10.4	-173.96	301.9	-50.5	535.3	516.1	19.19	27.889		
4,500.0	4,491.8	4,462.1	4,454.0	10.6	10.7	-173.92	308.7	-51.0	549.1	529.5	19.65	27.947		
4,600.0	4,591.6	4,561.2	4,552.8	10.9	10.9	-173.87	315.6	-51.6	562.9	542.8	20.10	28.002		
4,700.0	4,691.3	4,660.2	4,651.6	11.2	11.2	-173.83	322.5	-52.1	576.7	556.1	20.55	28.055		
4,800.0	4,791.1	4,759.3	4,750.4	11.4	11.4	-173.79	329.4	-52.6	590.5	569.4	21.01	28.105		
4,900.0	4,890.8	4,858.3	4,849.2	11.7	11.7	-173.76	336.3	-53.2	604.2	582.8	21.46	28.153		
5,000.0	4,990.6	4,957.4	4,948.1	11.9	12.0	-173.72	343.2	-53.7	618.0	596.1	21.92	28.198		
5,100.0	5,090.3	5,056.4	5,046.9	12.2	12.2	-173.69	350.1	-54.2	631.8	609.4	22.37	28.242		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - 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		
5,200.0	5,190.1	5,155.5	5,145.7	12.5	12.5	-173.66	357.0	-54.7	645.6	622.8	22.83	28.284		
5,300.0	5,289.9	5,254.5	5,244.5	12.7	12.7	-173.63	363.9	-55.3	659.4	636.1	23.28	28.324		
5,338.0	5,327.8	5,292.1	5,282.0	12.8	12.8	-173.61	366.5	-55.5	664.6	641.2	23.45	28.339		
5,350.0	5,339.7	5,304.0	5,293.8	12.9	12.8	-173.59	367.3	-55.5	666.4	642.9	23.47	28.397		
5,400.0	5,389.2	5,352.9	5,342.6	13.0	13.0	-173.48	370.7	-55.8	676.8	653.4	23.41	28.913		
5,450.0	5,437.8	5,400.6	5,390.2	13.2	13.1	-173.35	374.0	-56.1	691.7	668.6	23.15	29.884		
5,500.0	5,485.0	5,441.1	5,430.6	13.5	13.2	-173.17	376.9	-56.3	711.2	688.5	22.68	31.360		
5,550.0	5,530.5	5,450.0	5,439.5	13.8	13.2	-172.81	377.6	-56.3	736.2	714.2	21.96	33.519		
5,600.0	5,573.7	5,475.8	5,465.1	14.1	13.3	-172.37	380.7	-56.6	766.2	745.1	21.12	36.286		
5,650.0	5,614.4	5,500.0	5,488.9	14.5	13.4	-171.77	384.7	-56.9	801.3	781.2	20.12	39.834		
5,700.0	5,652.1	5,500.0	5,488.9	14.9	13.4	-170.74	384.7	-56.9	840.1	821.1	18.96	44.310		
5,750.0	5,686.4	5,500.0	5,488.9	15.4	13.4	-169.18	384.7	-56.9	882.6	864.8	17.77	49.674		
5,800.0	5,717.2	5,520.5	5,509.0	16.0	13.4	-167.19	389.0	-57.2	927.4	910.7	16.67	55.637		
5,850.0	5,744.0	5,526.5	5,514.8	16.5	13.5	-163.46	390.4	-57.3	974.4	958.4	15.99	60.950		
5,900.0	5,766.6	5,530.4	5,518.7	17.2	13.5	-155.94	391.3	-57.4	1,023.0	1,006.1	16.83	60.792		
5,950.0	5,784.9	5,532.6	5,520.8	17.9	13.5	-135.59	391.9	-57.4	1,072.4	1,049.3	23.10	46.427		
6,000.0	5,798.6	5,550.0	5,537.5	18.6	13.6	-85.82	396.5	-57.8	1,122.6	1,090.6	32.05	35.031		
6,050.0	5,807.6	5,532.2	5,520.4	19.4	13.5	-30.99	391.8	-57.4	1,172.0	1,153.3	18.67	62.781		
6,100.0	5,811.9	5,529.8	5,518.1	20.1	13.5	-17.81	391.2	-57.4	1,221.2	1,208.2	12.99	94.015		
6,119.8	5,812.3	5,528.5	5,516.8	20.5	13.5	-15.11	390.9	-57.4	1,240.5	1,228.6	11.87	104.527		
6,200.0	5,812.3	5,523.1	5,511.5	21.7	13.5	-5.18	389.6	-57.3	1,318.4	1,309.3	9.05	145.752		
6,300.0	5,812.3	5,500.0	5,488.9	23.1	13.4	7.64	384.7	-56.9	1,416.2	1,406.2	10.03	141.166		
6,400.0	5,812.3	5,500.0	5,488.9	24.6	13.4	20.06	384.7	-56.9	1,513.6	1,497.9	15.76	96.069		
6,500.0	5,812.3	5,500.0	5,488.9	26.1	13.4	31.44	384.7	-56.9	1,610.9	1,588.4	22.53	71.507		
6,600.0	5,812.3	5,500.0	5,488.9	27.7	13.4	41.08	384.7	-56.9	1,707.9	1,679.4	28.49	59.945		
6,700.0	5,812.3	5,500.0	5,488.9	29.2	13.4	48.90	384.7	-56.9	1,804.4	1,771.1	33.29	54.202		
6,786.6	5,812.3	5,500.0	5,488.9	30.6	13.4	54.35	384.7	-56.9	1,887.5	1,850.9	36.60	51.574		
6,800.0	5,812.3	5,500.0	5,488.9	30.8	13.4	54.35	384.7	-56.9	1,900.3	1,863.5	36.79	51.647		
6,900.0	5,812.3	5,500.0	5,488.9	32.5	13.4	54.35	384.7	-56.9	1,996.2	1,957.9	38.30	52.113		
7,000.0	5,812.3	5,500.0	5,488.9	34.2	13.4	54.35	384.7	-56.9	2,092.4	2,052.6	39.83	52.527		
7,100.0	5,812.3	5,500.0	5,488.9	35.9	13.4	54.35	384.7	-56.9	2,189.0	2,147.6	41.38	52.898		
7,200.0	5,812.3	5,500.0	5,488.9	37.6	13.4	54.35	384.7	-56.9	2,285.9	2,242.9	42.94	53.232		
7,300.0	5,812.3	5,477.1	5,466.3	39.4	13.3	52.48	380.9	-56.6	2,382.4	2,338.9	43.48	54.796		
7,400.0	5,812.3	5,474.5	5,463.8	41.1	13.3	52.28	380.5	-56.6	2,479.6	2,434.7	44.91	55.210		
7,500.0	5,812.3	5,472.1	5,461.5	42.9	13.3	52.09	380.2	-56.5	2,577.0	2,530.7	46.36	55.591		
7,600.0	5,812.3	5,450.0	5,439.5	44.7	13.2	50.38	377.6	-56.3	2,675.1	2,628.2	46.84	57.107		
7,700.0	5,812.3	5,450.0	5,439.5	46.5	13.2	50.38	377.6	-56.3	2,772.7	2,724.4	48.38	57.307		
7,800.0	5,812.2	5,450.0	5,439.5	48.3	13.2	50.38	377.6	-56.3	2,870.6	2,820.6	49.93	57.492		
7,900.0	5,812.2	5,450.0	5,439.5	50.1	13.2	50.38	377.6	-56.3	2,968.5	2,917.1	51.48	57.662		
8,000.0	5,812.2	5,450.0	5,439.5	52.0	13.2	50.38	377.6	-56.3	3,066.6	3,013.6	53.04	57.819		
8,100.0	5,812.2	5,450.0	5,439.5	53.8	13.2	50.38	377.6	-56.3	3,164.9	3,110.3	54.60	57.966		
8,200.0	5,812.2	5,450.0	5,439.5	55.6	13.2	50.38	377.6	-56.3	3,263.2	3,207.0	56.16	58.102		
8,300.0	5,812.2	5,450.0	5,439.5	57.5	13.2	50.38	377.6	-56.3	3,361.6	3,303.9	57.73	58.229		
8,400.0	5,812.2	5,450.0	5,439.5	59.3	13.2	50.38	377.6	-56.3	3,460.1	3,400.8	59.30	58.348		
8,500.0	5,812.2	5,450.0	5,439.5	61.2	13.2	50.38	377.6	-56.3	3,558.7	3,497.9	60.87	58.460		
8,600.0	5,812.2	5,450.0	5,439.5	63.1	13.2	50.38	377.6	-56.3	3,657.4	3,595.0	62.45	58.565		
8,700.0	5,812.2	5,450.0	5,439.5	64.9	13.2	50.38	377.6	-56.3	3,756.2	3,692.1	64.03	58.663		
8,800.0	5,812.2	5,450.0	5,439.5	66.8	13.2	50.38	377.6	-56.3	3,855.0	3,789.4	65.61	58.757		
8,900.0	5,812.2	5,450.0	5,439.5	68.7	13.2	50.38	377.6	-56.3	3,953.9	3,886.7	67.19	58.844		
9,000.0	5,812.2	5,450.0	5,439.5	70.5	13.2	50.38	377.6	-56.3	4,052.8	3,984.0	68.78	58.928		
9,100.0	5,812.2	5,450.0	5,439.5	72.4	13.2	50.38	377.6	-56.3	4,151.8	4,081.4	70.36	59.006		
9,200.0	5,812.2	5,450.0	5,439.5	74.3	13.2	50.38	377.6	-56.3	4,250.8	4,178.8	71.95	59.081		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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		
9,300.0	5,812.2	5,450.0	5,439.5	76.2	13.2	50.38	377.6	-56.3	4,349.9	4,276.3	73.54	59.152		
9,400.0	5,812.2	5,450.0	5,439.5	78.0	13.2	50.38	377.6	-56.3	4,449.0	4,373.8	75.13	59.220		
9,500.0	5,812.2	5,444.1	5,433.6	79.9	13.2	49.94	377.1	-56.3	4,548.1	4,471.8	76.28	59.622		
9,600.0	5,812.2	5,443.2	5,432.7	81.8	13.2	49.87	377.0	-56.3	4,647.3	4,569.5	77.80	59.731		
9,700.0	5,812.2	5,437.0	5,426.5	83.7	13.2	49.41	376.6	-56.3	4,746.5	4,667.6	78.92	60.146		
9,800.0	5,812.2	5,437.0	5,426.5	85.6	13.2	49.41	376.6	-56.3	4,845.7	4,765.2	80.49	60.201		
9,900.0	5,812.2	5,437.0	5,426.5	87.5	13.2	49.41	376.6	-56.3	4,945.0	4,862.9	82.07	60.254		
10,000.0	5,812.2	5,437.0	5,426.5	89.4	13.2	49.41	376.6	-56.3	5,044.3	4,960.6	83.65	60.304		
10,100.0	5,812.1	5,437.0	5,426.5	91.2	13.2	49.41	376.6	-56.3	5,143.6	5,058.4	85.23	60.352		
10,200.0	5,812.1	5,437.0	5,426.5	93.1	13.2	49.41	376.6	-56.3	5,243.0	5,156.2	86.81	60.398		
10,300.0	5,812.1	5,437.0	5,426.5	95.0	13.2	49.41	376.6	-56.3	5,342.3	5,253.9	88.39	60.443		
10,400.0	5,812.1	5,437.0	5,426.5	96.9	13.2	49.41	376.6	-56.3	5,441.7	5,351.8	89.97	60.486		
10,500.0	5,812.1	5,436.1	5,425.6	98.8	13.2	49.35	376.5	-56.2	5,541.1	5,449.7	91.47	60.579		
10,600.0	5,812.1	5,429.1	5,418.7	100.7	13.2	48.84	376.0	-56.2	5,640.6	5,548.1	92.44	61.017		
10,700.0	5,812.1	5,422.2	5,411.7	102.6	13.1	48.34	375.5	-56.2	5,740.0	5,646.6	93.40	61.455		
10,800.0	5,812.1	5,415.2	5,404.8	104.5	13.1	47.85	375.0	-56.1	5,839.5	5,745.1	94.35	61.893		
10,900.0	5,812.1	5,408.2	5,397.8	106.4	13.1	47.36	374.6	-56.1	5,938.9	5,843.6	95.28	62.332		
11,000.0	5,812.1	5,401.3	5,390.9	108.3	13.1	46.89	374.1	-56.1	6,038.4	5,942.2	96.20	62.771		
11,100.0	5,812.1	5,394.3	5,384.0	110.2	13.1	46.42	373.6	-56.0	6,137.9	6,040.8	97.10	63.209		
11,200.0	5,812.1	5,387.4	5,377.0	112.1	13.1	45.95	373.1	-56.0	6,237.4	6,139.4	98.00	63.648		
11,300.0	5,812.1	5,380.4	5,370.1	114.0	13.0	45.50	372.6	-56.0	6,336.9	6,238.0	98.88	64.087		
11,400.0	5,812.1	5,373.5	5,363.1	115.9	13.0	45.05	372.1	-55.9	6,436.4	6,336.6	99.75	64.525		
11,500.0	5,812.1	5,366.5	5,356.2	117.8	13.0	44.61	371.6	-55.9	6,535.9	6,435.3	100.61	64.964		
11,600.0	5,812.1	5,359.5	5,349.2	119.7	13.0	44.17	371.2	-55.8	6,635.4	6,534.0	101.46	65.402		
11,700.0	5,812.1	5,352.6	5,342.3	121.7	13.0	43.75	370.7	-55.8	6,734.9	6,632.6	102.29	65.840		
11,800.0	5,812.1	5,345.6	5,335.4	123.6	12.9	43.32	370.2	-55.8	6,834.5	6,731.4	103.12	66.277		
11,900.0	5,812.1	5,338.7	5,328.4	125.5	12.9	42.91	369.7	-55.7	6,934.0	6,830.1	103.94	66.714		
12,000.0	5,812.1	5,331.7	5,321.5	127.4	12.9	42.50	369.2	-55.7	7,033.6	6,928.8	104.74	67.151		
12,100.0	5,812.1	5,324.7	5,314.5	129.3	12.9	42.10	368.7	-55.7	7,133.1	7,027.6	105.54	67.587		
12,200.0	5,812.1	5,317.8	5,307.6	131.2	12.9	41.70	368.3	-55.6	7,232.7	7,126.4	106.33	68.022		
12,300.0	5,812.1	5,310.8	5,300.6	133.1	12.9	41.31	367.8	-55.6	7,332.2	7,225.1	107.11	68.457		
12,400.0	5,812.0	5,303.9	5,293.7	135.0	12.8	40.92	367.3	-55.5	7,431.8	7,323.9	107.88	68.891		
12,500.0	5,812.0	5,296.9	5,286.8	136.9	12.8	40.54	366.8	-55.5	7,531.4	7,422.8	108.64	69.324		
12,600.0	5,812.0	5,289.9	5,279.8	138.8	12.8	40.17	366.3	-55.5	7,631.0	7,521.6	109.39	69.757		
12,700.0	5,812.0	5,283.0	5,272.9	140.7	12.8	39.80	365.8	-55.4	7,730.6	7,620.4	110.14	70.188		
12,800.0	5,812.0	5,276.0	5,265.9	142.6	12.8	39.44	365.4	-55.4	7,830.1	7,719.3	110.88	70.618		
12,900.0	5,812.0	5,269.1	5,259.0	144.5	12.7	39.08	364.9	-55.4	7,929.7	7,818.1	111.61	71.048		
13,000.0	5,812.0	5,262.1	5,252.0	146.5	12.7	38.73	364.4	-55.3	8,029.3	7,917.0	112.34	71.476		
13,100.0	5,812.0	5,255.1	5,245.1	148.4	12.7	38.39	363.9	-55.3	8,128.9	8,015.9	113.05	71.903		
13,200.0	5,812.0	5,248.2	5,238.2	150.3	12.7	38.05	363.4	-55.2	8,228.5	8,114.8	113.77	72.329		
13,250.2	5,812.0	5,244.7	5,234.7	151.1	12.7	37.88	363.2	-55.2	8,278.5	8,164.5	113.96	72.643		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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	0.00	74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	74.9	0.0	74.9	74.7	0.18	416.010		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.63	118.961		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.08	69.404		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.53	48.994		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.98	37.860		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	74.9	0.0	74.9	72.5	2.43	30.850		
700.0	700.0	700.0	700.0	1.4	1.4	0.00	74.9	0.0	74.9	72.0	2.88	26.030		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	74.9	0.0	74.9	71.6	3.33	22.512		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	74.9	0.0	74.9	71.1	3.78	19.832		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	74.9	0.0	74.9	70.7	4.23	17.723 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-160.44	74.9	0.0	76.5	71.9	4.65	16.468 SF		
1,200.0	1,199.8	1,197.1	1,197.1	2.5	2.6	-161.31	76.5	0.4	83.1	78.1	5.04	16.486		
1,300.0	1,299.6	1,293.6	1,293.4	2.7	2.8	-161.89	81.3	1.5	94.6	89.2	5.45	17.367		
1,400.0	1,399.4	1,392.5	1,392.1	2.9	3.0	-162.09	88.0	3.0	108.0	102.1	5.87	18.407		
1,500.0	1,499.1	1,491.6	1,490.9	3.1	3.2	-162.25	94.7	4.5	121.3	115.0	6.29	19.301		
1,600.0	1,598.9	1,590.7	1,589.8	3.3	3.5	-162.37	101.5	6.1	134.7	128.0	6.71	20.068		
1,700.0	1,698.6	1,689.8	1,688.7	3.5	3.7	-162.48	108.2	7.6	148.0	140.9	7.14	20.731		
1,800.0	1,798.4	1,788.9	1,787.5	3.8	3.9	-162.56	114.9	9.2	161.4	153.8	7.57	21.308		
1,900.0	1,898.1	1,888.0	1,886.4	4.0	4.2	-162.64	121.7	10.7	174.7	166.7	8.01	21.813		
2,000.0	1,997.9	1,987.1	1,985.3	4.2	4.4	-162.70	128.4	12.2	188.1	179.6	8.45	22.260		
2,100.0	2,097.6	2,086.2	2,084.1	4.5	4.7	-162.75	135.2	13.8	201.4	192.5	8.89	22.657		
2,200.0	2,197.4	2,185.3	2,183.0	4.7	4.9	-162.80	141.9	15.3	214.8	205.4	9.33	23.012		
2,300.0	2,297.2	2,284.4	2,281.9	5.0	5.1	-162.84	148.6	16.9	228.1	218.3	9.78	23.330		
2,400.0	2,396.9	2,383.5	2,380.7	5.2	5.4	-162.88	155.4	18.4	241.5	231.2	10.22	23.618		
2,500.0	2,496.7	2,482.6	2,479.6	5.5	5.6	-162.91	162.1	20.0	254.8	244.1	10.67	23.878		
2,600.0	2,596.4	2,581.7	2,578.4	5.7	5.9	-162.94	168.9	21.5	268.2	257.0	11.12	24.115		
2,700.0	2,696.2	2,680.8	2,677.3	6.0	6.1	-162.97	175.6	23.0	281.5	269.9	11.57	24.332		
2,800.0	2,795.9	2,779.9	2,776.2	6.2	6.4	-162.99	182.3	24.6	294.9	282.8	12.02	24.531		
2,900.0	2,895.7	2,879.0	2,875.0	6.5	6.6	-163.02	189.1	26.1	308.2	295.7	12.47	24.713		
3,000.0	2,895.5	2,878.1	2,873.9	6.7	6.9	-163.04	195.8	27.7	321.6	308.6	12.92	24.882		
3,100.0	3,095.2	3,077.3	3,072.8	7.0	7.1	-163.06	202.5	29.2	334.9	321.5	13.38	25.038		
3,200.0	3,195.0	3,176.4	3,171.6	7.3	7.4	-163.07	209.3	30.8	348.3	334.4	13.83	25.183		
3,300.0	3,294.7	3,275.5	3,270.5	7.5	7.6	-163.09	216.0	32.3	361.6	347.3	14.28	25.318		
3,400.0	3,394.5	3,374.6	3,369.4	7.8	7.9	-163.11	222.8	33.8	375.0	360.2	14.74	25.444		
3,500.0	3,494.2	3,473.7	3,468.2	8.0	8.1	-163.12	229.5	35.4	388.3	373.1	15.19	25.561		
3,600.0	3,594.0	3,572.8	3,567.1	8.3	8.4	-163.13	236.2	36.9	401.7	386.0	15.65	25.671		
3,700.0	3,693.8	3,671.9	3,665.9	8.5	8.6	-163.15	243.0	38.5	415.0	398.9	16.10	25.774		
3,800.0	3,793.5	3,771.0	3,764.8	8.8	8.9	-163.16	249.7	40.0	428.4	411.8	16.56	25.871		
3,900.0	3,893.3	3,870.1	3,863.7	9.1	9.1	-163.17	256.5	41.6	441.7	424.7	17.01	25.963		
4,000.0	3,993.0	3,969.2	3,962.5	9.3	9.4	-163.18	263.2	43.1	455.1	437.6	17.47	26.049		
4,100.0	4,092.8	4,068.3	4,061.4	9.6	9.6	-163.19	269.9	44.6	468.4	450.5	17.93	26.130		
4,200.0	4,192.5	4,167.4	4,160.3	9.8	9.9	-163.20	276.7	46.2	481.8	463.4	18.38	26.208		
4,300.0	4,292.3	4,266.5	4,259.1	10.1	10.1	-163.21	283.4	47.7	495.1	476.3	18.84	26.281		
4,400.0	4,392.1	4,365.6	4,358.0	10.4	10.4	-163.21	290.2	49.3	508.5	489.2	19.30	26.350		
4,500.0	4,491.8	4,464.7	4,456.9	10.6	10.6	-163.22	296.9	50.8	521.8	502.1	19.75	26.416		
4,600.0	4,591.6	4,563.8	4,555.7	10.9	10.9	-163.23	303.6	52.3	535.2	515.0	20.21	26.479		
4,700.0	4,691.3	4,662.9	4,654.6	11.2	11.1	-163.24	310.4	53.9	548.5	527.9	20.67	26.538		
4,800.0	4,791.1	4,762.0	4,753.4	11.4	11.4	-163.24	317.1	55.4	561.9	540.7	21.13	26.595		
4,900.0	4,890.8	4,861.1	4,852.3	11.7	11.6	-163.25	323.8	57.0	575.2	553.6	21.58	26.650		
5,000.0	4,990.6	4,960.2	4,951.2	11.9	11.9	-163.26	330.6	58.5	588.6	566.5	22.04	26.701		
5,100.0	5,090.3	5,059.4	5,050.0	12.2	12.2	-163.26	337.3	60.1	601.9	579.4	22.50	26.751		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - 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		
5,200.0	5,190.1	5,158.5	5,148.9	12.5	12.4	-163.27	344.1	61.6	615.3	592.3	22.96	26.799		
5,300.0	5,289.9	5,257.6	5,247.8	12.7	12.7	-163.27	350.8	63.1	628.6	605.2	23.42	26.844		
5,338.0	5,327.8	5,295.2	5,285.3	12.8	12.8	-163.27	353.4	63.7	633.7	610.1	23.59	26.861		
5,350.0	5,339.7	5,307.1	5,297.2	12.9	12.8	-163.22	354.2	63.9	635.4	611.8	23.61	26.914		
5,400.0	5,389.2	5,346.3	5,336.2	13.0	12.9	-162.96	356.9	64.5	645.6	622.0	23.55	27.409		
5,450.0	5,437.8	5,367.7	5,357.6	13.2	12.9	-162.48	359.1	65.0	661.7	638.4	23.29	28.411		
5,500.0	5,485.0	5,400.0	5,389.4	13.5	13.0	-161.83	364.1	66.2	684.1	661.2	22.89	29.882		
5,550.0	5,530.5	5,400.0	5,389.4	13.8	13.0	-160.67	364.1	66.2	711.5	689.2	22.29	31.917		
5,600.0	5,573.7	5,422.1	5,411.0	14.1	13.1	-159.30	368.5	67.2	743.9	722.3	21.65	34.364		
5,650.0	5,614.4	5,450.0	5,438.0	14.5	13.2	-157.58	375.5	68.8	781.0	760.0	20.98	37.225		
5,700.0	5,652.1	5,450.0	5,438.0	14.9	13.2	-154.59	375.5	68.8	821.0	800.6	20.41	40.234		
5,750.0	5,686.4	5,450.0	5,438.0	15.4	13.2	-150.14	375.5	68.8	864.3	844.1	20.25	42.680		
5,800.0	5,717.2	5,450.0	5,438.0	16.0	13.2	-143.23	375.5	68.8	910.1	889.1	21.03	43.273		
5,850.0	5,744.0	5,470.1	5,457.2	16.5	13.3	-134.42	381.4	70.1	957.0	934.1	22.95	41.704		
5,900.0	5,766.6	5,473.5	5,460.4	17.2	13.3	-117.97	382.4	70.4	1,005.4	978.3	27.06	37.160		
5,950.0	5,784.9	5,475.1	5,462.0	17.9	13.3	-92.70	382.9	70.5	1,054.4	1,023.5	30.87	34.159		
6,000.0	5,798.6	5,475.0	5,461.9	18.6	13.3	-64.87	382.9	70.5	1,103.5	1,074.3	29.19	37.806		
6,050.0	5,807.6	5,473.4	5,460.4	19.4	13.3	-44.60	382.4	70.4	1,152.3	1,128.4	23.89	48.225		
6,100.0	5,811.9	5,470.4	5,457.5	20.1	13.3	-32.26	381.5	70.2	1,200.3	1,181.1	19.25	62.341		
6,119.8	5,812.3	5,468.8	5,456.0	20.5	13.3	-28.83	381.0	70.0	1,219.1	1,201.3	17.85	68.304		
6,200.0	5,812.3	5,450.0	5,438.0	21.7	13.2	-20.93	375.5	68.8	1,295.3	1,280.4	14.93	86.764		
6,300.0	5,812.3	5,450.0	5,438.0	23.1	13.2	-11.46	375.5	68.8	1,391.0	1,379.4	11.59	120.042		
6,400.0	5,812.3	5,450.0	5,438.0	24.6	13.2	-0.49	375.5	68.8	1,487.5	1,477.9	9.60	154.968		
6,500.0	5,812.3	5,450.0	5,438.0	26.1	13.2	11.30	375.5	68.8	1,584.5	1,572.2	12.29	128.950		
6,600.0	5,812.3	5,450.0	5,438.0	27.7	13.2	22.86	375.5	68.8	1,681.5	1,663.1	18.46	91.070		
6,700.0	5,812.3	5,428.6	5,417.4	29.2	13.2	32.03	370.1	67.5	1,777.9	1,753.7	24.26	73.289		
6,786.6	5,812.3	5,423.9	5,412.8	30.6	13.1	39.28	369.0	67.3	1,861.3	1,832.4	28.97	64.260		
6,800.0	5,812.3	5,423.2	5,412.1	30.8	13.1	39.24	368.8	67.3	1,874.2	1,845.1	29.10	64.402		
6,900.0	5,812.3	5,400.0	5,389.4	32.5	13.0	37.79	364.1	66.2	1,970.9	1,941.4	29.46	66.901		
7,000.0	5,812.3	5,400.0	5,389.4	34.2	13.0	37.79	364.1	66.2	2,067.3	2,036.6	30.70	67.340		
7,100.0	5,812.3	5,400.0	5,389.4	35.9	13.0	37.79	364.1	66.2	2,164.0	2,132.1	31.95	67.728		
7,200.0	5,812.3	5,400.0	5,389.4	37.6	13.0	37.79	364.1	66.2	2,261.1	2,227.9	33.22	68.071		
7,300.0	5,812.3	5,400.0	5,389.4	39.4	13.0	37.79	364.1	66.2	2,358.3	2,323.9	34.49	68.377		
7,400.0	5,812.3	5,400.0	5,389.4	41.1	13.0	37.79	364.1	66.2	2,455.8	2,420.1	35.77	68.651		
7,500.0	5,812.3	5,400.0	5,389.4	42.9	13.0	37.79	364.1	66.2	2,553.5	2,516.5	37.06	68.898		
7,600.0	5,812.3	5,400.0	5,389.4	44.7	13.0	37.79	364.1	66.2	2,651.4	2,613.0	38.36	69.122		
7,700.0	5,812.3	5,400.0	5,389.4	46.5	13.0	37.79	364.1	66.2	2,749.4	2,709.8	39.66	69.325		
7,800.0	5,812.2	5,400.0	5,389.4	48.3	13.0	37.79	364.1	66.2	2,847.6	2,806.6	40.97	69.510		
7,900.0	5,812.2	5,400.0	5,389.4	50.1	13.0	37.79	364.1	66.2	2,945.8	2,903.6	42.28	69.679		
8,000.0	5,812.2	5,400.0	5,389.4	52.0	13.0	37.79	364.1	66.2	3,044.2	3,000.6	43.59	69.835		
8,100.0	5,812.2	5,400.0	5,389.4	53.8	13.0	37.79	364.1	66.2	3,142.7	3,097.8	44.91	69.979		
8,200.0	5,812.2	5,377.4	5,367.1	55.6	13.0	36.45	360.4	65.3	3,240.8	3,195.7	45.05	71.943		
8,300.0	5,812.2	5,375.4	5,365.2	57.5	13.0	36.33	360.1	65.3	3,339.3	3,293.1	46.24	72.222		
8,400.0	5,812.2	5,373.5	5,363.3	59.3	13.0	36.22	359.9	65.2	3,438.0	3,390.5	47.43	72.483		
8,500.0	5,812.2	5,371.7	5,361.5	61.2	13.0	36.12	359.6	65.2	3,536.7	3,488.1	48.63	72.728		
8,600.0	5,812.2	5,350.0	5,340.0	63.1	12.9	34.90	357.2	64.6	3,635.9	3,587.2	48.74	74.603		
8,700.0	5,812.2	5,350.0	5,340.0	64.9	12.9	34.90	357.2	64.6	3,734.7	3,684.7	50.01	74.681		
8,800.0	5,812.2	5,350.0	5,340.0	66.8	12.9	34.90	357.2	64.6	3,833.5	3,782.2	51.28	74.754		
8,900.0	5,812.2	5,350.0	5,340.0	68.7	12.9	34.90	357.2	64.6	3,932.4	3,879.8	52.56	74.822		
9,000.0	5,812.2	5,350.0	5,340.0	70.5	12.9	34.90	357.2	64.6	4,031.3	3,977.5	53.83	74.887		
9,100.0	5,812.2	5,350.0	5,340.0	72.4	12.9	34.90	357.2	64.6	4,130.3	4,075.2	55.11	74.947		
9,200.0	5,812.2	5,350.0	5,340.0	74.3	12.9	34.90	357.2	64.6	4,229.4	4,173.0	56.39	75.005		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1												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
9,300.0	5,812.2	5,350.0	5,340.0	76.2	12.9	34.90	357.2	64.6	4,328.5	4,270.8	57.67	75.059	
9,400.0	5,812.2	5,350.0	5,340.0	78.0	12.9	34.90	357.2	64.6	4,427.6	4,368.7	58.95	75.110	
9,500.0	5,812.2	5,350.0	5,340.0	79.9	12.9	34.90	357.2	64.6	4,526.8	4,466.5	60.23	75.159	
9,600.0	5,812.2	5,350.0	5,340.0	81.8	12.9	34.90	357.2	64.6	4,626.0	4,564.5	61.51	75.205	
9,700.0	5,812.2	5,350.0	5,340.0	83.7	12.9	34.90	357.2	64.6	4,725.2	4,662.4	62.79	75.249	
9,800.0	5,812.2	5,350.0	5,340.0	85.6	12.9	34.90	357.2	64.6	4,824.5	4,760.4	64.08	75.291	
9,900.0	5,812.2	5,350.0	5,340.0	87.5	12.9	34.90	357.2	64.6	4,923.8	4,858.4	65.36	75.330	
10,000.0	5,812.2	5,350.0	5,340.0	89.4	12.9	34.90	357.2	64.6	5,023.1	4,956.5	66.65	75.368	
10,100.0	5,812.1	5,350.0	5,340.0	91.2	12.9	34.90	357.2	64.6	5,122.5	5,054.5	67.93	75.405	
10,200.0	5,812.1	5,350.0	5,340.0	93.1	12.9	34.90	357.2	64.6	5,221.8	5,152.6	69.22	75.439	
10,300.0	5,812.1	5,350.0	5,340.0	95.0	12.9	34.90	357.2	64.6	5,321.2	5,250.7	70.51	75.473	
10,400.0	5,812.1	5,350.0	5,340.0	96.9	12.9	34.90	357.2	64.6	5,420.7	5,348.9	71.79	75.504	
10,500.0	5,812.1	5,350.0	5,340.0	98.8	12.9	34.90	357.2	64.6	5,520.1	5,447.0	73.08	75.535	
10,600.0	5,812.1	5,350.0	5,340.0	100.7	12.9	34.90	357.2	64.6	5,619.6	5,545.2	74.37	75.564	
10,700.0	5,812.1	5,350.0	5,340.0	102.6	12.9	34.90	357.2	64.6	5,719.1	5,643.4	75.66	75.592	
10,800.0	5,812.1	5,350.0	5,340.0	104.5	12.9	34.90	357.2	64.6	5,818.6	5,741.6	76.95	75.619	
10,900.0	5,812.1	5,350.0	5,340.0	106.4	12.9	34.90	357.2	64.6	5,918.1	5,839.8	78.23	75.645	
11,000.0	5,812.1	5,350.0	5,340.0	108.3	12.9	34.90	357.2	64.6	6,017.6	5,938.1	79.52	75.670	
11,100.0	5,812.1	5,344.0	5,334.0	110.2	12.9	34.57	356.7	64.5	6,117.1	6,036.8	80.32	76.158	
11,200.0	5,812.1	5,338.0	5,328.0	112.1	12.9	34.25	356.3	64.4	6,216.7	6,135.6	81.11	76.649	
11,300.0	5,812.1	5,338.0	5,328.0	114.0	12.9	34.25	356.3	64.4	6,316.3	6,233.9	82.38	76.670	
11,400.0	5,812.1	5,338.0	5,328.0	115.9	12.9	34.25	356.3	64.4	6,415.8	6,332.2	83.66	76.690	
11,500.0	5,812.1	5,338.0	5,328.0	117.8	12.9	34.25	356.3	64.4	6,515.4	6,430.5	84.94	76.710	
11,600.0	5,812.1	5,338.0	5,328.0	119.7	12.9	34.25	356.3	64.4	6,615.0	6,528.8	86.21	76.729	
11,700.0	5,812.1	5,338.0	5,328.0	121.7	12.9	34.25	356.3	64.4	6,714.7	6,627.2	87.49	76.747	
11,800.0	5,812.1	5,338.0	5,328.0	123.6	12.9	34.25	356.3	64.4	6,814.3	6,725.5	88.77	76.765	
11,900.0	5,812.1	5,338.0	5,328.0	125.5	12.9	34.25	356.3	64.4	6,913.9	6,823.9	90.05	76.782	
12,000.0	5,812.1	5,338.0	5,328.0	127.4	12.9	34.25	356.3	64.4	7,013.6	6,922.2	91.32	76.798	
12,100.0	5,812.1	5,338.0	5,328.0	129.3	12.9	34.25	356.3	64.4	7,113.2	7,020.6	92.60	76.815	
12,200.0	5,812.1	5,337.2	5,327.2	131.2	12.9	34.20	356.2	64.4	7,212.9	7,119.1	93.80	76.896	
12,300.0	5,812.1	5,330.3	5,320.4	133.1	12.8	33.84	355.8	64.3	7,312.5	7,218.1	94.44	77.432	
12,400.0	5,812.0	5,323.5	5,313.6	135.0	12.8	33.49	355.3	64.2	7,412.2	7,317.1	95.07	77.964	
12,500.0	5,812.0	5,316.7	5,306.8	136.9	12.8	33.14	354.8	64.1	7,511.9	7,416.2	95.70	78.492	
12,600.0	5,812.0	5,309.9	5,300.0	138.8	12.8	32.80	354.4	64.0	7,611.6	7,515.2	96.33	79.016	
12,700.0	5,812.0	5,303.1	5,293.2	140.7	12.8	32.46	353.9	63.9	7,711.3	7,614.3	96.95	79.537	
12,800.0	5,812.0	5,296.3	5,286.4	142.6	12.8	32.14	353.4	63.7	7,810.9	7,713.4	97.57	80.053	
12,900.0	5,812.0	5,289.5	5,279.6	144.5	12.7	31.81	353.0	63.6	7,910.6	7,812.4	98.19	80.565	
13,000.0	5,812.0	5,282.7	5,272.9	146.5	12.7	31.50	352.5	63.5	8,010.3	7,911.5	98.80	81.073	
13,100.0	5,812.0	5,275.9	5,266.1	148.4	12.7	31.19	352.1	63.4	8,110.0	8,010.6	99.41	81.578	
13,200.0	5,812.0	5,269.1	5,259.3	150.3	12.7	30.88	351.6	63.3	8,209.7	8,109.7	100.02	82.078	
13,250.2	5,812.0	5,265.7	5,255.9	151.1	12.7	30.73	351.4	63.3	8,259.7	8,159.5	100.17	82.458	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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	23.81	74.9	33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	23.81	74.9	33.0	81.9	81.7	0.18	454.663		
200.0	200.0	200.0	200.0	0.3	0.3	23.81	74.9	33.0	81.9	81.2	0.63	130.014		
300.0	300.0	300.0	300.0	0.5	0.5	23.81	74.9	33.0	81.9	80.8	1.08	75.852		
400.0	400.0	400.0	400.0	0.8	0.8	23.81	74.9	33.0	81.9	80.3	1.53	53.546		
500.0	500.0	500.0	500.0	1.0	1.0	23.81	74.9	33.0	81.9	79.9	1.98	41.378		
600.0	600.0	600.0	600.0	1.2	1.2	23.81	74.9	33.0	81.9	79.4	2.43	33.716		
700.0	700.0	700.0	700.0	1.4	1.4	23.81	74.9	33.0	81.9	79.0	2.88	28.448		
800.0	800.0	800.0	800.0	1.7	1.7	23.81	74.9	33.0	81.9	78.5	3.33	24.604		
900.0	900.0	900.0	900.0	1.9	1.9	23.81	74.9	33.0	81.9	78.1	3.78	21.675		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	23.81	74.9	33.0	81.9	77.6	4.23	19.369 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-137.01	74.9	33.0	83.1	78.5	4.65	17.884		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-139.30	74.9	33.0	87.0	82.0	5.05	17.238 SF		
1,300.0	1,299.6	1,296.5	1,296.5	2.7	2.8	-141.91	76.4	33.7	94.1	88.6	5.45	17.253		
1,400.0	1,399.4	1,392.6	1,392.4	2.9	3.0	-143.86	80.7	35.8	104.6	98.8	5.87	17.834		
1,500.0	1,499.1	1,491.5	1,491.1	3.1	3.2	-145.32	87.0	38.7	117.2	110.9	6.29	18.623		
1,600.0	1,598.9	1,590.6	1,590.0	3.3	3.4	-146.51	93.2	41.7	129.8	123.1	6.72	19.315		
1,700.0	1,698.6	1,689.8	1,688.9	3.5	3.7	-147.48	99.5	44.6	142.4	135.3	7.15	19.918		
1,800.0	1,798.4	1,789.0	1,787.9	3.8	3.9	-148.30	105.8	47.6	155.1	147.5	7.59	20.446		
1,900.0	1,898.1	1,888.1	1,886.8	4.0	4.1	-148.99	112.0	50.5	167.8	159.8	8.02	20.912		
2,000.0	1,997.9	1,987.3	1,985.7	4.2	4.4	-149.58	118.3	53.4	180.5	172.1	8.47	21.324		
2,100.0	2,097.6	2,086.5	2,084.7	4.5	4.6	-150.10	124.5	56.4	193.3	184.4	8.91	21.692		
2,200.0	2,197.4	2,185.7	2,183.6	4.7	4.9	-150.55	130.8	59.3	206.1	196.7	9.36	22.021		
2,300.0	2,297.2	2,284.8	2,282.5	5.0	5.1	-150.95	137.1	62.3	218.8	209.0	9.81	22.317		
2,400.0	2,396.9	2,384.0	2,381.4	5.2	5.4	-151.30	143.3	65.2	231.6	221.3	10.25	22.585		
2,500.0	2,496.7	2,483.2	2,480.4	5.5	5.6	-151.62	149.6	68.1	244.4	233.7	10.71	22.828		
2,600.0	2,596.4	2,582.3	2,579.3	5.7	5.8	-151.91	155.8	71.1	257.2	246.0	11.16	23.049		
2,700.0	2,696.2	2,681.5	2,678.2	6.0	6.1	-152.17	162.1	74.0	270.0	258.4	11.61	23.252		
2,800.0	2,795.9	2,780.7	2,777.2	6.2	6.3	-152.40	168.4	77.0	282.8	270.7	12.07	23.438		
2,900.0	2,895.7	2,879.9	2,876.1	6.5	6.6	-152.62	174.6	79.9	295.6	283.1	12.52	23.609		
3,000.0	2,895.5	2,879.0	2,875.0	6.7	6.8	-152.82	180.9	82.9	308.4	295.4	12.98	23.767		
3,100.0	3,095.2	3,078.2	3,073.9	7.0	7.1	-153.00	187.2	85.8	321.2	307.8	13.43	23.914		
3,200.0	3,195.0	3,177.4	3,172.9	7.3	7.3	-153.17	193.4	88.7	334.0	320.2	13.89	24.050		
3,300.0	3,294.7	3,276.5	3,271.8	7.5	7.6	-153.32	199.7	91.7	346.9	332.5	14.35	24.176		
3,400.0	3,394.5	3,375.7	3,370.7	7.8	7.8	-153.47	205.9	94.6	359.7	344.9	14.81	24.294		
3,500.0	3,494.2	3,474.9	3,469.7	8.0	8.1	-153.60	212.2	97.6	372.5	357.3	15.26	24.405		
3,600.0	3,594.0	3,574.0	3,568.6	8.3	8.3	-153.73	218.5	100.5	385.3	369.6	15.72	24.508		
3,700.0	3,693.8	3,673.2	3,667.5	8.5	8.6	-153.84	224.7	103.5	398.2	382.0	16.18	24.605		
3,800.0	3,793.5	3,772.4	3,766.4	8.8	8.8	-153.95	231.0	106.4	411.0	394.4	16.64	24.696		
3,900.0	3,893.3	3,871.6	3,865.4	9.1	9.1	-154.06	237.2	109.3	423.8	406.7	17.10	24.782		
4,000.0	3,993.0	3,970.7	3,964.3	9.3	9.3	-154.16	243.5	112.3	436.7	419.1	17.56	24.863		
4,100.0	4,092.8	4,069.9	4,063.2	9.6	9.6	-154.25	249.8	115.2	449.5	431.5	18.02	24.940		
4,200.0	4,192.5	4,169.1	4,162.2	9.8	9.8	-154.33	256.0	118.2	462.3	443.9	18.48	25.012		
4,300.0	4,292.3	4,268.2	4,261.1	10.1	10.1	-154.42	262.3	121.1	475.2	456.2	18.95	25.081		
4,400.0	4,392.1	4,367.4	4,360.0	10.4	10.3	-154.49	268.5	124.0	488.0	468.6	19.41	25.146		
4,500.0	4,491.8	4,466.6	4,458.9	10.6	10.6	-154.57	274.8	127.0	500.9	481.0	19.87	25.208		
4,600.0	4,591.6	4,565.8	4,557.9	10.9	10.8	-154.64	281.1	129.9	513.7	493.4	20.33	25.267		
4,700.0	4,691.3	4,664.9	4,656.8	11.2	11.1	-154.70	287.3	132.9	526.5	505.8	20.79	25.323		
4,800.0	4,791.1	4,764.1	4,755.7	11.4	11.4	-154.77	293.6	135.8	539.4	518.1	21.25	25.377		
4,900.0	4,890.8	4,863.3	4,854.7	11.7	11.6	-154.83	299.8	138.8	552.2	530.5	21.72	25.428		
5,000.0	4,990.6	4,962.4	4,953.6	11.9	11.9	-154.88	306.1	141.7	565.1	542.9	22.18	25.477		
5,100.0	5,090.3	5,061.6	5,052.5	12.2	12.1	-154.94	312.4	144.6	577.9	555.3	22.64	25.524		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1														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		
5,200.0	5,190.1	5,160.8	5,151.4	12.5	12.4	-154.99	318.6	147.6	590.8	567.7	23.11	25.568			
5,300.0	5,289.9	5,259.9	5,250.4	12.7	12.6	-155.04	324.9	150.5	603.6	580.0	23.57	25.611			
5,338.0	5,327.8	5,297.6	5,288.0	12.8	12.7	-155.06	327.3	151.6	608.5	584.7	23.74	25.627			
5,350.0	5,339.7	5,309.5	5,299.8	12.9	12.7	-155.00	328.0	152.0	610.1	586.4	23.77	25.672			
5,400.0	5,389.2	5,358.5	5,348.7	13.0	12.9	-154.70	331.1	153.5	619.7	596.0	23.77	26.078			
5,450.0	5,437.8	5,406.4	5,396.5	13.2	13.0	-154.37	334.1	154.9	633.6	610.0	23.61	26.834			
5,500.0	5,485.0	5,443.7	5,433.7	13.5	13.1	-153.84	336.5	156.0	651.6	628.3	23.30	27.973			
5,550.0	5,530.5	5,463.7	5,453.6	13.8	13.1	-152.83	338.4	156.9	675.0	652.2	22.85	29.544			
5,600.0	5,573.7	5,481.9	5,471.6	14.1	13.2	-151.38	340.7	158.0	703.5	681.2	22.35	31.481			
5,650.0	5,614.4	5,500.0	5,489.4	14.5	13.3	-149.41	343.6	159.3	736.6	714.7	21.88	33.670			
5,700.0	5,652.1	5,500.0	5,489.4	14.9	13.3	-146.13	343.6	159.3	773.8	752.2	21.61	35.808			
5,750.0	5,686.4	5,523.4	5,512.3	15.4	13.3	-142.69	348.1	161.4	814.0	792.3	21.64	37.609			
5,800.0	5,717.2	5,532.8	5,521.4	16.0	13.4	-137.22	350.2	162.4	857.0	834.6	22.37	38.306			
5,850.0	5,744.0	5,550.0	5,538.0	16.5	13.4	-130.33	354.4	164.4	902.3	878.4	23.89	37.771			
5,900.0	5,766.6	5,550.0	5,538.0	17.2	13.4	-118.76	354.4	164.4	948.8	922.1	26.77	35.449			
5,950.0	5,784.9	5,550.0	5,538.0	17.9	13.4	-102.76	354.4	164.4	996.5	966.5	29.99	33.223			
6,000.0	5,798.6	5,550.0	5,538.0	18.6	13.4	-83.41	354.4	164.4	1,044.6	1,013.1	31.42	33.245			
6,050.0	5,807.6	5,550.0	5,538.0	19.4	13.4	-64.65	354.4	164.4	1,092.7	1,063.0	29.66	36.842			
6,100.0	5,811.9	5,550.0	5,538.0	20.1	13.4	-49.80	354.4	164.4	1,140.5	1,114.4	26.09	43.719			
6,119.8	5,812.3	5,550.0	5,538.0	20.5	13.4	-45.14	354.4	164.4	1,159.2	1,134.6	24.62	47.087			
6,200.0	5,812.3	5,550.0	5,538.0	21.7	13.4	-39.72	354.4	164.4	1,235.4	1,212.0	23.39	52.818			
6,300.0	5,812.3	5,550.0	5,538.0	23.1	13.4	-30.73	354.4	164.4	1,331.8	1,311.5	20.38	65.345			
6,400.0	5,812.3	5,528.3	5,517.0	24.6	13.4	-16.79	349.2	161.9	1,428.8	1,414.2	14.61	97.817			
6,500.0	5,812.3	5,522.6	5,511.4	26.1	13.3	-2.40	347.9	161.3	1,526.7	1,516.2	10.47	145.821			
6,600.0	5,812.3	5,500.0	5,489.4	27.7	13.3	12.37	343.6	159.3	1,625.1	1,611.8	13.31	122.053			
6,700.0	5,812.3	5,500.0	5,489.4	29.2	13.3	25.87	343.6	159.3	1,723.0	1,702.2	20.86	82.609			
6,786.6	5,812.3	5,500.0	5,489.4	30.6	13.3	36.02	343.6	159.3	1,807.6	1,780.4	27.23	66.373			
6,800.0	5,812.3	5,500.0	5,489.4	30.8	13.3	36.02	343.6	159.3	1,820.7	1,793.3	27.39	66.475			
6,900.0	5,812.3	5,500.0	5,489.4	32.5	13.3	36.02	343.6	159.3	1,918.4	1,889.8	28.58	67.126			
7,000.0	5,812.3	5,500.0	5,489.4	34.2	13.3	36.02	343.6	159.3	2,016.3	1,986.5	29.78	67.697			
7,100.0	5,812.3	5,500.0	5,489.4	35.9	13.3	36.02	343.6	159.3	2,114.4	2,083.4	31.00	68.201			
7,200.0	5,812.3	5,500.0	5,489.4	37.6	13.3	36.02	343.6	159.3	2,212.7	2,180.4	32.23	68.649			
7,300.0	5,812.3	5,500.0	5,489.4	39.4	13.3	36.02	343.6	159.3	2,311.1	2,277.6	33.47	69.049			
7,400.0	5,812.3	5,500.0	5,489.4	41.1	13.3	36.02	343.6	159.3	2,409.7	2,374.9	34.72	69.408			
7,500.0	5,812.3	5,500.0	5,489.4	42.9	13.3	36.02	343.6	159.3	2,508.3	2,472.4	35.97	69.731			
7,600.0	5,812.3	5,479.3	5,469.0	44.7	13.2	34.54	340.4	157.8	2,606.7	2,570.6	36.11	72.192			
7,700.0	5,812.3	5,476.8	5,466.5	46.5	13.2	34.36	340.0	157.6	2,705.4	2,668.2	37.21	72.714			
7,800.0	5,812.2	5,474.4	5,464.2	48.3	13.2	34.20	339.7	157.5	2,804.3	2,765.9	38.31	73.195			
7,900.0	5,812.2	5,472.2	5,462.0	50.1	13.2	34.05	339.4	157.4	2,903.2	2,863.7	39.42	73.641			
8,000.0	5,812.2	5,450.0	5,440.0	52.0	13.1	32.57	337.1	156.2	3,002.5	2,963.1	39.40	76.198			
8,100.0	5,812.2	5,450.0	5,440.0	53.8	13.1	32.57	337.1	156.2	3,101.5	3,060.9	40.61	76.366			
8,200.0	5,812.2	5,450.0	5,440.0	55.6	13.1	32.57	337.1	156.2	3,200.5	3,158.7	41.83	76.520			
8,300.0	5,812.2	5,450.0	5,440.0	57.5	13.1	32.57	337.1	156.2	3,299.6	3,256.5	43.04	76.662			
8,400.0	5,812.2	5,450.0	5,440.0	59.3	13.1	32.57	337.1	156.2	3,398.7	3,354.4	44.26	76.794			
8,500.0	5,812.2	5,450.0	5,440.0	61.2	13.1	32.57	337.1	156.2	3,497.9	3,452.4	45.48	76.917			
8,600.0	5,812.2	5,450.0	5,440.0	63.1	13.1	32.57	337.1	156.2	3,597.1	3,550.4	46.70	77.031			
8,700.0	5,812.2	5,450.0	5,440.0	64.9	13.1	32.57	337.1	156.2	3,696.3	3,648.4	47.92	77.138			
8,800.0	5,812.2	5,450.0	5,440.0	66.8	13.1	32.57	337.1	156.2	3,795.6	3,746.5	49.14	77.237			
8,900.0	5,812.2	5,450.0	5,440.0	68.7	13.1	32.57	337.1	156.2	3,895.0	3,844.6	50.37	77.331			
9,000.0	5,812.2	5,450.0	5,440.0	70.5	13.1	32.57	337.1	156.2	3,994.3	3,942.8	51.59	77.419			
9,100.0	5,812.2	5,450.0	5,440.0	72.4	13.1	32.57	337.1	156.2	4,093.7	4,040.9	52.82	77.501			
9,200.0	5,812.2	5,450.0	5,440.0	74.3	13.1	32.57	337.1	156.2	4,193.2	4,139.1	54.05	77.579			

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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		
9,300.0	5,812.2	5,450.0	5,440.0	76.2	13.1	32.57	337.1	156.2	4,292.6	4,237.4	55.28	77.652		
9,400.0	5,812.2	5,450.0	5,440.0	78.0	13.1	32.57	337.1	156.2	4,392.1	4,335.6	56.51	77.722		
9,500.0	5,812.2	5,450.0	5,440.0	79.9	13.1	32.57	337.1	156.2	4,491.6	4,433.9	57.74	77.788		
9,600.0	5,812.2	5,450.0	5,440.0	81.8	13.1	32.57	337.1	156.2	4,591.1	4,532.2	58.97	77.850		
9,700.0	5,812.2	5,450.0	5,440.0	83.7	13.1	32.57	337.1	156.2	4,690.7	4,630.5	60.21	77.909		
9,800.0	5,812.2	5,450.0	5,440.0	85.6	13.1	32.57	337.1	156.2	4,790.3	4,728.8	61.44	77.965		
9,900.0	5,812.2	5,450.0	5,440.0	87.5	13.1	32.57	337.1	156.2	4,889.8	4,827.2	62.68	78.019		
10,000.0	5,812.2	5,450.0	5,440.0	89.4	13.1	32.57	337.1	156.2	4,989.4	4,925.5	63.91	78.070		
10,100.0	5,812.1	5,443.5	5,433.5	91.2	13.1	32.15	336.5	156.0	5,089.0	5,024.4	64.60	78.775		
10,200.0	5,812.1	5,442.7	5,432.7	93.1	13.1	32.10	336.5	156.0	5,188.6	5,122.9	65.76	78.899		
10,300.0	5,812.1	5,436.0	5,426.0	95.0	13.1	31.67	336.0	155.8	5,288.3	5,221.9	66.42	79.622		
10,400.0	5,812.1	5,436.0	5,426.0	96.9	13.1	31.67	336.0	155.8	5,387.9	5,320.3	67.64	79.662		
10,500.0	5,812.1	5,436.0	5,426.0	98.8	13.1	31.67	336.0	155.8	5,487.6	5,418.7	68.85	79.700		
10,600.0	5,812.1	5,436.0	5,426.0	100.7	13.1	31.67	336.0	155.8	5,587.3	5,517.2	70.07	79.736		
10,700.0	5,812.1	5,436.0	5,426.0	102.6	13.1	31.67	336.0	155.8	5,686.9	5,615.6	71.29	79.771		
10,800.0	5,812.1	5,436.0	5,426.0	104.5	13.1	31.67	336.0	155.8	5,786.6	5,714.1	72.51	79.805		
10,900.0	5,812.1	5,436.0	5,426.0	106.4	13.1	31.67	336.0	155.8	5,886.3	5,812.6	73.73	79.837		
11,000.0	5,812.1	5,436.0	5,426.0	108.3	13.1	31.67	336.0	155.8	5,986.0	5,911.1	74.95	79.868		
11,100.0	5,812.1	5,436.0	5,426.0	110.2	13.1	31.67	336.0	155.8	6,085.7	6,009.6	76.17	79.898		
11,200.0	5,812.1	5,436.0	5,426.0	112.1	13.1	31.67	336.0	155.8	6,185.5	6,108.1	77.39	79.927		
11,300.0	5,812.1	5,432.4	5,422.5	114.0	13.1	31.45	335.8	155.6	6,285.2	6,206.9	78.26	80.310		
11,400.0	5,812.1	5,426.1	5,416.2	115.9	13.0	31.06	335.4	155.5	6,384.9	6,306.1	78.87	80.960		
11,500.0	5,812.1	5,419.8	5,409.8	117.8	13.0	30.68	335.0	155.3	6,484.7	6,405.2	79.47	81.603		
11,600.0	5,812.1	5,413.5	5,403.5	119.7	13.0	30.31	334.6	155.1	6,584.4	6,504.3	80.07	82.238		
11,700.0	5,812.1	5,407.2	5,397.2	121.7	13.0	29.95	334.2	154.9	6,684.2	6,603.5	80.66	82.866		
11,800.0	5,812.1	5,400.9	5,390.9	123.6	13.0	29.60	333.8	154.7	6,783.9	6,702.6	81.26	83.486		
11,900.0	5,812.1	5,394.5	5,384.6	125.5	13.0	29.26	333.4	154.5	6,883.6	6,801.8	81.85	84.099		
12,000.0	5,812.1	5,388.2	5,378.3	127.4	12.9	28.92	333.0	154.3	6,983.4	6,900.9	82.44	84.704		
12,100.0	5,812.1	5,381.9	5,372.0	129.3	12.9	28.59	332.6	154.1	7,083.1	7,000.1	83.04	85.303		
12,200.0	5,812.1	5,375.6	5,365.7	131.2	12.9	28.27	332.2	154.0	7,182.9	7,099.3	83.63	85.893		
12,300.0	5,812.1	5,369.3	5,359.4	133.1	12.9	27.95	331.8	153.8	7,282.6	7,198.4	84.22	86.477		
12,400.0	5,812.0	5,362.9	5,353.1	135.0	12.9	27.64	331.4	153.6	7,382.4	7,297.6	84.80	87.053		
12,500.0	5,812.0	5,356.6	5,346.8	136.9	12.9	27.34	331.0	153.4	7,482.1	7,396.8	85.39	87.621		
12,600.0	5,812.0	5,350.3	5,340.5	138.8	12.8	27.05	330.6	153.2	7,581.9	7,495.9	85.98	88.183		
12,700.0	5,812.0	5,344.0	5,334.2	140.7	12.8	26.76	330.2	153.0	7,681.7	7,595.1	86.57	88.737		
12,800.0	5,812.0	5,337.7	5,327.9	142.6	12.8	26.48	329.8	152.8	7,781.4	7,694.3	87.15	89.284		
12,900.0	5,812.0	5,331.4	5,321.6	144.5	12.8	26.20	329.4	152.6	7,881.2	7,793.4	87.74	89.825		
13,000.0	5,812.0	5,325.0	5,315.3	146.5	12.8	25.93	329.0	152.5	7,980.9	7,892.6	88.33	90.358		
13,100.0	5,812.0	5,318.7	5,309.0	148.4	12.8	25.66	328.6	152.3	8,080.7	7,991.8	88.91	90.884		
13,200.0	5,812.0	5,312.4	5,302.7	150.3	12.7	25.40	328.2	152.1	8,180.5	8,091.0	89.50	91.403		
13,250.2	5,812.0	5,309.2	5,299.5	151.1	12.7	25.27	328.0	152.0	8,230.5	8,140.9	89.63	91.825		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													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	-66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-66.1	66.1	65.9	0.19	353.401		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-66.1	66.1	65.5	0.64	103.824		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-66.1	66.1	65.0	1.09	60.851		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-66.1	66.1	64.6	1.54	43.037		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-66.1	66.1	64.1	1.99	33.291		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-66.1	66.1	63.7	2.43	27.145		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-66.1	66.1	63.2	2.88	22.914		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-66.1	66.1	62.8	3.33	19.824		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-66.1	66.1	62.3	3.78	17.469		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-66.1	66.1	61.9	4.23	15.613 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	111.41	0.0	-66.1	66.7	62.1	4.65	14.333		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	115.43	0.0	-66.1	68.8	63.7	5.05	13.610		
1,300.0	1,299.6	1,299.5	1,299.5	2.7	2.8	119.06	-1.7	-66.4	72.1	66.7	5.44	13.263		
1,400.0	1,399.4	1,399.3	1,399.2	2.9	2.9	119.73	-6.8	-67.5	75.7	69.9	5.81	13.036		
1,500.0	1,499.1	1,499.3	1,498.9	3.1	3.1	119.07	-13.6	-68.9	79.4	73.2	6.20	12.803		
1,600.0	1,598.9	1,599.2	1,598.6	3.3	3.3	118.47	-20.4	-70.3	83.1	76.5	6.62	12.565		
1,700.0	1,698.6	1,699.1	1,698.2	3.5	3.5	117.92	-27.3	-71.7	86.8	79.8	7.04	12.330		
1,800.0	1,798.4	1,799.1	1,797.9	3.8	3.7	117.41	-34.1	-73.1	90.6	83.1	7.48	12.103		
1,900.0	1,898.1	1,899.0	1,897.6	4.0	4.0	116.95	-40.9	-74.5	94.3	86.4	7.93	11.886		
2,000.0	1,997.9	1,998.9	1,997.3	4.2	4.2	116.51	-47.7	-75.9	98.0	89.6	8.39	11.681		
2,100.0	2,097.6	2,098.8	2,097.0	4.5	4.4	116.12	-54.6	-77.3	101.7	92.9	8.86	11.488		
2,200.0	2,197.4	2,198.8	2,196.7	4.7	4.6	115.75	-61.4	-78.7	105.5	96.2	9.33	11.307		
2,300.0	2,297.2	2,298.7	2,296.3	5.0	4.9	115.40	-68.2	-80.1	109.2	99.4	9.81	11.138		
2,400.0	2,396.9	2,398.6	2,396.0	5.2	5.1	115.08	-75.1	-81.5	113.0	102.7	10.29	10.980		
2,500.0	2,496.7	2,498.6	2,495.7	5.5	5.4	114.78	-81.9	-82.9	116.7	106.0	10.78	10.832		
2,600.0	2,596.4	2,598.5	2,595.4	5.7	5.6	114.49	-88.7	-84.3	120.5	109.2	11.27	10.694		
2,700.0	2,696.2	2,698.4	2,695.1	6.0	5.8	114.23	-95.5	-85.7	124.2	112.5	11.76	10.565		
2,800.0	2,795.9	2,798.3	2,794.8	6.2	6.1	113.98	-102.4	-87.1	128.0	115.7	12.25	10.445		
2,900.0	2,895.7	2,898.3	2,894.5	6.5	6.3	113.74	-109.2	-88.5	131.8	119.0	12.75	10.331		
3,000.0	2,995.5	2,998.2	2,994.1	6.7	6.6	113.52	-116.0	-89.9	135.5	122.3	13.25	10.225		
3,100.0	3,095.2	3,098.1	3,093.8	7.0	6.8	113.31	-122.9	-91.3	139.3	125.5	13.76	10.126		
3,200.0	3,195.0	3,198.1	3,193.5	7.3	7.1	113.11	-129.7	-92.7	143.0	128.8	14.26	10.032		
3,300.0	3,294.7	3,298.0	3,293.2	7.5	7.3	112.92	-136.5	-94.1	146.8	132.0	14.76	9.944		
3,400.0	3,394.5	3,397.9	3,392.9	7.8	7.6	112.74	-143.3	-95.5	150.6	135.3	15.27	9.861		
3,500.0	3,494.2	3,497.8	3,492.6	8.0	7.8	112.57	-150.2	-96.9	154.4	138.6	15.78	9.782		
3,600.0	3,594.0	3,597.8	3,592.2	8.3	8.1	112.40	-157.0	-98.3	158.1	141.8	16.29	9.708		
3,700.0	3,693.8	3,697.7	3,691.9	8.5	8.4	112.25	-163.8	-99.7	161.9	145.1	16.80	9.638		
3,800.0	3,793.5	3,797.6	3,791.6	8.8	8.6	112.10	-170.7	-101.1	165.7	148.4	17.31	9.571		
3,900.0	3,893.3	3,897.5	3,891.3	9.1	8.9	111.96	-177.5	-102.5	169.4	151.6	17.82	9.508		
4,000.0	3,993.0	3,997.5	3,991.0	9.3	9.1	111.82	-184.3	-103.9	173.2	154.9	18.33	9.448		
4,100.0	4,092.8	4,097.4	4,090.7	9.6	9.4	111.69	-191.1	-105.3	177.0	158.2	18.85	9.391		
4,200.0	4,192.5	4,197.3	4,190.4	9.8	9.6	111.57	-198.0	-106.7	180.8	161.4	19.36	9.337		
4,300.0	4,292.3	4,297.3	4,290.0	10.1	9.9	111.45	-204.8	-108.1	184.6	164.7	19.88	9.286		
4,400.0	4,392.1	4,397.2	4,389.7	10.4	10.2	111.33	-211.6	-109.5	188.3	167.9	20.39	9.236		
4,500.0	4,491.8	4,497.1	4,489.4	10.6	10.4	111.22	-218.5	-110.9	192.1	171.2	20.91	9.189		
4,600.0	4,591.6	4,597.0	4,589.1	10.9	10.7	111.12	-225.3	-112.3	195.9	174.5	21.42	9.145		
4,700.0	4,691.3	4,697.0	4,688.8	11.2	10.9	111.02	-232.1	-113.7	199.7	177.7	21.94	9.102		
4,800.0	4,791.1	4,796.9	4,788.5	11.4	11.2	110.92	-238.9	-115.1	203.5	181.0	22.46	9.061		
4,900.0	4,890.8	4,896.8	4,888.1	11.7	11.5	110.83	-245.8	-116.5	207.2	184.3	22.97	9.021		
5,000.0	4,990.6	4,996.8	4,987.8	11.9	11.7	110.73	-252.6	-117.9	211.0	187.5	23.49	8.983		
5,100.0	5,090.3	5,096.7	5,087.5	12.2	12.0	110.65	-259.4	-119.3	214.8	190.8	24.01	8.947		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													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		
5,200.0	5,190.1	5,196.6	5,187.2	12.5	12.2	110.56	-266.2	-120.7	218.6	194.1	24.53	8.912		
5,300.0	5,289.9	5,296.5	5,286.9	12.7	12.5	110.48	-273.1	-122.1	222.4	197.3	25.05	8.879		
5,338.0	5,327.8	5,334.5	5,324.8	12.8	12.6	110.45	-275.7	-122.7	223.8	198.6	25.24	8.867		
5,350.0	5,339.7	5,345.8	5,336.0	12.9	12.6	110.40	-276.5	-122.9	224.3	199.0	25.30	8.867		
5,400.0	5,389.2	5,391.8	5,381.6	13.0	12.8	110.06	-282.4	-124.1	228.0	202.5	25.57	8.918		
5,450.0	5,437.8	5,437.5	5,426.3	13.2	13.0	109.50	-292.1	-126.1	234.2	208.3	25.89	9.047		
5,500.0	5,485.0	5,482.9	5,469.5	13.5	13.2	108.74	-305.5	-128.8	242.8	216.6	26.27	9.244		
5,550.0	5,530.5	5,527.7	5,510.9	13.8	13.4	107.79	-322.3	-132.3	253.7	227.0	26.71	9.500		
5,600.0	5,573.7	5,572.0	5,550.1	14.1	13.7	106.66	-342.3	-136.3	266.8	239.6	27.22	9.801		
5,650.0	5,614.4	5,615.6	5,587.0	14.5	14.0	105.36	-365.0	-141.0	281.9	254.1	27.82	10.133		
5,700.0	5,652.1	5,658.5	5,621.3	14.9	14.3	103.92	-390.4	-146.2	299.0	270.4	28.55	10.471		
5,750.0	5,686.4	5,700.0	5,652.3	15.4	14.6	102.33	-417.4	-151.8	317.7	288.3	29.38	10.812		
5,800.0	5,717.2	5,742.5	5,681.7	16.0	15.0	100.64	-447.4	-157.9	338.0	307.7	30.34	11.140		
5,850.0	5,744.0	5,783.6	5,707.6	16.5	15.5	98.84	-478.7	-164.4	359.7	328.3	31.39	11.457		
5,900.0	5,766.6	5,824.3	5,730.7	17.2	15.9	96.95	-511.5	-171.1	382.5	350.0	32.53	11.759		
5,950.0	5,784.9	5,864.6	5,751.0	17.9	16.4	94.99	-545.6	-178.1	406.3	372.6	33.74	12.044		
6,000.0	5,798.6	5,904.7	5,768.4	18.6	16.9	92.98	-581.0	-185.3	430.9	395.9	35.01	12.311		
6,050.0	5,807.6	5,944.8	5,783.0	19.4	17.4	90.95	-617.5	-192.8	456.2	419.9	36.32	12.560		
6,100.0	5,811.9	5,984.9	5,794.7	20.1	17.9	88.92	-655.1	-200.6	481.9	444.2	37.67	12.792		
6,119.8	5,812.3	6,000.9	5,798.5	20.5	18.2	88.12	-670.3	-203.7	492.1	453.9	38.21	12.881		
6,200.0	5,812.3	6,068.1	5,809.3	21.7	19.1	89.63	-735.2	-217.0	532.5	491.9	40.56	13.130		
6,300.0	5,812.3	6,172.7	5,811.8	23.1	20.6	89.94	-837.8	-237.3	578.4	534.7	43.68	13.243		
6,400.0	5,812.3	6,308.4	5,811.8	24.6	22.5	89.95	-972.1	-256.0	614.3	567.2	47.17	13.023		
6,500.0	5,812.3	6,452.9	5,811.8	26.1	24.5	89.95	-1,116.3	-265.5	638.3	587.4	50.92	12.536		
6,600.0	5,812.3	6,569.7	5,811.8	27.7	26.3	89.96	-1,233.0	-266.2	651.1	596.8	54.37	11.976		
6,700.0	5,812.3	6,669.4	5,811.8	29.2	28.0	89.96	-1,332.8	-266.2	658.3	600.7	57.60	11.429		
6,786.6	5,812.3	6,756.0	5,811.8	30.6	29.4	89.96	-1,419.4	-266.2	660.2	599.9	60.34	10.942		
6,800.0	5,812.3	6,769.4	5,811.8	30.8	29.7	89.96	-1,432.7	-266.2	660.2	599.4	60.79	10.861		
6,900.0	5,812.3	6,869.4	5,811.8	32.5	31.4	89.96	-1,532.7	-266.2	660.2	596.0	64.24	10.278		
7,000.0	5,812.3	6,969.4	5,811.8	34.2	33.1	89.96	-1,632.7	-266.2	660.2	592.5	67.73	9.748		
7,100.0	5,812.3	7,069.4	5,811.8	35.9	34.9	89.96	-1,732.7	-266.3	660.2	589.0	71.26	9.266		
7,200.0	5,812.3	7,169.4	5,811.8	37.6	36.6	89.96	-1,832.7	-266.3	660.2	585.4	74.82	8.825		
7,300.0	5,812.3	7,269.4	5,811.8	39.4	38.4	89.96	-1,932.7	-266.3	660.2	581.8	78.40	8.421		
7,400.0	5,812.3	7,369.4	5,811.8	41.1	40.2	89.96	-2,032.7	-266.3	660.2	578.2	82.01	8.050		
7,500.0	5,812.3	7,469.4	5,811.8	42.9	42.0	89.96	-2,132.7	-266.3	660.2	574.6	85.64	7.709		
7,600.0	5,812.3	7,569.4	5,811.8	44.7	43.9	89.96	-2,232.7	-266.3	660.2	571.0	89.29	7.394		
7,700.0	5,812.3	7,669.4	5,811.8	46.5	45.7	89.96	-2,332.7	-266.3	660.2	567.3	92.96	7.103		
7,800.0	5,812.2	7,769.4	5,811.8	48.3	47.5	89.96	-2,432.7	-266.3	660.2	563.6	96.64	6.832		
7,900.0	5,812.2	7,869.4	5,811.8	50.1	49.4	89.97	-2,532.7	-266.3	660.2	559.9	100.33	6.581		
8,000.0	5,812.2	7,969.4	5,811.8	52.0	51.2	89.97	-2,632.7	-266.3	660.2	556.2	104.03	6.347		
8,100.0	5,812.2	8,069.4	5,811.9	53.8	53.1	89.97	-2,732.7	-266.3	660.3	552.5	107.74	6.128		
8,200.0	5,812.2	8,169.4	5,811.9	55.6	54.9	89.97	-2,832.7	-266.3	660.3	548.8	111.47	5.923		
8,300.0	5,812.2	8,269.4	5,811.9	57.5	56.8	89.97	-2,932.7	-266.3	660.3	545.1	115.20	5.732		
8,400.0	5,812.2	8,369.4	5,811.9	59.3	58.7	89.97	-3,032.7	-266.4	660.3	541.3	118.93	5.551		
8,500.0	5,812.2	8,469.4	5,811.9	61.2	60.5	89.97	-3,132.7	-266.4	660.3	537.6	122.68	5.382		
8,600.0	5,812.2	8,569.4	5,811.9	63.1	62.4	89.97	-3,232.7	-266.4	660.3	533.8	126.43	5.222		
8,700.0	5,812.2	8,669.4	5,811.9	64.9	64.3	89.97	-3,332.7	-266.4	660.3	530.1	130.18	5.072		
8,800.0	5,812.2	8,769.4	5,811.9	66.8	66.2	89.97	-3,432.7	-266.4	660.3	526.3	133.94	4.929		
8,900.0	5,812.2	8,869.4	5,811.9	68.7	68.1	89.97	-3,532.7	-266.4	660.3	522.6	137.71	4.795		
9,000.0	5,812.2	8,969.4	5,811.9	70.5	69.9	89.97	-3,632.7	-266.4	660.3	518.8	141.48	4.667		
9,100.0	5,812.2	9,069.4	5,811.9	72.4	71.8	89.97	-3,732.7	-266.4	660.3	515.0	145.25	4.546		
9,200.0	5,812.2	9,169.4	5,811.9	74.3	73.7	89.97	-3,832.7	-266.4	660.3	511.2	149.03	4.431		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1												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
9,300.0	5,812.2	9,269.4	5,811.9	76.2	75.6	89.97	-3,932.7	-266.4	660.3	507.5	152.81	4.321	
9,400.0	5,812.2	9,369.4	5,811.9	78.0	77.5	89.98	-4,032.7	-266.4	660.3	503.7	156.59	4.217	
9,500.0	5,812.2	9,469.4	5,811.9	79.9	79.4	89.98	-4,132.7	-266.4	660.3	499.9	160.38	4.117	
9,600.0	5,812.2	9,569.4	5,811.9	81.8	81.3	89.98	-4,232.7	-266.5	660.3	496.1	164.17	4.022	
9,700.0	5,812.2	9,669.4	5,811.9	83.7	83.2	89.98	-4,332.7	-266.5	660.3	492.3	167.96	3.931	
9,800.0	5,812.2	9,769.4	5,811.9	85.6	85.1	89.98	-4,432.7	-266.5	660.3	488.5	171.75	3.844	
9,900.0	5,812.2	9,869.4	5,811.9	87.5	87.0	89.98	-4,532.7	-266.5	660.3	484.7	175.55	3.761	
10,000.0	5,812.2	9,969.4	5,811.9	89.4	88.9	89.98	-4,632.8	-266.5	660.3	480.9	179.34	3.682	
10,100.0	5,812.1	10,069.4	5,811.9	91.2	90.8	89.98	-4,732.8	-266.5	660.3	477.1	183.14	3.605	
10,200.0	5,812.1	10,169.4	5,811.9	93.1	92.7	89.98	-4,832.8	-266.5	660.3	473.3	186.95	3.532	
10,300.0	5,812.1	10,269.4	5,811.9	95.0	94.6	89.98	-4,932.8	-266.5	660.3	469.5	190.75	3.462	
10,400.0	5,812.1	10,369.4	5,811.9	96.9	96.5	89.98	-5,032.8	-266.5	660.3	465.7	194.55	3.394	
10,500.0	5,812.1	10,469.4	5,811.9	98.8	98.4	89.98	-5,132.8	-266.5	660.3	461.9	198.36	3.329	
10,600.0	5,812.1	10,569.4	5,811.9	100.7	100.3	89.98	-5,232.8	-266.5	660.3	458.1	202.17	3.266	
10,700.0	5,812.1	10,669.4	5,811.9	102.6	102.2	89.98	-5,332.8	-266.5	660.3	454.3	205.98	3.206	
10,800.0	5,812.1	10,769.4	5,811.9	104.5	104.1	89.98	-5,432.8	-266.5	660.3	450.5	209.79	3.147	
10,900.0	5,812.1	10,869.4	5,811.9	106.4	106.0	89.98	-5,532.8	-266.6	660.3	446.7	213.60	3.091	
11,000.0	5,812.1	10,969.4	5,811.9	108.3	107.9	89.99	-5,632.8	-266.6	660.3	442.9	217.41	3.037	
11,100.0	5,812.1	11,069.4	5,811.9	110.2	109.8	89.99	-5,732.8	-266.6	660.3	439.1	221.23	2.985	
11,200.0	5,812.1	11,169.4	5,811.9	112.1	111.7	89.99	-5,832.8	-266.6	660.3	435.3	225.04	2.934	
11,300.0	5,812.1	11,269.4	5,812.0	114.0	113.6	89.99	-5,932.8	-266.6	660.3	431.4	228.86	2.885	
11,400.0	5,812.1	11,369.4	5,812.0	115.9	115.5	89.99	-6,032.8	-266.6	660.3	427.6	232.67	2.838	
11,500.0	5,812.1	11,469.4	5,812.0	117.8	117.4	89.99	-6,132.8	-266.6	660.3	423.8	236.49	2.792	
11,600.0	5,812.1	11,569.4	5,812.0	119.7	119.3	89.99	-6,232.8	-266.6	660.3	420.0	240.31	2.748	
11,700.0	5,812.1	11,669.4	5,812.0	121.7	121.2	89.99	-6,332.8	-266.6	660.3	416.2	244.13	2.705	
11,800.0	5,812.1	11,769.4	5,812.0	123.6	123.2	89.99	-6,432.8	-266.6	660.3	412.4	247.95	2.663	
11,900.0	5,812.1	11,869.4	5,812.0	125.5	125.1	89.99	-6,532.8	-266.6	660.3	408.5	251.77	2.623	
12,000.0	5,812.1	11,969.4	5,812.0	127.4	127.0	89.99	-6,632.8	-266.6	660.3	404.7	255.59	2.583	
12,100.0	5,812.1	12,069.4	5,812.0	129.3	128.9	89.99	-6,732.8	-266.7	660.3	400.9	259.41	2.545	
12,200.0	5,812.1	12,169.4	5,812.0	131.2	130.8	89.99	-6,832.8	-266.7	660.3	397.1	263.23	2.508	
12,300.0	5,812.1	12,269.4	5,812.0	133.1	132.7	89.99	-6,932.8	-266.7	660.3	393.3	267.06	2.473	
12,400.0	5,812.0	12,369.4	5,812.0	135.0	134.6	89.99	-7,032.8	-266.7	660.3	389.4	270.88	2.438	
12,500.0	5,812.0	12,469.4	5,812.0	136.9	136.5	90.00	-7,132.8	-266.7	660.3	385.6	274.71	2.404	
12,600.0	5,812.0	12,569.4	5,812.0	138.8	138.4	90.00	-7,232.8	-266.7	660.3	381.8	278.53	2.371	
12,700.0	5,812.0	12,669.4	5,812.0	140.7	140.4	90.00	-7,332.8	-266.7	660.3	378.0	282.36	2.339	
12,800.0	5,812.0	12,769.4	5,812.0	142.6	142.3	90.00	-7,432.8	-266.7	660.3	374.1	286.18	2.307	
12,900.0	5,812.0	12,869.4	5,812.0	144.5	144.2	90.00	-7,532.8	-266.7	660.3	370.3	290.01	2.277	
13,000.0	5,812.0	12,969.4	5,812.0	146.5	146.1	90.00	-7,632.8	-266.7	660.3	366.5	293.84	2.247	
13,100.0	5,812.0	13,069.4	5,812.0	148.4	148.0	90.00	-7,732.8	-266.7	660.3	362.7	297.66	2.218	
13,200.0	5,812.0	13,169.4	5,812.0	150.3	149.9	90.00	-7,832.8	-266.7	660.3	358.8	301.49	2.190	
13,250.2	5,812.0	13,219.5	5,812.0	151.1	150.9	90.00	-7,882.9	-266.7	660.3	357.1	303.23	2.178 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1													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	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-33.0	33.0	32.9	0.19	176.700		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-33.0	33.0	32.4	0.64	51.912		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-33.0	33.0	31.5	1.54	21.519		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-33.0	33.0	31.1	1.99	16.646		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-33.0	33.0	30.6	2.43	13.572		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-33.0	33.0	30.2	2.88	11.457		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-33.0	33.0	29.7	3.33	9.912		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-33.0	33.0	29.3	3.78	8.734		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-33.0	33.0	28.8	4.23	7.807 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	112.79	0.0	-33.0	33.7	29.0	4.65	7.237		
1,200.0	1,199.8	1,200.2	1,200.1	2.5	2.5	117.77	-1.7	-32.9	35.6	30.6	5.03	7.080		
1,300.0	1,299.6	1,300.5	1,300.3	2.7	2.7	119.42	-7.0	-32.3	37.6	32.2	5.39	6.978		
1,400.0	1,399.4	1,400.4	1,400.0	2.9	2.9	118.47	-13.9	-31.6	39.2	33.4	5.77	6.783		
1,500.0	1,499.1	1,500.4	1,499.8	3.1	3.1	117.59	-20.8	-30.9	40.8	34.6	6.18	6.593		
1,600.0	1,598.9	1,600.4	1,599.5	3.3	3.3	116.78	-27.8	-30.1	42.4	35.8	6.61	6.412		
1,700.0	1,698.6	1,700.4	1,699.3	3.5	3.5	116.03	-34.7	-29.4	44.0	36.9	7.04	6.241		
1,800.0	1,798.4	1,800.4	1,799.0	3.8	3.7	115.34	-41.6	-28.7	45.6	38.1	7.49	6.082		
1,900.0	1,898.1	1,900.4	1,898.7	4.0	4.0	114.69	-48.6	-27.9	47.2	39.2	7.95	5.934		
2,000.0	1,997.9	2,000.4	1,998.5	4.2	4.2	114.08	-55.5	-27.2	48.8	40.4	8.42	5.798		
2,100.0	2,097.6	2,100.3	2,098.2	4.5	4.4	113.51	-62.5	-26.5	50.4	41.5	8.89	5.672		
2,200.0	2,197.4	2,200.3	2,198.0	4.7	4.7	112.98	-69.4	-25.7	52.1	42.7	9.37	5.555		
2,300.0	2,297.2	2,300.3	2,297.7	5.0	4.9	112.48	-76.3	-25.0	53.7	43.8	9.86	5.448		
2,400.0	2,396.9	2,400.3	2,397.5	5.2	5.2	112.01	-83.3	-24.3	55.3	45.0	10.35	5.349		
2,500.0	2,496.7	2,500.3	2,497.2	5.5	5.4	111.57	-90.2	-23.6	57.0	46.1	10.84	5.257		
2,600.0	2,596.4	2,600.3	2,596.9	5.7	5.7	111.15	-97.1	-22.8	58.6	47.3	11.34	5.172		
2,700.0	2,696.2	2,700.3	2,696.7	6.0	5.9	110.75	-104.1	-22.1	60.3	48.5	11.84	5.093		
2,800.0	2,795.9	2,800.2	2,796.4	6.2	6.2	110.38	-111.0	-21.4	61.9	49.6	12.34	5.020		
2,900.0	2,895.7	2,900.2	2,896.2	6.5	6.4	110.02	-117.9	-20.6	63.6	50.8	12.84	4.952		
3,000.0	2,995.5	3,000.2	2,995.9	6.7	6.7	109.69	-124.9	-19.9	65.3	51.9	13.35	4.888		
3,100.0	3,095.2	3,100.2	3,095.7	7.0	6.9	109.37	-131.8	-19.2	66.9	53.1	13.86	4.829		
3,200.0	3,195.0	3,200.2	3,195.4	7.3	7.2	109.06	-138.8	-18.5	68.6	54.2	14.37	4.773		
3,300.0	3,294.7	3,300.2	3,295.1	7.5	7.4	108.77	-145.7	-17.7	70.2	55.4	14.88	4.721		
3,400.0	3,394.5	3,400.2	3,394.9	7.8	7.7	108.49	-152.6	-17.0	71.9	56.5	15.39	4.672		
3,500.0	3,494.2	3,500.1	3,494.6	8.0	7.9	108.23	-159.6	-16.3	73.6	57.7	15.90	4.626		
3,600.0	3,594.0	3,600.1	3,594.4	8.3	8.2	107.98	-166.5	-15.5	75.2	58.8	16.42	4.583		
3,700.0	3,693.8	3,700.1	3,694.1	8.5	8.4	107.74	-173.4	-14.8	76.9	60.0	16.93	4.542		
3,800.0	3,793.5	3,800.1	3,793.8	8.8	8.7	107.51	-180.4	-14.1	78.6	61.1	17.45	4.504		
3,900.0	3,893.3	3,900.1	3,893.6	9.1	9.0	107.28	-187.3	-13.4	80.2	62.3	17.96	4.467		
4,000.0	3,993.0	4,000.1	3,993.3	9.3	9.2	107.07	-194.2	-12.6	81.9	63.4	18.48	4.432		
4,100.0	4,092.8	4,100.1	4,093.1	9.6	9.5	106.87	-201.2	-11.9	83.6	64.6	19.00	4.400		
4,200.0	4,192.5	4,200.0	4,192.8	9.8	9.7	106.67	-208.1	-11.2	85.3	65.8	19.52	4.369		
4,300.0	4,292.3	4,300.0	4,292.6	10.1	10.0	106.48	-215.1	-10.4	86.9	66.9	20.04	4.339		
4,400.0	4,392.1	4,400.0	4,392.3	10.4	10.3	106.30	-222.0	-9.7	88.6	68.1	20.56	4.311		
4,500.0	4,491.8	4,500.0	4,492.0	10.6	10.5	106.13	-228.9	-9.0	90.3	69.2	21.08	4.284		
4,600.0	4,591.6	4,600.0	4,591.8	10.9	10.8	105.96	-235.9	-8.3	92.0	70.4	21.60	4.258		
4,700.0	4,691.3	4,700.0	4,691.5	11.2	11.0	105.80	-242.8	-7.5	93.7	71.5	22.12	4.234		
4,800.0	4,791.1	4,800.0	4,791.3	11.4	11.3	105.64	-249.7	-6.8	95.3	72.7	22.64	4.211		
4,900.0	4,890.8	4,899.9	4,891.0	11.7	11.6	105.49	-256.7	-6.1	97.0	73.9	23.17	4.188		
5,000.0	4,990.6	4,999.9	4,990.8	11.9	11.8	105.34	-263.6	-5.3	98.7	75.0	23.69	4.167		
5,100.0	5,090.3	5,099.9	5,090.5	12.2	12.1	105.20	-270.5	-4.6	100.4	76.2	24.21	4.146		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1													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		
5,200.0	5,190.1	5,199.9	5,190.2	12.5	12.3	105.06	-277.5	-3.9	102.1	77.3	24.73	4.127		
5,300.0	5,289.9	5,299.9	5,290.0	12.7	12.6	104.93	-284.4	-3.1	103.8	78.5	25.26	4.108		
5,338.0	5,327.8	5,337.9	5,327.9	12.8	12.7	104.88	-287.1	-2.9	104.4	78.9	25.46	4.101		
5,350.0	5,339.7	5,349.9	5,339.9	12.9	12.7	104.92	-287.9	-2.8	104.6	79.1	25.52	4.100		
5,400.0	5,389.2	5,399.7	5,389.6	13.0	12.9	106.50	-291.3	-2.4	106.4	80.7	25.77	4.130		
5,450.0	5,437.8	5,449.3	5,439.0	13.2	13.0	110.13	-294.9	-2.0	109.9	83.9	25.99	4.229		
5,500.0	5,485.0	5,500.0	5,489.2	13.5	13.2	113.92	-302.1	-1.3	115.2	89.0	26.18	4.401		
5,550.0	5,530.5	5,551.6	5,539.3	13.8	13.4	117.01	-314.3	0.0	122.1	95.7	26.37	4.629		
5,600.0	5,573.7	5,604.0	5,588.7	14.1	13.6	119.38	-331.7	1.8	130.2	103.7	26.56	4.904		
5,650.0	5,614.4	5,657.3	5,636.8	14.5	13.9	121.04	-354.3	4.2	139.5	112.7	26.78	5.209		
5,700.0	5,652.1	5,711.3	5,683.0	14.9	14.3	122.05	-382.1	7.1	149.7	122.6	27.09	5.526		
5,750.0	5,686.4	5,766.2	5,726.7	15.4	14.7	122.47	-415.1	10.6	160.6	133.0	27.52	5.834		
5,800.0	5,717.2	5,821.9	5,767.2	16.0	15.2	122.38	-453.0	14.6	172.0	143.9	28.12	6.117		
5,850.0	5,744.0	5,878.2	5,803.9	16.5	15.8	121.85	-495.6	19.0	183.9	155.0	28.92	6.358		
5,900.0	5,766.6	5,935.3	5,836.0	17.2	16.4	120.94	-542.4	24.0	196.1	166.1	29.95	6.546		
5,950.0	5,784.9	5,993.0	5,863.1	17.9	17.1	119.72	-593.1	29.3	208.4	177.2	31.21	6.678		
6,000.0	5,798.6	6,051.4	5,884.6	18.6	17.9	118.24	-647.0	35.0	220.8	188.1	32.69	6.755		
6,050.0	5,807.6	6,110.3	5,900.0	19.4	18.7	116.55	-703.5	40.9	233.2	198.8	34.38	6.784		
6,100.0	5,811.9	6,169.7	5,909.0	20.1	19.6	114.67	-761.9	47.0	245.5	209.2	36.23	6.775		
6,119.8	5,812.3	6,193.3	5,910.7	20.5	19.9	113.89	-785.3	49.5	250.3	213.3	37.00	6.763		
6,200.0	5,812.3	6,269.7	5,911.3	21.7	21.0	112.24	-861.4	56.8	267.6	227.8	39.78	6.727		
6,300.0	5,812.3	6,355.5	5,911.3	23.1	22.2	110.53	-947.0	61.6	288.5	245.6	42.90	6.724		
6,400.0	5,812.3	6,444.0	5,911.3	24.6	23.5	109.07	-1,035.4	62.6	308.7	262.7	46.02	6.708		
6,500.0	5,812.3	6,542.4	5,911.3	26.1	25.0	107.90	-1,133.9	62.6	325.4	276.0	49.31	6.599		
6,600.0	5,812.3	6,641.6	5,911.3	27.7	26.7	107.15	-1,233.1	62.6	337.1	284.6	52.52	6.419		
6,700.0	5,812.3	6,741.4	5,911.3	29.2	28.4	106.74	-1,332.8	62.6	344.0	288.4	55.59	6.187		
6,786.6	5,812.3	6,827.9	5,911.3	30.6	29.9	106.63	-1,419.4	62.6	345.8	287.7	58.12	5.951		
6,800.0	5,812.3	6,841.3	5,911.3	30.8	30.1	106.63	-1,432.8	62.7	345.8	287.3	58.55	5.906		
6,900.0	5,812.3	6,941.3	5,911.3	32.5	31.9	106.63	-1,532.8	62.7	345.8	283.9	61.90	5.586		
7,000.0	5,812.3	7,041.3	5,911.3	34.2	33.6	106.64	-1,632.8	62.7	345.8	280.5	65.29	5.297		
7,100.0	5,812.3	7,141.3	5,911.3	35.9	35.4	106.64	-1,732.8	62.7	345.8	277.1	68.71	5.033		
7,200.0	5,812.3	7,241.3	5,911.3	37.6	37.2	106.64	-1,832.8	62.7	345.8	273.6	72.16	4.792		
7,300.0	5,812.3	7,341.3	5,911.3	39.4	39.0	106.64	-1,932.8	62.7	345.8	270.1	75.63	4.572		
7,400.0	5,812.3	7,441.3	5,911.3	41.1	40.8	106.64	-2,032.8	62.7	345.8	266.6	79.12	4.370		
7,500.0	5,812.3	7,541.3	5,911.3	42.9	42.7	106.64	-2,132.8	62.7	345.7	263.1	82.64	4.184		
7,600.0	5,812.3	7,641.3	5,911.3	44.7	44.5	106.64	-2,232.8	62.7	345.7	259.6	86.17	4.012		
7,700.0	5,812.3	7,741.3	5,911.2	46.5	46.3	106.64	-2,332.8	62.7	345.7	256.0	89.71	3.854		
7,800.0	5,812.2	7,841.3	5,911.2	48.3	48.2	106.64	-2,432.8	62.7	345.7	252.4	93.27	3.707		
7,900.0	5,812.2	7,941.3	5,911.2	50.1	50.1	106.64	-2,532.8	62.7	345.7	248.9	96.84	3.570		
8,000.0	5,812.2	8,041.3	5,911.2	52.0	51.9	106.64	-2,632.8	62.7	345.7	245.3	100.41	3.443		
8,100.0	5,812.2	8,141.3	5,911.2	53.8	53.8	106.64	-2,732.8	62.7	345.7	241.7	104.00	3.324		
8,200.0	5,812.2	8,241.3	5,911.2	55.6	55.6	106.64	-2,832.8	62.7	345.7	238.1	107.60	3.213		
8,300.0	5,812.2	8,341.3	5,911.2	57.5	57.5	106.64	-2,932.8	62.7	345.6	234.4	111.20	3.108		
8,400.0	5,812.2	8,441.3	5,911.2	59.3	59.4	106.64	-3,032.8	62.7	345.6	230.8	114.81	3.011		
8,500.0	5,812.2	8,541.3	5,911.2	61.2	61.3	106.64	-3,132.8	62.8	345.6	227.2	118.42	2.919		
8,600.0	5,812.2	8,641.3	5,911.2	63.1	63.2	106.64	-3,232.8	62.8	345.6	223.6	122.04	2.832		
8,700.0	5,812.2	8,741.3	5,911.2	64.9	65.0	106.65	-3,332.8	62.8	345.6	219.9	125.67	2.750		
8,800.0	5,812.2	8,841.3	5,911.2	66.8	66.9	106.65	-3,432.8	62.8	345.6	216.3	129.30	2.673		
8,900.0	5,812.2	8,941.3	5,911.2	68.7	68.8	106.65	-3,532.8	62.8	345.6	212.6	132.94	2.600		
9,000.0	5,812.2	9,041.3	5,911.2	70.5	70.7	106.65	-3,632.8	62.8	345.6	209.0	136.57	2.530		
9,100.0	5,812.2	9,141.3	5,911.2	72.4	72.6	106.65	-3,732.8	62.8	345.6	205.3	140.22	2.464		
9,200.0	5,812.2	9,241.3	5,911.2	74.3	74.5	106.65	-3,832.8	62.8	345.5	201.7	143.86	2.402		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1													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)				
9,300.0	5,812.2	9,341.3	5,911.2	76.2	76.4	106.65	-3,932.8	62.8	345.5	198.0	147.51	2.342		
9,400.0	5,812.2	9,441.3	5,911.2	78.0	78.3	106.65	-4,032.8	62.8	345.5	194.4	151.16	2.286		
9,500.0	5,812.2	9,541.3	5,911.2	79.9	80.2	106.65	-4,132.8	62.8	345.5	190.7	154.81	2.232		
9,600.0	5,812.2	9,641.3	5,911.2	81.8	82.1	106.65	-4,232.8	62.8	345.5	187.0	158.47	2.180		
9,700.0	5,812.2	9,741.3	5,911.2	83.7	84.0	106.65	-4,332.8	62.8	345.5	183.3	162.13	2.131		
9,800.0	5,812.2	9,841.3	5,911.2	85.6	85.9	106.65	-4,432.8	62.8	345.5	179.7	165.79	2.084		
9,900.0	5,812.2	9,941.3	5,911.2	87.5	87.8	106.65	-4,532.8	62.8	345.5	176.0	169.45	2.039		
10,000.0	5,812.2	10,041.3	5,911.2	89.4	89.7	106.65	-4,632.8	62.8	345.4	172.3	173.12	1.995		
10,100.0	5,812.1	10,141.3	5,911.1	91.2	91.6	106.65	-4,732.8	62.8	345.4	168.6	176.78	1.954		
10,200.0	5,812.1	10,241.3	5,911.1	93.1	93.5	106.65	-4,832.8	62.9	345.4	165.0	180.45	1.914		
10,300.0	5,812.1	10,341.3	5,911.1	95.0	95.4	106.66	-4,932.8	62.9	345.4	161.3	184.12	1.876		
10,400.0	5,812.1	10,441.3	5,911.1	96.9	97.3	106.66	-5,032.8	62.9	345.4	157.6	187.79	1.839		
10,500.0	5,812.1	10,541.3	5,911.1	98.8	99.2	106.66	-5,132.8	62.9	345.4	153.9	191.46	1.804		
10,600.0	5,812.1	10,641.3	5,911.1	100.7	101.1	106.66	-5,232.8	62.9	345.4	150.2	195.14	1.770		
10,700.0	5,812.1	10,741.3	5,911.1	102.6	103.0	106.66	-5,332.8	62.9	345.4	146.5	198.81	1.737		
10,800.0	5,812.1	10,841.3	5,911.1	104.5	104.9	106.66	-5,432.8	62.9	345.3	142.9	202.49	1.706		
10,900.0	5,812.1	10,941.3	5,911.1	106.4	106.8	106.66	-5,532.8	62.9	345.3	139.2	206.16	1.675		
11,000.0	5,812.1	11,041.3	5,911.1	108.3	108.7	106.66	-5,632.8	62.9	345.3	135.5	209.84	1.646		
11,100.0	5,812.1	11,141.3	5,911.1	110.2	110.6	106.66	-5,732.8	62.9	345.3	131.8	213.52	1.617		
11,200.0	5,812.1	11,241.3	5,911.1	112.1	112.5	106.66	-5,832.8	62.9	345.3	128.1	217.20	1.590		
11,300.0	5,812.1	11,341.3	5,911.1	114.0	114.4	106.66	-5,932.8	62.9	345.3	124.4	220.88	1.563		
11,400.0	5,812.1	11,441.3	5,911.1	115.9	116.4	106.66	-6,032.8	62.9	345.3	120.7	224.56	1.538		
11,500.0	5,812.1	11,541.3	5,911.1	117.8	118.3	106.66	-6,132.8	62.9	345.3	117.0	228.24	1.513		
11,600.0	5,812.1	11,641.3	5,911.1	119.7	120.2	106.66	-6,232.8	62.9	345.3	113.3	231.93	1.489 Level 3		
11,700.0	5,812.1	11,741.3	5,911.1	121.7	122.1	106.66	-6,332.8	62.9	345.2	109.6	235.61	1.465 Level 3		
11,800.0	5,812.1	11,841.3	5,911.1	123.6	124.0	106.66	-6,432.8	62.9	345.2	105.9	239.29	1.443 Level 3		
11,900.0	5,812.1	11,941.3	5,911.1	125.5	125.9	106.66	-6,532.8	63.0	345.2	102.2	242.98	1.421 Level 3		
12,000.0	5,812.1	12,041.3	5,911.1	127.4	127.8	106.67	-6,632.8	63.0	345.2	98.5	246.66	1.399 Level 3		
12,100.0	5,812.1	12,141.3	5,911.1	129.3	129.7	106.67	-6,732.8	63.0	345.2	94.8	250.35	1.379 Level 3		
12,200.0	5,812.1	12,241.3	5,911.1	131.2	131.7	106.67	-6,832.8	63.0	345.2	91.1	254.04	1.359 Level 3		
12,300.0	5,812.1	12,341.3	5,911.1	133.1	133.6	106.67	-6,932.8	63.0	345.2	87.4	257.72	1.339 Level 3		
12,400.0	5,812.0	12,441.3	5,911.0	135.0	135.5	106.67	-7,032.8	63.0	345.2	83.7	261.41	1.320 Level 3		
12,500.0	5,812.0	12,541.3	5,911.0	136.9	137.4	106.67	-7,132.8	63.0	345.1	80.0	265.10	1.302 Level 3		
12,600.0	5,812.0	12,641.3	5,911.0	138.8	139.3	106.67	-7,232.8	63.0	345.1	76.3	268.79	1.284 Level 3		
12,700.0	5,812.0	12,741.3	5,911.0	140.7	141.2	106.67	-7,332.8	63.0	345.1	72.6	272.48	1.267 Level 3		
12,800.0	5,812.0	12,841.3	5,911.0	142.6	143.1	106.67	-7,432.8	63.0	345.1	68.9	276.17	1.250 Level 2		
12,900.0	5,812.0	12,941.3	5,911.0	144.5	145.0	106.67	-7,532.8	63.0	345.1	65.2	279.86	1.233 Level 2		
13,000.0	5,812.0	13,041.3	5,911.0	146.5	147.0	106.67	-7,632.8	63.0	345.1	61.5	283.55	1.217 Level 2		
13,100.0	5,812.0	13,141.3	5,911.0	148.4	148.9	106.67	-7,732.8	63.0	345.1	57.8	287.24	1.201 Level 2		
13,200.0	5,812.0	13,241.3	5,911.0	150.3	150.6	106.67	-7,832.8	63.0	345.1	54.3	290.78	1.187 Level 2		
13,250.2	5,812.0	13,291.5	5,911.0	151.1	151.4	106.67	-7,883.0	63.0	345.1	52.8	292.29	1.181 Level 2, SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	33.0	33.0	32.9	0.18	183.550		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	33.0	33.0	32.4	0.63	52.488		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	33.0	33.0	32.0	1.08	30.622		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	33.0	33.0	31.5	1.53	21.617		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	33.0	33.0	31.1	1.98	16.704		
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	33.0	33.0	30.6	2.43	13.611		
700.0	700.0	700.0	700.0	1.4	1.4	90.01	0.0	33.0	33.0	30.2	2.88	11.485		
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	33.0	33.0	29.7	3.33	9.933		
900.0	900.0	900.0	900.0	1.9	1.9	90.01	0.0	33.0	33.0	29.3	3.78	8.750 CC, ES		
1,000.0	1,000.0	999.4	999.4	2.1	2.1	92.52	-1.5	33.9	34.0	29.8	4.20	8.089		
1,100.0	1,100.0	1,098.6	1,098.5	2.3	2.3	-63.14	-5.9	36.6	36.2	31.7	4.57	7.925		
1,200.0	1,199.8	1,198.6	1,198.2	2.5	2.5	-61.81	-11.9	40.1	38.1	33.2	4.94	7.720		
1,300.0	1,299.6	1,298.6	1,297.9	2.7	2.7	-62.85	-17.9	43.7	39.2	33.9	5.33	7.357		
1,400.0	1,399.4	1,398.6	1,397.7	2.9	2.9	-63.84	-23.9	47.2	40.3	34.6	5.74	7.021		
1,500.0	1,499.1	1,498.5	1,497.4	3.1	3.1	-64.78	-29.9	50.8	41.4	35.3	6.17	6.714		
1,600.0	1,598.9	1,598.5	1,597.2	3.3	3.3	-65.67	-35.9	54.3	42.6	35.9	6.61	6.436		
1,700.0	1,698.6	1,698.5	1,696.9	3.5	3.6	-66.51	-41.9	57.9	43.7	36.6	7.07	6.184		
1,800.0	1,798.4	1,798.5	1,796.7	3.8	3.8	-67.31	-47.9	61.5	44.8	37.3	7.53	5.956		
1,900.0	1,898.1	1,898.5	1,896.4	4.0	4.1	-68.07	-53.9	65.0	46.0	38.0	8.00	5.750		
2,000.0	1,997.9	1,998.5	1,996.2	4.2	4.3	-68.79	-59.9	68.6	47.1	38.7	8.47	5.563		
2,100.0	2,097.6	2,098.5	2,095.9	4.5	4.5	-69.48	-65.9	72.1	48.3	39.3	8.96	5.393		
2,200.0	2,197.4	2,198.5	2,195.7	4.7	4.8	-70.13	-71.9	75.7	49.5	40.0	9.44	5.239		
2,300.0	2,297.2	2,298.5	2,295.4	5.0	5.0	-70.75	-77.9	79.2	50.7	40.7	9.94	5.098		
2,400.0	2,396.9	2,398.5	2,395.2	5.2	5.3	-71.35	-83.9	82.8	51.8	41.4	10.43	4.969		
2,500.0	2,496.7	2,498.5	2,494.9	5.5	5.6	-71.92	-89.9	86.4	53.0	42.1	10.93	4.852		
2,600.0	2,596.4	2,598.5	2,594.6	5.7	5.8	-72.46	-95.9	89.9	54.2	42.8	11.43	4.743		
2,700.0	2,696.2	2,698.5	2,694.4	6.0	6.1	-72.99	-101.9	93.5	55.4	43.5	11.93	4.643		
2,800.0	2,795.9	2,798.4	2,794.1	6.2	6.3	-73.48	-107.9	97.0	56.6	44.2	12.44	4.551		
2,900.0	2,895.7	2,898.4	2,893.9	6.5	6.6	-73.96	-113.9	100.6	57.8	44.9	12.95	4.466		
3,000.0	2,995.5	2,998.4	2,993.6	6.7	6.8	-74.42	-119.9	104.2	59.0	45.6	13.46	4.386		
3,100.0	3,095.2	3,098.4	3,093.4	7.0	7.1	-74.86	-125.9	107.7	60.2	46.3	13.97	4.313		
3,200.0	3,195.0	3,198.4	3,193.1	7.3	7.3	-75.28	-131.9	111.3	61.5	47.0	14.48	4.244		
3,300.0	3,294.7	3,298.4	3,292.9	7.5	7.6	-75.69	-137.9	114.8	62.7	47.7	15.00	4.180		
3,400.0	3,394.5	3,398.4	3,392.6	7.8	7.9	-76.08	-143.9	118.4	63.9	48.4	15.51	4.120		
3,500.0	3,494.2	3,498.4	3,492.4	8.0	8.1	-76.46	-149.9	121.9	65.1	49.1	16.03	4.064		
3,600.0	3,594.0	3,598.4	3,592.1	8.3	8.4	-76.82	-155.9	125.5	66.4	49.8	16.54	4.011		
3,700.0	3,693.8	3,698.4	3,691.9	8.5	8.6	-77.17	-161.9	129.1	67.6	50.5	17.06	3.961		
3,800.0	3,793.5	3,798.4	3,791.6	8.8	8.9	-77.50	-167.9	132.6	68.8	51.2	17.58	3.915		
3,900.0	3,893.3	3,898.4	3,891.4	9.1	9.2	-77.83	-173.9	136.2	70.1	52.0	18.10	3.871		
4,000.0	3,993.0	3,998.3	3,991.1	9.3	9.4	-78.14	-179.9	139.7	71.3	52.7	18.62	3.829		
4,100.0	4,092.8	4,098.3	4,090.9	9.6	9.7	-78.45	-185.9	143.3	72.5	53.4	19.14	3.790		
4,200.0	4,192.5	4,198.3	4,190.6	9.8	9.9	-78.74	-191.9	146.8	73.8	54.1	19.66	3.752		
4,300.0	4,292.3	4,298.3	4,290.4	10.1	10.2	-79.02	-197.9	150.4	75.0	54.8	20.19	3.717		
4,400.0	4,392.1	4,398.3	4,390.1	10.4	10.5	-79.29	-203.9	154.0	76.3	55.6	20.71	3.683		
4,500.0	4,491.8	4,498.3	4,489.9	10.6	10.7	-79.56	-209.9	157.5	77.5	56.3	21.23	3.652		
4,600.0	4,591.6	4,598.3	4,589.6	10.9	11.0	-79.81	-215.9	161.1	78.8	57.0	21.75	3.621		
4,700.0	4,691.3	4,698.3	4,689.4	11.2	11.3	-80.06	-221.9	164.6	80.0	57.7	22.28	3.592		
4,800.0	4,791.1	4,798.3	4,789.1	11.4	11.5	-80.30	-227.9	168.2	81.3	58.5	22.80	3.565		
4,900.0	4,890.8	4,898.3	4,888.9	11.7	11.8	-80.54	-233.9	171.8	82.5	59.2	23.32	3.538		
5,000.0	4,990.6	4,998.3	4,988.6	11.9	12.0	-80.76	-239.9	175.3	83.8	59.9	23.85	3.513		
5,100.0	5,090.3	5,098.3	5,088.4	12.2	12.3	-80.98	-245.9	178.9	85.0	60.7	24.37	3.489		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1													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		
5,200.0	5,190.1	5,198.2	5,188.1	12.5	12.6	-81.20	-251.9	182.4	86.3	61.4	24.90	3.466		
5,300.0	5,289.9	5,298.2	5,287.8	12.7	12.8	-81.40	-257.9	186.0	87.6	62.1	25.42	3.444		
5,338.0	5,327.8	5,336.2	5,325.8	12.8	12.9	-81.48	-260.2	187.3	88.0	62.4	25.62	3.436		
5,350.0	5,339.7	5,348.2	5,337.7	12.9	13.0	-81.58	-260.9	187.8	88.2	62.5	25.69	3.432		
5,400.0	5,389.2	5,398.1	5,387.4	13.0	13.1	-83.93	-263.9	189.5	88.3	62.3	26.02	3.396		
5,411.4	5,400.4	5,409.3	5,398.7	13.1	13.1	-84.89	-264.6	189.9	88.4	62.2	26.11	3.384		
5,450.0	5,437.8	5,447.0	5,436.3	13.2	13.2	-89.16	-266.9	191.3	88.5	62.1	26.41	3.352		
5,500.0	5,485.0	5,494.8	5,483.6	13.5	13.4	-95.06	-272.4	194.6	90.2	63.4	26.81	3.363		
5,550.0	5,530.5	5,543.5	5,531.0	13.8	13.6	-100.63	-281.9	200.2	93.7	66.5	27.19	3.445		
5,600.0	5,573.7	5,593.0	5,577.9	14.1	13.8	-105.62	-295.3	208.2	99.0	71.5	27.54	3.594		
5,650.0	5,614.4	5,643.3	5,623.9	14.5	14.1	-109.87	-312.9	218.6	105.8	78.0	27.85	3.801		
5,700.0	5,652.1	5,694.6	5,668.5	14.9	14.5	-113.33	-334.6	231.5	114.0	85.9	28.14	4.052		
5,750.0	5,686.4	5,746.8	5,711.2	15.4	14.9	-116.01	-360.5	246.8	123.2	94.7	28.45	4.330		
5,800.0	5,717.2	5,800.0	5,751.3	16.0	15.3	-117.98	-390.5	264.6	133.2	104.4	28.84	4.619		
5,850.0	5,744.0	5,854.1	5,788.3	16.5	15.9	-119.31	-424.5	284.8	143.8	114.4	29.36	4.898		
5,900.0	5,766.6	5,909.3	5,821.5	17.2	16.5	-120.09	-462.3	307.2	154.8	124.7	30.04	5.152		
5,950.0	5,784.9	5,965.5	5,850.4	17.9	17.2	-120.40	-503.8	331.8	166.0	135.0	30.93	5.366		
6,000.0	5,798.6	6,022.7	5,874.3	18.6	18.0	-120.30	-548.4	358.3	177.2	145.2	32.04	5.531		
6,050.0	5,807.6	6,080.9	5,892.7	19.4	18.9	-119.85	-595.9	386.4	188.4	155.0	33.36	5.645		
6,100.0	5,811.9	6,140.1	5,904.9	20.1	19.8	-119.10	-645.6	415.9	199.3	164.4	34.90	5.709		
6,119.8	5,812.3	6,163.7	5,907.9	20.5	20.2	-118.73	-665.8	427.9	203.5	167.9	35.57	5.722		
6,200.0	5,812.3	6,256.3	5,910.8	21.7	21.7	-117.25	-745.5	474.8	218.9	180.7	38.29	5.718		
6,300.0	5,812.3	6,366.0	5,910.8	23.1	23.4	-114.97	-842.5	526.1	237.4	195.7	41.66	5.699		
6,400.0	5,812.3	6,477.1	5,910.8	24.6	25.1	-113.07	-943.5	572.3	255.7	210.7	44.93	5.690		
6,500.0	5,812.3	6,589.7	5,910.8	26.1	26.9	-111.46	-1,048.5	613.1	273.6	225.5	48.13	5.684		
6,600.0	5,812.3	6,703.8	5,910.8	27.7	28.8	-110.10	-1,157.0	648.0	291.1	239.8	51.24	5.681		
6,700.0	5,812.3	6,819.3	5,910.8	29.2	30.7	-108.93	-1,268.9	676.7	307.9	253.7	54.22	5.679		
6,786.6	5,812.3	6,920.5	5,910.8	30.6	32.3	-108.06	-1,368.2	696.3	322.0	265.3	56.69	5.680		
6,800.0	5,812.3	6,936.2	5,910.8	30.8	32.6	-107.91	-1,383.7	698.8	324.1	266.9	57.21	5.665		
6,900.0	5,812.3	7,055.0	5,910.8	32.5	34.5	-107.11	-1,501.5	714.1	336.3	275.3	61.08	5.507		
7,000.0	5,812.3	7,175.3	5,910.8	34.2	36.4	-106.72	-1,621.5	722.0	342.7	277.8	64.86	5.284		
7,100.0	5,812.3	7,286.6	5,910.8	35.9	38.2	-106.67	-1,732.8	723.1	343.6	275.2	68.38	5.025		
7,200.0	5,812.3	7,386.6	5,910.8	37.6	39.8	-106.67	-1,832.8	723.1	343.6	271.9	71.74	4.790		
7,300.0	5,812.3	7,486.6	5,910.8	39.4	41.4	-106.67	-1,932.8	723.1	343.6	268.5	75.13	4.574		
7,400.0	5,812.3	7,586.6	5,910.8	41.1	43.1	-106.67	-2,032.8	723.1	343.6	265.1	78.55	4.375		
7,500.0	5,812.3	7,686.6	5,910.8	42.9	44.7	-106.67	-2,132.8	723.1	343.6	261.6	82.00	4.191		
7,600.0	5,812.3	7,786.6	5,910.9	44.7	46.4	-106.67	-2,232.8	723.1	343.6	258.2	85.46	4.021		
7,700.0	5,812.3	7,886.6	5,910.9	46.5	48.1	-106.67	-2,332.8	723.1	343.7	254.7	88.95	3.863		
7,800.0	5,812.2	7,986.6	5,910.9	48.3	49.9	-106.67	-2,432.8	723.2	343.7	251.2	92.45	3.717		
7,900.0	5,812.2	8,086.6	5,910.9	50.1	51.6	-106.68	-2,532.8	723.2	343.7	247.7	95.97	3.581		
8,000.0	5,812.2	8,186.6	5,910.9	52.0	53.4	-106.68	-2,632.8	723.2	343.7	244.2	99.51	3.454		
8,100.0	5,812.2	8,286.6	5,910.9	53.8	55.1	-106.68	-2,732.8	723.2	343.7	240.7	103.05	3.335		
8,200.0	5,812.2	8,386.6	5,910.9	55.6	56.9	-106.68	-2,832.8	723.2	343.7	237.1	106.61	3.224		
8,300.0	5,812.2	8,486.6	5,910.9	57.5	58.7	-106.68	-2,932.8	723.2	343.7	233.6	110.17	3.120		
8,400.0	5,812.2	8,586.6	5,910.9	59.3	60.5	-106.68	-3,032.8	723.2	343.7	230.0	113.75	3.022		
8,500.0	5,812.2	8,686.6	5,910.9	61.2	62.3	-106.68	-3,132.8	723.2	343.7	226.4	117.33	2.930		
8,600.0	5,812.2	8,786.6	5,910.9	63.1	64.1	-106.68	-3,232.8	723.2	343.8	222.8	120.92	2.843		
8,700.0	5,812.2	8,886.6	5,910.9	64.9	65.9	-106.68	-3,332.8	723.2	343.8	219.3	124.51	2.761		
8,800.0	5,812.2	8,986.6	5,910.9	66.8	67.7	-106.68	-3,432.8	723.2	343.8	215.7	128.12	2.683		
8,900.0	5,812.2	9,086.6	5,910.9	68.7	69.6	-106.68	-3,532.8	723.2	343.8	212.1	131.73	2.610		
9,000.0	5,812.2	9,186.6	5,910.9	70.5	71.4	-106.68	-3,632.8	723.2	343.8	208.5	135.34	2.540		
9,100.0	5,812.2	9,286.6	5,910.9	72.4	73.2	-106.68	-3,732.8	723.2	343.8	204.9	138.96	2.474		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1											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
9,200.0	5,812.2	9,386.6	5,910.9	74.3	75.1	-106.68	-3,832.8	723.2	343.8	201.3	142.58	2.411	
9,300.0	5,812.2	9,486.6	5,910.9	76.2	76.9	-106.68	-3,932.8	723.2	343.8	197.6	146.21	2.352	
9,400.0	5,812.2	9,586.6	5,910.9	78.0	78.7	-106.68	-4,032.8	723.2	343.9	194.0	149.84	2.295	
9,500.0	5,812.2	9,686.6	5,910.9	79.9	80.6	-106.69	-4,132.8	723.2	343.9	190.4	153.47	2.241	
9,600.0	5,812.2	9,786.6	5,910.9	81.8	82.5	-106.69	-4,232.8	723.2	343.9	186.8	157.11	2.189	
9,700.0	5,812.2	9,886.6	5,910.9	83.7	84.3	-106.69	-4,332.8	723.2	343.9	183.1	160.75	2.139	
9,800.0	5,812.2	9,986.6	5,910.9	85.6	86.2	-106.69	-4,432.8	723.2	343.9	179.5	164.39	2.092	
9,900.0	5,812.2	10,086.6	5,910.9	87.5	88.0	-106.69	-4,532.8	723.2	343.9	175.9	168.04	2.047	
10,000.0	5,812.2	10,186.6	5,910.9	89.4	89.9	-106.69	-4,632.8	723.2	343.9	172.2	171.69	2.003	
10,100.0	5,812.1	10,286.6	5,910.9	91.2	91.8	-106.69	-4,732.8	723.2	343.9	168.6	175.34	1.962	
10,200.0	5,812.1	10,386.6	5,910.9	93.1	93.6	-106.69	-4,832.8	723.2	344.0	165.0	178.99	1.922	
10,300.0	5,812.1	10,486.6	5,910.9	95.0	95.5	-106.69	-4,932.8	723.2	344.0	161.3	182.65	1.883	
10,400.0	5,812.1	10,586.6	5,910.9	96.9	97.4	-106.69	-5,032.8	723.3	344.0	157.7	186.31	1.846	
10,500.0	5,812.1	10,686.6	5,910.9	98.8	99.3	-106.69	-5,132.8	723.3	344.0	154.0	189.96	1.811	
10,600.0	5,812.1	10,786.6	5,910.9	100.7	101.1	-106.69	-5,232.8	723.3	344.0	150.4	193.62	1.777	
10,700.0	5,812.1	10,886.6	5,910.9	102.6	103.0	-106.69	-5,332.8	723.3	344.0	146.7	197.29	1.744	
10,800.0	5,812.1	10,986.6	5,910.9	104.5	104.9	-106.69	-5,432.8	723.3	344.0	143.1	200.95	1.712	
10,900.0	5,812.1	11,086.6	5,910.9	106.4	106.8	-106.69	-5,532.8	723.3	344.0	139.4	204.62	1.681	
11,000.0	5,812.1	11,186.6	5,910.9	108.3	108.7	-106.70	-5,632.8	723.3	344.0	135.8	208.28	1.652	
11,100.0	5,812.1	11,286.6	5,911.0	110.2	110.5	-106.70	-5,732.8	723.3	344.1	132.1	211.95	1.623	
11,200.0	5,812.1	11,386.6	5,911.0	112.1	112.4	-106.70	-5,832.8	723.3	344.1	128.5	215.62	1.596	
11,300.0	5,812.1	11,486.6	5,911.0	114.0	114.3	-106.70	-5,932.8	723.3	344.1	124.8	219.29	1.569	
11,400.0	5,812.1	11,586.6	5,911.0	115.9	116.2	-106.70	-6,032.8	723.3	344.1	121.1	222.96	1.543	
11,500.0	5,812.1	11,686.6	5,911.0	117.8	118.1	-106.70	-6,132.8	723.3	344.1	117.5	226.63	1.518	
11,600.0	5,812.1	11,786.6	5,911.0	119.7	120.0	-106.70	-6,232.8	723.3	344.1	113.8	230.31	1.494 Level 3	
11,700.0	5,812.1	11,886.6	5,911.0	121.7	121.9	-106.70	-6,332.8	723.3	344.1	110.2	233.98	1.471 Level 3	
11,800.0	5,812.1	11,986.6	5,911.0	123.6	123.8	-106.70	-6,432.8	723.3	344.1	106.5	237.66	1.448 Level 3	
11,900.0	5,812.1	12,086.6	5,911.0	125.5	125.7	-106.70	-6,532.8	723.3	344.2	102.8	241.33	1.426 Level 3	
12,000.0	5,812.1	12,186.6	5,911.0	127.4	127.6	-106.70	-6,632.8	723.3	344.2	99.2	245.01	1.405 Level 3	
12,100.0	5,812.1	12,286.6	5,911.0	129.3	129.5	-106.70	-6,732.8	723.3	344.2	95.5	248.69	1.384 Level 3	
12,200.0	5,812.1	12,386.6	5,911.0	131.2	131.3	-106.70	-6,832.8	723.3	344.2	91.8	252.37	1.364 Level 3	
12,300.0	5,812.1	12,486.6	5,911.0	133.1	133.2	-106.70	-6,932.8	723.3	344.2	88.2	256.04	1.344 Level 3	
12,400.0	5,812.0	12,586.6	5,911.0	135.0	135.1	-106.70	-7,032.8	723.3	344.2	84.5	259.72	1.325 Level 3	
12,500.0	5,812.0	12,686.6	5,911.0	136.9	137.0	-106.71	-7,132.8	723.3	344.2	80.8	263.40	1.307 Level 3	
12,600.0	5,812.0	12,786.6	5,911.0	138.8	138.9	-106.71	-7,232.8	723.3	344.2	77.2	267.09	1.289 Level 3	
12,700.0	5,812.0	12,886.6	5,911.0	140.7	140.8	-106.71	-7,332.8	723.3	344.3	73.5	270.77	1.271 Level 3	
12,800.0	5,812.0	12,986.6	5,911.0	142.6	142.7	-106.71	-7,432.8	723.3	344.3	69.8	274.45	1.254 Level 3	
12,900.0	5,812.0	13,086.6	5,911.0	144.5	144.6	-106.71	-7,532.8	723.3	344.3	66.1	278.13	1.238 Level 2	
13,000.0	5,812.0	13,186.6	5,911.0	146.5	146.5	-106.71	-7,632.8	723.3	344.3	62.5	281.82	1.222 Level 2	
13,100.0	5,812.0	13,286.6	5,911.0	148.4	148.4	-106.71	-7,732.8	723.4	344.3	58.8	285.50	1.206 Level 2	
13,200.0	5,812.0	13,386.6	5,911.0	150.3	150.3	-106.71	-7,832.8	723.4	344.3	55.1	289.18	1.191 Level 2	
13,226.5	5,812.0	13,413.1	5,911.0	150.7	150.8	-106.71	-7,859.2	723.4	344.3	54.3	290.00	1.187 Level 2	
13,250.2	5,812.0	13,435.8	5,911.0	151.1	151.2	-106.71	-7,881.9	723.4	344.3	53.6	290.72	1.184 Level 2, SF	

Cathedral Energy Services

Anticollision Report

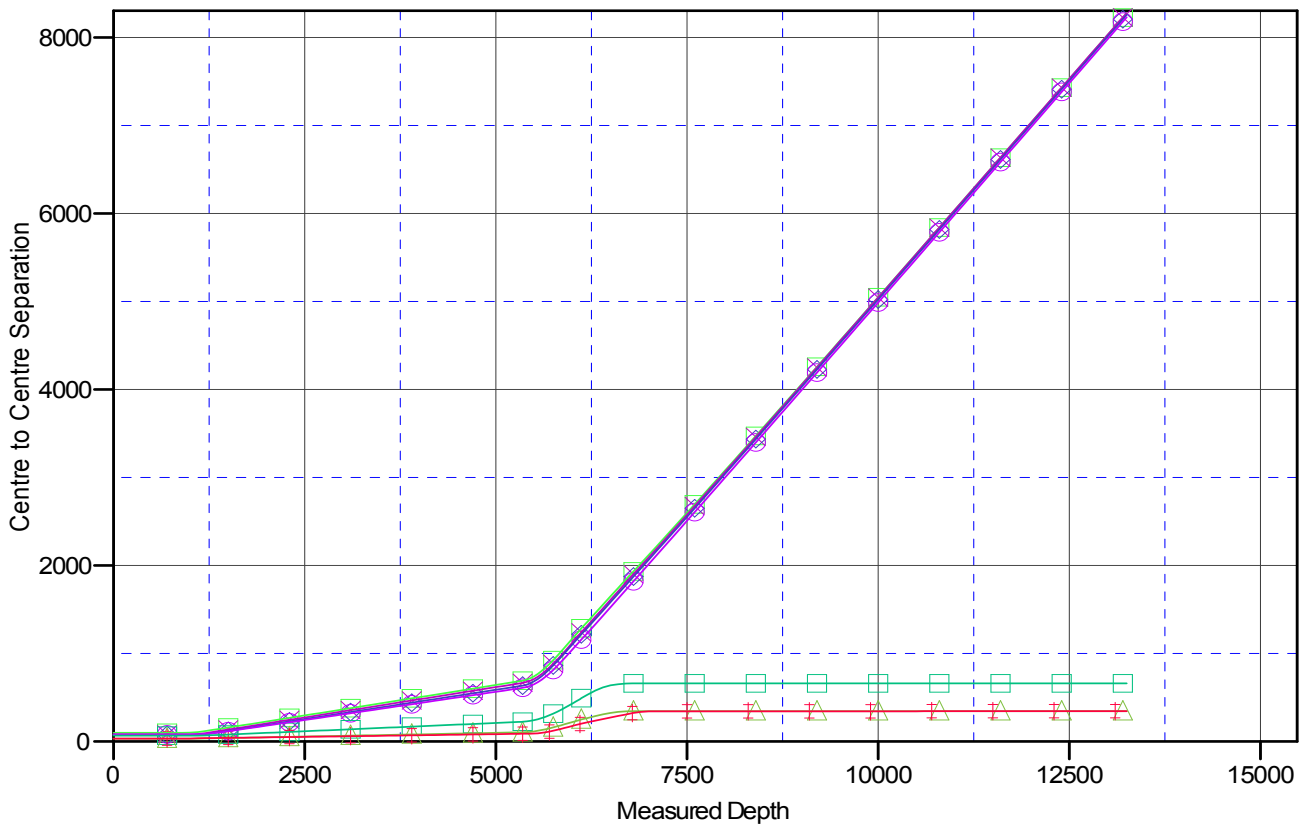
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S12-T10N-R58W
Site Error: 0.0ft
Reference Well: Razor Federal #12G-1311A
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Razor Federal #12G-1311A
TVD Reference: WELL @ 4970.3ft (Original Well Elev)
MD Reference: WELL @ 4970.3ft (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 @ 4970.3ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor Federal #12G- 1311A
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.09°

Ladder Plot



LEGEND

- Razor #12G-0109A, HZ, Plan #1 V0
- ✕ Razor #12G-0110B, HZ, Plan #1 V0
- ◆ Razor #12G-0111A, HZ, Plan #1 V0
- Razor #12G-0112B, HZ, Plan #1 V0
- Razor Federal #12G-1309A, HZ, Plan #1 V0
- ▲ Razor Federal #12G-1310B, HZ, Plan #1 V0
- ✕ Razor Federal #12G-1312B, HZ, Plan #1 V0

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		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 Federal #12G-1311A					
Well Position	+N/-S	0.0 ft	Northing:	1,558,226.49 ft	Latitude:	40.853494
	+E/-W	0.0 ft	Easting:	3,467,059.83 ft	Longitude:	-103.811636
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,953.5 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	8/5/2013	8.09	67.49	53,237

Design	Plan #1			
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	177.14

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	4.00	160.00	1,199.8	-6.6	2.4	2.00	2.00	0.00	160.00	
5,338.0	4.00	160.00	5,327.8	-277.8	101.1	0.00	0.00	0.00	0.00	
6,119.8	90.00	160.00	5,812.3	-766.1	278.8	11.00	11.00	0.00	0.00	
6,786.6	90.00	180.00	5,812.3	-1,419.4	394.0	3.00	0.00	3.00	89.99	
13,250.2	90.00	180.00	5,812.0	-7,883.0	393.6	0.00	0.00	0.00	0.00	Razor #12G-1311A PI

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1000' MD
1,100.0	2.00	160.00	1,100.0	-1.6	0.6	1.7	2.00	2.00	
1,200.0	4.00	160.00	1,199.8	-6.6	2.4	6.7	2.00	2.00	EOB; 4 Deg Inc
1,300.0	4.00	160.00	1,299.6	-13.1	4.8	13.3	0.00	0.00	
1,400.0	4.00	160.00	1,399.4	-19.7	7.2	20.0	0.00	0.00	
1,500.0	4.00	160.00	1,499.1	-26.2	9.5	26.7	0.00	0.00	
1,600.0	4.00	160.00	1,598.9	-32.8	11.9	33.3	0.00	0.00	
1,700.0	4.00	160.00	1,698.6	-39.3	14.3	40.0	0.00	0.00	
1,800.0	4.00	160.00	1,798.4	-45.9	16.7	46.7	0.00	0.00	
1,900.0	4.00	160.00	1,898.1	-52.4	19.1	53.3	0.00	0.00	
2,000.0	4.00	160.00	1,997.9	-59.0	21.5	60.0	0.00	0.00	
2,100.0	4.00	160.00	2,097.6	-65.6	23.9	66.7	0.00	0.00	
2,200.0	4.00	160.00	2,197.4	-72.1	26.2	73.3	0.00	0.00	
2,300.0	4.00	160.00	2,297.2	-78.7	28.6	80.0	0.00	0.00	
2,400.0	4.00	160.00	2,396.9	-85.2	31.0	86.7	0.00	0.00	
2,500.0	4.00	160.00	2,496.7	-91.8	33.4	93.3	0.00	0.00	
2,600.0	4.00	160.00	2,596.4	-98.3	35.8	100.0	0.00	0.00	
2,700.0	4.00	160.00	2,696.2	-104.9	38.2	106.7	0.00	0.00	
2,800.0	4.00	160.00	2,795.9	-111.4	40.6	113.3	0.00	0.00	
2,900.0	4.00	160.00	2,895.7	-118.0	42.9	120.0	0.00	0.00	
3,000.0	4.00	160.00	2,995.5	-124.5	45.3	126.7	0.00	0.00	
3,100.0	4.00	160.00	3,095.2	-131.1	47.7	133.3	0.00	0.00	
3,200.0	4.00	160.00	3,195.0	-137.7	50.1	140.0	0.00	0.00	
3,300.0	4.00	160.00	3,294.7	-144.2	52.5	146.6	0.00	0.00	
3,400.0	4.00	160.00	3,394.5	-150.8	54.9	153.3	0.00	0.00	
3,500.0	4.00	160.00	3,494.2	-157.3	57.3	160.0	0.00	0.00	
3,600.0	4.00	160.00	3,594.0	-163.9	59.6	166.6	0.00	0.00	
3,700.0	4.00	160.00	3,693.7	-170.4	62.0	173.3	0.00	0.00	
3,800.0	4.00	160.00	3,793.5	-177.0	64.4	180.0	0.00	0.00	
3,900.0	4.00	160.00	3,893.3	-183.5	66.8	186.6	0.00	0.00	
4,000.0	4.00	160.00	3,993.0	-190.1	69.2	193.3	0.00	0.00	
4,100.0	4.00	160.00	4,092.8	-196.7	71.6	200.0	0.00	0.00	
4,200.0	4.00	160.00	4,192.5	-203.2	74.0	206.6	0.00	0.00	
4,300.0	4.00	160.00	4,292.3	-209.8	76.3	213.3	0.00	0.00	
4,400.0	4.00	160.00	4,392.0	-216.3	78.7	220.0	0.00	0.00	
4,500.0	4.00	160.00	4,491.8	-222.9	81.1	226.6	0.00	0.00	
4,600.0	4.00	160.00	4,591.6	-229.4	83.5	233.3	0.00	0.00	
4,700.0	4.00	160.00	4,691.3	-236.0	85.9	240.0	0.00	0.00	
4,800.0	4.00	160.00	4,791.1	-242.5	88.3	246.6	0.00	0.00	
4,900.0	4.00	160.00	4,890.8	-249.1	90.7	253.3	0.00	0.00	
5,000.0	4.00	160.00	4,990.6	-255.6	93.0	260.0	0.00	0.00	
5,100.0	4.00	160.00	5,090.3	-262.2	95.4	266.6	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	160.00	5,190.1	-268.8	97.8	273.3	0.00	0.00	
5,300.0	4.00	160.00	5,289.9	-275.3	100.2	280.0	0.00	0.00	
5,338.0	4.00	160.00	5,327.8	-277.8	101.1	282.5	0.00	0.00	Start 11 Deg Build
5,350.0	5.32	160.00	5,339.7	-278.7	101.4	283.4	11.00	11.00	
5,400.0	10.82	160.00	5,389.2	-285.3	103.8	290.1	11.00	11.00	
5,450.0	16.32	160.00	5,437.8	-296.3	107.9	301.3	11.00	11.00	
5,500.0	21.82	160.00	5,485.0	-311.7	113.4	316.9	11.00	11.00	
5,550.0	27.32	160.00	5,530.5	-331.2	120.5	336.8	11.00	11.00	
5,600.0	32.82	160.00	5,573.7	-354.7	129.1	360.7	11.00	11.00	
5,650.0	38.32	160.00	5,614.4	-382.1	139.1	388.5	11.00	11.00	
5,700.0	43.82	160.00	5,652.1	-412.9	150.3	419.9	11.00	11.00	
5,750.0	49.32	160.00	5,686.4	-447.0	162.7	454.6	11.00	11.00	
5,800.0	54.82	160.00	5,717.2	-484.1	176.2	492.2	11.00	11.00	
5,850.0	60.32	160.00	5,744.0	-523.7	190.6	532.6	11.00	11.00	
5,875.4	63.12	160.00	5,756.0	-544.7	198.3	554.0	11.00	11.00	Top Niobrara
5,900.0	65.82	160.00	5,766.6	-565.6	205.9	575.1	11.00	11.00	
5,950.0	71.32	160.00	5,784.9	-609.3	221.8	619.6	11.00	11.00	
6,000.0	76.82	160.00	5,798.6	-654.5	238.2	665.5	11.00	11.00	
6,050.0	82.32	160.00	5,807.6	-700.6	255.0	712.5	11.00	11.00	
6,100.0	87.82	160.00	5,811.9	-747.4	272.0	760.1	11.00	11.00	
6,119.8	90.00	160.00	5,812.3	-766.1	278.8	779.0	11.00	11.00	LP @ 6,119' MD
6,200.0	90.00	162.41	5,812.3	-842.0	304.7	856.1	3.00	0.00	7" (1,813' FEL-1,840' FSL)
6,300.0	90.00	165.41	5,812.3	-938.0	332.4	953.4	3.00	0.00	
6,400.0	90.00	168.41	5,812.3	-1,035.4	355.0	1,051.8	3.00	0.00	
6,500.0	90.00	171.41	5,812.3	-1,133.9	372.6	1,151.0	3.00	0.00	
6,600.0	90.00	174.41	5,812.3	-1,233.1	384.9	1,250.7	3.00	0.00	
6,700.0	90.00	177.41	5,812.3	-1,332.8	392.0	1,350.7	3.00	0.00	
6,786.6	90.00	180.00	5,812.3	-1,419.4	394.0	1,437.3	3.00	0.00	EOT; 180 Deg Azi
6,800.0	90.00	180.00	5,812.3	-1,432.8	394.0	1,450.6	0.00	0.00	
6,900.0	90.00	180.00	5,812.3	-1,532.8	394.0	1,550.5	0.00	0.00	
7,000.0	90.00	180.00	5,812.3	-1,632.8	394.0	1,650.4	0.00	0.00	
7,100.0	90.00	180.00	5,812.3	-1,732.8	394.0	1,750.3	0.00	0.00	
7,200.0	90.00	180.00	5,812.3	-1,832.8	394.0	1,850.1	0.00	0.00	
7,300.0	90.00	180.00	5,812.3	-1,932.8	394.0	1,950.0	0.00	0.00	
7,400.0	90.00	180.00	5,812.3	-2,032.8	394.0	2,049.9	0.00	0.00	
7,500.0	90.00	180.00	5,812.3	-2,132.8	394.0	2,149.8	0.00	0.00	
7,600.0	90.00	180.00	5,812.3	-2,232.8	394.0	2,249.6	0.00	0.00	
7,700.0	90.00	180.00	5,812.3	-2,332.8	393.9	2,349.5	0.00	0.00	
7,800.0	90.00	180.00	5,812.2	-2,432.8	393.9	2,449.4	0.00	0.00	
7,900.0	90.00	180.00	5,812.2	-2,532.8	393.9	2,549.3	0.00	0.00	
8,000.0	90.00	180.00	5,812.2	-2,632.8	393.9	2,649.2	0.00	0.00	
8,100.0	90.00	180.00	5,812.2	-2,732.8	393.9	2,749.0	0.00	0.00	
8,200.0	90.00	180.00	5,812.2	-2,832.8	393.9	2,848.9	0.00	0.00	
8,300.0	90.00	180.00	5,812.2	-2,932.8	393.9	2,948.8	0.00	0.00	
8,400.0	90.00	180.00	5,812.2	-3,032.8	393.9	3,048.7	0.00	0.00	
8,500.0	90.00	180.00	5,812.2	-3,132.8	393.9	3,148.5	0.00	0.00	
8,600.0	90.00	180.00	5,812.2	-3,232.8	393.9	3,248.4	0.00	0.00	
8,700.0	90.00	180.00	5,812.2	-3,332.8	393.9	3,348.3	0.00	0.00	
8,800.0	90.00	180.00	5,812.2	-3,432.8	393.9	3,448.2	0.00	0.00	
8,900.0	90.00	180.00	5,812.2	-3,532.8	393.9	3,548.0	0.00	0.00	
9,000.0	90.00	180.00	5,812.2	-3,632.8	393.9	3,647.9	0.00	0.00	
9,100.0	90.00	180.00	5,812.2	-3,732.8	393.9	3,747.8	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	180.00	5,812.2	-3,832.8	393.8	3,847.7	0.00	0.00	
9,300.0	90.00	180.00	5,812.2	-3,932.8	393.8	3,947.5	0.00	0.00	
9,400.0	90.00	180.00	5,812.2	-4,032.8	393.8	4,047.4	0.00	0.00	
9,500.0	90.00	180.00	5,812.2	-4,132.8	393.8	4,147.3	0.00	0.00	
9,600.0	90.00	180.00	5,812.2	-4,232.8	393.8	4,247.2	0.00	0.00	
9,700.0	90.00	180.00	5,812.2	-4,332.8	393.8	4,347.0	0.00	0.00	
9,800.0	90.00	180.00	5,812.2	-4,432.8	393.8	4,446.9	0.00	0.00	
9,900.0	90.00	180.00	5,812.2	-4,532.8	393.8	4,546.8	0.00	0.00	
10,000.0	90.00	180.00	5,812.2	-4,632.8	393.8	4,646.7	0.00	0.00	
10,100.0	90.00	180.00	5,812.1	-4,732.8	393.8	4,746.5	0.00	0.00	
10,200.0	90.00	180.00	5,812.1	-4,832.8	393.8	4,846.4	0.00	0.00	
10,300.0	90.00	180.00	5,812.1	-4,932.8	393.8	4,946.3	0.00	0.00	
10,400.0	90.00	180.00	5,812.1	-5,032.8	393.8	5,046.2	0.00	0.00	
10,500.0	90.00	180.00	5,812.1	-5,132.8	393.8	5,146.0	0.00	0.00	
10,600.0	90.00	180.00	5,812.1	-5,232.8	393.8	5,245.9	0.00	0.00	
10,700.0	90.00	180.00	5,812.1	-5,332.8	393.7	5,345.8	0.00	0.00	
10,800.0	90.00	180.00	5,812.1	-5,432.8	393.7	5,445.7	0.00	0.00	
10,900.0	90.00	180.00	5,812.1	-5,532.8	393.7	5,545.5	0.00	0.00	
11,000.0	90.00	180.00	5,812.1	-5,632.8	393.7	5,645.4	0.00	0.00	
11,100.0	90.00	180.00	5,812.1	-5,732.8	393.7	5,745.3	0.00	0.00	
11,200.0	90.00	180.00	5,812.1	-5,832.8	393.7	5,845.2	0.00	0.00	
11,300.0	90.00	180.00	5,812.1	-5,932.8	393.7	5,945.0	0.00	0.00	
11,400.0	90.00	180.00	5,812.1	-6,032.8	393.7	6,044.9	0.00	0.00	
11,500.0	90.00	180.00	5,812.1	-6,132.8	393.7	6,144.8	0.00	0.00	
11,600.0	90.00	180.00	5,812.1	-6,232.8	393.7	6,244.7	0.00	0.00	
11,700.0	90.00	180.00	5,812.1	-6,332.8	393.7	6,344.5	0.00	0.00	
11,800.0	90.00	180.00	5,812.1	-6,432.8	393.7	6,444.4	0.00	0.00	
11,900.0	90.00	180.00	5,812.1	-6,532.8	393.7	6,544.3	0.00	0.00	
12,000.0	90.00	180.00	5,812.1	-6,632.8	393.7	6,644.2	0.00	0.00	
12,100.0	90.00	180.00	5,812.1	-6,732.8	393.7	6,744.0	0.00	0.00	
12,200.0	90.00	180.00	5,812.1	-6,832.8	393.6	6,843.9	0.00	0.00	
12,300.0	90.00	180.00	5,812.1	-6,932.8	393.6	6,943.8	0.00	0.00	
12,400.0	90.00	180.00	5,812.0	-7,032.8	393.6	7,043.7	0.00	0.00	
12,500.0	90.00	180.00	5,812.0	-7,132.8	393.6	7,143.5	0.00	0.00	
12,600.0	90.00	180.00	5,812.0	-7,232.8	393.6	7,243.4	0.00	0.00	
12,700.0	90.00	180.00	5,812.0	-7,332.8	393.6	7,343.3	0.00	0.00	
12,800.0	90.00	180.00	5,812.0	-7,432.8	393.6	7,443.2	0.00	0.00	
12,900.0	90.00	180.00	5,812.0	-7,532.8	393.6	7,543.0	0.00	0.00	
13,000.0	90.00	180.00	5,812.0	-7,632.8	393.6	7,642.9	0.00	0.00	
13,100.0	90.00	180.00	5,812.0	-7,732.8	393.6	7,742.8	0.00	0.00	
13,200.0	90.00	180.00	5,812.0	-7,832.8	393.6	7,842.7	0.00	0.00	
13,250.2	90.00	180.00	5,812.0	-7,883.0	393.6	7,892.8	0.00	0.00	PBHL @ 13,250' MD

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1311A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Razor #12G-1311A PBH	0.00	0.00	5,812.0	-7,883.0	393.6	1,550,352.46	3,467,603.42	40.831858	-103.810214
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name		
(ft)	(ft)			
6,200.0	5,812.3	7" (1,813' FEL-1,840' FSL)		
			Casing Diameter	Hole Diameter
			(in)	(in)
			7.000	7.500

Formations				
Measured Depth	Vertical Depth	Name		
(ft)	(ft)			
5,875.4	5,756.0	Top Niobrara		
			Lithology	Dip
				(°)
				Dip Direction
				(°)
				0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		
(ft)	(ft)	+N/-S	+E/-W	Comment
(ft)	(ft)	(ft)	(ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1000' MD
1,200.0	1,199.8	-6.6	2.4	EOB; 4 Deg Inc
5,338.0	5,327.8	-277.8	101.1	Start 11 Deg Bulid
6,119.8	5,812.3	-766.1	278.8	LP @ 6,119' MD
6,786.6	5,812.3	-1,419.4	394.0	EOT; 180 Deg Azi
13,250.2	5,812.0	-7,883.0	393.6	PBHL @ 13,250' MD

Whiting Petroleum Corporation

Weld County, CO

S12-T10N-R58W

Razor Federal #12G-1311A

HZ

Plan #1

Anticollision Report

18 October, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	10/15/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,249.5	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S12-T10N-R58W						
Razor #12G-0109A - HZ - Plan #1	900.0	900.0	99.4	95.6	26.320	CC, ES
Razor #12G-0109A - HZ - Plan #1	1,100.0	1,093.4	107.3	102.7	23.148	SF
Razor #12G-0110B - HZ - Plan #1	1,000.0	1,000.0	81.9	77.6	19.374	CC, ES
Razor #12G-0110B - HZ - Plan #1	1,100.0	1,097.3	85.2	80.6	18.356	SF
Razor #12G-0111A - HZ - Plan #1	1,000.0	1,000.0	74.9	70.7	17.723	CC, ES
Razor #12G-0111A - HZ - Plan #1	1,100.0	1,100.0	76.5	71.9	16.468	SF
Razor #12G-0112B - HZ - Plan #1	1,000.0	1,000.0	81.9	77.6	19.369	CC, ES
Razor #12G-0112B - HZ - Plan #1	1,200.0	1,199.8	87.0	82.0	17.238	SF
Razor Federal #12G-1309A - HZ - Plan #1	1,000.0	1,000.0	66.1	61.9	15.613	CC, ES
Razor Federal #12G-1309A - HZ - Plan #1	13,250.2	13,219.5	660.3	357.1	2.178	SF
Razor Federal #12G-1310B - HZ - Plan #1	1,000.0	1,000.0	33.0	28.8	7.807	CC, ES
Razor Federal #12G-1310B - HZ - Plan #1	13,250.2	13,291.5	345.1	52.8	1.181	Level 2, SF
Razor Federal #12G-1312B - HZ - Plan #1	900.0	900.0	33.0	29.3	8.750	CC, ES
Razor Federal #12G-1312B - HZ - Plan #1	13,250.2	13,435.8	344.3	53.6	1.184	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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-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	-41.09	74.9	-65.3	99.4					
100.0	100.0	100.0	100.0	0.1	0.1	-41.09	74.9	-65.3	99.4	99.2	0.18	552.089		
200.0	200.0	200.0	200.0	0.3	0.3	-41.09	74.9	-65.3	99.4	98.8	0.63	157.874		
300.0	300.0	300.0	300.0	0.5	0.5	-41.09	74.9	-65.3	99.4	98.3	1.08	92.106		
400.0	400.0	400.0	400.0	0.8	0.8	-41.09	74.9	-65.3	99.4	97.9	1.53	65.020		
500.0	500.0	500.0	500.0	1.0	1.0	-41.09	74.9	-65.3	99.4	97.4	1.98	50.244		
600.0	600.0	600.0	600.0	1.2	1.2	-41.09	74.9	-65.3	99.4	97.0	2.43	40.941		
700.0	700.0	700.0	700.0	1.4	1.4	-41.09	74.9	-65.3	99.4	96.5	2.88	34.544		
800.0	800.0	800.0	800.0	1.7	1.7	-41.09	74.9	-65.3	99.4	96.1	3.33	29.876		
900.0	900.0	900.0	900.0	1.9	1.9	-41.09	74.9	-65.3	99.4	95.6	3.78	26.320 CC, ES		
1,000.0	1,000.0	996.9	996.8	2.1	2.1	-40.73	76.5	-65.8	101.0	96.7	4.22	23.929		
1,100.0	1,100.0	1,093.4	1,093.2	2.3	2.3	160.52	81.1	-67.4	107.3	102.7	4.64	23.148 SF		
1,200.0	1,199.8	1,192.4	1,192.0	2.5	2.5	162.47	87.6	-69.6	118.8	113.8	5.04	23.592		
1,300.0	1,299.6	1,291.4	1,290.8	2.7	2.8	164.35	94.2	-71.9	132.1	126.7	5.44	24.283		
1,400.0	1,399.4	1,390.4	1,389.6	2.9	3.0	165.89	100.7	-74.1	145.5	139.7	5.85	24.865		
1,500.0	1,499.1	1,489.5	1,488.3	3.1	3.3	167.16	107.2	-76.3	159.1	152.8	6.27	25.359		
1,600.0	1,598.9	1,588.5	1,587.1	3.3	3.5	168.24	113.8	-78.5	172.6	165.9	6.70	25.782		
1,700.0	1,698.6	1,687.5	1,685.9	3.5	3.7	169.15	120.3	-80.7	186.2	179.1	7.12	26.146		
1,800.0	1,798.4	1,786.5	1,784.7	3.8	4.0	169.95	126.9	-83.0	199.9	192.4	7.55	26.463		
1,900.0	1,898.1	1,885.6	1,883.5	4.0	4.2	170.64	133.4	-85.2	213.6	205.6	7.99	26.741		
2,000.0	1,997.9	1,984.6	1,982.3	4.2	4.5	171.25	139.9	-87.4	227.3	218.9	8.42	26.986		
2,100.0	2,097.6	2,083.6	2,081.1	4.5	4.7	171.78	146.5	-89.6	241.1	232.2	8.86	27.203		
2,200.0	2,197.4	2,182.6	2,179.8	4.7	5.0	172.26	153.0	-91.9	254.8	245.5	9.30	27.396		
2,300.0	2,297.2	2,281.7	2,278.6	5.0	5.2	172.70	159.6	-94.1	268.6	258.9	9.74	27.570		
2,400.0	2,396.9	2,380.7	2,377.4	5.2	5.5	173.09	166.1	-96.3	282.4	272.2	10.19	27.726		
2,500.0	2,496.7	2,479.7	2,476.2	5.5	5.7	173.44	172.7	-98.5	296.2	285.6	10.63	27.867		
2,600.0	2,596.4	2,578.8	2,575.0	5.7	6.0	173.76	179.2	-100.7	310.0	299.0	11.07	27.995		
2,700.0	2,696.2	2,677.8	2,673.8	6.0	6.2	174.05	185.7	-103.0	323.9	312.3	11.52	28.112		
2,800.0	2,795.9	2,776.8	2,772.6	6.2	6.5	174.32	192.3	-105.2	337.7	325.7	11.97	28.220		
2,900.0	2,895.7	2,875.8	2,871.3	6.5	6.7	174.57	198.8	-107.4	351.5	339.1	12.41	28.318		
3,000.0	2,995.5	2,974.9	2,970.1	6.7	7.0	174.80	205.4	-109.6	365.4	352.5	12.86	28.409		
3,100.0	3,095.2	3,073.9	3,068.9	7.0	7.2	175.02	211.9	-111.8	379.2	365.9	13.31	28.492		
3,200.0	3,195.0	3,172.9	3,167.7	7.3	7.5	175.21	218.4	-114.1	393.1	379.3	13.76	28.570		
3,300.0	3,294.7	3,271.9	3,266.5	7.5	7.7	175.40	225.0	-116.3	406.9	392.7	14.21	28.642		
3,400.0	3,394.5	3,371.0	3,365.3	7.8	8.0	175.57	231.5	-118.5	420.8	406.1	14.66	28.709		
3,500.0	3,494.2	3,470.0	3,464.1	8.0	8.2	175.73	238.1	-120.7	434.6	419.5	15.11	28.772		
3,600.0	3,594.0	3,569.0	3,562.8	8.3	8.5	175.88	244.6	-123.0	448.5	433.0	15.56	28.830		
3,700.0	3,693.8	3,668.0	3,661.6	8.5	8.7	176.03	251.1	-125.2	462.4	446.4	16.01	28.885		
3,800.0	3,793.5	3,767.1	3,760.4	8.8	9.0	176.16	257.7	-127.4	476.3	459.8	16.46	28.937		
3,900.0	3,893.3	3,866.1	3,859.2	9.1	9.2	176.29	264.2	-129.6	490.1	473.2	16.91	28.985		
4,000.0	3,993.0	3,965.1	3,958.0	9.3	9.5	176.41	270.8	-131.8	504.0	486.7	17.36	29.031		
4,100.0	4,092.8	4,064.2	4,056.8	9.6	9.7	176.52	277.3	-134.1	517.9	500.1	17.81	29.074		
4,200.0	4,192.5	4,163.2	4,155.6	9.8	10.0	176.63	283.8	-136.3	531.8	513.5	18.27	29.114		
4,300.0	4,292.3	4,262.2	4,254.3	10.1	10.2	176.73	290.4	-138.5	545.7	526.9	18.72	29.153		
4,400.0	4,392.1	4,361.2	4,353.1	10.4	10.5	176.83	296.9	-140.7	559.6	540.4	19.17	29.189		
4,500.0	4,491.8	4,460.3	4,451.9	10.6	10.8	176.92	303.5	-142.9	573.4	553.8	19.62	29.224		
4,600.0	4,591.6	4,559.3	4,550.7	10.9	11.0	177.01	310.0	-145.2	587.3	567.3	20.07	29.257		
4,700.0	4,691.3	4,658.3	4,649.5	11.2	11.3	177.09	316.5	-147.4	601.2	580.7	20.53	29.288		
4,800.0	4,791.1	4,757.3	4,748.3	11.4	11.5	177.17	323.1	-149.6	615.1	594.1	20.98	29.318		
4,900.0	4,890.8	4,856.4	4,847.1	11.7	11.8	177.25	329.6	-151.8	629.0	607.6	21.43	29.346		
5,000.0	4,990.6	4,955.4	4,945.8	11.9	12.0	177.32	336.2	-154.1	642.9	621.0	21.89	29.374		
5,100.0	5,090.3	5,054.4	5,044.6	12.2	12.3	177.39	342.7	-156.3	656.8	634.4	22.34	29.400		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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		
5,200.0	5,190.1	5,153.5	5,143.4	12.5	12.5	177.46	349.3	-158.5	670.7	647.9	22.79	29.424		
5,300.0	5,289.9	5,252.5	5,242.2	12.7	12.8	177.52	355.8	-160.7	684.6	661.3	23.25	29.448		
5,338.0	5,327.8	5,290.1	5,279.7	12.8	12.9	177.54	358.3	-161.6	689.9	666.4	23.42	29.457		
5,350.0	5,339.7	5,302.0	5,291.6	12.9	12.9	177.54	359.1	-161.8	691.7	668.2	23.43	29.516		
5,400.0	5,389.2	5,343.5	5,333.0	13.0	13.0	177.53	361.8	-162.8	702.2	678.8	23.35	30.068		
5,450.0	5,437.8	5,350.0	5,339.5	13.2	13.0	177.45	362.4	-163.0	718.9	696.0	23.00	31.260		
5,500.0	5,485.0	5,382.1	5,371.3	13.5	13.1	177.38	366.1	-164.2	741.2	718.7	22.51	32.923		
5,550.0	5,530.5	5,400.0	5,389.0	13.8	13.2	177.26	369.0	-165.2	769.4	747.6	21.81	35.278		
5,600.0	5,573.7	5,400.0	5,389.0	14.1	13.2	177.01	369.0	-165.2	802.9	782.0	20.89	38.430		
5,650.0	5,614.4	5,426.7	5,415.0	14.5	13.3	176.79	374.4	-167.0	840.0	820.2	19.87	42.281		
5,700.0	5,652.1	5,450.0	5,437.5	14.9	13.4	176.48	380.1	-169.0	881.4	862.7	18.69	47.166		
5,750.0	5,686.4	5,450.0	5,437.5	15.4	13.4	175.80	380.1	-169.0	925.3	907.9	17.35	53.330		
5,800.0	5,717.2	5,450.0	5,437.5	16.0	13.4	174.65	380.1	-169.0	971.7	955.7	15.96	60.885		
5,850.0	5,744.0	5,450.0	5,437.5	16.5	13.4	172.38	380.1	-169.0	1,019.9	1,005.2	14.67	69.519		
5,900.0	5,766.6	5,450.0	5,437.5	17.2	13.4	166.10	380.1	-169.0	1,069.2	1,054.7	14.49	73.782		
5,950.0	5,784.9	5,450.0	5,437.5	17.9	13.4	111.88	380.1	-169.0	1,119.0	1,089.1	29.98	37.330		
6,000.0	5,798.6	5,450.0	5,437.5	18.6	13.4	16.35	380.1	-169.0	1,169.0	1,156.0	12.97	90.159		
6,050.0	5,807.6	5,450.0	5,437.5	19.4	13.4	7.74	380.1	-169.0	1,218.5	1,208.9	9.64	126.450		
6,100.0	5,811.9	5,450.0	5,437.5	20.1	13.4	5.01	380.1	-169.0	1,267.3	1,258.8	8.52	148.791		
6,119.8	5,812.3	5,450.0	5,437.5	20.5	13.4	4.39	380.1	-169.0	1,286.4	1,278.0	8.33	154.443		
6,200.0	5,812.3	5,450.0	5,437.5	21.7	13.4	12.35	380.1	-169.0	1,363.2	1,352.1	11.05	123.328		
6,300.0	5,812.3	5,450.0	5,437.5	23.1	13.4	22.21	380.1	-169.0	1,459.2	1,443.2	16.07	90.813		
6,400.0	5,812.3	5,450.0	5,437.5	24.6	13.4	31.41	380.1	-169.0	1,555.2	1,533.7	21.59	72.045		
6,500.0	5,812.3	5,427.9	5,416.2	26.1	13.3	37.88	374.7	-167.1	1,650.4	1,624.6	25.76	64.063		
6,600.0	5,812.3	5,422.5	5,411.0	27.7	13.3	44.35	373.5	-166.7	1,745.4	1,715.5	29.93	58.317		
6,700.0	5,812.3	5,400.0	5,389.0	29.2	13.2	48.56	369.0	-165.2	1,840.1	1,807.3	32.85	56.023		
6,786.6	5,812.3	5,400.0	5,389.0	30.6	13.2	52.87	369.0	-165.2	1,921.0	1,885.4	35.64	53.908		
6,800.0	5,812.3	5,400.0	5,389.0	30.8	13.2	52.87	369.0	-165.2	1,933.5	1,897.7	35.83	53.966		
6,900.0	5,812.3	5,400.0	5,389.0	32.5	13.2	52.87	369.0	-165.2	2,027.0	1,989.7	37.32	54.320		
7,000.0	5,812.3	5,400.0	5,389.0	34.2	13.2	52.87	369.0	-165.2	2,121.1	2,082.3	38.82	54.635		
7,100.0	5,812.3	5,400.0	5,389.0	35.9	13.2	52.87	369.0	-165.2	2,215.7	2,175.4	40.35	54.918		
7,200.0	5,812.3	5,400.0	5,389.0	37.6	13.2	52.87	369.0	-165.2	2,310.8	2,268.9	41.88	55.172		
7,300.0	5,812.3	5,400.0	5,389.0	39.4	13.2	52.87	369.0	-165.2	2,406.3	2,362.8	43.43	55.403		
7,400.0	5,812.3	5,400.0	5,389.0	41.1	13.2	52.87	369.0	-165.2	2,502.1	2,457.1	44.99	55.612		
7,500.0	5,812.3	5,400.0	5,389.0	42.9	13.2	52.87	369.0	-165.2	2,598.2	2,551.7	46.56	55.804		
7,600.0	5,812.3	5,400.0	5,389.0	44.7	13.2	52.87	369.0	-165.2	2,694.7	2,646.5	48.14	55.980		
7,700.0	5,812.3	5,400.0	5,389.0	46.5	13.2	52.87	369.0	-165.2	2,791.3	2,741.6	49.72	56.142		
7,800.0	5,812.2	5,400.0	5,389.0	48.3	13.2	52.87	369.0	-165.2	2,888.2	2,836.9	51.31	56.292		
7,900.0	5,812.2	5,400.0	5,389.0	50.1	13.2	52.87	369.0	-165.2	2,985.3	2,932.4	52.90	56.431		
8,000.0	5,812.2	5,377.9	5,367.2	52.0	13.1	51.42	365.5	-164.0	3,082.1	3,028.6	53.50	57.607		
8,100.0	5,812.2	5,375.9	5,365.2	53.8	13.1	51.30	365.3	-163.9	3,179.5	3,124.5	54.99	57.818		
8,200.0	5,812.2	5,374.1	5,363.4	55.6	13.1	51.18	365.0	-163.8	3,277.0	3,220.5	56.48	58.017		
8,300.0	5,812.2	5,372.3	5,361.6	57.5	13.1	51.06	364.8	-163.8	3,374.6	3,316.6	57.98	58.204		
8,400.0	5,812.2	5,350.0	5,339.5	59.3	13.0	49.67	362.4	-163.0	3,472.9	3,414.4	58.47	59.393		
8,500.0	5,812.2	5,350.0	5,339.5	61.2	13.0	49.67	362.4	-163.0	3,570.7	3,510.6	60.03	59.478		
8,600.0	5,812.2	5,350.0	5,339.5	63.1	13.0	49.67	362.4	-163.0	3,668.6	3,607.0	61.60	59.559		
8,700.0	5,812.2	5,350.0	5,339.5	64.9	13.0	49.67	362.4	-163.0	3,766.7	3,703.5	63.16	59.635		
8,800.0	5,812.2	5,350.0	5,339.5	66.8	13.0	49.67	362.4	-163.0	3,864.8	3,800.1	64.73	59.707		
8,900.0	5,812.2	5,350.0	5,339.5	68.7	13.0	49.67	362.4	-163.0	3,963.1	3,896.8	66.30	59.776		
9,000.0	5,812.2	5,350.0	5,339.5	70.5	13.0	49.67	362.4	-163.0	4,061.4	3,993.5	67.87	59.841		
9,100.0	5,812.2	5,350.0	5,339.5	72.4	13.0	49.67	362.4	-163.0	4,159.8	4,090.4	69.44	59.902		
9,200.0	5,812.2	5,350.0	5,339.5	74.3	13.0	49.67	362.4	-163.0	4,258.3	4,187.3	71.02	59.961		

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

Cathedral Energy Services

Anticollision Report

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Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	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-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		
9,300.0	5,812.2	5,350.0	5,339.5	76.2	13.0	49.67	362.4	-163.0	4,356.8	4,284.2	72.59	60.017		
9,400.0	5,812.2	5,350.0	5,339.5	78.0	13.0	49.67	362.4	-163.0	4,455.4	4,381.3	74.17	60.071		
9,500.0	5,812.2	5,350.0	5,339.5	79.9	13.0	49.67	362.4	-163.0	4,554.1	4,478.4	75.75	60.122		
9,600.0	5,812.2	5,350.0	5,339.5	81.8	13.0	49.67	362.4	-163.0	4,652.8	4,575.5	77.33	60.171		
9,700.0	5,812.2	5,350.0	5,339.5	83.7	13.0	49.67	362.4	-163.0	4,751.6	4,672.7	78.91	60.218		
9,800.0	5,812.2	5,350.0	5,339.5	85.6	13.0	49.67	362.4	-163.0	4,850.5	4,770.0	80.49	60.263		
9,900.0	5,812.2	5,350.0	5,339.5	87.5	13.0	49.67	362.4	-163.0	4,949.4	4,867.3	82.07	60.307		
10,000.0	5,812.2	5,350.0	5,339.5	89.4	13.0	49.67	362.4	-163.0	5,048.3	4,964.6	83.65	60.348		
10,100.0	5,812.1	5,350.0	5,339.5	91.2	13.0	49.67	362.4	-163.0	5,147.2	5,062.0	85.24	60.388		
10,200.0	5,812.1	5,350.0	5,339.5	93.1	13.0	49.67	362.4	-163.0	5,246.3	5,159.4	86.82	60.426		
10,300.0	5,812.1	5,350.0	5,339.5	95.0	13.0	49.67	362.4	-163.0	5,345.3	5,256.9	88.41	60.463		
10,400.0	5,812.1	5,350.0	5,339.5	96.9	13.0	49.67	362.4	-163.0	5,444.4	5,354.4	89.99	60.499		
10,500.0	5,812.1	5,350.0	5,339.5	98.8	13.0	49.67	362.4	-163.0	5,543.5	5,451.9	91.58	60.533		
10,600.0	5,812.1	5,350.0	5,339.5	100.7	13.0	49.67	362.4	-163.0	5,642.6	5,549.5	93.16	60.567		
10,700.0	5,812.1	5,350.0	5,339.5	102.6	13.0	49.67	362.4	-163.0	5,741.8	5,647.0	94.75	60.599		
10,800.0	5,812.1	5,350.0	5,339.5	104.5	13.0	49.67	362.4	-163.0	5,841.0	5,744.7	96.34	60.630		
10,900.0	5,812.1	5,350.0	5,339.5	106.4	13.0	49.67	362.4	-163.0	5,940.2	5,842.3	97.93	60.660		
11,000.0	5,812.1	5,344.1	5,333.6	108.3	13.0	49.32	361.9	-162.8	6,039.4	5,940.4	99.06	60.965		
11,100.0	5,812.1	5,338.0	5,327.5	110.2	13.0	48.95	361.4	-162.6	6,138.7	6,038.6	100.17	61.281		
11,200.0	5,812.1	5,338.0	5,327.5	112.1	13.0	48.95	361.4	-162.6	6,238.0	6,136.3	101.75	61.308		
11,300.0	5,812.1	5,338.0	5,327.5	114.0	13.0	48.95	361.4	-162.6	6,337.3	6,234.0	103.33	61.333		
11,400.0	5,812.1	5,338.0	5,327.5	115.9	13.0	48.95	361.4	-162.6	6,436.7	6,331.8	104.90	61.358		
11,500.0	5,812.1	5,338.0	5,327.5	117.8	13.0	48.95	361.4	-162.6	6,536.0	6,429.5	106.48	61.382		
11,600.0	5,812.1	5,338.0	5,327.5	119.7	13.0	48.95	361.4	-162.6	6,635.4	6,527.3	108.06	61.406		
11,700.0	5,812.1	5,338.0	5,327.5	121.7	13.0	48.95	361.4	-162.6	6,734.8	6,625.1	109.64	61.429		
11,800.0	5,812.1	5,338.0	5,327.5	123.6	13.0	48.95	361.4	-162.6	6,834.2	6,723.0	111.21	61.451		
11,900.0	5,812.1	5,338.0	5,327.5	125.5	13.0	48.95	361.4	-162.6	6,933.6	6,820.8	112.79	61.472		
12,000.0	5,812.1	5,338.0	5,327.5	127.4	13.0	48.95	361.4	-162.6	7,033.1	6,918.7	114.37	61.493		
12,100.0	5,812.1	5,338.0	5,327.5	129.3	13.0	48.95	361.4	-162.6	7,132.5	7,016.6	115.95	61.513		
12,200.0	5,812.1	5,333.7	5,323.2	131.2	13.0	48.69	361.2	-162.5	7,232.0	7,114.8	117.14	61.736		
12,300.0	5,812.1	5,327.1	5,316.6	133.1	13.0	48.31	360.7	-162.4	7,331.5	7,213.3	118.12	62.066		
12,400.0	5,812.0	5,320.5	5,310.0	135.0	13.0	47.92	360.3	-162.2	7,430.9	7,311.8	119.09	62.397		
12,500.0	5,812.0	5,313.9	5,303.4	136.9	12.9	47.54	359.8	-162.1	7,530.4	7,410.4	120.05	62.728		
12,600.0	5,812.0	5,307.3	5,296.9	138.8	12.9	47.17	359.4	-161.9	7,629.9	7,508.9	120.99	63.060		
12,700.0	5,812.0	5,300.7	5,290.3	140.7	12.9	46.80	359.0	-161.8	7,729.4	7,607.5	121.93	63.392		
12,800.0	5,812.0	5,294.0	5,283.7	142.6	12.9	46.43	358.5	-161.7	7,829.0	7,706.1	122.86	63.725		
12,900.0	5,812.0	5,287.4	5,277.1	144.5	12.9	46.07	358.1	-161.5	7,928.5	7,804.7	123.77	64.058		
13,000.0	5,812.0	5,280.8	5,270.5	146.5	12.9	45.71	357.7	-161.4	8,028.0	7,903.3	124.68	64.391		
13,100.0	5,812.0	5,274.2	5,263.9	148.4	12.8	45.36	357.2	-161.2	8,127.5	8,002.0	125.57	64.725		
13,200.0	5,812.0	5,267.6	5,257.3	150.3	12.8	45.01	356.8	-161.1	8,227.1	8,100.6	126.46	65.059		
13,250.2	5,812.0	5,264.3	5,254.0	151.1	12.8	44.83	356.6	-161.0	8,277.0	8,150.3	126.74	65.309		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - HZ - Plan #1													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	-23.80	74.9	-33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	-23.80	74.9	-33.0	81.9	81.7	0.18	454.763		
200.0	200.0	200.0	200.0	0.3	0.3	-23.80	74.9	-33.0	81.9	81.2	0.63	130.043		
300.0	300.0	300.0	300.0	0.5	0.5	-23.80	74.9	-33.0	81.9	80.8	1.08	75.869		
400.0	400.0	400.0	400.0	0.8	0.8	-23.80	74.9	-33.0	81.9	80.3	1.53	53.558		
500.0	500.0	500.0	500.0	1.0	1.0	-23.80	74.9	-33.0	81.9	79.9	1.98	41.387		
600.0	600.0	600.0	600.0	1.2	1.2	-23.80	74.9	-33.0	81.9	79.4	2.43	33.723		
700.0	700.0	700.0	700.0	1.4	1.4	-23.80	74.9	-33.0	81.9	79.0	2.88	28.454		
800.0	800.0	800.0	800.0	1.7	1.7	-23.80	74.9	-33.0	81.9	78.5	3.33	24.609		
900.0	900.0	900.0	900.0	1.9	1.9	-23.80	74.9	-33.0	81.9	78.1	3.78	21.680		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-23.80	74.9	-33.0	81.9	77.6	4.23	19.374 CC, ES		
1,100.0	1,100.0	1,097.3	1,097.2	2.3	2.3	176.64	76.6	-33.2	85.2	80.6	4.64	18.356 SF		
1,200.0	1,199.8	1,193.9	1,193.7	2.5	2.5	177.77	81.4	-33.5	95.3	90.2	5.04	18.900		
1,300.0	1,299.6	1,292.7	1,292.3	2.7	2.8	179.03	88.3	-34.1	108.9	103.4	5.45	19.978		
1,400.0	1,399.4	1,391.8	1,391.1	2.9	3.0	-179.98	95.2	-34.6	122.5	116.6	5.86	20.901		
1,500.0	1,499.1	1,490.8	1,489.9	3.1	3.2	-179.19	102.1	-35.1	136.2	129.9	6.28	21.687		
1,600.0	1,598.9	1,589.8	1,588.7	3.3	3.5	-178.55	109.0	-35.7	149.9	143.2	6.70	22.361		
1,700.0	1,698.6	1,688.9	1,687.5	3.5	3.7	-178.01	115.9	-36.2	163.6	156.5	7.13	22.943		
1,800.0	1,798.4	1,787.9	1,786.3	3.8	4.0	-177.56	122.8	-36.7	177.3	169.8	7.56	23.450		
1,900.0	1,898.1	1,887.0	1,885.1	4.0	4.2	-177.17	129.6	-37.3	191.0	183.1	8.00	23.895		
2,000.0	1,997.9	1,986.0	1,983.9	4.2	4.4	-176.84	136.5	-37.8	204.8	196.4	8.43	24.289		
2,100.0	2,097.6	2,085.1	2,082.7	4.5	4.7	-176.54	143.4	-38.3	218.5	209.7	8.87	24.638		
2,200.0	2,197.4	2,184.1	2,181.5	4.7	4.9	-176.29	150.3	-38.8	232.3	223.0	9.31	24.950		
2,300.0	2,297.2	2,283.2	2,280.4	5.0	5.2	-176.06	157.2	-39.4	246.0	236.3	9.75	25.230		
2,400.0	2,396.9	2,382.2	2,379.2	5.2	5.4	-175.85	164.1	-39.9	259.8	249.6	10.19	25.483		
2,500.0	2,496.7	2,481.2	2,478.0	5.5	5.7	-175.67	171.0	-40.4	273.6	262.9	10.64	25.713		
2,600.0	2,596.4	2,580.3	2,576.8	5.7	5.9	-175.50	177.9	-41.0	287.3	276.2	11.08	25.922		
2,700.0	2,696.2	2,679.3	2,675.6	6.0	6.2	-175.35	184.8	-41.5	301.1	289.6	11.53	26.112		
2,800.0	2,795.9	2,778.4	2,774.4	6.2	6.4	-175.21	191.6	-42.0	314.9	302.9	11.98	26.287		
2,900.0	2,895.7	2,877.4	2,873.2	6.5	6.7	-175.08	198.5	-42.6	328.6	316.2	12.43	26.448		
3,000.0	2,895.5	2,876.5	2,872.0	6.7	6.9	-174.96	205.4	-43.1	342.4	329.5	12.87	26.597		
3,100.0	3,095.2	3,075.5	3,070.8	7.0	7.2	-174.86	212.3	-43.6	356.2	342.9	13.32	26.734		
3,200.0	3,195.0	3,174.6	3,169.6	7.3	7.4	-174.76	219.2	-44.1	370.0	356.2	13.77	26.862		
3,300.0	3,294.7	3,273.6	3,268.4	7.5	7.7	-174.66	226.1	-44.7	383.7	369.5	14.22	26.980		
3,400.0	3,394.5	3,372.6	3,367.2	7.8	7.9	-174.58	233.0	-45.2	397.5	382.8	14.67	27.091		
3,500.0	3,494.2	3,471.7	3,466.0	8.0	8.2	-174.50	239.9	-45.7	411.3	396.2	15.12	27.195		
3,600.0	3,594.0	3,570.7	3,564.8	8.3	8.4	-174.42	246.7	-46.3	425.1	409.5	15.58	27.291		
3,700.0	3,693.8	3,669.8	3,663.6	8.5	8.7	-174.35	253.6	-46.8	438.8	422.8	16.03	27.382		
3,800.0	3,793.5	3,768.8	3,762.4	8.8	8.9	-174.29	260.5	-47.3	452.6	436.2	16.48	27.468		
3,900.0	3,893.3	3,867.9	3,861.2	9.1	9.2	-174.22	267.4	-47.9	466.4	449.5	16.93	27.548		
4,000.0	3,993.0	3,966.9	3,960.0	9.3	9.4	-174.17	274.3	-48.4	480.2	462.8	17.38	27.624		
4,100.0	4,092.8	4,066.0	4,058.8	9.6	9.7	-174.11	281.2	-48.9	494.0	476.1	17.84	27.696		
4,200.0	4,192.5	4,165.0	4,157.6	9.8	9.9	-174.06	288.1	-49.4	507.8	489.5	18.29	27.764		
4,300.0	4,292.3	4,264.1	4,256.4	10.1	10.2	-174.01	295.0	-50.0	521.5	502.8	18.74	27.828		
4,400.0	4,392.1	4,363.1	4,355.2	10.4	10.4	-173.96	301.9	-50.5	535.3	516.1	19.19	27.889		
4,500.0	4,491.8	4,462.1	4,454.0	10.6	10.7	-173.92	308.7	-51.0	549.1	529.5	19.65	27.947		
4,600.0	4,591.6	4,561.2	4,552.8	10.9	10.9	-173.87	315.6	-51.6	562.9	542.8	20.10	28.002		
4,700.0	4,691.3	4,660.2	4,651.6	11.2	11.2	-173.83	322.5	-52.1	576.7	556.1	20.55	28.055		
4,800.0	4,791.1	4,759.3	4,750.4	11.4	11.4	-173.79	329.4	-52.6	590.5	569.4	21.01	28.105		
4,900.0	4,890.8	4,858.3	4,849.2	11.7	11.7	-173.76	336.3	-53.2	604.2	582.8	21.46	28.153		
5,000.0	4,990.6	4,957.4	4,948.1	11.9	12.0	-173.72	343.2	-53.7	618.0	596.1	21.92	28.198		
5,100.0	5,090.3	5,056.4	5,046.9	12.2	12.2	-173.69	350.1	-54.2	631.8	609.4	22.37	28.242		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - 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		
5,200.0	5,190.1	5,155.5	5,145.7	12.5	12.5	-173.66	357.0	-54.7	645.6	622.8	22.83	28.284		
5,300.0	5,289.9	5,254.5	5,244.5	12.7	12.7	-173.63	363.9	-55.3	659.4	636.1	23.28	28.324		
5,338.0	5,327.8	5,292.1	5,282.0	12.8	12.8	-173.61	366.5	-55.5	664.6	641.2	23.45	28.339		
5,350.0	5,339.7	5,304.0	5,293.8	12.9	12.8	-173.59	367.3	-55.5	666.4	642.9	23.47	28.397		
5,400.0	5,389.2	5,352.9	5,342.6	13.0	13.0	-173.48	370.7	-55.8	676.8	653.4	23.41	28.913		
5,450.0	5,437.8	5,400.6	5,390.2	13.2	13.1	-173.35	374.0	-56.1	691.7	668.6	23.15	29.884		
5,500.0	5,485.0	5,441.1	5,430.6	13.5	13.2	-173.17	376.9	-56.3	711.2	688.5	22.68	31.360		
5,550.0	5,530.5	5,450.0	5,439.5	13.8	13.2	-172.81	377.6	-56.3	736.2	714.2	21.96	33.519		
5,600.0	5,573.7	5,475.8	5,465.1	14.1	13.3	-172.37	380.7	-56.6	766.2	745.1	21.12	36.286		
5,650.0	5,614.4	5,500.0	5,488.9	14.5	13.4	-171.77	384.7	-56.9	801.3	781.2	20.12	39.834		
5,700.0	5,652.1	5,500.0	5,488.9	14.9	13.4	-170.74	384.7	-56.9	840.1	821.1	18.96	44.310		
5,750.0	5,686.4	5,500.0	5,488.9	15.4	13.4	-169.18	384.7	-56.9	882.6	864.8	17.77	49.674		
5,800.0	5,717.2	5,520.5	5,509.0	16.0	13.4	-167.19	389.0	-57.2	927.4	910.7	16.67	55.637		
5,850.0	5,744.0	5,526.5	5,514.8	16.5	13.5	-163.46	390.4	-57.3	974.4	958.4	15.99	60.950		
5,900.0	5,766.6	5,530.4	5,518.7	17.2	13.5	-155.94	391.3	-57.4	1,023.0	1,006.1	16.83	60.792		
5,950.0	5,784.9	5,532.6	5,520.8	17.9	13.5	-135.59	391.9	-57.4	1,072.4	1,049.3	23.10	46.427		
6,000.0	5,798.6	5,550.0	5,537.5	18.6	13.6	-85.82	396.5	-57.8	1,122.6	1,090.6	32.05	35.031		
6,050.0	5,807.6	5,532.2	5,520.4	19.4	13.5	-30.99	391.8	-57.4	1,172.0	1,153.3	18.67	62.781		
6,100.0	5,811.9	5,529.8	5,518.1	20.1	13.5	-17.81	391.2	-57.4	1,221.2	1,208.2	12.99	94.015		
6,119.8	5,812.3	5,528.5	5,516.8	20.5	13.5	-15.11	390.9	-57.4	1,240.5	1,228.6	11.87	104.527		
6,200.0	5,812.3	5,523.1	5,511.5	21.7	13.5	-5.18	389.6	-57.3	1,318.4	1,309.3	9.05	145.752		
6,300.0	5,812.3	5,500.0	5,488.9	23.1	13.4	7.64	384.7	-56.9	1,416.2	1,406.2	10.03	141.166		
6,400.0	5,812.3	5,500.0	5,488.9	24.6	13.4	20.06	384.7	-56.9	1,513.6	1,497.9	15.76	96.069		
6,500.0	5,812.3	5,500.0	5,488.9	26.1	13.4	31.44	384.7	-56.9	1,610.9	1,588.4	22.53	71.507		
6,600.0	5,812.3	5,500.0	5,488.9	27.7	13.4	41.08	384.7	-56.9	1,707.9	1,679.4	28.49	59.945		
6,700.0	5,812.3	5,500.0	5,488.9	29.2	13.4	48.90	384.7	-56.9	1,804.4	1,771.1	33.29	54.202		
6,786.6	5,812.3	5,500.0	5,488.9	30.6	13.4	54.35	384.7	-56.9	1,887.5	1,850.9	36.60	51.574		
6,800.0	5,812.3	5,500.0	5,488.9	30.8	13.4	54.35	384.7	-56.9	1,900.3	1,863.5	36.79	51.647		
6,900.0	5,812.3	5,500.0	5,488.9	32.5	13.4	54.35	384.7	-56.9	1,996.2	1,957.9	38.30	52.113		
7,000.0	5,812.3	5,500.0	5,488.9	34.2	13.4	54.35	384.7	-56.9	2,092.4	2,052.6	39.83	52.527		
7,100.0	5,812.3	5,500.0	5,488.9	35.9	13.4	54.35	384.7	-56.9	2,189.0	2,147.6	41.38	52.898		
7,200.0	5,812.3	5,500.0	5,488.9	37.6	13.4	54.35	384.7	-56.9	2,285.9	2,242.9	42.94	53.232		
7,300.0	5,812.3	5,477.1	5,466.3	39.4	13.3	52.48	380.9	-56.6	2,382.4	2,338.9	43.48	54.796		
7,400.0	5,812.3	5,474.5	5,463.8	41.1	13.3	52.28	380.5	-56.6	2,479.6	2,434.7	44.91	55.210		
7,500.0	5,812.3	5,472.1	5,461.5	42.9	13.3	52.09	380.2	-56.5	2,577.0	2,530.7	46.36	55.591		
7,600.0	5,812.3	5,450.0	5,439.5	44.7	13.2	50.38	377.6	-56.3	2,675.1	2,628.2	46.84	57.107		
7,700.0	5,812.3	5,450.0	5,439.5	46.5	13.2	50.38	377.6	-56.3	2,772.7	2,724.4	48.38	57.307		
7,800.0	5,812.2	5,450.0	5,439.5	48.3	13.2	50.38	377.6	-56.3	2,870.6	2,820.6	49.93	57.492		
7,900.0	5,812.2	5,450.0	5,439.5	50.1	13.2	50.38	377.6	-56.3	2,968.5	2,917.1	51.48	57.662		
8,000.0	5,812.2	5,450.0	5,439.5	52.0	13.2	50.38	377.6	-56.3	3,066.6	3,013.6	53.04	57.819		
8,100.0	5,812.2	5,450.0	5,439.5	53.8	13.2	50.38	377.6	-56.3	3,164.9	3,110.3	54.60	57.966		
8,200.0	5,812.2	5,450.0	5,439.5	55.6	13.2	50.38	377.6	-56.3	3,263.2	3,207.0	56.16	58.102		
8,300.0	5,812.2	5,450.0	5,439.5	57.5	13.2	50.38	377.6	-56.3	3,361.6	3,303.9	57.73	58.229		
8,400.0	5,812.2	5,450.0	5,439.5	59.3	13.2	50.38	377.6	-56.3	3,460.1	3,400.8	59.30	58.348		
8,500.0	5,812.2	5,450.0	5,439.5	61.2	13.2	50.38	377.6	-56.3	3,558.7	3,497.9	60.87	58.460		
8,600.0	5,812.2	5,450.0	5,439.5	63.1	13.2	50.38	377.6	-56.3	3,657.4	3,595.0	62.45	58.565		
8,700.0	5,812.2	5,450.0	5,439.5	64.9	13.2	50.38	377.6	-56.3	3,756.2	3,692.1	64.03	58.663		
8,800.0	5,812.2	5,450.0	5,439.5	66.8	13.2	50.38	377.6	-56.3	3,855.0	3,789.4	65.61	58.757		
8,900.0	5,812.2	5,450.0	5,439.5	68.7	13.2	50.38	377.6	-56.3	3,953.9	3,886.7	67.19	58.844		
9,000.0	5,812.2	5,450.0	5,439.5	70.5	13.2	50.38	377.6	-56.3	4,052.8	3,984.0	68.78	58.928		
9,100.0	5,812.2	5,450.0	5,439.5	72.4	13.2	50.38	377.6	-56.3	4,151.8	4,081.4	70.36	59.006		
9,200.0	5,812.2	5,450.0	5,439.5	74.3	13.2	50.38	377.6	-56.3	4,250.8	4,178.8	71.95	59.081		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0110B - 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		Total		Separation		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			
9,300.0	5,812.2	5,450.0	5,439.5	76.2	13.2	50.38	377.6	-56.3	4,349.9	4,276.3	73.54	59.152		
9,400.0	5,812.2	5,450.0	5,439.5	78.0	13.2	50.38	377.6	-56.3	4,449.0	4,373.8	75.13	59.220		
9,500.0	5,812.2	5,444.1	5,433.6	79.9	13.2	49.94	377.1	-56.3	4,548.1	4,471.8	76.28	59.622		
9,600.0	5,812.2	5,443.2	5,432.7	81.8	13.2	49.87	377.0	-56.3	4,647.3	4,569.5	77.80	59.731		
9,700.0	5,812.2	5,437.0	5,426.5	83.7	13.2	49.41	376.6	-56.3	4,746.5	4,667.6	78.92	60.146		
9,800.0	5,812.2	5,437.0	5,426.5	85.6	13.2	49.41	376.6	-56.3	4,845.7	4,765.2	80.49	60.201		
9,900.0	5,812.2	5,437.0	5,426.5	87.5	13.2	49.41	376.6	-56.3	4,945.0	4,862.9	82.07	60.254		
10,000.0	5,812.2	5,437.0	5,426.5	89.4	13.2	49.41	376.6	-56.3	5,044.3	4,960.6	83.65	60.304		
10,100.0	5,812.1	5,437.0	5,426.5	91.2	13.2	49.41	376.6	-56.3	5,143.6	5,058.4	85.23	60.352		
10,200.0	5,812.1	5,437.0	5,426.5	93.1	13.2	49.41	376.6	-56.3	5,243.0	5,156.2	86.81	60.398		
10,300.0	5,812.1	5,437.0	5,426.5	95.0	13.2	49.41	376.6	-56.3	5,342.3	5,253.9	88.39	60.443		
10,400.0	5,812.1	5,437.0	5,426.5	96.9	13.2	49.41	376.6	-56.3	5,441.7	5,351.8	89.97	60.486		
10,500.0	5,812.1	5,436.1	5,425.6	98.8	13.2	49.35	376.5	-56.2	5,541.1	5,449.7	91.47	60.579		
10,600.0	5,812.1	5,429.1	5,418.7	100.7	13.2	48.84	376.0	-56.2	5,640.6	5,548.1	92.44	61.017		
10,700.0	5,812.1	5,422.2	5,411.7	102.6	13.1	48.34	375.5	-56.2	5,740.0	5,646.6	93.40	61.455		
10,800.0	5,812.1	5,415.2	5,404.8	104.5	13.1	47.85	375.0	-56.1	5,839.5	5,745.1	94.35	61.893		
10,900.0	5,812.1	5,408.2	5,397.8	106.4	13.1	47.36	374.6	-56.1	5,938.9	5,843.6	95.28	62.332		
11,000.0	5,812.1	5,401.3	5,390.9	108.3	13.1	46.89	374.1	-56.1	6,038.4	5,942.2	96.20	62.771		
11,100.0	5,812.1	5,394.3	5,384.0	110.2	13.1	46.42	373.6	-56.0	6,137.9	6,040.8	97.10	63.209		
11,200.0	5,812.1	5,387.4	5,377.0	112.1	13.1	45.95	373.1	-56.0	6,237.4	6,139.4	98.00	63.648		
11,300.0	5,812.1	5,380.4	5,370.1	114.0	13.0	45.50	372.6	-56.0	6,336.9	6,238.0	98.88	64.087		
11,400.0	5,812.1	5,373.5	5,363.1	115.9	13.0	45.05	372.1	-55.9	6,436.4	6,336.6	99.75	64.525		
11,500.0	5,812.1	5,366.5	5,356.2	117.8	13.0	44.61	371.6	-55.9	6,535.9	6,435.3	100.61	64.964		
11,600.0	5,812.1	5,359.5	5,349.2	119.7	13.0	44.17	371.2	-55.8	6,635.4	6,534.0	101.46	65.402		
11,700.0	5,812.1	5,352.6	5,342.3	121.7	13.0	43.75	370.7	-55.8	6,734.9	6,632.6	102.29	65.840		
11,800.0	5,812.1	5,345.6	5,335.4	123.6	12.9	43.32	370.2	-55.8	6,834.5	6,731.4	103.12	66.277		
11,900.0	5,812.1	5,338.7	5,328.4	125.5	12.9	42.91	369.7	-55.7	6,934.0	6,830.1	103.94	66.714		
12,000.0	5,812.1	5,331.7	5,321.5	127.4	12.9	42.50	369.2	-55.7	7,033.6	6,928.8	104.74	67.151		
12,100.0	5,812.1	5,324.7	5,314.5	129.3	12.9	42.10	368.7	-55.7	7,133.1	7,027.6	105.54	67.587		
12,200.0	5,812.1	5,317.8	5,307.6	131.2	12.9	41.70	368.3	-55.6	7,232.7	7,126.4	106.33	68.022		
12,300.0	5,812.1	5,310.8	5,300.6	133.1	12.9	41.31	367.8	-55.6	7,332.2	7,225.1	107.11	68.457		
12,400.0	5,812.0	5,303.9	5,293.7	135.0	12.8	40.92	367.3	-55.5	7,431.8	7,323.9	107.88	68.891		
12,500.0	5,812.0	5,296.9	5,286.8	136.9	12.8	40.54	366.8	-55.5	7,531.4	7,422.8	108.64	69.324		
12,600.0	5,812.0	5,289.9	5,279.8	138.8	12.8	40.17	366.3	-55.5	7,631.0	7,521.6	109.39	69.757		
12,700.0	5,812.0	5,283.0	5,272.9	140.7	12.8	39.80	365.8	-55.4	7,730.6	7,620.4	110.14	70.188		
12,800.0	5,812.0	5,276.0	5,265.9	142.6	12.8	39.44	365.4	-55.4	7,830.1	7,719.3	110.88	70.618		
12,900.0	5,812.0	5,269.1	5,259.0	144.5	12.7	39.08	364.9	-55.4	7,929.7	7,818.1	111.61	71.048		
13,000.0	5,812.0	5,262.1	5,252.0	146.5	12.7	38.73	364.4	-55.3	8,029.3	7,917.0	112.34	71.476		
13,100.0	5,812.0	5,255.1	5,245.1	148.4	12.7	38.39	363.9	-55.3	8,128.9	8,015.9	113.05	71.903		
13,200.0	5,812.0	5,248.2	5,238.2	150.3	12.7	38.05	363.4	-55.2	8,228.5	8,114.8	113.77	72.329		
13,250.2	5,812.0	5,244.7	5,234.7	151.1	12.7	37.88	363.2	-55.2	8,278.5	8,164.5	113.96	72.643		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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	0.00	74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	74.9	0.0	74.9	74.7	0.18	416.010		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.63	118.961		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.08	69.404		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.53	48.994		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.98	37.860		
600.0	600.0	600.0	600.0	1.2	1.2	0.00	74.9	0.0	74.9	72.5	2.43	30.850		
700.0	700.0	700.0	700.0	1.4	1.4	0.00	74.9	0.0	74.9	72.0	2.88	26.030		
800.0	800.0	800.0	800.0	1.7	1.7	0.00	74.9	0.0	74.9	71.6	3.33	22.512		
900.0	900.0	900.0	900.0	1.9	1.9	0.00	74.9	0.0	74.9	71.1	3.78	19.832		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	74.9	0.0	74.9	70.7	4.23	17.723 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-160.44	74.9	0.0	76.5	71.9	4.65	16.468 SF		
1,200.0	1,199.8	1,197.1	1,197.1	2.5	2.6	-161.31	76.5	0.4	83.1	78.1	5.04	16.486		
1,300.0	1,299.6	1,293.6	1,293.4	2.7	2.8	-161.89	81.3	1.5	94.6	89.2	5.45	17.367		
1,400.0	1,399.4	1,392.5	1,392.1	2.9	3.0	-162.09	88.0	3.0	108.0	102.1	5.87	18.407		
1,500.0	1,499.1	1,491.6	1,490.9	3.1	3.2	-162.25	94.7	4.5	121.3	115.0	6.29	19.301		
1,600.0	1,598.9	1,590.7	1,589.8	3.3	3.5	-162.37	101.5	6.1	134.7	128.0	6.71	20.068		
1,700.0	1,698.6	1,689.8	1,688.7	3.5	3.7	-162.48	108.2	7.6	148.0	140.9	7.14	20.731		
1,800.0	1,798.4	1,788.9	1,787.5	3.8	3.9	-162.56	114.9	9.2	161.4	153.8	7.57	21.308		
1,900.0	1,898.1	1,888.0	1,886.4	4.0	4.2	-162.64	121.7	10.7	174.7	166.7	8.01	21.813		
2,000.0	1,997.9	1,987.1	1,985.3	4.2	4.4	-162.70	128.4	12.2	188.1	179.6	8.45	22.260		
2,100.0	2,097.6	2,086.2	2,084.1	4.5	4.7	-162.75	135.2	13.8	201.4	192.5	8.89	22.657		
2,200.0	2,197.4	2,185.3	2,183.0	4.7	4.9	-162.80	141.9	15.3	214.8	205.4	9.33	23.012		
2,300.0	2,297.2	2,284.4	2,281.9	5.0	5.1	-162.84	148.6	16.9	228.1	218.3	9.78	23.330		
2,400.0	2,396.9	2,383.5	2,380.7	5.2	5.4	-162.88	155.4	18.4	241.5	231.2	10.22	23.618		
2,500.0	2,496.7	2,482.6	2,479.6	5.5	5.6	-162.91	162.1	20.0	254.8	244.1	10.67	23.878		
2,600.0	2,596.4	2,581.7	2,578.4	5.7	5.9	-162.94	168.9	21.5	268.2	257.0	11.12	24.115		
2,700.0	2,696.2	2,680.8	2,677.3	6.0	6.1	-162.97	175.6	23.0	281.5	269.9	11.57	24.332		
2,800.0	2,795.9	2,779.9	2,776.2	6.2	6.4	-162.99	182.3	24.6	294.9	282.8	12.02	24.531		
2,900.0	2,895.7	2,879.0	2,875.0	6.5	6.6	-163.02	189.1	26.1	308.2	295.7	12.47	24.713		
3,000.0	2,895.5	2,878.1	2,873.9	6.7	6.9	-163.04	195.8	27.7	321.6	308.6	12.92	24.882		
3,100.0	3,095.2	3,077.3	3,072.8	7.0	7.1	-163.06	202.5	29.2	334.9	321.5	13.38	25.038		
3,200.0	3,195.0	3,176.4	3,171.6	7.3	7.4	-163.07	209.3	30.8	348.3	334.4	13.83	25.183		
3,300.0	3,294.7	3,275.5	3,270.5	7.5	7.6	-163.09	216.0	32.3	361.6	347.3	14.28	25.318		
3,400.0	3,394.5	3,374.6	3,369.4	7.8	7.9	-163.11	222.8	33.8	375.0	360.2	14.74	25.444		
3,500.0	3,494.2	3,473.7	3,468.2	8.0	8.1	-163.12	229.5	35.4	388.3	373.1	15.19	25.561		
3,600.0	3,594.0	3,572.8	3,567.1	8.3	8.4	-163.13	236.2	36.9	401.7	386.0	15.65	25.671		
3,700.0	3,693.8	3,671.9	3,665.9	8.5	8.6	-163.15	243.0	38.5	415.0	398.9	16.10	25.774		
3,800.0	3,793.5	3,771.0	3,764.8	8.8	8.9	-163.16	249.7	40.0	428.4	411.8	16.56	25.871		
3,900.0	3,893.3	3,870.1	3,863.7	9.1	9.1	-163.17	256.5	41.6	441.7	424.7	17.01	25.963		
4,000.0	3,993.0	3,969.2	3,962.5	9.3	9.4	-163.18	263.2	43.1	455.1	437.6	17.47	26.049		
4,100.0	4,092.8	4,068.3	4,061.4	9.6	9.6	-163.19	269.9	44.6	468.4	450.5	17.93	26.130		
4,200.0	4,192.5	4,167.4	4,160.3	9.8	9.9	-163.20	276.7	46.2	481.8	463.4	18.38	26.208		
4,300.0	4,292.3	4,266.5	4,259.1	10.1	10.1	-163.21	283.4	47.7	495.1	476.3	18.84	26.281		
4,400.0	4,392.1	4,365.6	4,358.0	10.4	10.4	-163.21	290.2	49.3	508.5	489.2	19.30	26.350		
4,500.0	4,491.8	4,464.7	4,456.9	10.6	10.6	-163.22	296.9	50.8	521.8	502.1	19.75	26.416		
4,600.0	4,591.6	4,563.8	4,555.7	10.9	10.9	-163.23	303.6	52.3	535.2	515.0	20.21	26.479		
4,700.0	4,691.3	4,662.9	4,654.6	11.2	11.1	-163.24	310.4	53.9	548.5	527.9	20.67	26.538		
4,800.0	4,791.1	4,762.0	4,753.4	11.4	11.4	-163.24	317.1	55.4	561.9	540.7	21.13	26.595		
4,900.0	4,890.8	4,861.1	4,852.3	11.7	11.6	-163.25	323.8	57.0	575.2	553.6	21.58	26.650		
5,000.0	4,990.6	4,960.2	4,951.2	11.9	11.9	-163.26	330.6	58.5	588.6	566.5	22.04	26.701		
5,100.0	5,090.3	5,059.4	5,050.0	12.2	12.2	-163.26	337.3	60.1	601.9	579.4	22.50	26.751		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - 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		
5,200.0	5,190.1	5,158.5	5,148.9	12.5	12.4	-163.27	344.1	61.6	615.3	592.3	22.96	26.799		
5,300.0	5,289.9	5,257.6	5,247.8	12.7	12.7	-163.27	350.8	63.1	628.6	605.2	23.42	26.844		
5,338.0	5,327.8	5,295.2	5,285.3	12.8	12.8	-163.27	353.4	63.7	633.7	610.1	23.59	26.861		
5,350.0	5,339.7	5,307.1	5,297.2	12.9	12.8	-163.22	354.2	63.9	635.4	611.8	23.61	26.914		
5,400.0	5,389.2	5,346.3	5,336.2	13.0	12.9	-162.96	356.9	64.5	645.6	622.0	23.55	27.409		
5,450.0	5,437.8	5,367.7	5,357.6	13.2	12.9	-162.48	359.1	65.0	661.7	638.4	23.29	28.411		
5,500.0	5,485.0	5,400.0	5,389.4	13.5	13.0	-161.83	364.1	66.2	684.1	661.2	22.89	29.882		
5,550.0	5,530.5	5,400.0	5,389.4	13.8	13.0	-160.67	364.1	66.2	711.5	689.2	22.29	31.917		
5,600.0	5,573.7	5,422.1	5,411.0	14.1	13.1	-159.30	368.5	67.2	743.9	722.3	21.65	34.364		
5,650.0	5,614.4	5,450.0	5,438.0	14.5	13.2	-157.58	375.5	68.8	781.0	760.0	20.98	37.225		
5,700.0	5,652.1	5,450.0	5,438.0	14.9	13.2	-154.59	375.5	68.8	821.0	800.6	20.41	40.234		
5,750.0	5,686.4	5,450.0	5,438.0	15.4	13.2	-150.14	375.5	68.8	864.3	844.1	20.25	42.680		
5,800.0	5,717.2	5,450.0	5,438.0	16.0	13.2	-143.23	375.5	68.8	910.1	889.1	21.03	43.273		
5,850.0	5,744.0	5,470.1	5,457.2	16.5	13.3	-134.42	381.4	70.1	957.0	934.1	22.95	41.704		
5,900.0	5,766.6	5,473.5	5,460.4	17.2	13.3	-117.97	382.4	70.4	1,005.4	978.3	27.06	37.160		
5,950.0	5,784.9	5,475.1	5,462.0	17.9	13.3	-92.70	382.9	70.5	1,054.4	1,023.5	30.87	34.159		
6,000.0	5,798.6	5,475.0	5,461.9	18.6	13.3	-64.87	382.9	70.5	1,103.5	1,074.3	29.19	37.806		
6,050.0	5,807.6	5,473.4	5,460.4	19.4	13.3	-44.60	382.4	70.4	1,152.3	1,128.4	23.89	48.225		
6,100.0	5,811.9	5,470.4	5,457.5	20.1	13.3	-32.26	381.5	70.2	1,200.3	1,181.1	19.25	62.341		
6,119.8	5,812.3	5,468.8	5,456.0	20.5	13.3	-28.83	381.0	70.0	1,219.1	1,201.3	17.85	68.304		
6,200.0	5,812.3	5,450.0	5,438.0	21.7	13.2	-20.93	375.5	68.8	1,295.3	1,280.4	14.93	86.764		
6,300.0	5,812.3	5,450.0	5,438.0	23.1	13.2	-11.46	375.5	68.8	1,391.0	1,379.4	11.59	120.042		
6,400.0	5,812.3	5,450.0	5,438.0	24.6	13.2	-0.49	375.5	68.8	1,487.5	1,477.9	9.60	154.968		
6,500.0	5,812.3	5,450.0	5,438.0	26.1	13.2	11.30	375.5	68.8	1,584.5	1,572.2	12.29	128.950		
6,600.0	5,812.3	5,450.0	5,438.0	27.7	13.2	22.86	375.5	68.8	1,681.5	1,663.1	18.46	91.070		
6,700.0	5,812.3	5,428.6	5,417.4	29.2	13.2	32.03	370.1	67.5	1,777.9	1,753.7	24.26	73.289		
6,786.6	5,812.3	5,423.9	5,412.8	30.6	13.1	39.28	369.0	67.3	1,861.3	1,832.4	28.97	64.260		
6,800.0	5,812.3	5,423.2	5,412.1	30.8	13.1	39.24	368.8	67.3	1,874.2	1,845.1	29.10	64.402		
6,900.0	5,812.3	5,400.0	5,389.4	32.5	13.0	37.79	364.1	66.2	1,970.9	1,941.4	29.46	66.901		
7,000.0	5,812.3	5,400.0	5,389.4	34.2	13.0	37.79	364.1	66.2	2,067.3	2,036.6	30.70	67.340		
7,100.0	5,812.3	5,400.0	5,389.4	35.9	13.0	37.79	364.1	66.2	2,164.0	2,132.1	31.95	67.728		
7,200.0	5,812.3	5,400.0	5,389.4	37.6	13.0	37.79	364.1	66.2	2,261.1	2,227.9	33.22	68.071		
7,300.0	5,812.3	5,400.0	5,389.4	39.4	13.0	37.79	364.1	66.2	2,358.3	2,323.9	34.49	68.377		
7,400.0	5,812.3	5,400.0	5,389.4	41.1	13.0	37.79	364.1	66.2	2,455.8	2,420.1	35.77	68.651		
7,500.0	5,812.3	5,400.0	5,389.4	42.9	13.0	37.79	364.1	66.2	2,553.5	2,516.5	37.06	68.898		
7,600.0	5,812.3	5,400.0	5,389.4	44.7	13.0	37.79	364.1	66.2	2,651.4	2,613.0	38.36	69.122		
7,700.0	5,812.3	5,400.0	5,389.4	46.5	13.0	37.79	364.1	66.2	2,749.4	2,709.8	39.66	69.325		
7,800.0	5,812.2	5,400.0	5,389.4	48.3	13.0	37.79	364.1	66.2	2,847.6	2,806.6	40.97	69.510		
7,900.0	5,812.2	5,400.0	5,389.4	50.1	13.0	37.79	364.1	66.2	2,945.8	2,903.6	42.28	69.679		
8,000.0	5,812.2	5,400.0	5,389.4	52.0	13.0	37.79	364.1	66.2	3,044.2	3,000.6	43.59	69.835		
8,100.0	5,812.2	5,400.0	5,389.4	53.8	13.0	37.79	364.1	66.2	3,142.7	3,097.8	44.91	69.979		
8,200.0	5,812.2	5,377.4	5,367.1	55.6	13.0	36.45	360.4	65.3	3,240.8	3,195.7	45.05	71.943		
8,300.0	5,812.2	5,375.4	5,365.2	57.5	13.0	36.33	360.1	65.3	3,339.3	3,293.1	46.24	72.222		
8,400.0	5,812.2	5,373.5	5,363.3	59.3	13.0	36.22	359.9	65.2	3,438.0	3,390.5	47.43	72.483		
8,500.0	5,812.2	5,371.7	5,361.5	61.2	13.0	36.12	359.6	65.2	3,536.7	3,488.1	48.63	72.728		
8,600.0	5,812.2	5,350.0	5,340.0	63.1	12.9	34.90	357.2	64.6	3,635.9	3,587.2	48.74	74.603		
8,700.0	5,812.2	5,350.0	5,340.0	64.9	12.9	34.90	357.2	64.6	3,734.7	3,684.7	50.01	74.681		
8,800.0	5,812.2	5,350.0	5,340.0	66.8	12.9	34.90	357.2	64.6	3,833.5	3,782.2	51.28	74.754		
8,900.0	5,812.2	5,350.0	5,340.0	68.7	12.9	34.90	357.2	64.6	3,932.4	3,879.8	52.56	74.822		
9,000.0	5,812.2	5,350.0	5,340.0	70.5	12.9	34.90	357.2	64.6	4,031.3	3,977.5	53.83	74.887		
9,100.0	5,812.2	5,350.0	5,340.0	72.4	12.9	34.90	357.2	64.6	4,130.3	4,075.2	55.11	74.947		
9,200.0	5,812.2	5,350.0	5,340.0	74.3	12.9	34.90	357.2	64.6	4,229.4	4,173.0	56.39	75.005		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0111A - HZ - Plan #1													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		
9,300.0	5,812.2	5,350.0	5,340.0	76.2	12.9	34.90	357.2	64.6	4,328.5	4,270.8	57.67	75.059		
9,400.0	5,812.2	5,350.0	5,340.0	78.0	12.9	34.90	357.2	64.6	4,427.6	4,368.7	58.95	75.110		
9,500.0	5,812.2	5,350.0	5,340.0	79.9	12.9	34.90	357.2	64.6	4,526.8	4,466.5	60.23	75.159		
9,600.0	5,812.2	5,350.0	5,340.0	81.8	12.9	34.90	357.2	64.6	4,626.0	4,564.5	61.51	75.205		
9,700.0	5,812.2	5,350.0	5,340.0	83.7	12.9	34.90	357.2	64.6	4,725.2	4,662.4	62.79	75.249		
9,800.0	5,812.2	5,350.0	5,340.0	85.6	12.9	34.90	357.2	64.6	4,824.5	4,760.4	64.08	75.291		
9,900.0	5,812.2	5,350.0	5,340.0	87.5	12.9	34.90	357.2	64.6	4,923.8	4,858.4	65.36	75.330		
10,000.0	5,812.2	5,350.0	5,340.0	89.4	12.9	34.90	357.2	64.6	5,023.1	4,956.5	66.65	75.368		
10,100.0	5,812.1	5,350.0	5,340.0	91.2	12.9	34.90	357.2	64.6	5,122.5	5,054.5	67.93	75.405		
10,200.0	5,812.1	5,350.0	5,340.0	93.1	12.9	34.90	357.2	64.6	5,221.8	5,152.6	69.22	75.439		
10,300.0	5,812.1	5,350.0	5,340.0	95.0	12.9	34.90	357.2	64.6	5,321.2	5,250.7	70.51	75.473		
10,400.0	5,812.1	5,350.0	5,340.0	96.9	12.9	34.90	357.2	64.6	5,420.7	5,348.9	71.79	75.504		
10,500.0	5,812.1	5,350.0	5,340.0	98.8	12.9	34.90	357.2	64.6	5,520.1	5,447.0	73.08	75.535		
10,600.0	5,812.1	5,350.0	5,340.0	100.7	12.9	34.90	357.2	64.6	5,619.6	5,545.2	74.37	75.564		
10,700.0	5,812.1	5,350.0	5,340.0	102.6	12.9	34.90	357.2	64.6	5,719.1	5,643.4	75.66	75.592		
10,800.0	5,812.1	5,350.0	5,340.0	104.5	12.9	34.90	357.2	64.6	5,818.6	5,741.6	76.95	75.619		
10,900.0	5,812.1	5,350.0	5,340.0	106.4	12.9	34.90	357.2	64.6	5,918.1	5,839.8	78.23	75.645		
11,000.0	5,812.1	5,350.0	5,340.0	108.3	12.9	34.90	357.2	64.6	6,017.6	5,938.1	79.52	75.670		
11,100.0	5,812.1	5,344.0	5,334.0	110.2	12.9	34.57	356.7	64.5	6,117.1	6,036.8	80.32	76.158		
11,200.0	5,812.1	5,338.0	5,328.0	112.1	12.9	34.25	356.3	64.4	6,216.7	6,135.6	81.11	76.649		
11,300.0	5,812.1	5,338.0	5,328.0	114.0	12.9	34.25	356.3	64.4	6,316.3	6,233.9	82.38	76.670		
11,400.0	5,812.1	5,338.0	5,328.0	115.9	12.9	34.25	356.3	64.4	6,415.8	6,332.2	83.66	76.690		
11,500.0	5,812.1	5,338.0	5,328.0	117.8	12.9	34.25	356.3	64.4	6,515.4	6,430.5	84.94	76.710		
11,600.0	5,812.1	5,338.0	5,328.0	119.7	12.9	34.25	356.3	64.4	6,615.0	6,528.8	86.21	76.729		
11,700.0	5,812.1	5,338.0	5,328.0	121.7	12.9	34.25	356.3	64.4	6,714.7	6,627.2	87.49	76.747		
11,800.0	5,812.1	5,338.0	5,328.0	123.6	12.9	34.25	356.3	64.4	6,814.3	6,725.5	88.77	76.765		
11,900.0	5,812.1	5,338.0	5,328.0	125.5	12.9	34.25	356.3	64.4	6,913.9	6,823.9	90.05	76.782		
12,000.0	5,812.1	5,338.0	5,328.0	127.4	12.9	34.25	356.3	64.4	7,013.6	6,922.2	91.32	76.798		
12,100.0	5,812.1	5,338.0	5,328.0	129.3	12.9	34.25	356.3	64.4	7,113.2	7,020.6	92.60	76.815		
12,200.0	5,812.1	5,337.2	5,327.2	131.2	12.9	34.20	356.2	64.4	7,212.9	7,119.1	93.80	76.896		
12,300.0	5,812.1	5,330.3	5,320.4	133.1	12.8	33.84	355.8	64.3	7,312.5	7,218.1	94.44	77.432		
12,400.0	5,812.0	5,323.5	5,313.6	135.0	12.8	33.49	355.3	64.2	7,412.2	7,317.1	95.07	77.964		
12,500.0	5,812.0	5,316.7	5,306.8	136.9	12.8	33.14	354.8	64.1	7,511.9	7,416.2	95.70	78.492		
12,600.0	5,812.0	5,309.9	5,300.0	138.8	12.8	32.80	354.4	64.0	7,611.6	7,515.2	96.33	79.016		
12,700.0	5,812.0	5,303.1	5,293.2	140.7	12.8	32.46	353.9	63.9	7,711.3	7,614.3	96.95	79.537		
12,800.0	5,812.0	5,296.3	5,286.4	142.6	12.8	32.14	353.4	63.7	7,810.9	7,713.4	97.57	80.053		
12,900.0	5,812.0	5,289.5	5,279.6	144.5	12.7	31.81	353.0	63.6	7,910.6	7,812.4	98.19	80.565		
13,000.0	5,812.0	5,282.7	5,272.9	146.5	12.7	31.50	352.5	63.5	8,010.3	7,911.5	98.80	81.073		
13,100.0	5,812.0	5,275.9	5,266.1	148.4	12.7	31.19	352.1	63.4	8,110.0	8,010.6	99.41	81.578		
13,200.0	5,812.0	5,269.1	5,259.3	150.3	12.7	30.88	351.6	63.3	8,209.7	8,109.7	100.02	82.078		
13,250.2	5,812.0	5,265.7	5,255.9	151.1	12.7	30.73	351.4	63.3	8,259.7	8,159.5	100.17	82.458		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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	23.81	74.9	33.0	81.9					
100.0	100.0	100.0	100.0	0.1	0.1	23.81	74.9	33.0	81.9	81.7	0.18	454.663		
200.0	200.0	200.0	200.0	0.3	0.3	23.81	74.9	33.0	81.9	81.2	0.63	130.014		
300.0	300.0	300.0	300.0	0.5	0.5	23.81	74.9	33.0	81.9	80.8	1.08	75.852		
400.0	400.0	400.0	400.0	0.8	0.8	23.81	74.9	33.0	81.9	80.3	1.53	53.546		
500.0	500.0	500.0	500.0	1.0	1.0	23.81	74.9	33.0	81.9	79.9	1.98	41.378		
600.0	600.0	600.0	600.0	1.2	1.2	23.81	74.9	33.0	81.9	79.4	2.43	33.716		
700.0	700.0	700.0	700.0	1.4	1.4	23.81	74.9	33.0	81.9	79.0	2.88	28.448		
800.0	800.0	800.0	800.0	1.7	1.7	23.81	74.9	33.0	81.9	78.5	3.33	24.604		
900.0	900.0	900.0	900.0	1.9	1.9	23.81	74.9	33.0	81.9	78.1	3.78	21.675		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	23.81	74.9	33.0	81.9	77.6	4.23	19.369 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-137.01	74.9	33.0	83.1	78.5	4.65	17.884		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-139.30	74.9	33.0	87.0	82.0	5.05	17.238 SF		
1,300.0	1,299.6	1,296.5	1,296.5	2.7	2.8	-141.91	76.4	33.7	94.1	88.6	5.45	17.253		
1,400.0	1,399.4	1,392.6	1,392.4	2.9	3.0	-143.86	80.7	35.8	104.6	98.8	5.87	17.834		
1,500.0	1,499.1	1,491.5	1,491.1	3.1	3.2	-145.32	87.0	38.7	117.2	110.9	6.29	18.623		
1,600.0	1,598.9	1,590.6	1,590.0	3.3	3.4	-146.51	93.2	41.7	129.8	123.1	6.72	19.315		
1,700.0	1,698.6	1,689.8	1,688.9	3.5	3.7	-147.48	99.5	44.6	142.4	135.3	7.15	19.918		
1,800.0	1,798.4	1,789.0	1,787.9	3.8	3.9	-148.30	105.8	47.6	155.1	147.5	7.59	20.446		
1,900.0	1,898.1	1,888.1	1,886.8	4.0	4.1	-148.99	112.0	50.5	167.8	159.8	8.02	20.912		
2,000.0	1,997.9	1,987.3	1,985.7	4.2	4.4	-149.58	118.3	53.4	180.5	172.1	8.47	21.324		
2,100.0	2,097.6	2,086.5	2,084.7	4.5	4.6	-150.10	124.5	56.4	193.3	184.4	8.91	21.692		
2,200.0	2,197.4	2,185.7	2,183.6	4.7	4.9	-150.55	130.8	59.3	206.1	196.7	9.36	22.021		
2,300.0	2,297.2	2,284.8	2,282.5	5.0	5.1	-150.95	137.1	62.3	218.8	209.0	9.81	22.317		
2,400.0	2,396.9	2,384.0	2,381.4	5.2	5.4	-151.30	143.3	65.2	231.6	221.3	10.25	22.585		
2,500.0	2,496.7	2,483.2	2,480.4	5.5	5.6	-151.62	149.6	68.1	244.4	233.7	10.71	22.828		
2,600.0	2,596.4	2,582.3	2,579.3	5.7	5.8	-151.91	155.8	71.1	257.2	246.0	11.16	23.049		
2,700.0	2,696.2	2,681.5	2,678.2	6.0	6.1	-152.17	162.1	74.0	270.0	258.4	11.61	23.252		
2,800.0	2,795.9	2,780.7	2,777.2	6.2	6.3	-152.40	168.4	77.0	282.8	270.7	12.07	23.438		
2,900.0	2,895.7	2,879.9	2,876.1	6.5	6.6	-152.62	174.6	79.9	295.6	283.1	12.52	23.609		
3,000.0	2,895.5	2,879.0	2,875.0	6.7	6.8	-152.82	180.9	82.9	308.4	295.4	12.98	23.767		
3,100.0	3,095.2	3,078.2	3,073.9	7.0	7.1	-153.00	187.2	85.8	321.2	307.8	13.43	23.914		
3,200.0	3,195.0	3,177.4	3,172.9	7.3	7.3	-153.17	193.4	88.7	334.0	320.2	13.89	24.050		
3,300.0	3,294.7	3,276.5	3,271.8	7.5	7.6	-153.32	199.7	91.7	346.9	332.5	14.35	24.176		
3,400.0	3,394.5	3,375.7	3,370.7	7.8	7.8	-153.47	205.9	94.6	359.7	344.9	14.81	24.294		
3,500.0	3,494.2	3,474.9	3,469.7	8.0	8.1	-153.60	212.2	97.6	372.5	357.3	15.26	24.405		
3,600.0	3,594.0	3,574.0	3,568.6	8.3	8.3	-153.73	218.5	100.5	385.3	369.6	15.72	24.508		
3,700.0	3,693.8	3,673.2	3,667.5	8.5	8.6	-153.84	224.7	103.5	398.2	382.0	16.18	24.605		
3,800.0	3,793.5	3,772.4	3,766.4	8.8	8.8	-153.95	231.0	106.4	411.0	394.4	16.64	24.696		
3,900.0	3,893.3	3,871.6	3,865.4	9.1	9.1	-154.06	237.2	109.3	423.8	406.7	17.10	24.782		
4,000.0	3,993.0	3,970.7	3,964.3	9.3	9.3	-154.16	243.5	112.3	436.7	419.1	17.56	24.863		
4,100.0	4,092.8	4,069.9	4,063.2	9.6	9.6	-154.25	249.8	115.2	449.5	431.5	18.02	24.940		
4,200.0	4,192.5	4,169.1	4,162.2	9.8	9.8	-154.33	256.0	118.2	462.3	443.9	18.48	25.012		
4,300.0	4,292.3	4,268.2	4,261.1	10.1	10.1	-154.42	262.3	121.1	475.2	456.2	18.95	25.081		
4,400.0	4,392.1	4,367.4	4,360.0	10.4	10.3	-154.49	268.5	124.0	488.0	468.6	19.41	25.146		
4,500.0	4,491.8	4,466.6	4,458.9	10.6	10.6	-154.57	274.8	127.0	500.9	481.0	19.87	25.208		
4,600.0	4,591.6	4,565.8	4,557.9	10.9	10.8	-154.64	281.1	129.9	513.7	493.4	20.33	25.267		
4,700.0	4,691.3	4,664.9	4,656.8	11.2	11.1	-154.70	287.3	132.9	526.5	505.8	20.79	25.323		
4,800.0	4,791.1	4,764.1	4,755.7	11.4	11.4	-154.77	293.6	135.8	539.4	518.1	21.25	25.377		
4,900.0	4,890.8	4,863.3	4,854.7	11.7	11.6	-154.83	299.8	138.8	552.2	530.5	21.72	25.428		
5,000.0	4,990.6	4,962.4	4,953.6	11.9	11.9	-154.88	306.1	141.7	565.1	542.9	22.18	25.477		
5,100.0	5,090.3	5,061.6	5,052.5	12.2	12.1	-154.94	312.4	144.6	577.9	555.3	22.64	25.524		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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		
5,200.0	5,190.1	5,160.8	5,151.4	12.5	12.4	-154.99	318.6	147.6	590.8	567.7	23.11	25.568		
5,300.0	5,289.9	5,259.9	5,250.4	12.7	12.6	-155.04	324.9	150.5	603.6	580.0	23.57	25.611		
5,338.0	5,327.8	5,297.6	5,288.0	12.8	12.7	-155.06	327.3	151.6	608.5	584.7	23.74	25.627		
5,350.0	5,339.7	5,309.5	5,299.8	12.9	12.7	-155.00	328.0	152.0	610.1	586.4	23.77	25.672		
5,400.0	5,389.2	5,358.5	5,348.7	13.0	12.9	-154.70	331.1	153.5	619.7	596.0	23.77	26.078		
5,450.0	5,437.8	5,406.4	5,396.5	13.2	13.0	-154.37	334.1	154.9	633.6	610.0	23.61	26.834		
5,500.0	5,485.0	5,443.7	5,433.7	13.5	13.1	-153.84	336.5	156.0	651.6	628.3	23.30	27.973		
5,550.0	5,530.5	5,463.7	5,453.6	13.8	13.1	-152.83	338.4	156.9	675.0	652.2	22.85	29.544		
5,600.0	5,573.7	5,481.9	5,471.6	14.1	13.2	-151.38	340.7	158.0	703.5	681.2	22.35	31.481		
5,650.0	5,614.4	5,500.0	5,489.4	14.5	13.3	-149.41	343.6	159.3	736.6	714.7	21.88	33.670		
5,700.0	5,652.1	5,500.0	5,489.4	14.9	13.3	-146.13	343.6	159.3	773.8	752.2	21.61	35.808		
5,750.0	5,686.4	5,523.4	5,512.3	15.4	13.3	-142.69	348.1	161.4	814.0	792.3	21.64	37.609		
5,800.0	5,717.2	5,532.8	5,521.4	16.0	13.4	-137.22	350.2	162.4	857.0	834.6	22.37	38.306		
5,850.0	5,744.0	5,550.0	5,538.0	16.5	13.4	-130.33	354.4	164.4	902.3	878.4	23.89	37.771		
5,900.0	5,766.6	5,550.0	5,538.0	17.2	13.4	-118.76	354.4	164.4	948.8	922.1	26.77	35.449		
5,950.0	5,784.9	5,550.0	5,538.0	17.9	13.4	-102.76	354.4	164.4	996.5	966.5	29.99	33.223		
6,000.0	5,798.6	5,550.0	5,538.0	18.6	13.4	-83.41	354.4	164.4	1,044.6	1,013.1	31.42	33.245		
6,050.0	5,807.6	5,550.0	5,538.0	19.4	13.4	-64.65	354.4	164.4	1,092.7	1,063.0	29.66	36.842		
6,100.0	5,811.9	5,550.0	5,538.0	20.1	13.4	-49.80	354.4	164.4	1,140.5	1,114.4	26.09	43.719		
6,119.8	5,812.3	5,550.0	5,538.0	20.5	13.4	-45.14	354.4	164.4	1,159.2	1,134.6	24.62	47.087		
6,200.0	5,812.3	5,550.0	5,538.0	21.7	13.4	-39.72	354.4	164.4	1,235.4	1,212.0	23.39	52.818		
6,300.0	5,812.3	5,550.0	5,538.0	23.1	13.4	-30.73	354.4	164.4	1,331.8	1,311.5	20.38	65.345		
6,400.0	5,812.3	5,528.3	5,517.0	24.6	13.4	-16.79	349.2	161.9	1,428.8	1,414.2	14.61	97.817		
6,500.0	5,812.3	5,522.6	5,511.4	26.1	13.3	-2.40	347.9	161.3	1,526.7	1,516.2	10.47	145.821		
6,600.0	5,812.3	5,500.0	5,489.4	27.7	13.3	12.37	343.6	159.3	1,625.1	1,611.8	13.31	122.053		
6,700.0	5,812.3	5,500.0	5,489.4	29.2	13.3	25.87	343.6	159.3	1,723.0	1,702.2	20.86	82.609		
6,786.6	5,812.3	5,500.0	5,489.4	30.6	13.3	36.02	343.6	159.3	1,807.6	1,780.4	27.23	66.373		
6,800.0	5,812.3	5,500.0	5,489.4	30.8	13.3	36.02	343.6	159.3	1,820.7	1,793.3	27.39	66.475		
6,900.0	5,812.3	5,500.0	5,489.4	32.5	13.3	36.02	343.6	159.3	1,918.4	1,889.8	28.58	67.126		
7,000.0	5,812.3	5,500.0	5,489.4	34.2	13.3	36.02	343.6	159.3	2,016.3	1,986.5	29.78	67.697		
7,100.0	5,812.3	5,500.0	5,489.4	35.9	13.3	36.02	343.6	159.3	2,114.4	2,083.4	31.00	68.201		
7,200.0	5,812.3	5,500.0	5,489.4	37.6	13.3	36.02	343.6	159.3	2,212.7	2,180.4	32.23	68.649		
7,300.0	5,812.3	5,500.0	5,489.4	39.4	13.3	36.02	343.6	159.3	2,311.1	2,277.6	33.47	69.049		
7,400.0	5,812.3	5,500.0	5,489.4	41.1	13.3	36.02	343.6	159.3	2,409.7	2,374.9	34.72	69.408		
7,500.0	5,812.3	5,500.0	5,489.4	42.9	13.3	36.02	343.6	159.3	2,508.3	2,472.4	35.97	69.731		
7,600.0	5,812.3	5,479.3	5,469.0	44.7	13.2	34.54	340.4	157.8	2,606.7	2,570.6	36.11	72.192		
7,700.0	5,812.3	5,476.8	5,466.5	46.5	13.2	34.36	340.0	157.6	2,705.4	2,668.2	37.21	72.714		
7,800.0	5,812.2	5,474.4	5,464.2	48.3	13.2	34.20	339.7	157.5	2,804.3	2,765.9	38.31	73.195		
7,900.0	5,812.2	5,472.2	5,462.0	50.1	13.2	34.05	339.4	157.4	2,903.2	2,863.7	39.42	73.641		
8,000.0	5,812.2	5,450.0	5,440.0	52.0	13.1	32.57	337.1	156.2	3,002.5	2,963.1	39.40	76.198		
8,100.0	5,812.2	5,450.0	5,440.0	53.8	13.1	32.57	337.1	156.2	3,101.5	3,060.9	40.61	76.366		
8,200.0	5,812.2	5,450.0	5,440.0	55.6	13.1	32.57	337.1	156.2	3,200.5	3,158.7	41.83	76.520		
8,300.0	5,812.2	5,450.0	5,440.0	57.5	13.1	32.57	337.1	156.2	3,299.6	3,256.5	43.04	76.662		
8,400.0	5,812.2	5,450.0	5,440.0	59.3	13.1	32.57	337.1	156.2	3,398.7	3,354.4	44.26	76.794		
8,500.0	5,812.2	5,450.0	5,440.0	61.2	13.1	32.57	337.1	156.2	3,497.9	3,452.4	45.48	76.917		
8,600.0	5,812.2	5,450.0	5,440.0	63.1	13.1	32.57	337.1	156.2	3,597.1	3,550.4	46.70	77.031		
8,700.0	5,812.2	5,450.0	5,440.0	64.9	13.1	32.57	337.1	156.2	3,696.3	3,648.4	47.92	77.138		
8,800.0	5,812.2	5,450.0	5,440.0	66.8	13.1	32.57	337.1	156.2	3,795.6	3,746.5	49.14	77.237		
8,900.0	5,812.2	5,450.0	5,440.0	68.7	13.1	32.57	337.1	156.2	3,895.0	3,844.6	50.37	77.331		
9,000.0	5,812.2	5,450.0	5,440.0	70.5	13.1	32.57	337.1	156.2	3,994.3	3,942.8	51.59	77.419		
9,100.0	5,812.2	5,450.0	5,440.0	72.4	13.1	32.57	337.1	156.2	4,093.7	4,040.9	52.82	77.501		
9,200.0	5,812.2	5,450.0	5,440.0	74.3	13.1	32.57	337.1	156.2	4,193.2	4,139.1	54.05	77.579		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12G-0112B - HZ - Plan #1													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		
9,300.0	5,812.2	5,450.0	5,440.0	76.2	13.1	32.57	337.1	156.2	4,292.6	4,237.4	55.28	77.652		
9,400.0	5,812.2	5,450.0	5,440.0	78.0	13.1	32.57	337.1	156.2	4,392.1	4,335.6	56.51	77.722		
9,500.0	5,812.2	5,450.0	5,440.0	79.9	13.1	32.57	337.1	156.2	4,491.6	4,433.9	57.74	77.788		
9,600.0	5,812.2	5,450.0	5,440.0	81.8	13.1	32.57	337.1	156.2	4,591.1	4,532.2	58.97	77.850		
9,700.0	5,812.2	5,450.0	5,440.0	83.7	13.1	32.57	337.1	156.2	4,690.7	4,630.5	60.21	77.909		
9,800.0	5,812.2	5,450.0	5,440.0	85.6	13.1	32.57	337.1	156.2	4,790.3	4,728.8	61.44	77.965		
9,900.0	5,812.2	5,450.0	5,440.0	87.5	13.1	32.57	337.1	156.2	4,889.8	4,827.2	62.68	78.019		
10,000.0	5,812.2	5,450.0	5,440.0	89.4	13.1	32.57	337.1	156.2	4,989.4	4,925.5	63.91	78.070		
10,100.0	5,812.1	5,443.5	5,433.5	91.2	13.1	32.15	336.5	156.0	5,089.0	5,024.4	64.60	78.775		
10,200.0	5,812.1	5,442.7	5,432.7	93.1	13.1	32.10	336.5	156.0	5,188.6	5,122.9	65.76	78.899		
10,300.0	5,812.1	5,436.0	5,426.0	95.0	13.1	31.67	336.0	155.8	5,288.3	5,221.9	66.42	79.622		
10,400.0	5,812.1	5,436.0	5,426.0	96.9	13.1	31.67	336.0	155.8	5,387.9	5,320.3	67.64	79.662		
10,500.0	5,812.1	5,436.0	5,426.0	98.8	13.1	31.67	336.0	155.8	5,487.6	5,418.7	68.85	79.700		
10,600.0	5,812.1	5,436.0	5,426.0	100.7	13.1	31.67	336.0	155.8	5,587.3	5,517.2	70.07	79.736		
10,700.0	5,812.1	5,436.0	5,426.0	102.6	13.1	31.67	336.0	155.8	5,686.9	5,615.6	71.29	79.771		
10,800.0	5,812.1	5,436.0	5,426.0	104.5	13.1	31.67	336.0	155.8	5,786.6	5,714.1	72.51	79.805		
10,900.0	5,812.1	5,436.0	5,426.0	106.4	13.1	31.67	336.0	155.8	5,886.3	5,812.6	73.73	79.837		
11,000.0	5,812.1	5,436.0	5,426.0	108.3	13.1	31.67	336.0	155.8	5,986.0	5,911.1	74.95	79.868		
11,100.0	5,812.1	5,436.0	5,426.0	110.2	13.1	31.67	336.0	155.8	6,085.7	6,009.6	76.17	79.898		
11,200.0	5,812.1	5,436.0	5,426.0	112.1	13.1	31.67	336.0	155.8	6,185.5	6,108.1	77.39	79.927		
11,300.0	5,812.1	5,432.4	5,422.5	114.0	13.1	31.45	335.8	155.6	6,285.2	6,206.9	78.26	80.310		
11,400.0	5,812.1	5,426.1	5,416.2	115.9	13.0	31.06	335.4	155.5	6,384.9	6,306.1	78.87	80.960		
11,500.0	5,812.1	5,419.8	5,409.8	117.8	13.0	30.68	335.0	155.3	6,484.7	6,405.2	79.47	81.603		
11,600.0	5,812.1	5,413.5	5,403.5	119.7	13.0	30.31	334.6	155.1	6,584.4	6,504.3	80.07	82.238		
11,700.0	5,812.1	5,407.2	5,397.2	121.7	13.0	29.95	334.2	154.9	6,684.2	6,603.5	80.66	82.866		
11,800.0	5,812.1	5,400.9	5,390.9	123.6	13.0	29.60	333.8	154.7	6,783.9	6,702.6	81.26	83.486		
11,900.0	5,812.1	5,394.5	5,384.6	125.5	13.0	29.26	333.4	154.5	6,883.6	6,801.8	81.85	84.099		
12,000.0	5,812.1	5,388.2	5,378.3	127.4	12.9	28.92	333.0	154.3	6,983.4	6,900.9	82.44	84.704		
12,100.0	5,812.1	5,381.9	5,372.0	129.3	12.9	28.59	332.6	154.1	7,083.1	7,000.1	83.04	85.303		
12,200.0	5,812.1	5,375.6	5,365.7	131.2	12.9	28.27	332.2	154.0	7,182.9	7,099.3	83.63	85.893		
12,300.0	5,812.1	5,369.3	5,359.4	133.1	12.9	27.95	331.8	153.8	7,282.6	7,198.4	84.22	86.477		
12,400.0	5,812.0	5,362.9	5,353.1	135.0	12.9	27.64	331.4	153.6	7,382.4	7,297.6	84.80	87.053		
12,500.0	5,812.0	5,356.6	5,346.8	136.9	12.9	27.34	331.0	153.4	7,482.1	7,396.8	85.39	87.621		
12,600.0	5,812.0	5,350.3	5,340.5	138.8	12.8	27.05	330.6	153.2	7,581.9	7,495.9	85.98	88.183		
12,700.0	5,812.0	5,344.0	5,334.2	140.7	12.8	26.76	330.2	153.0	7,681.7	7,595.1	86.57	88.737		
12,800.0	5,812.0	5,337.7	5,327.9	142.6	12.8	26.48	329.8	152.8	7,781.4	7,694.3	87.15	89.284		
12,900.0	5,812.0	5,331.4	5,321.6	144.5	12.8	26.20	329.4	152.6	7,881.2	7,793.4	87.74	89.825		
13,000.0	5,812.0	5,325.0	5,315.3	146.5	12.8	25.93	329.0	152.5	7,980.9	7,892.6	88.33	90.358		
13,100.0	5,812.0	5,318.7	5,309.0	148.4	12.8	25.66	328.6	152.3	8,080.7	7,991.8	88.91	90.884		
13,200.0	5,812.0	5,312.4	5,302.7	150.3	12.7	25.40	328.2	152.1	8,180.5	8,091.0	89.50	91.403		
13,250.2	5,812.0	5,309.2	5,299.5	151.1	12.7	25.27	328.0	152.0	8,230.5	8,140.9	89.63	91.825		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													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	-66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-66.1	66.1	65.9	0.19	353.401		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-66.1	66.1	65.5	0.64	103.824		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-66.1	66.1	65.0	1.09	60.851		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-66.1	66.1	64.6	1.54	43.037		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-66.1	66.1	64.1	1.99	33.291		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-66.1	66.1	63.7	2.43	27.145		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-66.1	66.1	63.2	2.88	22.914		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-66.1	66.1	62.8	3.33	19.824		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-66.1	66.1	62.3	3.78	17.469		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-66.1	66.1	61.9	4.23	15.613 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	111.41	0.0	-66.1	66.7	62.1	4.65	14.333		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	115.43	0.0	-66.1	68.8	63.7	5.05	13.610		
1,300.0	1,299.6	1,299.5	1,299.5	2.7	2.8	119.06	-1.7	-66.4	72.1	66.7	5.44	13.263		
1,400.0	1,399.4	1,399.3	1,399.2	2.9	2.9	119.73	-6.8	-67.5	75.7	69.9	5.81	13.036		
1,500.0	1,499.1	1,499.3	1,498.9	3.1	3.1	119.07	-13.6	-68.9	79.4	73.2	6.20	12.803		
1,600.0	1,598.9	1,599.2	1,598.6	3.3	3.3	118.47	-20.4	-70.3	83.1	76.5	6.62	12.565		
1,700.0	1,698.6	1,699.1	1,698.2	3.5	3.5	117.92	-27.3	-71.7	86.8	79.8	7.04	12.330		
1,800.0	1,798.4	1,799.1	1,797.9	3.8	3.7	117.41	-34.1	-73.1	90.6	83.1	7.48	12.103		
1,900.0	1,898.1	1,899.0	1,897.6	4.0	4.0	116.95	-40.9	-74.5	94.3	86.4	7.93	11.886		
2,000.0	1,997.9	1,998.9	1,997.3	4.2	4.2	116.51	-47.7	-75.9	98.0	89.6	8.39	11.681		
2,100.0	2,097.6	2,098.8	2,097.0	4.5	4.4	116.12	-54.6	-77.3	101.7	92.9	8.86	11.488		
2,200.0	2,197.4	2,198.8	2,196.7	4.7	4.6	115.75	-61.4	-78.7	105.5	96.2	9.33	11.307		
2,300.0	2,297.2	2,298.7	2,296.3	5.0	4.9	115.40	-68.2	-80.1	109.2	99.4	9.81	11.138		
2,400.0	2,396.9	2,398.6	2,396.0	5.2	5.1	115.08	-75.1	-81.5	113.0	102.7	10.29	10.980		
2,500.0	2,496.7	2,498.6	2,495.7	5.5	5.4	114.78	-81.9	-82.9	116.7	106.0	10.78	10.832		
2,600.0	2,596.4	2,598.5	2,595.4	5.7	5.6	114.49	-88.7	-84.3	120.5	109.2	11.27	10.694		
2,700.0	2,696.2	2,698.4	2,695.1	6.0	5.8	114.23	-95.5	-85.7	124.2	112.5	11.76	10.565		
2,800.0	2,795.9	2,798.3	2,794.8	6.2	6.1	113.98	-102.4	-87.1	128.0	115.7	12.25	10.445		
2,900.0	2,895.7	2,898.3	2,894.5	6.5	6.3	113.74	-109.2	-88.5	131.8	119.0	12.75	10.331		
3,000.0	2,995.5	2,998.2	2,994.1	6.7	6.6	113.52	-116.0	-89.9	135.5	122.3	13.25	10.225		
3,100.0	3,095.2	3,098.1	3,093.8	7.0	6.8	113.31	-122.9	-91.3	139.3	125.5	13.76	10.126		
3,200.0	3,195.0	3,198.1	3,193.5	7.3	7.1	113.11	-129.7	-92.7	143.0	128.8	14.26	10.032		
3,300.0	3,294.7	3,298.0	3,293.2	7.5	7.3	112.92	-136.5	-94.1	146.8	132.0	14.76	9.944		
3,400.0	3,394.5	3,397.9	3,392.9	7.8	7.6	112.74	-143.3	-95.5	150.6	135.3	15.27	9.861		
3,500.0	3,494.2	3,497.8	3,492.6	8.0	7.8	112.57	-150.2	-96.9	154.4	138.6	15.78	9.782		
3,600.0	3,594.0	3,597.8	3,592.2	8.3	8.1	112.40	-157.0	-98.3	158.1	141.8	16.29	9.708		
3,700.0	3,693.8	3,697.7	3,691.9	8.5	8.4	112.25	-163.8	-99.7	161.9	145.1	16.80	9.638		
3,800.0	3,793.5	3,797.6	3,791.6	8.8	8.6	112.10	-170.7	-101.1	165.7	148.4	17.31	9.571		
3,900.0	3,893.3	3,897.5	3,891.3	9.1	8.9	111.96	-177.5	-102.5	169.4	151.6	17.82	9.508		
4,000.0	3,993.0	3,997.5	3,991.0	9.3	9.1	111.82	-184.3	-103.9	173.2	154.9	18.33	9.448		
4,100.0	4,092.8	4,097.4	4,090.7	9.6	9.4	111.69	-191.1	-105.3	177.0	158.2	18.85	9.391		
4,200.0	4,192.5	4,197.3	4,190.4	9.8	9.6	111.57	-198.0	-106.7	180.8	161.4	19.36	9.337		
4,300.0	4,292.3	4,297.3	4,290.0	10.1	9.9	111.45	-204.8	-108.1	184.6	164.7	19.88	9.286		
4,400.0	4,392.1	4,397.2	4,389.7	10.4	10.2	111.33	-211.6	-109.5	188.3	167.9	20.39	9.236		
4,500.0	4,491.8	4,497.1	4,489.4	10.6	10.4	111.22	-218.5	-110.9	192.1	171.2	20.91	9.189		
4,600.0	4,591.6	4,597.0	4,589.1	10.9	10.7	111.12	-225.3	-112.3	195.9	174.5	21.42	9.145		
4,700.0	4,691.3	4,697.0	4,688.8	11.2	10.9	111.02	-232.1	-113.7	199.7	177.7	21.94	9.102		
4,800.0	4,791.1	4,796.9	4,788.5	11.4	11.2	110.92	-238.9	-115.1	203.5	181.0	22.46	9.061		
4,900.0	4,890.8	4,896.8	4,888.1	11.7	11.5	110.83	-245.8	-116.5	207.2	184.3	22.97	9.021		
5,000.0	4,990.6	4,996.8	4,987.8	11.9	11.7	110.73	-252.6	-117.9	211.0	187.5	23.49	8.983		
5,100.0	5,090.3	5,096.7	5,087.5	12.2	12.0	110.65	-259.4	-119.3	214.8	190.8	24.01	8.947		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1													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		
5,200.0	5,190.1	5,196.6	5,187.2	12.5	12.2	110.56	-266.2	-120.7	218.6	194.1	24.53	8.912		
5,300.0	5,289.9	5,296.5	5,286.9	12.7	12.5	110.48	-273.1	-122.1	222.4	197.3	25.05	8.879		
5,338.0	5,327.8	5,334.5	5,324.8	12.8	12.6	110.45	-275.7	-122.7	223.8	198.6	25.24	8.867		
5,350.0	5,339.7	5,345.8	5,336.0	12.9	12.6	110.40	-276.5	-122.9	224.3	199.0	25.30	8.867		
5,400.0	5,389.2	5,391.8	5,381.6	13.0	12.8	110.06	-282.4	-124.1	228.0	202.5	25.57	8.918		
5,450.0	5,437.8	5,437.5	5,426.3	13.2	13.0	109.50	-292.1	-126.1	234.2	208.3	25.89	9.047		
5,500.0	5,485.0	5,482.9	5,469.5	13.5	13.2	108.74	-305.5	-128.8	242.8	216.6	26.27	9.244		
5,550.0	5,530.5	5,527.7	5,510.9	13.8	13.4	107.79	-322.3	-132.3	253.7	227.0	26.71	9.500		
5,600.0	5,573.7	5,572.0	5,550.1	14.1	13.7	106.66	-342.3	-136.3	266.8	239.6	27.22	9.801		
5,650.0	5,614.4	5,615.6	5,587.0	14.5	14.0	105.36	-365.0	-141.0	281.9	254.1	27.82	10.133		
5,700.0	5,652.1	5,658.5	5,621.3	14.9	14.3	103.92	-390.4	-146.2	299.0	270.4	28.55	10.471		
5,750.0	5,686.4	5,700.0	5,652.3	15.4	14.6	102.33	-417.4	-151.8	317.7	288.3	29.38	10.812		
5,800.0	5,717.2	5,742.5	5,681.7	16.0	15.0	100.64	-447.4	-157.9	338.0	307.7	30.34	11.140		
5,850.0	5,744.0	5,783.6	5,707.6	16.5	15.5	98.84	-478.7	-164.4	359.7	328.3	31.39	11.457		
5,900.0	5,766.6	5,824.3	5,730.7	17.2	15.9	96.95	-511.5	-171.1	382.5	350.0	32.53	11.759		
5,950.0	5,784.9	5,864.6	5,751.0	17.9	16.4	94.99	-545.6	-178.1	406.3	372.6	33.74	12.044		
6,000.0	5,798.6	5,904.7	5,768.4	18.6	16.9	92.98	-581.0	-185.3	430.9	395.9	35.01	12.311		
6,050.0	5,807.6	5,944.8	5,783.0	19.4	17.4	90.95	-617.5	-192.8	456.2	419.9	36.32	12.560		
6,100.0	5,811.9	5,984.9	5,794.7	20.1	17.9	88.92	-655.1	-200.6	481.9	444.2	37.67	12.792		
6,119.8	5,812.3	6,000.9	5,798.5	20.5	18.2	88.12	-670.3	-203.7	492.1	453.9	38.21	12.881		
6,200.0	5,812.3	6,068.1	5,809.3	21.7	19.1	89.63	-735.2	-217.0	532.5	491.9	40.56	13.130		
6,300.0	5,812.3	6,172.7	5,811.8	23.1	20.6	89.94	-837.8	-237.3	578.4	534.7	43.68	13.243		
6,400.0	5,812.3	6,308.4	5,811.8	24.6	22.5	89.95	-972.1	-256.0	614.3	567.2	47.17	13.023		
6,500.0	5,812.3	6,452.9	5,811.8	26.1	24.5	89.95	-1,116.3	-265.5	638.3	587.4	50.92	12.536		
6,600.0	5,812.3	6,569.7	5,811.8	27.7	26.3	89.96	-1,233.0	-266.2	651.1	596.8	54.37	11.976		
6,700.0	5,812.3	6,669.4	5,811.8	29.2	28.0	89.96	-1,332.8	-266.2	658.3	600.7	57.60	11.429		
6,786.6	5,812.3	6,756.0	5,811.8	30.6	29.4	89.96	-1,419.4	-266.2	660.2	599.9	60.34	10.942		
6,800.0	5,812.3	6,769.4	5,811.8	30.8	29.7	89.96	-1,432.7	-266.2	660.2	599.4	60.79	10.861		
6,900.0	5,812.3	6,869.4	5,811.8	32.5	31.4	89.96	-1,532.7	-266.2	660.2	596.0	64.24	10.278		
7,000.0	5,812.3	6,969.4	5,811.8	34.2	33.1	89.96	-1,632.7	-266.2	660.2	592.5	67.73	9.748		
7,100.0	5,812.3	7,069.4	5,811.8	35.9	34.9	89.96	-1,732.7	-266.3	660.2	589.0	71.26	9.266		
7,200.0	5,812.3	7,169.4	5,811.8	37.6	36.6	89.96	-1,832.7	-266.3	660.2	585.4	74.82	8.825		
7,300.0	5,812.3	7,269.4	5,811.8	39.4	38.4	89.96	-1,932.7	-266.3	660.2	581.8	78.40	8.421		
7,400.0	5,812.3	7,369.4	5,811.8	41.1	40.2	89.96	-2,032.7	-266.3	660.2	578.2	82.01	8.050		
7,500.0	5,812.3	7,469.4	5,811.8	42.9	42.0	89.96	-2,132.7	-266.3	660.2	574.6	85.64	7.709		
7,600.0	5,812.3	7,569.4	5,811.8	44.7	43.9	89.96	-2,232.7	-266.3	660.2	571.0	89.29	7.394		
7,700.0	5,812.3	7,669.4	5,811.8	46.5	45.7	89.96	-2,332.7	-266.3	660.2	567.3	92.96	7.103		
7,800.0	5,812.2	7,769.4	5,811.8	48.3	47.5	89.96	-2,432.7	-266.3	660.2	563.6	96.64	6.832		
7,900.0	5,812.2	7,869.4	5,811.8	50.1	49.4	89.97	-2,532.7	-266.3	660.2	559.9	100.33	6.581		
8,000.0	5,812.2	7,969.4	5,811.8	52.0	51.2	89.97	-2,632.7	-266.3	660.2	556.2	104.03	6.347		
8,100.0	5,812.2	8,069.4	5,811.9	53.8	53.1	89.97	-2,732.7	-266.3	660.3	552.5	107.74	6.128		
8,200.0	5,812.2	8,169.4	5,811.9	55.6	54.9	89.97	-2,832.7	-266.3	660.3	548.8	111.47	5.923		
8,300.0	5,812.2	8,269.4	5,811.9	57.5	56.8	89.97	-2,932.7	-266.3	660.3	545.1	115.20	5.732		
8,400.0	5,812.2	8,369.4	5,811.9	59.3	58.7	89.97	-3,032.7	-266.4	660.3	541.3	118.93	5.551		
8,500.0	5,812.2	8,469.4	5,811.9	61.2	60.5	89.97	-3,132.7	-266.4	660.3	537.6	122.68	5.382		
8,600.0	5,812.2	8,569.4	5,811.9	63.1	62.4	89.97	-3,232.7	-266.4	660.3	533.8	126.43	5.222		
8,700.0	5,812.2	8,669.4	5,811.9	64.9	64.3	89.97	-3,332.7	-266.4	660.3	530.1	130.18	5.072		
8,800.0	5,812.2	8,769.4	5,811.9	66.8	66.2	89.97	-3,432.7	-266.4	660.3	526.3	133.94	4.929		
8,900.0	5,812.2	8,869.4	5,811.9	68.7	68.1	89.97	-3,532.7	-266.4	660.3	522.6	137.71	4.795		
9,000.0	5,812.2	8,969.4	5,811.9	70.5	69.9	89.97	-3,632.7	-266.4	660.3	518.8	141.48	4.667		
9,100.0	5,812.2	9,069.4	5,811.9	72.4	71.8	89.97	-3,732.7	-266.4	660.3	515.0	145.25	4.546		
9,200.0	5,812.2	9,169.4	5,811.9	74.3	73.7	89.97	-3,832.7	-266.4	660.3	511.2	149.03	4.431		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1309A - HZ - Plan #1												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
9,300.0	5,812.2	9,269.4	5,811.9	76.2	75.6	89.97	-3,932.7	-266.4	660.3	507.5	152.81	4.321	
9,400.0	5,812.2	9,369.4	5,811.9	78.0	77.5	89.98	-4,032.7	-266.4	660.3	503.7	156.59	4.217	
9,500.0	5,812.2	9,469.4	5,811.9	79.9	79.4	89.98	-4,132.7	-266.4	660.3	499.9	160.38	4.117	
9,600.0	5,812.2	9,569.4	5,811.9	81.8	81.3	89.98	-4,232.7	-266.5	660.3	496.1	164.17	4.022	
9,700.0	5,812.2	9,669.4	5,811.9	83.7	83.2	89.98	-4,332.7	-266.5	660.3	492.3	167.96	3.931	
9,800.0	5,812.2	9,769.4	5,811.9	85.6	85.1	89.98	-4,432.7	-266.5	660.3	488.5	171.75	3.844	
9,900.0	5,812.2	9,869.4	5,811.9	87.5	87.0	89.98	-4,532.7	-266.5	660.3	484.7	175.55	3.761	
10,000.0	5,812.2	9,969.4	5,811.9	89.4	88.9	89.98	-4,632.8	-266.5	660.3	480.9	179.34	3.682	
10,100.0	5,812.1	10,069.4	5,811.9	91.2	90.8	89.98	-4,732.8	-266.5	660.3	477.1	183.14	3.605	
10,200.0	5,812.1	10,169.4	5,811.9	93.1	92.7	89.98	-4,832.8	-266.5	660.3	473.3	186.95	3.532	
10,300.0	5,812.1	10,269.4	5,811.9	95.0	94.6	89.98	-4,932.8	-266.5	660.3	469.5	190.75	3.462	
10,400.0	5,812.1	10,369.4	5,811.9	96.9	96.5	89.98	-5,032.8	-266.5	660.3	465.7	194.55	3.394	
10,500.0	5,812.1	10,469.4	5,811.9	98.8	98.4	89.98	-5,132.8	-266.5	660.3	461.9	198.36	3.329	
10,600.0	5,812.1	10,569.4	5,811.9	100.7	100.3	89.98	-5,232.8	-266.5	660.3	458.1	202.17	3.266	
10,700.0	5,812.1	10,669.4	5,811.9	102.6	102.2	89.98	-5,332.8	-266.5	660.3	454.3	205.98	3.206	
10,800.0	5,812.1	10,769.4	5,811.9	104.5	104.1	89.98	-5,432.8	-266.5	660.3	450.5	209.79	3.147	
10,900.0	5,812.1	10,869.4	5,811.9	106.4	106.0	89.98	-5,532.8	-266.6	660.3	446.7	213.60	3.091	
11,000.0	5,812.1	10,969.4	5,811.9	108.3	107.9	89.99	-5,632.8	-266.6	660.3	442.9	217.41	3.037	
11,100.0	5,812.1	11,069.4	5,811.9	110.2	109.8	89.99	-5,732.8	-266.6	660.3	439.1	221.23	2.985	
11,200.0	5,812.1	11,169.4	5,811.9	112.1	111.7	89.99	-5,832.8	-266.6	660.3	435.3	225.04	2.934	
11,300.0	5,812.1	11,269.4	5,812.0	114.0	113.6	89.99	-5,932.8	-266.6	660.3	431.4	228.86	2.885	
11,400.0	5,812.1	11,369.4	5,812.0	115.9	115.5	89.99	-6,032.8	-266.6	660.3	427.6	232.67	2.838	
11,500.0	5,812.1	11,469.4	5,812.0	117.8	117.4	89.99	-6,132.8	-266.6	660.3	423.8	236.49	2.792	
11,600.0	5,812.1	11,569.4	5,812.0	119.7	119.3	89.99	-6,232.8	-266.6	660.3	420.0	240.31	2.748	
11,700.0	5,812.1	11,669.4	5,812.0	121.7	121.2	89.99	-6,332.8	-266.6	660.3	416.2	244.13	2.705	
11,800.0	5,812.1	11,769.4	5,812.0	123.6	123.2	89.99	-6,432.8	-266.6	660.3	412.4	247.95	2.663	
11,900.0	5,812.1	11,869.4	5,812.0	125.5	125.1	89.99	-6,532.8	-266.6	660.3	408.5	251.77	2.623	
12,000.0	5,812.1	11,969.4	5,812.0	127.4	127.0	89.99	-6,632.8	-266.6	660.3	404.7	255.59	2.583	
12,100.0	5,812.1	12,069.4	5,812.0	129.3	128.9	89.99	-6,732.8	-266.7	660.3	400.9	259.41	2.545	
12,200.0	5,812.1	12,169.4	5,812.0	131.2	130.8	89.99	-6,832.8	-266.7	660.3	397.1	263.23	2.508	
12,300.0	5,812.1	12,269.4	5,812.0	133.1	132.7	89.99	-6,932.8	-266.7	660.3	393.3	267.06	2.473	
12,400.0	5,812.0	12,369.4	5,812.0	135.0	134.6	89.99	-7,032.8	-266.7	660.3	389.4	270.88	2.438	
12,500.0	5,812.0	12,469.4	5,812.0	136.9	136.5	90.00	-7,132.8	-266.7	660.3	385.6	274.71	2.404	
12,600.0	5,812.0	12,569.4	5,812.0	138.8	138.4	90.00	-7,232.8	-266.7	660.3	381.8	278.53	2.371	
12,700.0	5,812.0	12,669.4	5,812.0	140.7	140.4	90.00	-7,332.8	-266.7	660.3	378.0	282.36	2.339	
12,800.0	5,812.0	12,769.4	5,812.0	142.6	142.3	90.00	-7,432.8	-266.7	660.3	374.1	286.18	2.307	
12,900.0	5,812.0	12,869.4	5,812.0	144.5	144.2	90.00	-7,532.8	-266.7	660.3	370.3	290.01	2.277	
13,000.0	5,812.0	12,969.4	5,812.0	146.5	146.1	90.00	-7,632.8	-266.7	660.3	366.5	293.84	2.247	
13,100.0	5,812.0	13,069.4	5,812.0	148.4	148.0	90.00	-7,732.8	-266.7	660.3	362.7	297.66	2.218	
13,200.0	5,812.0	13,169.4	5,812.0	150.3	149.9	90.00	-7,832.8	-266.7	660.3	358.8	301.49	2.190	
13,250.2	5,812.0	13,219.5	5,812.0	151.1	150.9	90.00	-7,882.9	-266.7	660.3	357.1	303.23	2.178 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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1													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	-33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-33.0	33.0	32.9	0.19	176.700		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-33.0	33.0	32.4	0.64	51.912		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-33.0	33.0	31.5	1.54	21.519		
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-33.0	33.0	31.1	1.99	16.646		
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-33.0	33.0	30.6	2.43	13.572		
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-33.0	33.0	30.2	2.88	11.457		
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-33.0	33.0	29.7	3.33	9.912		
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-33.0	33.0	29.3	3.78	8.734		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-33.0	33.0	28.8	4.23	7.807 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	112.79	0.0	-33.0	33.7	29.0	4.65	7.237		
1,200.0	1,199.8	1,200.2	1,200.1	2.5	2.5	117.77	-1.7	-32.9	35.6	30.6	5.03	7.080		
1,300.0	1,299.6	1,300.5	1,300.3	2.7	2.7	119.42	-7.0	-32.3	37.6	32.2	5.39	6.978		
1,400.0	1,399.4	1,400.4	1,400.0	2.9	2.9	118.47	-13.9	-31.6	39.2	33.4	5.77	6.783		
1,500.0	1,499.1	1,500.4	1,499.8	3.1	3.1	117.59	-20.8	-30.9	40.8	34.6	6.18	6.593		
1,600.0	1,598.9	1,600.4	1,599.5	3.3	3.3	116.78	-27.8	-30.1	42.4	35.8	6.61	6.412		
1,700.0	1,698.6	1,700.4	1,699.3	3.5	3.5	116.03	-34.7	-29.4	44.0	36.9	7.04	6.241		
1,800.0	1,798.4	1,800.4	1,799.0	3.8	3.7	115.34	-41.6	-28.7	45.6	38.1	7.49	6.082		
1,900.0	1,898.1	1,900.4	1,898.7	4.0	4.0	114.69	-48.6	-27.9	47.2	39.2	7.95	5.934		
2,000.0	1,997.9	2,000.4	1,998.5	4.2	4.2	114.08	-55.5	-27.2	48.8	40.4	8.42	5.798		
2,100.0	2,097.6	2,100.3	2,098.2	4.5	4.4	113.51	-62.5	-26.5	50.4	41.5	8.89	5.672		
2,200.0	2,197.4	2,200.3	2,198.0	4.7	4.7	112.98	-69.4	-25.7	52.1	42.7	9.37	5.555		
2,300.0	2,297.2	2,300.3	2,297.7	5.0	4.9	112.48	-76.3	-25.0	53.7	43.8	9.86	5.448		
2,400.0	2,396.9	2,400.3	2,397.5	5.2	5.2	112.01	-83.3	-24.3	55.3	45.0	10.35	5.349		
2,500.0	2,496.7	2,500.3	2,497.2	5.5	5.4	111.57	-90.2	-23.6	57.0	46.1	10.84	5.257		
2,600.0	2,596.4	2,600.3	2,596.9	5.7	5.7	111.15	-97.1	-22.8	58.6	47.3	11.34	5.172		
2,700.0	2,696.2	2,700.3	2,696.7	6.0	5.9	110.75	-104.1	-22.1	60.3	48.5	11.84	5.093		
2,800.0	2,795.9	2,800.2	2,796.4	6.2	6.2	110.38	-111.0	-21.4	61.9	49.6	12.34	5.020		
2,900.0	2,895.7	2,900.2	2,896.2	6.5	6.4	110.02	-117.9	-20.6	63.6	50.8	12.84	4.952		
3,000.0	2,995.5	3,000.2	2,995.9	6.7	6.7	109.69	-124.9	-19.9	65.3	51.9	13.35	4.888		
3,100.0	3,095.2	3,100.2	3,095.7	7.0	6.9	109.37	-131.8	-19.2	66.9	53.1	13.86	4.829		
3,200.0	3,195.0	3,200.2	3,195.4	7.3	7.2	109.06	-138.8	-18.5	68.6	54.2	14.37	4.773		
3,300.0	3,294.7	3,300.2	3,295.1	7.5	7.4	108.77	-145.7	-17.7	70.2	55.4	14.88	4.721		
3,400.0	3,394.5	3,400.2	3,394.9	7.8	7.7	108.49	-152.6	-17.0	71.9	56.5	15.39	4.672		
3,500.0	3,494.2	3,500.1	3,494.6	8.0	7.9	108.23	-159.6	-16.3	73.6	57.7	15.90	4.626		
3,600.0	3,594.0	3,600.1	3,594.4	8.3	8.2	107.98	-166.5	-15.5	75.2	58.8	16.42	4.583		
3,700.0	3,693.8	3,700.1	3,694.1	8.5	8.4	107.74	-173.4	-14.8	76.9	60.0	16.93	4.542		
3,800.0	3,793.5	3,800.1	3,793.8	8.8	8.7	107.51	-180.4	-14.1	78.6	61.1	17.45	4.504		
3,900.0	3,893.3	3,900.1	3,893.6	9.1	9.0	107.28	-187.3	-13.4	80.2	62.3	17.96	4.467		
4,000.0	3,993.0	4,000.1	3,993.3	9.3	9.2	107.07	-194.2	-12.6	81.9	63.4	18.48	4.432		
4,100.0	4,092.8	4,100.1	4,093.1	9.6	9.5	106.87	-201.2	-11.9	83.6	64.6	19.00	4.400		
4,200.0	4,192.5	4,200.0	4,192.8	9.8	9.7	106.67	-208.1	-11.2	85.3	65.8	19.52	4.369		
4,300.0	4,292.3	4,300.0	4,292.6	10.1	10.0	106.48	-215.1	-10.4	86.9	66.9	20.04	4.339		
4,400.0	4,392.1	4,400.0	4,392.3	10.4	10.3	106.30	-222.0	-9.7	88.6	68.1	20.56	4.311		
4,500.0	4,491.8	4,500.0	4,492.0	10.6	10.5	106.13	-228.9	-9.0	90.3	69.2	21.08	4.284		
4,600.0	4,591.6	4,600.0	4,591.8	10.9	10.8	105.96	-235.9	-8.3	92.0	70.4	21.60	4.258		
4,700.0	4,691.3	4,700.0	4,691.5	11.2	11.0	105.80	-242.8	-7.5	93.7	71.5	22.12	4.234		
4,800.0	4,791.1	4,800.0	4,791.3	11.4	11.3	105.64	-249.7	-6.8	95.3	72.7	22.64	4.211		
4,900.0	4,890.8	4,899.9	4,891.0	11.7	11.6	105.49	-256.7	-6.1	97.0	73.9	23.17	4.188		
5,000.0	4,990.6	4,999.9	4,990.8	11.9	11.8	105.34	-263.6	-5.3	98.7	75.0	23.69	4.167		
5,100.0	5,090.3	5,099.9	5,090.5	12.2	12.1	105.20	-270.5	-4.6	100.4	76.2	24.21	4.146		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - 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		
5,200.0	5,190.1	5,199.9	5,190.2	12.5	12.3	105.06	-277.5	-3.9	102.1	77.3	24.73	4.127		
5,300.0	5,289.9	5,299.9	5,290.0	12.7	12.6	104.93	-284.4	-3.1	103.8	78.5	25.26	4.108		
5,338.0	5,327.8	5,337.9	5,327.9	12.8	12.7	104.88	-287.1	-2.9	104.4	78.9	25.46	4.101		
5,350.0	5,339.7	5,349.9	5,339.9	12.9	12.7	104.92	-287.9	-2.8	104.6	79.1	25.52	4.100		
5,400.0	5,389.2	5,399.7	5,389.6	13.0	12.9	106.50	-291.3	-2.4	106.4	80.7	25.77	4.130		
5,450.0	5,437.8	5,449.3	5,439.0	13.2	13.0	110.13	-294.9	-2.0	109.9	83.9	25.99	4.229		
5,500.0	5,485.0	5,500.0	5,489.2	13.5	13.2	113.92	-302.1	-1.3	115.2	89.0	26.18	4.401		
5,550.0	5,530.5	5,551.6	5,539.3	13.8	13.4	117.01	-314.3	0.0	122.1	95.7	26.37	4.629		
5,600.0	5,573.7	5,604.0	5,588.7	14.1	13.6	119.38	-331.7	1.8	130.2	103.7	26.56	4.904		
5,650.0	5,614.4	5,657.3	5,636.8	14.5	13.9	121.04	-354.3	4.2	139.5	112.7	26.78	5.209		
5,700.0	5,652.1	5,711.3	5,683.0	14.9	14.3	122.05	-382.1	7.1	149.7	122.6	27.09	5.526		
5,750.0	5,686.4	5,766.2	5,726.7	15.4	14.7	122.47	-415.1	10.6	160.6	133.0	27.52	5.834		
5,800.0	5,717.2	5,821.9	5,767.2	16.0	15.2	122.38	-453.0	14.6	172.0	143.9	28.12	6.117		
5,850.0	5,744.0	5,878.2	5,803.9	16.5	15.8	121.85	-495.6	19.0	183.9	155.0	28.92	6.358		
5,900.0	5,766.6	5,935.3	5,836.0	17.2	16.4	120.94	-542.4	24.0	196.1	166.1	29.95	6.546		
5,950.0	5,784.9	5,993.0	5,863.1	17.9	17.1	119.72	-593.1	29.3	208.4	177.2	31.21	6.678		
6,000.0	5,798.6	6,051.4	5,884.6	18.6	17.9	118.24	-647.0	35.0	220.8	188.1	32.69	6.755		
6,050.0	5,807.6	6,110.3	5,900.0	19.4	18.7	116.55	-703.5	40.9	233.2	198.8	34.38	6.784		
6,100.0	5,811.9	6,169.7	5,909.0	20.1	19.6	114.67	-761.9	47.0	245.5	209.2	36.23	6.775		
6,119.8	5,812.3	6,193.3	5,910.7	20.5	19.9	113.89	-785.3	49.5	250.3	213.3	37.00	6.763		
6,200.0	5,812.3	6,269.7	5,911.3	21.7	21.0	112.24	-861.4	56.8	267.6	227.8	39.78	6.727		
6,300.0	5,812.3	6,355.5	5,911.3	23.1	22.2	110.53	-947.0	61.6	288.5	245.6	42.90	6.724		
6,400.0	5,812.3	6,444.0	5,911.3	24.6	23.5	109.07	-1,035.4	62.6	308.7	262.7	46.02	6.708		
6,500.0	5,812.3	6,542.4	5,911.3	26.1	25.0	107.90	-1,133.9	62.6	325.4	276.0	49.31	6.599		
6,600.0	5,812.3	6,641.6	5,911.3	27.7	26.7	107.15	-1,233.1	62.6	337.1	284.6	52.52	6.419		
6,700.0	5,812.3	6,741.4	5,911.3	29.2	28.4	106.74	-1,332.8	62.6	344.0	288.4	55.59	6.187		
6,786.6	5,812.3	6,827.9	5,911.3	30.6	29.9	106.63	-1,419.4	62.6	345.8	287.7	58.12	5.951		
6,800.0	5,812.3	6,841.3	5,911.3	30.8	30.1	106.63	-1,432.8	62.7	345.8	287.3	58.55	5.906		
6,900.0	5,812.3	6,941.3	5,911.3	32.5	31.9	106.63	-1,532.8	62.7	345.8	283.9	61.90	5.586		
7,000.0	5,812.3	7,041.3	5,911.3	34.2	33.6	106.64	-1,632.8	62.7	345.8	280.5	65.29	5.297		
7,100.0	5,812.3	7,141.3	5,911.3	35.9	35.4	106.64	-1,732.8	62.7	345.8	277.1	68.71	5.033		
7,200.0	5,812.3	7,241.3	5,911.3	37.6	37.2	106.64	-1,832.8	62.7	345.8	273.6	72.16	4.792		
7,300.0	5,812.3	7,341.3	5,911.3	39.4	39.0	106.64	-1,932.8	62.7	345.8	270.1	75.63	4.572		
7,400.0	5,812.3	7,441.3	5,911.3	41.1	40.8	106.64	-2,032.8	62.7	345.8	266.6	79.12	4.370		
7,500.0	5,812.3	7,541.3	5,911.3	42.9	42.7	106.64	-2,132.8	62.7	345.7	263.1	82.64	4.184		
7,600.0	5,812.3	7,641.3	5,911.3	44.7	44.5	106.64	-2,232.8	62.7	345.7	259.6	86.17	4.012		
7,700.0	5,812.3	7,741.3	5,911.2	46.5	46.3	106.64	-2,332.8	62.7	345.7	256.0	89.71	3.854		
7,800.0	5,812.2	7,841.3	5,911.2	48.3	48.2	106.64	-2,432.8	62.7	345.7	252.4	93.27	3.707		
7,900.0	5,812.2	7,941.3	5,911.2	50.1	50.1	106.64	-2,532.8	62.7	345.7	248.9	96.84	3.570		
8,000.0	5,812.2	8,041.3	5,911.2	52.0	51.9	106.64	-2,632.8	62.7	345.7	245.3	100.41	3.443		
8,100.0	5,812.2	8,141.3	5,911.2	53.8	53.8	106.64	-2,732.8	62.7	345.7	241.7	104.00	3.324		
8,200.0	5,812.2	8,241.3	5,911.2	55.6	55.6	106.64	-2,832.8	62.7	345.7	238.1	107.60	3.213		
8,300.0	5,812.2	8,341.3	5,911.2	57.5	57.5	106.64	-2,932.8	62.7	345.6	234.4	111.20	3.108		
8,400.0	5,812.2	8,441.3	5,911.2	59.3	59.4	106.64	-3,032.8	62.7	345.6	230.8	114.81	3.011		
8,500.0	5,812.2	8,541.3	5,911.2	61.2	61.3	106.64	-3,132.8	62.8	345.6	227.2	118.42	2.919		
8,600.0	5,812.2	8,641.3	5,911.2	63.1	63.2	106.64	-3,232.8	62.8	345.6	223.6	122.04	2.832		
8,700.0	5,812.2	8,741.3	5,911.2	64.9	65.0	106.65	-3,332.8	62.8	345.6	219.9	125.67	2.750		
8,800.0	5,812.2	8,841.3	5,911.2	66.8	66.9	106.65	-3,432.8	62.8	345.6	216.3	129.30	2.673		
8,900.0	5,812.2	8,941.3	5,911.2	68.7	68.8	106.65	-3,532.8	62.8	345.6	212.6	132.94	2.600		
9,000.0	5,812.2	9,041.3	5,911.2	70.5	70.7	106.65	-3,632.8	62.8	345.6	209.0	136.57	2.530		
9,100.0	5,812.2	9,141.3	5,911.2	72.4	72.6	106.65	-3,732.8	62.8	345.6	205.3	140.22	2.464		
9,200.0	5,812.2	9,241.3	5,911.2	74.3	74.5	106.65	-3,832.8	62.8	345.5	201.7	143.86	2.402		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1310B - HZ - Plan #1												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
9,300.0	5,812.2	9,341.3	5,911.2	76.2	76.4	106.65	-3,932.8	62.8	345.5	198.0	147.51	2.342	
9,400.0	5,812.2	9,441.3	5,911.2	78.0	78.3	106.65	-4,032.8	62.8	345.5	194.4	151.16	2.286	
9,500.0	5,812.2	9,541.3	5,911.2	79.9	80.2	106.65	-4,132.8	62.8	345.5	190.7	154.81	2.232	
9,600.0	5,812.2	9,641.3	5,911.2	81.8	82.1	106.65	-4,232.8	62.8	345.5	187.0	158.47	2.180	
9,700.0	5,812.2	9,741.3	5,911.2	83.7	84.0	106.65	-4,332.8	62.8	345.5	183.3	162.13	2.131	
9,800.0	5,812.2	9,841.3	5,911.2	85.6	85.9	106.65	-4,432.8	62.8	345.5	179.7	165.79	2.084	
9,900.0	5,812.2	9,941.3	5,911.2	87.5	87.8	106.65	-4,532.8	62.8	345.5	176.0	169.45	2.039	
10,000.0	5,812.2	10,041.3	5,911.2	89.4	89.7	106.65	-4,632.8	62.8	345.4	172.3	173.12	1.995	
10,100.0	5,812.1	10,141.3	5,911.1	91.2	91.6	106.65	-4,732.8	62.8	345.4	168.6	176.78	1.954	
10,200.0	5,812.1	10,241.3	5,911.1	93.1	93.5	106.65	-4,832.8	62.9	345.4	165.0	180.45	1.914	
10,300.0	5,812.1	10,341.3	5,911.1	95.0	95.4	106.66	-4,932.8	62.9	345.4	161.3	184.12	1.876	
10,400.0	5,812.1	10,441.3	5,911.1	96.9	97.3	106.66	-5,032.8	62.9	345.4	157.6	187.79	1.839	
10,500.0	5,812.1	10,541.3	5,911.1	98.8	99.2	106.66	-5,132.8	62.9	345.4	153.9	191.46	1.804	
10,600.0	5,812.1	10,641.3	5,911.1	100.7	101.1	106.66	-5,232.8	62.9	345.4	150.2	195.14	1.770	
10,700.0	5,812.1	10,741.3	5,911.1	102.6	103.0	106.66	-5,332.8	62.9	345.4	146.5	198.81	1.737	
10,800.0	5,812.1	10,841.3	5,911.1	104.5	104.9	106.66	-5,432.8	62.9	345.3	142.9	202.49	1.706	
10,900.0	5,812.1	10,941.3	5,911.1	106.4	106.8	106.66	-5,532.8	62.9	345.3	139.2	206.16	1.675	
11,000.0	5,812.1	11,041.3	5,911.1	108.3	108.7	106.66	-5,632.8	62.9	345.3	135.5	209.84	1.646	
11,100.0	5,812.1	11,141.3	5,911.1	110.2	110.6	106.66	-5,732.8	62.9	345.3	131.8	213.52	1.617	
11,200.0	5,812.1	11,241.3	5,911.1	112.1	112.5	106.66	-5,832.8	62.9	345.3	128.1	217.20	1.590	
11,300.0	5,812.1	11,341.3	5,911.1	114.0	114.4	106.66	-5,932.8	62.9	345.3	124.4	220.88	1.563	
11,400.0	5,812.1	11,441.3	5,911.1	115.9	116.4	106.66	-6,032.8	62.9	345.3	120.7	224.56	1.538	
11,500.0	5,812.1	11,541.3	5,911.1	117.8	118.3	106.66	-6,132.8	62.9	345.3	117.0	228.24	1.513	
11,600.0	5,812.1	11,641.3	5,911.1	119.7	120.2	106.66	-6,232.8	62.9	345.3	113.3	231.93	1.489	Level 3
11,700.0	5,812.1	11,741.3	5,911.1	121.7	122.1	106.66	-6,332.8	62.9	345.2	109.6	235.61	1.465	Level 3
11,800.0	5,812.1	11,841.3	5,911.1	123.6	124.0	106.66	-6,432.8	62.9	345.2	105.9	239.29	1.443	Level 3
11,900.0	5,812.1	11,941.3	5,911.1	125.5	125.9	106.66	-6,532.8	63.0	345.2	102.2	242.98	1.421	Level 3
12,000.0	5,812.1	12,041.3	5,911.1	127.4	127.8	106.67	-6,632.8	63.0	345.2	98.5	246.66	1.399	Level 3
12,100.0	5,812.1	12,141.3	5,911.1	129.3	129.7	106.67	-6,732.8	63.0	345.2	94.8	250.35	1.379	Level 3
12,200.0	5,812.1	12,241.3	5,911.1	131.2	131.7	106.67	-6,832.8	63.0	345.2	91.1	254.04	1.359	Level 3
12,300.0	5,812.1	12,341.3	5,911.1	133.1	133.6	106.67	-6,932.8	63.0	345.2	87.4	257.72	1.339	Level 3
12,400.0	5,812.0	12,441.3	5,911.0	135.0	135.5	106.67	-7,032.8	63.0	345.2	83.7	261.41	1.320	Level 3
12,500.0	5,812.0	12,541.3	5,911.0	136.9	137.4	106.67	-7,132.8	63.0	345.1	80.0	265.10	1.302	Level 3
12,600.0	5,812.0	12,641.3	5,911.0	138.8	139.3	106.67	-7,232.8	63.0	345.1	76.3	268.79	1.284	Level 3
12,700.0	5,812.0	12,741.3	5,911.0	140.7	141.2	106.67	-7,332.8	63.0	345.1	72.6	272.48	1.267	Level 3
12,800.0	5,812.0	12,841.3	5,911.0	142.6	143.1	106.67	-7,432.8	63.0	345.1	68.9	276.17	1.250	Level 2
12,900.0	5,812.0	12,941.3	5,911.0	144.5	145.0	106.67	-7,532.8	63.0	345.1	65.2	279.86	1.233	Level 2
13,000.0	5,812.0	13,041.3	5,911.0	146.5	147.0	106.67	-7,632.8	63.0	345.1	61.5	283.55	1.217	Level 2
13,100.0	5,812.0	13,141.3	5,911.0	148.4	148.9	106.67	-7,732.8	63.0	345.1	57.8	287.24	1.201	Level 2
13,200.0	5,812.0	13,241.3	5,911.0	150.3	150.6	106.67	-7,832.8	63.0	345.1	54.3	290.78	1.187	Level 2
13,250.2	5,812.0	13,291.5	5,911.0	151.1	151.4	106.67	-7,883.0	63.0	345.1	52.8	292.29	1.181	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1													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	90.01	0.0	33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	33.0	33.0	32.9	0.18	183.550		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	33.0	33.0	32.4	0.63	52.488		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	33.0	33.0	32.0	1.08	30.622		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	33.0	33.0	31.5	1.53	21.617		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	33.0	33.0	31.1	1.98	16.704		
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	33.0	33.0	30.6	2.43	13.611		
700.0	700.0	700.0	700.0	1.4	1.4	90.01	0.0	33.0	33.0	30.2	2.88	11.485		
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	33.0	33.0	29.7	3.33	9.933		
900.0	900.0	900.0	900.0	1.9	1.9	90.01	0.0	33.0	33.0	29.3	3.78	8.750 CC, ES		
1,000.0	1,000.0	999.4	999.4	2.1	2.1	92.52	-1.5	33.9	34.0	29.8	4.20	8.089		
1,100.0	1,100.0	1,098.6	1,098.5	2.3	2.3	-63.14	-5.9	36.6	36.2	31.7	4.57	7.925		
1,200.0	1,199.8	1,198.6	1,198.2	2.5	2.5	-61.81	-11.9	40.1	38.1	33.2	4.94	7.720		
1,300.0	1,299.6	1,298.6	1,297.9	2.7	2.7	-62.85	-17.9	43.7	39.2	33.9	5.33	7.357		
1,400.0	1,399.4	1,398.6	1,397.7	2.9	2.9	-63.84	-23.9	47.2	40.3	34.6	5.74	7.021		
1,500.0	1,499.1	1,498.5	1,497.4	3.1	3.1	-64.78	-29.9	50.8	41.4	35.3	6.17	6.714		
1,600.0	1,598.9	1,598.5	1,597.2	3.3	3.3	-65.67	-35.9	54.3	42.6	35.9	6.61	6.436		
1,700.0	1,698.6	1,698.5	1,696.9	3.5	3.6	-66.51	-41.9	57.9	43.7	36.6	7.07	6.184		
1,800.0	1,798.4	1,798.5	1,796.7	3.8	3.8	-67.31	-47.9	61.5	44.8	37.3	7.53	5.956		
1,900.0	1,898.1	1,898.5	1,896.4	4.0	4.1	-68.07	-53.9	65.0	46.0	38.0	8.00	5.750		
2,000.0	1,997.9	1,998.5	1,996.2	4.2	4.3	-68.79	-59.9	68.6	47.1	38.7	8.47	5.563		
2,100.0	2,097.6	2,098.5	2,095.9	4.5	4.5	-69.48	-65.9	72.1	48.3	39.3	8.96	5.393		
2,200.0	2,197.4	2,198.5	2,195.7	4.7	4.8	-70.13	-71.9	75.7	49.5	40.0	9.44	5.239		
2,300.0	2,297.2	2,298.5	2,295.4	5.0	5.0	-70.75	-77.9	79.2	50.7	40.7	9.94	5.098		
2,400.0	2,396.9	2,398.5	2,395.2	5.2	5.3	-71.35	-83.9	82.8	51.8	41.4	10.43	4.969		
2,500.0	2,496.7	2,498.5	2,494.9	5.5	5.6	-71.92	-89.9	86.4	53.0	42.1	10.93	4.852		
2,600.0	2,596.4	2,598.5	2,594.6	5.7	5.8	-72.46	-95.9	89.9	54.2	42.8	11.43	4.743		
2,700.0	2,696.2	2,698.5	2,694.4	6.0	6.1	-72.99	-101.9	93.5	55.4	43.5	11.93	4.643		
2,800.0	2,795.9	2,798.4	2,794.1	6.2	6.3	-73.48	-107.9	97.0	56.6	44.2	12.44	4.551		
2,900.0	2,895.7	2,898.4	2,893.9	6.5	6.6	-73.96	-113.9	100.6	57.8	44.9	12.95	4.466		
3,000.0	2,995.5	2,998.4	2,993.6	6.7	6.8	-74.42	-119.9	104.2	59.0	45.6	13.46	4.386		
3,100.0	3,095.2	3,098.4	3,093.4	7.0	7.1	-74.86	-125.9	107.7	60.2	46.3	13.97	4.313		
3,200.0	3,195.0	3,198.4	3,193.1	7.3	7.3	-75.28	-131.9	111.3	61.5	47.0	14.48	4.244		
3,300.0	3,294.7	3,298.4	3,292.9	7.5	7.6	-75.69	-137.9	114.8	62.7	47.7	15.00	4.180		
3,400.0	3,394.5	3,398.4	3,392.6	7.8	7.9	-76.08	-143.9	118.4	63.9	48.4	15.51	4.120		
3,500.0	3,494.2	3,498.4	3,492.4	8.0	8.1	-76.46	-149.9	121.9	65.1	49.1	16.03	4.064		
3,600.0	3,594.0	3,598.4	3,592.1	8.3	8.4	-76.82	-155.9	125.5	66.4	49.8	16.54	4.011		
3,700.0	3,693.8	3,698.4	3,691.9	8.5	8.6	-77.17	-161.9	129.1	67.6	50.5	17.06	3.961		
3,800.0	3,793.5	3,798.4	3,791.6	8.8	8.9	-77.50	-167.9	132.6	68.8	51.2	17.58	3.915		
3,900.0	3,893.3	3,898.4	3,891.4	9.1	9.2	-77.83	-173.9	136.2	70.1	52.0	18.10	3.871		
4,000.0	3,993.0	3,998.3	3,991.1	9.3	9.4	-78.14	-179.9	139.7	71.3	52.7	18.62	3.829		
4,100.0	4,092.8	4,098.3	4,090.9	9.6	9.7	-78.45	-185.9	143.3	72.5	53.4	19.14	3.790		
4,200.0	4,192.5	4,198.3	4,190.6	9.8	9.9	-78.74	-191.9	146.8	73.8	54.1	19.66	3.752		
4,300.0	4,292.3	4,298.3	4,290.4	10.1	10.2	-79.02	-197.9	150.4	75.0	54.8	20.19	3.717		
4,400.0	4,392.1	4,398.3	4,390.1	10.4	10.5	-79.29	-203.9	154.0	76.3	55.6	20.71	3.683		
4,500.0	4,491.8	4,498.3	4,489.9	10.6	10.7	-79.56	-209.9	157.5	77.5	56.3	21.23	3.652		
4,600.0	4,591.6	4,598.3	4,589.6	10.9	11.0	-79.81	-215.9	161.1	78.8	57.0	21.75	3.621		
4,700.0	4,691.3	4,698.3	4,689.4	11.2	11.3	-80.06	-221.9	164.6	80.0	57.7	22.28	3.592		
4,800.0	4,791.1	4,798.3	4,789.1	11.4	11.5	-80.30	-227.9	168.2	81.3	58.5	22.80	3.565		
4,900.0	4,890.8	4,898.3	4,888.9	11.7	11.8	-80.54	-233.9	171.8	82.5	59.2	23.32	3.538		
5,000.0	4,990.6	4,998.3	4,988.6	11.9	12.0	-80.76	-239.9	175.3	83.8	59.9	23.85	3.513		
5,100.0	5,090.3	5,098.3	5,088.4	12.2	12.3	-80.98	-245.9	178.9	85.0	60.7	24.37	3.489		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1													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		
5,200.0	5,190.1	5,198.2	5,188.1	12.5	12.6	-81.20	-251.9	182.4	86.3	61.4	24.90	3.466		
5,300.0	5,289.9	5,298.2	5,287.8	12.7	12.8	-81.40	-257.9	186.0	87.6	62.1	25.42	3.444		
5,338.0	5,327.8	5,336.2	5,325.8	12.8	12.9	-81.48	-260.2	187.3	88.0	62.4	25.62	3.436		
5,350.0	5,339.7	5,348.2	5,337.7	12.9	13.0	-81.58	-260.9	187.8	88.2	62.5	25.69	3.432		
5,400.0	5,389.2	5,398.1	5,387.4	13.0	13.1	-83.93	-263.9	189.5	88.3	62.3	26.02	3.396		
5,411.4	5,400.4	5,409.3	5,398.7	13.1	13.1	-84.89	-264.6	189.9	88.4	62.2	26.11	3.384		
5,450.0	5,437.8	5,447.0	5,436.3	13.2	13.2	-89.16	-266.9	191.3	88.5	62.1	26.41	3.352		
5,500.0	5,485.0	5,494.8	5,483.6	13.5	13.4	-95.06	-272.4	194.6	90.2	63.4	26.81	3.363		
5,550.0	5,530.5	5,543.5	5,531.0	13.8	13.6	-100.63	-281.9	200.2	93.7	66.5	27.19	3.445		
5,600.0	5,573.7	5,593.0	5,577.9	14.1	13.8	-105.62	-295.3	208.2	99.0	71.5	27.54	3.594		
5,650.0	5,614.4	5,643.3	5,623.9	14.5	14.1	-109.87	-312.9	218.6	105.8	78.0	27.85	3.801		
5,700.0	5,652.1	5,694.6	5,668.5	14.9	14.5	-113.33	-334.6	231.5	114.0	85.9	28.14	4.052		
5,750.0	5,686.4	5,746.8	5,711.2	15.4	14.9	-116.01	-360.5	246.8	123.2	94.7	28.45	4.330		
5,800.0	5,717.2	5,800.0	5,751.3	16.0	15.3	-117.98	-390.5	264.6	133.2	104.4	28.84	4.619		
5,850.0	5,744.0	5,854.1	5,788.3	16.5	15.9	-119.31	-424.5	284.8	143.8	114.4	29.36	4.898		
5,900.0	5,766.6	5,909.3	5,821.5	17.2	16.5	-120.09	-462.3	307.2	154.8	124.7	30.04	5.152		
5,950.0	5,784.9	5,965.5	5,850.4	17.9	17.2	-120.40	-503.8	331.8	166.0	135.0	30.93	5.366		
6,000.0	5,798.6	6,022.7	5,874.3	18.6	18.0	-120.30	-548.4	358.3	177.2	145.2	32.04	5.531		
6,050.0	5,807.6	6,080.9	5,892.7	19.4	18.9	-119.85	-595.9	386.4	188.4	155.0	33.36	5.645		
6,100.0	5,811.9	6,140.1	5,904.9	20.1	19.8	-119.10	-645.6	415.9	199.3	164.4	34.90	5.709		
6,119.8	5,812.3	6,163.7	5,907.9	20.5	20.2	-118.73	-665.8	427.9	203.5	167.9	35.57	5.722		
6,200.0	5,812.3	6,256.3	5,910.8	21.7	21.7	-117.25	-745.5	474.8	218.9	180.7	38.29	5.718		
6,300.0	5,812.3	6,366.0	5,910.8	23.1	23.4	-114.97	-842.5	526.1	237.4	195.7	41.66	5.699		
6,400.0	5,812.3	6,477.1	5,910.8	24.6	25.1	-113.07	-943.5	572.3	255.7	210.7	44.93	5.690		
6,500.0	5,812.3	6,589.7	5,910.8	26.1	26.9	-111.46	-1,048.5	613.1	273.6	225.5	48.13	5.684		
6,600.0	5,812.3	6,703.8	5,910.8	27.7	28.8	-110.10	-1,157.0	648.0	291.1	239.8	51.24	5.681		
6,700.0	5,812.3	6,819.3	5,910.8	29.2	30.7	-108.93	-1,268.9	676.7	307.9	253.7	54.22	5.679		
6,786.6	5,812.3	6,920.5	5,910.8	30.6	32.3	-108.06	-1,368.2	696.3	322.0	265.3	56.69	5.680		
6,800.0	5,812.3	6,936.2	5,910.8	30.8	32.6	-107.91	-1,383.7	698.8	324.1	266.9	57.21	5.665		
6,900.0	5,812.3	7,055.0	5,910.8	32.5	34.5	-107.11	-1,501.5	714.1	336.3	275.3	61.08	5.507		
7,000.0	5,812.3	7,175.3	5,910.8	34.2	36.4	-106.72	-1,621.5	722.0	342.7	277.8	64.86	5.284		
7,100.0	5,812.3	7,286.6	5,910.8	35.9	38.2	-106.67	-1,732.8	723.1	343.6	275.2	68.38	5.025		
7,200.0	5,812.3	7,386.6	5,910.8	37.6	39.8	-106.67	-1,832.8	723.1	343.6	271.9	71.74	4.790		
7,300.0	5,812.3	7,486.6	5,910.8	39.4	41.4	-106.67	-1,932.8	723.1	343.6	268.5	75.13	4.574		
7,400.0	5,812.3	7,586.6	5,910.8	41.1	43.1	-106.67	-2,032.8	723.1	343.6	265.1	78.55	4.375		
7,500.0	5,812.3	7,686.6	5,910.8	42.9	44.7	-106.67	-2,132.8	723.1	343.6	261.6	82.00	4.191		
7,600.0	5,812.3	7,786.6	5,910.9	44.7	46.4	-106.67	-2,232.8	723.1	343.6	258.2	85.46	4.021		
7,700.0	5,812.3	7,886.6	5,910.9	46.5	48.1	-106.67	-2,332.8	723.1	343.7	254.7	88.95	3.863		
7,800.0	5,812.2	7,986.6	5,910.9	48.3	49.9	-106.67	-2,432.8	723.2	343.7	251.2	92.45	3.717		
7,900.0	5,812.2	8,086.6	5,910.9	50.1	51.6	-106.68	-2,532.8	723.2	343.7	247.7	95.97	3.581		
8,000.0	5,812.2	8,186.6	5,910.9	52.0	53.4	-106.68	-2,632.8	723.2	343.7	244.2	99.51	3.454		
8,100.0	5,812.2	8,286.6	5,910.9	53.8	55.1	-106.68	-2,732.8	723.2	343.7	240.7	103.05	3.335		
8,200.0	5,812.2	8,386.6	5,910.9	55.6	56.9	-106.68	-2,832.8	723.2	343.7	237.1	106.61	3.224		
8,300.0	5,812.2	8,486.6	5,910.9	57.5	58.7	-106.68	-2,932.8	723.2	343.7	233.6	110.17	3.120		
8,400.0	5,812.2	8,586.6	5,910.9	59.3	60.5	-106.68	-3,032.8	723.2	343.7	230.0	113.75	3.022		
8,500.0	5,812.2	8,686.6	5,910.9	61.2	62.3	-106.68	-3,132.8	723.2	343.7	226.4	117.33	2.930		
8,600.0	5,812.2	8,786.6	5,910.9	63.1	64.1	-106.68	-3,232.8	723.2	343.8	222.8	120.92	2.843		
8,700.0	5,812.2	8,886.6	5,910.9	64.9	65.9	-106.68	-3,332.8	723.2	343.8	219.3	124.51	2.761		
8,800.0	5,812.2	8,986.6	5,910.9	66.8	67.7	-106.68	-3,432.8	723.2	343.8	215.7	128.12	2.683		
8,900.0	5,812.2	9,086.6	5,910.9	68.7	69.6	-106.68	-3,532.8	723.2	343.8	212.1	131.73	2.610		
9,000.0	5,812.2	9,186.6	5,910.9	70.5	71.4	-106.68	-3,632.8	723.2	343.8	208.5	135.34	2.540		
9,100.0	5,812.2	9,286.6	5,910.9	72.4	73.2	-106.68	-3,732.8	723.2	343.8	204.9	138.96	2.474		

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 Federal #12G-1311A
Project:	Weld County, CO	TVD Reference:	WELL @ 4970.3ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4970.3ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Razor Federal #12G-1311A	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 #1	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12G-1312B - HZ - Plan #1													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		
9,200.0	5,812.2	9,386.6	5,910.9	74.3	75.1	-106.68	-3,832.8	723.2	343.8	201.3	142.58	2.411		
9,300.0	5,812.2	9,486.6	5,910.9	76.2	76.9	-106.68	-3,932.8	723.2	343.8	197.6	146.21	2.352		
9,400.0	5,812.2	9,586.6	5,910.9	78.0	78.7	-106.68	-4,032.8	723.2	343.9	194.0	149.84	2.295		
9,500.0	5,812.2	9,686.6	5,910.9	79.9	80.6	-106.69	-4,132.8	723.2	343.9	190.4	153.47	2.241		
9,600.0	5,812.2	9,786.6	5,910.9	81.8	82.5	-106.69	-4,232.8	723.2	343.9	186.8	157.11	2.189		
9,700.0	5,812.2	9,886.6	5,910.9	83.7	84.3	-106.69	-4,332.8	723.2	343.9	183.1	160.75	2.139		
9,800.0	5,812.2	9,986.6	5,910.9	85.6	86.2	-106.69	-4,432.8	723.2	343.9	179.5	164.39	2.092		
9,900.0	5,812.2	10,086.6	5,910.9	87.5	88.0	-106.69	-4,532.8	723.2	343.9	175.9	168.04	2.047		
10,000.0	5,812.2	10,186.6	5,910.9	89.4	89.9	-106.69	-4,632.8	723.2	343.9	172.2	171.69	2.003		
10,100.0	5,812.1	10,286.6	5,910.9	91.2	91.8	-106.69	-4,732.8	723.2	343.9	168.6	175.34	1.962		
10,200.0	5,812.1	10,386.6	5,910.9	93.1	93.6	-106.69	-4,832.8	723.2	344.0	165.0	178.99	1.922		
10,300.0	5,812.1	10,486.6	5,910.9	95.0	95.5	-106.69	-4,932.8	723.2	344.0	161.3	182.65	1.883		
10,400.0	5,812.1	10,586.6	5,910.9	96.9	97.4	-106.69	-5,032.8	723.3	344.0	157.7	186.31	1.846		
10,500.0	5,812.1	10,686.6	5,910.9	98.8	99.3	-106.69	-5,132.8	723.3	344.0	154.0	189.96	1.811		
10,600.0	5,812.1	10,786.6	5,910.9	100.7	101.1	-106.69	-5,232.8	723.3	344.0	150.4	193.62	1.777		
10,700.0	5,812.1	10,886.6	5,910.9	102.6	103.0	-106.69	-5,332.8	723.3	344.0	146.7	197.29	1.744		
10,800.0	5,812.1	10,986.6	5,910.9	104.5	104.9	-106.69	-5,432.8	723.3	344.0	143.1	200.95	1.712		
10,900.0	5,812.1	11,086.6	5,910.9	106.4	106.8	-106.69	-5,532.8	723.3	344.0	139.4	204.62	1.681		
11,000.0	5,812.1	11,186.6	5,910.9	108.3	108.7	-106.70	-5,632.8	723.3	344.0	135.8	208.28	1.652		
11,100.0	5,812.1	11,286.6	5,911.0	110.2	110.5	-106.70	-5,732.8	723.3	344.1	132.1	211.95	1.623		
11,200.0	5,812.1	11,386.6	5,911.0	112.1	112.4	-106.70	-5,832.8	723.3	344.1	128.5	215.62	1.596		
11,300.0	5,812.1	11,486.6	5,911.0	114.0	114.3	-106.70	-5,932.8	723.3	344.1	124.8	219.29	1.569		
11,400.0	5,812.1	11,586.6	5,911.0	115.9	116.2	-106.70	-6,032.8	723.3	344.1	121.1	222.96	1.543		
11,500.0	5,812.1	11,686.6	5,911.0	117.8	118.1	-106.70	-6,132.8	723.3	344.1	117.5	226.63	1.518		
11,600.0	5,812.1	11,786.6	5,911.0	119.7	120.0	-106.70	-6,232.8	723.3	344.1	113.8	230.31	1.494 Level 3		
11,700.0	5,812.1	11,886.6	5,911.0	121.7	121.9	-106.70	-6,332.8	723.3	344.1	110.2	233.98	1.471 Level 3		
11,800.0	5,812.1	11,986.6	5,911.0	123.6	123.8	-106.70	-6,432.8	723.3	344.1	106.5	237.66	1.448 Level 3		
11,900.0	5,812.1	12,086.6	5,911.0	125.5	125.7	-106.70	-6,532.8	723.3	344.2	102.8	241.33	1.426 Level 3		
12,000.0	5,812.1	12,186.6	5,911.0	127.4	127.6	-106.70	-6,632.8	723.3	344.2	99.2	245.01	1.405 Level 3		
12,100.0	5,812.1	12,286.6	5,911.0	129.3	129.5	-106.70	-6,732.8	723.3	344.2	95.5	248.69	1.384 Level 3		
12,200.0	5,812.1	12,386.6	5,911.0	131.2	131.3	-106.70	-6,832.8	723.3	344.2	91.8	252.37	1.364 Level 3		
12,300.0	5,812.1	12,486.6	5,911.0	133.1	133.2	-106.70	-6,932.8	723.3	344.2	88.2	256.04	1.344 Level 3		
12,400.0	5,812.0	12,586.6	5,911.0	135.0	135.1	-106.70	-7,032.8	723.3	344.2	84.5	259.72	1.325 Level 3		
12,500.0	5,812.0	12,686.6	5,911.0	136.9	137.0	-106.71	-7,132.8	723.3	344.2	80.8	263.40	1.307 Level 3		
12,600.0	5,812.0	12,786.6	5,911.0	138.8	138.9	-106.71	-7,232.8	723.3	344.2	77.2	267.09	1.289 Level 3		
12,700.0	5,812.0	12,886.6	5,911.0	140.7	140.8	-106.71	-7,332.8	723.3	344.3	73.5	270.77	1.271 Level 3		
12,800.0	5,812.0	12,986.6	5,911.0	142.6	142.7	-106.71	-7,432.8	723.3	344.3	69.8	274.45	1.254 Level 3		
12,900.0	5,812.0	13,086.6	5,911.0	144.5	144.6	-106.71	-7,532.8	723.3	344.3	66.1	278.13	1.238 Level 2		
13,000.0	5,812.0	13,186.6	5,911.0	146.5	146.5	-106.71	-7,632.8	723.3	344.3	62.5	281.82	1.222 Level 2		
13,100.0	5,812.0	13,286.6	5,911.0	148.4	148.4	-106.71	-7,732.8	723.4	344.3	58.8	285.50	1.206 Level 2		
13,200.0	5,812.0	13,386.6	5,911.0	150.3	150.3	-106.71	-7,832.8	723.4	344.3	55.1	289.18	1.191 Level 2		
13,226.5	5,812.0	13,413.1	5,911.0	150.7	150.8	-106.71	-7,859.2	723.4	344.3	54.3	290.00	1.187 Level 2		
13,250.2	5,812.0	13,435.8	5,911.0	151.1	151.2	-106.71	-7,881.9	723.4	344.3	53.6	290.72	1.184 Level 2, SF		

Cathedral Energy Services

Anticollision Report

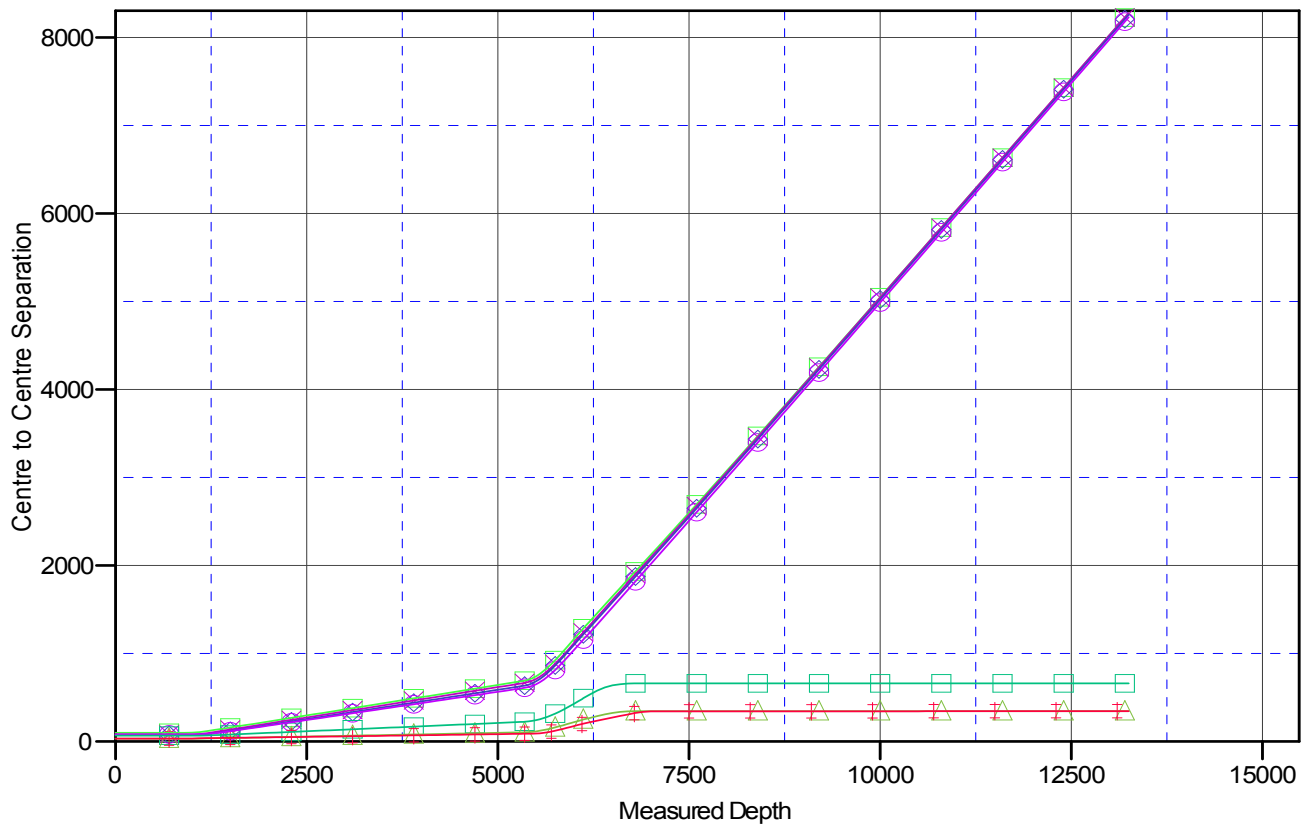
Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S12-T10N-R58W
Site Error: 0.0ft
Reference Well: Razor Federal #12G-1311A
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well Razor Federal #12G-1311A
TVD Reference: WELL @ 4970.3ft (Original Well Elev)
MD Reference: WELL @ 4970.3ft (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 @ 4970.3ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: Razor Federal #12G- 1311A
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.09°

Ladder Plot



LEGEND

- Razor #12G-0109A, HZ, Plan #1 V0
- ✕ Razor #12G-0110B, HZ, Plan #1 V0
- ◆ Razor #12G-0111A, HZ, Plan #1 V0
- Razor #12G-0112B, HZ, Plan #1 V0
- Razor Federal #12G-1309A, HZ, Plan #1 V0
- ▲ Razor Federal #12G-1310B, HZ, Plan #1 V0
- ✕ Razor Federal #12G-1312B, HZ, Plan #1 V0