



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #21B-0909A
Company:	Whiting Petroleum Corporation	TVD Reference:	KB=17 @ 4854.3usft
Project:	Weld County, CO	MD Reference:	KB=17 @ 4854.3usft
Site:	S21-T10N-R58W	North Reference:	True
Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

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		S21-T10N-R58W			
Site Position:		Northing:	1,549,494.62 usft	Latitude:	40.830272
From:	Lat/Long	Easting:	3,452,846.68 usft	Longitude:	-103.863561
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.06 °

Well	Razor #21B-0909A					
Well Position	+N/-S	0.0 usft	Northing:	1,549,441.31 usft	Latitude:	40.830200
	+E/-W	0.0 usft	Easting:	3,451,378.46 usft	Longitude:	-103.868869
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,837.3 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	5/20/2013	8.14	67.47	53,243

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	357.34

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	4.00	340.96	699.8	6.6	-2.3	2.00	2.00	0.00	340.96	
5,445.2	4.00	340.96	5,433.5	319.5	-110.3	0.00	0.00	0.00	0.00	
6,227.0	90.00	340.96	5,918.0	810.7	-279.8	11.00	11.00	0.00	0.00	
6,861.7	90.00	360.00	5,918.0	1,433.7	-384.3	3.00	0.00	3.00	90.00	
13,706.6	90.00	360.00	5,918.0	8,278.6	-384.3	0.00	0.00	0.00	0.00	21B-0909A BHL P2

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Project:	Weld County, CO	MD Reference:	KB=17 @ 4854.3usft
Site:	S21-T10N-R58W	North Reference:	True
Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
0.5	0.00	0.00	0.5	0.0	0.0	0.0	0.00	0.00	SH - 327' FNL, 2,161' FEL
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	KOP @ 500'
600.0	2.00	340.96	600.0	1.6	-0.6	1.7	2.00	2.00	
700.0	4.00	340.96	699.8	6.6	-2.3	6.7	2.00	2.00	EOB @ 4° INC
800.0	4.00	340.96	799.6	13.2	-4.6	13.4	0.00	0.00	
900.0	4.00	340.96	899.4	19.8	-6.8	20.1	0.00	0.00	
1,000.0	4.00	340.96	999.1	26.4	-9.1	26.8	0.00	0.00	
1,100.0	4.00	340.96	1,098.9	33.0	-11.4	33.5	0.00	0.00	
1,200.0	4.00	340.96	1,198.6	39.6	-13.7	40.2	0.00	0.00	
1,300.0	4.00	340.96	1,298.4	46.2	-15.9	46.8	0.00	0.00	
1,400.0	4.00	340.96	1,398.1	52.8	-18.2	53.5	0.00	0.00	
1,500.0	4.00	340.96	1,497.9	59.3	-20.5	60.2	0.00	0.00	
1,600.0	4.00	340.96	1,597.6	65.9	-22.8	66.9	0.00	0.00	
1,621.4	4.00	340.96	1,619.0	67.4	-23.2	68.4	0.00	0.00	Pierre
1,700.0	4.00	340.96	1,697.4	72.5	-25.0	73.6	0.00	0.00	Surface Casing
1,800.0	4.00	340.96	1,797.2	79.1	-27.3	80.3	0.00	0.00	
1,900.0	4.00	340.96	1,896.9	85.7	-29.6	87.0	0.00	0.00	
2,000.0	4.00	340.96	1,996.7	92.3	-31.9	93.7	0.00	0.00	
2,100.0	4.00	340.96	2,096.4	98.9	-34.1	100.4	0.00	0.00	
2,200.0	4.00	340.96	2,196.2	105.5	-36.4	107.1	0.00	0.00	
2,300.0	4.00	340.96	2,295.9	112.1	-38.7	113.8	0.00	0.00	
2,400.0	4.00	340.96	2,395.7	118.7	-41.0	120.5	0.00	0.00	
2,500.0	4.00	340.96	2,495.5	125.3	-43.2	127.2	0.00	0.00	
2,600.0	4.00	340.96	2,595.2	131.9	-45.5	133.9	0.00	0.00	
2,700.0	4.00	340.96	2,695.0	138.5	-47.8	140.5	0.00	0.00	
2,800.0	4.00	340.96	2,794.7	145.1	-50.1	147.2	0.00	0.00	
2,900.0	4.00	340.96	2,894.5	151.7	-52.3	153.9	0.00	0.00	
3,000.0	4.00	340.96	2,994.2	158.3	-54.6	160.6	0.00	0.00	
3,100.0	4.00	340.96	3,094.0	164.9	-56.9	167.3	0.00	0.00	
3,200.0	4.00	340.96	3,193.7	171.4	-59.2	174.0	0.00	0.00	
3,300.0	4.00	340.96	3,293.5	178.0	-61.4	180.7	0.00	0.00	
3,400.0	4.00	340.96	3,393.3	184.6	-63.7	187.4	0.00	0.00	
3,500.0	4.00	340.96	3,493.0	191.2	-66.0	194.1	0.00	0.00	
3,600.0	4.00	340.96	3,592.8	197.8	-68.3	200.8	0.00	0.00	
3,700.0	4.00	340.96	3,692.5	204.4	-70.5	207.5	0.00	0.00	
3,800.0	4.00	340.96	3,792.3	211.0	-72.8	214.2	0.00	0.00	
3,900.0	4.00	340.96	3,892.0	217.6	-75.1	220.9	0.00	0.00	
4,000.0	4.00	340.96	3,991.8	224.2	-77.4	227.5	0.00	0.00	
4,100.0	4.00	340.96	4,091.6	230.8	-79.6	234.2	0.00	0.00	
4,200.0	4.00	340.96	4,191.3	237.4	-81.9	240.9	0.00	0.00	
4,300.0	4.00	340.96	4,291.1	244.0	-84.2	247.6	0.00	0.00	
4,400.0	4.00	340.96	4,390.8	250.6	-86.5	254.3	0.00	0.00	
4,500.0	4.00	340.96	4,490.6	257.2	-88.8	261.0	0.00	0.00	
4,600.0	4.00	340.96	4,590.3	263.8	-91.0	267.7	0.00	0.00	
4,700.0	4.00	340.96	4,690.1	270.4	-93.3	274.4	0.00	0.00	
4,800.0	4.00	340.96	4,789.9	277.0	-95.6	281.1	0.00	0.00	
4,900.0	4.00	340.96	4,889.6	283.5	-97.9	287.8	0.00	0.00	

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Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,000.0	4.00	340.96	4,989.4	290.1	-100.1	294.5	0.00	0.00	
5,100.0	4.00	340.96	5,089.1	296.7	-102.4	301.2	0.00	0.00	
5,200.0	4.00	340.96	5,188.9	303.3	-104.7	307.9	0.00	0.00	
5,300.0	4.00	340.96	5,288.6	309.9	-107.0	314.5	0.00	0.00	
5,400.0	4.00	340.96	5,388.4	316.5	-109.2	321.2	0.00	0.00	
5,445.2	4.00	340.96	5,433.5	319.5	-110.3	324.3	0.00	0.00	Start 11° Build
5,450.0	4.53	340.96	5,438.3	319.8	-110.4	324.6	11.00	11.00	
5,500.0	10.03	340.96	5,487.8	325.8	-112.4	330.7	11.00	11.00	
5,550.0	15.53	340.96	5,536.6	336.3	-116.0	341.3	11.00	11.00	
5,600.0	21.03	340.96	5,584.0	351.1	-121.2	356.3	11.00	11.00	
5,650.0	26.53	340.96	5,629.8	370.1	-127.7	375.7	11.00	11.00	
5,700.0	32.03	340.96	5,673.4	393.2	-135.7	399.1	11.00	11.00	
5,750.0	37.53	340.96	5,714.4	420.2	-145.0	426.5	11.00	11.00	
5,800.0	43.03	340.96	5,752.6	450.7	-155.6	457.5	11.00	11.00	
5,850.0	48.53	340.96	5,787.4	484.6	-167.2	491.8	11.00	11.00	
5,900.0	54.03	340.96	5,818.7	521.5	-180.0	529.2	11.00	11.00	
5,950.0	59.53	340.96	5,846.1	561.0	-193.6	569.4	11.00	11.00	
6,000.0	65.03	340.96	5,869.3	602.8	-208.0	611.8	11.00	11.00	
6,049.3	70.45	340.96	5,888.0	645.9	-222.9	655.6	11.00	11.00	Niobrara
6,050.0	70.53	340.96	5,888.2	646.5	-223.1	656.2	11.00	11.00	
6,100.0	76.03	340.96	5,902.6	691.8	-238.7	702.1	11.00	11.00	
6,150.0	81.53	340.96	5,912.3	738.1	-254.7	749.1	11.00	11.00	
6,200.0	87.03	340.96	5,917.3	785.1	-271.0	796.9	11.00	11.00	
6,227.0	90.00	340.96	5,918.0	810.7	-279.8	822.8	11.00	11.00	LP @ 5,918' TVD, 90° INC - 7" - 489' FSL, 2,43
6,300.0	90.00	343.15	5,918.0	880.1	-302.3	893.2	3.00	0.00	
6,400.0	90.00	346.15	5,918.0	976.5	-328.7	990.7	3.00	0.00	
6,500.0	90.00	349.15	5,918.0	1,074.2	-350.1	1,089.3	3.00	0.00	
6,600.0	90.00	352.15	5,918.0	1,172.9	-366.4	1,188.6	3.00	0.00	
6,700.0	90.00	355.15	5,918.0	1,272.2	-377.4	1,288.4	3.00	0.00	
6,800.0	90.00	358.15	5,918.0	1,372.0	-383.3	1,388.3	3.00	0.00	
6,861.7	90.00	360.00	5,918.0	1,433.7	-384.3	1,450.0	3.00	0.00	EOT @ 360° AZ
6,900.0	90.00	360.00	5,918.0	1,472.0	-384.3	1,488.3	0.00	0.00	
7,000.0	90.00	360.00	5,918.0	1,572.0	-384.3	1,588.2	0.00	0.00	
7,100.0	90.00	360.00	5,918.0	1,672.0	-384.3	1,688.1	0.00	0.00	
7,200.0	90.00	360.00	5,918.0	1,772.0	-384.3	1,787.9	0.00	0.00	
7,300.0	90.00	360.00	5,918.0	1,872.0	-384.3	1,887.8	0.00	0.00	
7,400.0	90.00	360.00	5,918.0	1,972.0	-384.3	1,987.7	0.00	0.00	
7,500.0	90.00	360.00	5,918.0	2,072.0	-384.3	2,087.6	0.00	0.00	
7,600.0	90.00	360.00	5,918.0	2,172.0	-384.3	2,187.5	0.00	0.00	
7,700.0	90.00	360.00	5,918.0	2,272.0	-384.3	2,287.4	0.00	0.00	
7,800.0	90.00	360.00	5,918.0	2,372.0	-384.3	2,387.3	0.00	0.00	
7,900.0	90.00	360.00	5,918.0	2,472.0	-384.3	2,487.2	0.00	0.00	
8,000.0	90.00	360.00	5,918.0	2,572.0	-384.3	2,587.1	0.00	0.00	
8,100.0	90.00	360.00	5,918.0	2,672.0	-384.3	2,687.0	0.00	0.00	
8,200.0	90.00	360.00	5,918.0	2,772.0	-384.3	2,786.9	0.00	0.00	
8,300.0	90.00	360.00	5,918.0	2,872.0	-384.3	2,886.8	0.00	0.00	
8,400.0	90.00	360.00	5,918.0	2,972.0	-384.3	2,986.7	0.00	0.00	
8,500.0	90.00	360.00	5,918.0	3,072.0	-384.3	3,086.5	0.00	0.00	
8,600.0	90.00	360.00	5,918.0	3,172.0	-384.3	3,186.4	0.00	0.00	
8,700.0	90.00	360.00	5,918.0	3,272.0	-384.3	3,286.3	0.00	0.00	
8,800.0	90.00	360.00	5,918.0	3,372.0	-384.3	3,386.2	0.00	0.00	
8,900.0	90.00	360.00	5,918.0	3,472.0	-384.3	3,486.1	0.00	0.00	

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Project:	Weld County, CO	MD Reference:	KB=17 @ 4854.3usft
Site:	S21-T10N-R58W	North Reference:	True
Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,000.0	90.00	360.00	5,918.0	3,572.0	-384.3	3,586.0	0.00	0.00	
9,100.0	90.00	360.00	5,918.0	3,672.0	-384.3	3,685.9	0.00	0.00	
9,200.0	90.00	360.00	5,918.0	3,772.0	-384.3	3,785.8	0.00	0.00	
9,300.0	90.00	360.00	5,918.0	3,872.0	-384.3	3,885.7	0.00	0.00	
9,400.0	90.00	360.00	5,918.0	3,972.0	-384.3	3,985.6	0.00	0.00	
9,500.0	90.00	360.00	5,918.0	4,072.0	-384.3	4,085.5	0.00	0.00	
9,600.0	90.00	360.00	5,918.0	4,172.0	-384.3	4,185.4	0.00	0.00	
9,700.0	90.00	360.00	5,918.0	4,272.0	-384.3	4,285.3	0.00	0.00	
9,800.0	90.00	360.00	5,918.0	4,372.0	-384.3	4,385.2	0.00	0.00	
9,900.0	90.00	360.00	5,918.0	4,472.0	-384.3	4,485.0	0.00	0.00	
10,000.0	90.00	360.00	5,918.0	4,572.0	-384.3	4,584.9	0.00	0.00	
10,100.0	90.00	360.00	5,918.0	4,672.0	-384.3	4,684.8	0.00	0.00	
10,200.0	90.00	360.00	5,918.0	4,772.0	-384.3	4,784.7	0.00	0.00	
10,300.0	90.00	360.00	5,918.0	4,872.0	-384.3	4,884.6	0.00	0.00	
10,400.0	90.00	360.00	5,918.0	4,972.0	-384.3	4,984.5	0.00	0.00	
10,500.0	90.00	360.00	5,918.0	5,072.0	-384.3	5,084.4	0.00	0.00	
10,600.0	90.00	360.00	5,918.0	5,172.0	-384.3	5,184.3	0.00	0.00	
10,700.0	90.00	360.00	5,918.0	5,272.0	-384.3	5,284.2	0.00	0.00	
10,800.0	90.00	360.00	5,918.0	5,372.0	-384.3	5,384.1	0.00	0.00	
10,900.0	90.00	360.00	5,918.0	5,472.0	-384.3	5,484.0	0.00	0.00	
11,000.0	90.00	360.00	5,918.0	5,572.0	-384.3	5,583.9	0.00	0.00	
11,100.0	90.00	360.00	5,918.0	5,672.0	-384.3	5,683.8	0.00	0.00	
11,200.0	90.00	360.00	5,918.0	5,772.0	-384.3	5,783.6	0.00	0.00	
11,300.0	90.00	360.00	5,918.0	5,872.0	-384.3	5,883.5	0.00	0.00	
11,400.0	90.00	360.00	5,918.0	5,972.0	-384.3	5,983.4	0.00	0.00	
11,500.0	90.00	360.00	5,918.0	6,072.0	-384.3	6,083.3	0.00	0.00	
11,600.0	90.00	360.00	5,918.0	6,172.0	-384.3	6,183.2	0.00	0.00	
11,700.0	90.00	360.00	5,918.0	6,272.0	-384.3	6,283.1	0.00	0.00	
11,800.0	90.00	360.00	5,918.0	6,372.0	-384.3	6,383.0	0.00	0.00	
11,900.0	90.00	360.00	5,918.0	6,472.0	-384.3	6,482.9	0.00	0.00	
12,000.0	90.00	360.00	5,918.0	6,572.0	-384.3	6,582.8	0.00	0.00	
12,100.0	90.00	360.00	5,918.0	6,672.0	-384.3	6,682.7	0.00	0.00	
12,200.0	90.00	360.00	5,918.0	6,772.0	-384.3	6,782.6	0.00	0.00	
12,300.0	90.00	360.00	5,918.0	6,872.0	-384.3	6,882.5	0.00	0.00	
12,400.0	90.00	360.00	5,918.0	6,972.0	-384.3	6,982.4	0.00	0.00	
12,500.0	90.00	360.00	5,918.0	7,072.0	-384.3	7,082.2	0.00	0.00	
12,600.0	90.00	360.00	5,918.0	7,172.0	-384.3	7,182.1	0.00	0.00	
12,700.0	90.00	360.00	5,918.0	7,272.0	-384.3	7,282.0	0.00	0.00	
12,800.0	90.00	360.00	5,918.0	7,372.0	-384.3	7,381.9	0.00	0.00	
12,900.0	90.00	360.00	5,918.0	7,472.0	-384.3	7,481.8	0.00	0.00	
13,000.0	90.00	360.00	5,918.0	7,572.0	-384.3	7,581.7	0.00	0.00	
13,100.0	90.00	360.00	5,918.0	7,672.0	-384.3	7,681.6	0.00	0.00	
13,200.0	90.00	360.00	5,918.0	7,772.0	-384.3	7,781.5	0.00	0.00	
13,300.0	90.00	360.00	5,918.0	7,872.0	-384.3	7,881.4	0.00	0.00	
13,400.0	90.00	360.00	5,918.0	7,972.0	-384.3	7,981.3	0.00	0.00	
13,500.0	90.00	360.00	5,918.0	8,072.0	-384.3	8,081.2	0.00	0.00	
13,600.0	90.00	360.00	5,918.0	8,172.0	-384.3	8,181.1	0.00	0.00	
13,706.6	90.00	360.00	5,918.0	8,278.6	-384.3	8,287.5	0.00	0.00	BHL - 2,558' FSL, 2,475' FEL - TD @ 13,706.6'

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor #21B-0909A
Company:	Whiting Petroleum Corporation	TVD Reference:	KB=17 @ 4854.3usft
Project:	Weld County, CO	MD Reference:	KB=17 @ 4854.3usft
Site:	S21-T10N-R58W	North Reference:	True
Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
21B-0909A BHL	0.00	1.05	5,793.5	8,278.6	-384.3	1,557,711.46	3,450,841.99	40.852922	-103.870258
- plan misses target center by 124.5usft at 13706.6usft MD (5918.0 TVD, 8278.6 N, -384.3 E)									
- Point									
21B-0909A TGT	0.00	1.05	5,793.5	7,778.7	-381.2	1,557,211.72	3,450,854.21	40.851550	-103.870247
- plan misses target center by 124.5usft at 13206.7usft MD (5918.0 TVD, 7778.7 N, -384.3 E)									
- Point									
21B-0909A TGT P2	0.00	1.05	5,918.0	7,778.7	-381.2	1,557,211.72	3,450,854.21	40.851550	-103.870247
- plan misses target center by 3.0usft at 13206.7usft MD (5918.0 TVD, 7778.7 N, -384.3 E)									
- Point									
21B-0909A BHL P2	0.00	1.05	5,918.0	8,278.6	-384.3	1,557,711.46	3,450,841.99	40.852922	-103.870258
- plan hits target center									
- Point									

Casing Points					
	Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
	(usft)	(usft)		(")	(")
	6,227.0	5,918.0	7" - 489' FSL, 2,434' FEL	0	0
	1,700.0	1,697.4	Surface Casing	0	0

Formations					
	Measured Depth	Vertical Depth	Name	Lithology	Dip
	(usft)	(usft)			(°)
	1,621.4	1,619.0	Pierre		
	6,049.3	5,888.0	Niobrara		

Plan Annotations					
	Measured Depth	Vertical Depth	Local Coordinates		
	(usft)	(usft)	+N/-S	+E/-W	Comment
	(usft)	(usft)	(usft)	(usft)	
	0.5	0.5	0.0	0.0	SH - 327' FNL, 2,161' FEL
	500.0	500.0	0.0	0.0	KOP @ 500'
	700.0	699.8	6.6	-2.3	EOB @ 4° INC
	5,445.2	5,433.5	319.5	-110.3	Start 11° Build
	6,227.0	5,918.0	810.7	-279.8	LP @ 5,918' TVD, 90° INC
	6,861.7	5,918.0	1,433.7	-384.3	EOT @ 360° AZ
	13,706.6	5,918.0	8,278.6	-384.3	BHL - 2,558' FSL, 2,475' FEL
	13,706.6	5,918.0	8,278.6	-384.3	TD @ 13,706.6' MD

Whiting Petroleum Corporation

Weld County, CO

S21-T10N-R58W

Razor #21B-0909A

HZ

Plan #2

Anticollision Report

02 April, 2014

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,550.0usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	4/2/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,706.3	Plan #2 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S21-T10N-R58W						
Razor #21A-0913A - HZ - Plan #2	5,923.0	6,282.0	1,260.9	1,221.5	32.038	CC
Razor #21A-0913A - HZ - Plan #2	13,706.6	13,663.2	1,320.2	1,004.8	4.186	ES, SF
Razor #21B-0910B - HZ - Plan #2	500.0	500.0	34.6	32.6	17.430	CC, ES
Razor #21B-0910B - HZ - Plan #2	13,706.6	13,751.2	343.2	36.7	1.120	Level 2, SF
Razor #21B-0911A - HZ - Plan #2	500.0	500.0	66.7	64.7	33.605	CC, ES
Razor #21B-0911A - HZ - Plan #2	13,706.6	13,695.0	660.1	344.4	2.091	SF
Razor #21B-0912B - HZ - Plan #2	500.0	500.0	99.9	97.9	50.338	CC, ES
Razor #21B-0912B - HZ - Plan #2	13,706.6	13,870.6	994.8	681.6	3.177	SF
Razor #21C-0905A - HZ - Plan #2	6,305.0	5,932.5	1,283.4	1,243.5	32.169	CC
Razor #21C-0905A - HZ - Plan #2	13,706.6	13,737.7	1,344.2	1,027.7	4.247	ES, SF
Razor #21C-0906B - HZ - Plan #2	6,893.1	6,977.4	1,018.2	956.1	16.398	CC
Razor #21C-0906B - HZ - Plan #2	13,706.6	13,790.8	1,018.5	701.5	3.213	ES, SF
Razor #21C-0907A - HZ - Plan #2	6,893.0	6,910.2	683.9	620.7	10.820	CC
Razor #21C-0907A - HZ - Plan #2	13,706.6	13,723.8	684.2	365.4	2.146	ES, SF
Razor #21C-0908B - HZ - Plan #2	13,706.6	13,909.0	368.0	59.3	1.192	Level 2, CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21A-0913A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	88.86	26.3	1,319.8	1,320.1					
100.0	100.0	94.6	94.6	0.1	0.1	88.86	26.3	1,319.8	1,320.0	1,319.9	0.18	7,272.222		
200.0	200.0	194.6	194.6	0.3	0.3	88.86	26.3	1,319.8	1,320.0	1,319.4	0.62	2,115.626		
300.0	300.0	294.6	294.6	0.5	0.5	88.86	26.3	1,319.8	1,320.0	1,319.0	1.07	1,229.686		
400.0	400.0	394.6	394.6	0.8	0.8	88.86	26.3	1,319.8	1,320.0	1,318.5	1.52	866.733		
500.0	500.0	494.6	494.6	1.0	1.0	88.86	26.3	1,319.8	1,320.0	1,318.1	1.97	669.209		
600.0	600.0	610.2	610.2	1.2	1.2	107.90	28.3	1,319.1	1,320.0	1,317.6	2.45	537.788		
699.8	699.7	722.7	722.5	1.4	1.5	107.87	34.4	1,317.0	1,319.9	1,316.9	2.93	449.721		
700.0	699.8	722.9	722.7	1.4	1.5	107.87	34.4	1,317.0	1,319.9	1,316.9	2.94	449.591		
800.0	799.6	822.9	822.4	1.7	1.7	107.87	41.0	1,314.7	1,319.9	1,316.5	3.40	387.878		
900.0	899.4	922.9	922.2	1.9	2.0	107.87	47.6	1,312.4	1,319.9	1,316.0	3.88	340.151		
1,000.0	999.1	1,022.9	1,021.9	2.2	2.2	107.87	54.1	1,310.2	1,319.9	1,315.5	4.36	302.400		
1,100.0	1,098.9	1,122.9	1,121.7	2.4	2.5	107.87	60.7	1,307.9	1,319.9	1,315.0	4.85	271.918		
1,200.0	1,198.6	1,222.9	1,221.5	2.7	2.7	107.87	67.3	1,305.6	1,319.9	1,314.5	5.35	246.855		
1,300.0	1,298.4	1,322.9	1,321.2	2.9	3.0	107.87	73.9	1,303.3	1,319.9	1,314.0	5.84	225.921		
1,400.0	1,398.1	1,422.9	1,421.0	3.2	3.2	107.87	80.5	1,301.1	1,319.9	1,313.5	6.34	208.194		
1,500.0	1,497.9	1,522.9	1,520.7	3.4	3.5	107.87	87.1	1,298.8	1,319.9	1,313.0	6.84	193.002		
1,600.0	1,597.6	1,622.9	1,620.5	3.7	3.7	107.87	93.7	1,296.5	1,319.9	1,312.5	7.34	179.846		
1,700.0	1,697.4	1,722.9	1,720.2	3.9	4.0	107.87	100.3	1,294.3	1,319.9	1,312.0	7.84	168.347		
1,800.0	1,797.2	1,822.9	1,820.0	4.2	4.2	107.87	106.9	1,292.0	1,319.9	1,311.5	8.34	158.215		
1,900.0	1,896.9	1,922.9	1,919.7	4.4	4.5	107.87	113.5	1,289.7	1,319.9	1,311.0	8.85	149.221		
2,000.0	1,996.7	2,022.9	2,019.5	4.7	4.7	107.87	120.1	1,287.4	1,319.9	1,310.5	9.35	141.186		
2,100.0	2,096.4	2,122.9	2,119.3	4.9	5.0	107.87	126.7	1,285.2	1,319.9	1,310.0	9.85	133.966		
2,200.0	2,196.2	2,222.9	2,219.0	5.2	5.2	107.87	133.3	1,282.9	1,319.9	1,309.5	10.36	127.443		
2,300.0	2,295.9	2,322.9	2,318.8	5.4	5.5	107.87	139.9	1,280.6	1,319.9	1,309.0	10.86	121.522		
2,400.0	2,395.7	2,422.9	2,418.5	5.7	5.8	107.87	146.5	1,278.3	1,319.9	1,308.5	11.37	116.123		
2,500.0	2,495.5	2,522.9	2,518.3	6.0	6.0	107.87	153.1	1,276.1	1,319.9	1,308.0	11.87	111.181		
2,600.0	2,595.2	2,622.9	2,618.0	6.2	6.3	107.87	159.7	1,273.8	1,319.9	1,307.5	12.38	106.641		
2,700.0	2,695.0	2,722.9	2,717.8	6.5	6.5	107.87	166.3	1,271.5	1,319.9	1,307.0	12.88	102.455		
2,800.0	2,794.7	2,822.9	2,817.6	6.7	6.8	107.87	172.9	1,269.2	1,319.9	1,306.5	13.39	98.584		
2,900.0	2,894.5	2,922.9	2,917.3	7.0	7.0	107.87	179.4	1,267.0	1,319.9	1,306.0	13.89	94.994		
3,000.0	2,994.2	3,022.9	3,017.1	7.2	7.3	107.87	186.0	1,264.7	1,319.9	1,305.5	14.40	91.655		
3,100.0	3,094.0	3,122.9	3,116.8	7.5	7.6	107.87	192.6	1,262.4	1,319.9	1,305.0	14.91	88.542		
3,200.0	3,193.7	3,222.9	3,216.6	7.7	7.8	107.87	199.2	1,260.1	1,319.9	1,304.5	15.41	85.633		
3,300.0	3,293.5	3,322.9	3,316.3	8.0	8.1	107.87	205.8	1,257.9	1,319.9	1,304.0	15.92	82.909		
3,400.0	3,393.3	3,422.9	3,416.1	8.3	8.3	107.87	212.4	1,255.6	1,319.9	1,303.5	16.43	80.352		
3,500.0	3,493.0	3,522.9	3,515.9	8.5	8.6	107.87	219.0	1,253.3	1,319.9	1,303.0	16.93	77.947		
3,600.0	3,592.8	3,622.9	3,615.6	8.8	8.8	107.87	225.6	1,251.1	1,319.9	1,302.5	17.44	75.682		
3,700.0	3,692.5	3,722.9	3,715.4	9.0	9.1	107.87	232.2	1,248.8	1,319.9	1,302.0	17.95	73.545		
3,800.0	3,792.3	3,822.9	3,815.1	9.3	9.3	107.87	238.8	1,246.5	1,319.9	1,301.5	18.45	71.524		
3,900.0	3,892.0	3,922.9	3,914.9	9.5	9.6	107.87	245.4	1,244.2	1,319.9	1,301.0	18.96	69.612		
4,000.0	3,991.8	4,022.9	4,014.6	9.8	9.9	107.87	252.0	1,242.0	1,319.9	1,300.5	19.47	67.799		
4,100.0	4,091.6	4,122.9	4,114.4	10.1	10.1	107.87	258.6	1,239.7	1,319.9	1,300.0	19.98	66.078		
4,200.0	4,191.3	4,222.9	4,214.1	10.3	10.4	107.87	265.2	1,237.4	1,319.9	1,299.4	20.48	64.442		
4,300.0	4,291.1	4,322.9	4,313.9	10.6	10.6	107.87	271.8	1,235.1	1,319.9	1,298.9	20.99	62.885		
4,400.0	4,390.8	4,422.9	4,413.7	10.8	10.9	107.87	278.4	1,232.9	1,319.9	1,298.4	21.50	61.401		
4,500.0	4,490.6	4,522.9	4,513.4	11.1	11.1	107.87	285.0	1,230.6	1,319.9	1,297.9	22.00	59.985		
4,600.0	4,590.3	4,622.9	4,613.2	11.3	11.4	107.87	291.6	1,228.3	1,319.9	1,297.4	22.51	58.633		
4,700.0	4,690.1	4,722.9	4,712.9	11.6	11.7	107.87	298.2	1,226.0	1,319.9	1,296.9	23.02	57.341		
4,800.0	4,789.9	4,822.9	4,812.7	11.9	11.9	107.87	304.7	1,223.8	1,319.9	1,296.4	23.53	56.104		
4,900.0	4,889.6	4,922.9	4,912.4	12.1	12.2	107.87	311.3	1,221.5	1,319.9	1,295.9	24.03	54.920		
5,000.0	4,989.4	5,022.9	5,012.2	12.4	12.4	107.87	317.9	1,219.2	1,319.9	1,295.4	24.54	53.784		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21A-0913A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,089.1	5,122.9	5,112.0	12.6	12.7	107.87	324.5	1,216.9	1,319.9	1,294.9	25.05	52.695		
5,200.0	5,188.9	5,222.9	5,211.7	12.9	12.9	107.87	331.1	1,214.7	1,319.9	1,294.4	25.56	51.648		
5,300.0	5,288.6	5,322.9	5,311.5	13.1	13.2	107.87	337.7	1,212.4	1,320.0	1,293.9	26.06	50.643		
5,400.0	5,388.4	5,422.9	5,411.2	13.4	13.5	107.87	344.3	1,210.1	1,320.0	1,293.4	26.57	49.675		
5,500.0	5,487.8	5,790.8	5,741.3	13.7	15.5	103.87	481.1	1,163.0	1,310.6	1,281.5	29.13	44.990		
5,600.0	5,584.0	6,011.3	5,863.5	14.1	18.0	99.45	652.6	1,103.8	1,293.3	1,260.9	32.45	39.853		
5,700.0	5,673.4	6,146.8	5,897.1	14.7	19.9	96.61	776.4	1,061.2	1,277.4	1,242.1	35.32	36.169		
5,800.0	5,752.6	6,209.9	5,901.0	15.5	20.9	95.64	835.9	1,040.6	1,266.0	1,228.9	37.14	34.084		
5,900.0	5,818.7	6,270.6	5,901.0	16.5	21.8	94.30	893.5	1,021.8	1,261.1	1,222.0	39.07	32.275		
5,923.0	5,831.8	6,282.0	5,901.0	16.7	22.0	94.03	904.4	1,018.5	1,260.9	1,221.5	39.36	32.038 CC		
6,000.0	5,869.3	6,322.4	5,901.0	17.6	22.6	92.96	943.2	1,007.1	1,262.5	1,221.5	40.99	30.797		
6,100.0	5,902.6	6,378.8	5,901.0	19.0	23.4	91.40	997.8	992.7	1,268.9	1,225.8	43.12	29.430		
6,200.0	5,917.3	6,437.8	5,901.0	20.5	24.3	89.86	1,055.2	979.4	1,279.2	1,233.9	45.37	28.192		
6,300.0	5,918.0	6,500.0	5,901.0	22.0	25.2	89.48	1,116.2	967.2	1,291.3	1,243.6	47.68	27.081		
6,400.0	5,918.0	6,556.3	5,901.0	23.5	26.1	89.48	1,171.8	958.0	1,301.5	1,251.7	49.80	26.134		
6,500.0	5,918.0	6,600.0	5,901.0	25.0	26.8	89.49	1,215.0	951.9	1,309.7	1,258.0	51.70	25.333		
6,600.0	5,918.0	6,674.7	5,901.0	26.5	28.0	89.49	1,289.3	943.8	1,315.4	1,261.3	54.10	24.315		
6,700.0	5,918.0	6,733.8	5,901.0	28.1	28.9	89.49	1,348.3	939.5	1,319.2	1,263.0	56.18	23.483		
6,800.0	5,918.0	6,800.0	5,901.0	29.7	29.9	89.49	1,414.4	936.8	1,320.8	1,262.5	58.30	22.656		
6,900.0	5,918.0	6,857.7	5,901.0	31.3	30.8	89.49	1,472.1	936.3	1,320.6	1,260.2	60.48	21.836		
7,000.0	5,918.0	6,957.7	5,901.0	32.9	32.5	89.49	1,572.1	936.3	1,320.6	1,256.8	63.84	20.687		
7,100.0	5,918.0	7,057.7	5,901.0	34.6	34.1	89.49	1,672.1	936.3	1,320.6	1,253.4	67.25	19.637		
7,200.0	5,918.0	7,157.7	5,901.0	36.3	35.8	89.49	1,772.1	936.3	1,320.6	1,249.9	70.71	18.677		
7,300.0	5,918.0	7,257.7	5,901.0	38.0	37.5	89.49	1,872.1	936.3	1,320.6	1,246.4	74.20	17.797		
7,400.0	5,918.0	7,357.7	5,901.0	39.7	39.3	89.49	1,972.1	936.3	1,320.6	1,242.9	77.73	16.989		
7,500.0	5,918.0	7,457.7	5,901.0	41.5	41.0	89.49	2,072.1	936.3	1,320.6	1,239.3	81.29	16.246		
7,600.0	5,918.0	7,557.7	5,901.0	43.3	42.8	89.49	2,172.1	936.3	1,320.6	1,235.7	84.87	15.560		
7,700.0	5,918.0	7,657.7	5,901.0	45.0	44.6	89.49	2,272.1	936.3	1,320.6	1,232.1	88.47	14.926		
7,800.0	5,918.0	7,757.7	5,901.0	46.8	46.4	89.49	2,372.1	936.3	1,320.6	1,228.5	92.10	14.339		
7,900.0	5,918.0	7,857.7	5,901.0	48.6	48.2	89.49	2,472.1	936.3	1,320.6	1,224.8	95.74	13.794		
8,000.0	5,918.0	7,957.7	5,901.0	50.4	50.0	89.49	2,572.1	936.3	1,320.6	1,221.2	99.39	13.286		
8,100.0	5,918.0	8,057.7	5,901.0	52.3	51.8	89.49	2,672.1	936.3	1,320.6	1,217.5	103.06	12.813		
8,200.0	5,918.0	8,157.7	5,901.0	54.1	53.6	89.49	2,772.1	936.3	1,320.6	1,213.8	106.74	12.371		
8,300.0	5,918.0	8,257.7	5,901.0	55.9	55.4	89.49	2,872.1	936.3	1,320.6	1,210.1	110.43	11.958		
8,400.0	5,918.0	8,357.7	5,901.0	57.8	57.3	89.49	2,972.1	936.2	1,320.6	1,206.4	114.14	11.570		
8,500.0	5,918.0	8,457.7	5,901.0	59.6	59.1	89.49	3,072.1	936.2	1,320.5	1,202.7	117.85	11.206		
8,600.0	5,918.0	8,557.7	5,901.0	61.4	61.0	89.49	3,172.1	936.2	1,320.5	1,199.0	121.57	10.863		
8,700.0	5,918.0	8,657.7	5,901.0	63.3	62.8	89.49	3,272.1	936.2	1,320.5	1,195.2	125.29	10.539		
8,800.0	5,918.0	8,757.7	5,901.0	65.2	64.7	89.49	3,372.1	936.2	1,320.5	1,191.5	129.03	10.234		
8,900.0	5,918.0	8,857.7	5,901.0	67.0	66.5	89.49	3,472.1	936.2	1,320.5	1,187.8	132.77	9.946		
9,000.0	5,918.0	8,957.7	5,901.0	68.9	68.4	89.50	3,572.1	936.2	1,320.5	1,184.0	136.51	9.673		
9,100.0	5,918.0	9,057.7	5,901.0	70.7	70.2	89.50	3,672.1	936.2	1,320.5	1,180.2	140.26	9.415		
9,200.0	5,918.0	9,157.7	5,901.0	72.6	72.1	89.50	3,772.1	936.2	1,320.5	1,176.5	144.02	9.169		
9,300.0	5,918.0	9,257.7	5,901.0	74.5	74.0	89.50	3,872.1	936.2	1,320.5	1,172.7	147.78	8.936		
9,400.0	5,918.0	9,357.7	5,901.0	76.4	75.9	89.50	3,972.1	936.2	1,320.5	1,168.9	151.54	8.714		
9,500.0	5,918.0	9,457.7	5,901.0	78.2	77.7	89.50	4,072.1	936.2	1,320.5	1,165.2	155.31	8.502		
9,600.0	5,918.0	9,557.7	5,901.0	80.1	79.6	89.50	4,172.1	936.2	1,320.5	1,161.4	159.08	8.301		
9,700.0	5,918.0	9,657.7	5,901.0	82.0	81.5	89.50	4,272.1	936.2	1,320.5	1,157.6	162.86	8.108		
9,800.0	5,918.0	9,757.7	5,901.0	83.9	83.4	89.50	4,372.1	936.2	1,320.5	1,153.8	166.64	7.924		
9,900.0	5,918.0	9,857.7	5,901.0	85.8	85.3	89.50	4,472.1	936.1	1,320.5	1,150.0	170.42	7.748		
10,000.0	5,918.0	9,957.7	5,901.0	87.6	87.1	89.50	4,572.1	936.1	1,320.5	1,146.3	174.20	7.580		
10,100.0	5,918.0	10,057.7	5,901.0	89.5	89.0	89.50	4,672.1	936.1	1,320.4	1,142.5	177.99	7.419		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21A-0913A - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,200.0	5,918.0	10,157.7	5,901.0	91.4	90.9	89.50	4,772.1	936.1	1,320.4	1,138.7	181.77	7.264	
10,300.0	5,918.0	10,257.7	5,901.0	93.3	92.8	89.50	4,872.1	936.1	1,320.4	1,134.9	185.57	7.116	
10,400.0	5,918.0	10,357.7	5,901.0	95.2	94.7	89.50	4,972.1	936.1	1,320.4	1,131.1	189.36	6.973	
10,500.0	5,918.0	10,457.7	5,901.0	97.1	96.6	89.50	5,072.1	936.1	1,320.4	1,127.3	193.15	6.836	
10,600.0	5,918.0	10,557.7	5,901.0	99.0	98.5	89.50	5,172.1	936.1	1,320.4	1,123.5	196.95	6.704	
10,700.0	5,918.0	10,657.7	5,901.0	100.9	100.4	89.50	5,272.1	936.1	1,320.4	1,119.7	200.75	6.577	
10,800.0	5,918.0	10,757.7	5,901.0	102.8	102.3	89.50	5,372.1	936.1	1,320.4	1,115.9	204.55	6.455	
10,900.0	5,918.0	10,857.7	5,901.0	104.7	104.2	89.50	5,472.1	936.1	1,320.4	1,112.0	208.35	6.337	
11,000.0	5,918.0	10,957.7	5,901.0	106.6	106.1	89.50	5,572.1	936.1	1,320.4	1,108.2	212.15	6.224	
11,100.0	5,918.0	11,057.7	5,901.0	108.5	108.0	89.50	5,672.1	936.1	1,320.4	1,104.4	215.96	6.114	
11,200.0	5,918.0	11,157.7	5,901.0	110.4	109.9	89.50	5,772.1	936.1	1,320.4	1,100.6	219.76	6.008	
11,300.0	5,918.0	11,257.7	5,901.0	112.3	111.8	89.50	5,872.1	936.1	1,320.4	1,096.8	223.57	5.906	
11,400.0	5,918.0	11,357.7	5,901.0	114.2	113.7	89.50	5,972.1	936.1	1,320.4	1,093.0	227.38	5.807	
11,500.0	5,918.0	11,457.7	5,901.0	116.1	115.6	89.50	6,072.1	936.0	1,320.4	1,089.2	231.19	5.711	
11,600.0	5,918.0	11,557.7	5,901.0	118.0	117.5	89.50	6,172.1	936.0	1,320.4	1,085.4	235.00	5.619	
11,700.0	5,918.0	11,657.7	5,901.0	119.9	119.4	89.50	6,272.1	936.0	1,320.3	1,081.5	238.81	5.529	
11,800.0	5,918.0	11,757.7	5,901.0	121.8	121.3	89.50	6,372.1	936.0	1,320.3	1,077.7	242.62	5.442	
11,900.0	5,918.0	11,857.7	5,901.0	123.7	123.2	89.50	6,472.1	936.0	1,320.3	1,073.9	246.43	5.358	
12,000.0	5,918.0	11,957.7	5,901.0	125.6	125.1	89.50	6,572.1	936.0	1,320.3	1,070.1	250.25	5.276	
12,100.0	5,918.0	12,057.7	5,901.0	127.5	127.0	89.50	6,672.1	936.0	1,320.3	1,066.3	254.06	5.197	
12,200.0	5,918.0	12,157.7	5,901.0	129.4	128.9	89.50	6,772.1	936.0	1,320.3	1,062.4	257.88	5.120	
12,300.0	5,918.0	12,257.7	5,901.0	131.3	130.8	89.50	6,872.1	936.0	1,320.3	1,058.6	261.70	5.045	
12,400.0	5,918.0	12,357.7	5,901.0	133.2	132.7	89.50	6,972.1	936.0	1,320.3	1,054.8	265.51	4.973	
12,500.0	5,918.0	12,457.7	5,901.0	135.1	134.6	89.50	7,072.1	936.0	1,320.3	1,051.0	269.33	4.902	
12,600.0	5,918.0	12,557.7	5,901.0	137.0	136.5	89.50	7,172.1	936.0	1,320.3	1,047.1	273.15	4.834	
12,700.0	5,918.0	12,657.7	5,901.0	138.9	138.4	89.50	7,272.1	936.0	1,320.3	1,043.3	276.97	4.767	
12,800.0	5,918.0	12,757.7	5,901.0	140.8	140.3	89.50	7,372.1	936.0	1,320.3	1,039.5	280.79	4.702	
12,900.0	5,918.0	12,857.7	5,901.0	142.7	142.2	89.50	7,472.1	936.0	1,320.3	1,035.7	284.61	4.639	
13,000.0	5,918.0	12,957.7	5,901.0	144.7	144.1	89.50	7,572.1	936.0	1,320.3	1,031.8	288.43	4.577	
13,100.0	5,918.0	13,057.7	5,901.0	146.6	146.1	89.50	7,672.1	935.9	1,320.3	1,028.0	292.25	4.518	
13,200.0	5,918.0	13,157.7	5,901.0	148.5	148.0	89.50	7,772.1	935.9	1,320.3	1,024.2	296.08	4.459	
13,300.0	5,918.0	13,257.7	5,901.0	150.4	149.9	89.50	7,872.1	935.9	1,320.2	1,020.3	299.90	4.402	
13,400.0	5,918.0	13,357.7	5,901.0	152.3	151.8	89.50	7,972.1	935.9	1,320.2	1,016.5	303.72	4.347	
13,500.0	5,918.0	13,457.7	5,901.0	154.2	153.7	89.50	8,072.1	935.9	1,320.2	1,012.7	307.55	4.293	
13,600.0	5,918.0	13,557.7	5,901.0	156.1	155.6	89.50	8,172.1	935.9	1,320.2	1,008.9	311.37	4.240	
13,700.0	5,918.0	13,657.7	5,901.0	158.0	157.5	89.50	8,272.1	935.9	1,320.2	1,005.0	315.20	4.189	
13,705.5	5,918.0	13,663.2	5,901.0	158.1	157.6	89.50	8,277.5	935.9	1,320.2	1,004.8	315.41	4.186	
13,706.6	5,918.0	13,663.2	5,901.0	158.1	157.6	89.50	8,277.5	935.9	1,320.2	1,004.8	315.43	4.186 ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	34.6	34.6					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	34.6	34.6	34.4	0.19	185.429		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	34.6	34.6	34.0	0.64	54.384		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	34.6	34.6	33.5	1.09	31.865		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	34.6	34.6	33.1	1.54	22.534		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	34.6	34.6	32.6	1.98	17.430	CC, ES	
600.0	600.0	600.0	600.0	1.2	1.2	111.71	0.0	34.6	35.2	32.8	2.43	14.468		
700.0	699.8	699.8	699.8	1.4	1.4	119.12	0.0	34.6	37.5	34.6	2.88	12.990		
800.0	799.6	800.1	800.1	1.7	1.7	125.38	1.7	34.4	40.6	37.3	3.34	12.176		
900.0	899.4	900.7	900.5	1.9	1.9	126.48	7.0	33.9	42.7	38.9	3.80	11.259		
1,000.0	999.1	1,000.7	1,000.3	2.2	2.1	125.42	13.9	33.3	44.2	39.9	4.26	10.363		
1,100.0	1,098.9	1,100.6	1,100.0	2.4	2.4	124.42	20.9	32.6	45.6	40.9	4.74	9.632		
1,200.0	1,198.6	1,200.6	1,199.7	2.7	2.6	123.49	27.8	32.0	47.1	41.9	5.22	9.026		
1,300.0	1,298.4	1,300.6	1,299.5	2.9	2.8	122.61	34.8	31.3	48.6	42.9	5.71	8.518		
1,400.0	1,398.1	1,400.6	1,399.2	3.2	3.1	121.79	41.7	30.6	50.1	43.9	6.20	8.087		
1,500.0	1,497.9	1,500.6	1,499.0	3.4	3.3	121.01	48.7	30.0	51.6	44.9	6.69	7.717		
1,600.0	1,597.6	1,600.6	1,598.7	3.7	3.6	120.28	55.6	29.3	53.1	45.9	7.18	7.396		
1,700.0	1,697.4	1,700.6	1,698.5	3.9	3.8	119.59	62.5	28.7	54.6	47.0	7.68	7.116		
1,800.0	1,797.2	1,800.5	1,798.2	4.2	4.1	118.93	69.5	28.0	56.2	48.0	8.18	6.869		
1,900.0	1,896.9	1,900.5	1,897.9	4.4	4.3	118.31	76.4	27.4	57.7	49.0	8.68	6.650		
2,000.0	1,996.7	2,000.5	1,997.7	4.7	4.6	117.72	83.4	26.7	59.3	50.1	9.18	6.455		
2,100.0	2,096.4	2,100.5	2,097.4	4.9	4.8	117.17	90.3	26.1	60.8	51.1	9.68	6.280		
2,200.0	2,196.2	2,200.5	2,197.2	5.2	5.1	116.64	97.3	25.4	62.4	52.2	10.19	6.122		
2,300.0	2,295.9	2,300.5	2,296.9	5.4	5.3	116.13	104.2	24.7	63.9	53.2	10.69	5.979		
2,400.0	2,395.7	2,400.5	2,396.6	5.7	5.6	115.65	111.2	24.1	65.5	54.3	11.20	5.849		
2,500.0	2,495.5	2,500.5	2,496.4	6.0	5.9	115.20	118.1	23.4	67.1	55.4	11.70	5.730		
2,600.0	2,595.2	2,600.4	2,596.1	6.2	6.1	114.76	125.0	22.8	68.6	56.4	12.21	5.621		
2,700.0	2,695.0	2,700.4	2,695.9	6.5	6.4	114.34	132.0	22.1	70.2	57.5	12.72	5.521		
2,800.0	2,794.7	2,800.4	2,795.6	6.7	6.6	113.94	138.9	21.5	71.8	58.6	13.22	5.429		
2,900.0	2,894.5	2,900.4	2,895.4	7.0	6.9	113.56	145.9	20.8	73.4	59.6	13.73	5.343		
3,000.0	2,994.2	3,000.4	2,995.1	7.2	7.1	113.20	152.8	20.1	75.0	60.7	14.24	5.264		
3,100.0	3,094.0	3,100.4	3,094.8	7.5	7.4	112.85	159.8	19.5	76.6	61.8	14.75	5.190		
3,200.0	3,193.7	3,200.4	3,194.6	7.7	7.6	112.51	166.7	18.8	78.2	62.9	15.26	5.122		
3,300.0	3,293.5	3,300.3	3,294.3	8.0	7.9	112.19	173.6	18.2	79.7	64.0	15.77	5.057		
3,400.0	3,393.3	3,400.3	3,394.1	8.3	8.1	111.88	180.6	17.5	81.3	65.1	16.28	4.997		
3,500.0	3,493.0	3,500.3	3,493.8	8.5	8.4	111.58	187.5	16.9	82.9	66.2	16.79	4.941		
3,600.0	3,592.8	3,600.3	3,593.6	8.8	8.7	111.30	194.5	16.2	84.5	67.3	17.30	4.888		
3,700.0	3,692.5	3,700.3	3,693.3	9.0	8.9	111.02	201.4	15.6	86.2	68.3	17.81	4.838		
3,800.0	3,792.3	3,800.3	3,793.0	9.3	9.2	110.76	208.4	14.9	87.8	69.4	18.32	4.791		
3,900.0	3,892.0	3,900.3	3,892.8	9.5	9.4	110.50	215.3	14.2	89.4	70.5	18.83	4.746		
4,000.0	3,991.8	4,000.2	3,992.5	9.8	9.7	110.25	222.3	13.6	91.0	71.6	19.34	4.704		
4,100.0	4,091.6	4,100.2	4,092.3	10.1	9.9	110.01	229.2	12.9	92.6	72.7	19.85	4.664		
4,200.0	4,191.3	4,200.2	4,192.0	10.3	10.2	109.78	236.1	12.3	94.2	73.8	20.36	4.626		
4,300.0	4,291.1	4,300.2	4,291.8	10.6	10.4	109.56	243.1	11.6	95.8	74.9	20.87	4.590		
4,400.0	4,390.8	4,400.2	4,391.5	10.8	10.7	109.35	250.0	11.0	97.4	76.1	21.39	4.556		
4,500.0	4,490.6	4,500.2	4,491.2	11.1	11.0	109.14	257.0	10.3	99.1	77.2	21.90	4.524		
4,600.0	4,590.3	4,600.2	4,591.0	11.3	11.2	108.94	263.9	9.6	100.7	78.3	22.41	4.493		
4,700.0	4,690.1	4,700.2	4,690.7	11.6	11.5	108.74	270.9	9.0	102.3	79.4	22.92	4.463		
4,800.0	4,789.9	4,800.1	4,790.5	11.9	11.7	108.55	277.8	8.3	103.9	80.5	23.43	4.435		
4,900.0	4,889.6	4,900.1	4,890.2	12.1	12.0	108.37	284.7	7.7	105.5	81.6	23.94	4.408		
5,000.0	4,989.4	5,000.1	4,990.0	12.4	12.2	108.19	291.7	7.0	107.2	82.7	24.46	4.382		
5,100.0	5,089.1	5,100.1	5,089.7	12.6	12.5	108.02	298.6	6.4	108.8	83.8	24.97	4.357		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,200.1	5,189.4	12.9	12.7	107.85	305.6	5.7	110.4	84.9	25.48	4.333		
5,300.0	5,288.6	5,300.1	5,289.2	13.1	13.0	107.69	312.5	5.1	112.0	86.0	25.99	4.310		
5,400.0	5,388.4	5,400.1	5,388.9	13.4	13.3	107.53	319.5	4.4	113.7	87.2	26.50	4.289		
5,500.0	5,487.8	5,499.9	5,488.6	13.7	13.5	108.55	326.4	3.7	116.2	89.2	27.00	4.304		
5,600.0	5,584.0	5,601.0	5,589.0	14.1	13.8	114.69	337.2	2.7	124.8	97.4	27.37	4.558		
5,700.0	5,673.4	5,706.0	5,689.4	14.7	14.3	119.18	367.2	-0.1	139.0	111.3	27.73	5.011		
5,800.0	5,752.6	5,814.2	5,784.3	15.5	14.9	121.23	418.4	-5.0	157.3	129.0	28.26	5.565		
5,900.0	5,818.7	5,925.1	5,868.5	16.5	15.8	121.18	490.0	-11.7	178.3	149.0	29.25	6.093		
6,000.0	5,869.3	6,038.6	5,936.9	17.6	17.0	119.53	579.9	-20.2	200.9	169.9	31.02	6.477		
6,100.0	5,902.6	6,154.2	5,984.9	19.0	18.4	116.71	684.3	-30.1	224.4	190.7	33.68	6.663		
6,200.0	5,917.3	6,271.5	6,008.7	20.5	20.0	113.09	798.4	-40.9	247.9	210.8	37.10	6.684		
6,300.0	5,918.0	6,370.7	6,011.0	22.0	21.4	110.64	897.2	-49.5	269.8	229.4	40.47	6.668		
6,400.0	5,918.0	6,456.4	6,011.0	23.5	22.6	109.08	982.8	-53.4	290.7	247.2	43.46	6.689		
6,500.0	5,918.0	6,547.8	6,011.0	25.0	23.9	107.72	1,074.2	-53.9	310.5	263.9	46.54	6.671		
6,600.0	5,918.0	6,646.5	6,011.0	26.5	25.5	106.72	1,172.9	-53.9	326.0	276.3	49.73	6.555		
6,700.0	5,918.0	6,745.9	6,011.0	28.1	27.1	106.09	1,272.2	-53.9	336.6	283.7	52.88	6.366		
6,800.0	5,918.0	6,845.7	6,011.0	29.7	28.8	105.77	1,372.0	-53.9	342.2	286.3	55.93	6.119		
6,900.0	5,918.0	6,945.7	6,011.0	31.3	30.5	105.72	1,472.0	-53.9	343.2	284.2	58.99	5.818		
7,000.0	5,918.0	7,045.7	6,011.0	32.9	32.2	105.72	1,572.0	-53.9	343.2	280.9	62.29	5.509		
7,100.0	5,918.0	7,145.7	6,011.0	34.6	34.0	105.72	1,672.0	-53.9	343.2	277.5	65.65	5.228		
7,200.0	5,918.0	7,245.7	6,011.0	36.3	35.7	105.72	1,772.0	-53.9	343.2	274.2	69.03	4.971		
7,300.0	5,918.0	7,345.7	6,011.0	38.0	37.5	105.72	1,872.0	-53.9	343.2	270.7	72.46	4.737		
7,400.0	5,918.0	7,445.7	6,011.0	39.7	39.3	105.72	1,972.0	-53.9	343.2	267.3	75.90	4.521		
7,500.0	5,918.0	7,545.7	6,011.0	41.5	41.1	105.72	2,072.0	-53.9	343.2	263.8	79.38	4.324		
7,600.0	5,918.0	7,645.7	6,011.0	43.3	42.9	105.72	2,172.0	-53.9	343.2	260.3	82.87	4.141		
7,700.0	5,918.0	7,745.7	6,011.0	45.0	44.7	105.72	2,272.0	-53.9	343.2	256.8	86.39	3.973		
7,800.0	5,918.0	7,845.7	6,011.0	46.8	46.6	105.72	2,372.0	-53.9	343.2	253.3	89.92	3.817		
7,900.0	5,918.0	7,945.7	6,011.0	48.6	48.4	105.72	2,472.0	-53.9	343.2	249.7	93.46	3.672		
8,000.0	5,918.0	8,045.7	6,011.0	50.4	50.3	105.72	2,572.0	-53.9	343.2	246.2	97.02	3.537		
8,100.0	5,918.0	8,145.7	6,011.0	52.3	52.1	105.72	2,672.0	-53.9	343.2	242.6	100.59	3.412		
8,200.0	5,918.0	8,245.7	6,011.0	54.1	54.0	105.72	2,772.0	-53.9	343.2	239.0	104.17	3.295		
8,300.0	5,918.0	8,345.7	6,011.0	55.9	55.8	105.72	2,872.0	-53.9	343.2	235.4	107.76	3.185		
8,400.0	5,918.0	8,445.7	6,011.0	57.8	57.7	105.72	2,972.0	-53.9	343.2	231.8	111.36	3.082		
8,500.0	5,918.0	8,545.7	6,011.0	59.6	59.6	105.72	3,072.0	-53.9	343.2	228.2	114.96	2.985		
8,600.0	5,918.0	8,645.7	6,011.0	61.4	61.4	105.72	3,172.0	-53.9	343.2	224.6	118.58	2.894		
8,700.0	5,918.0	8,745.7	6,011.0	63.3	63.3	105.72	3,272.0	-53.9	343.2	221.0	122.20	2.808		
8,800.0	5,918.0	8,845.7	6,011.0	65.2	65.2	105.72	3,372.0	-53.9	343.2	217.4	125.82	2.728		
8,900.0	5,918.0	8,945.7	6,011.0	67.0	67.1	105.72	3,472.0	-53.9	343.2	213.7	129.45	2.651		
9,000.0	5,918.0	9,045.7	6,011.0	68.9	68.9	105.72	3,572.0	-53.9	343.2	210.1	133.09	2.579		
9,100.0	5,918.0	9,145.7	6,011.0	70.7	70.8	105.72	3,672.0	-53.9	343.2	206.5	136.73	2.510		
9,200.0	5,918.0	9,245.7	6,011.0	72.6	72.7	105.72	3,772.0	-53.9	343.2	202.8	140.37	2.445		
9,300.0	5,918.0	9,345.7	6,011.0	74.5	74.6	105.72	3,872.0	-53.9	343.2	199.2	144.02	2.383		
9,400.0	5,918.0	9,445.7	6,011.0	76.4	76.5	105.72	3,972.0	-53.9	343.2	195.5	147.67	2.324		
9,500.0	5,918.0	9,545.7	6,011.0	78.2	78.4	105.72	4,072.0	-53.9	343.2	191.9	151.33	2.268		
9,600.0	5,918.0	9,645.7	6,011.0	80.1	80.3	105.72	4,172.0	-53.9	343.2	188.2	154.98	2.214		
9,700.0	5,918.0	9,745.7	6,011.0	82.0	82.2	105.72	4,272.0	-53.9	343.2	184.5	158.64	2.163		
9,800.0	5,918.0	9,845.7	6,011.0	83.9	84.1	105.72	4,372.0	-53.9	343.2	180.9	162.31	2.114		
9,900.0	5,918.0	9,945.7	6,011.0	85.8	86.0	105.72	4,472.0	-53.9	343.2	177.2	165.97	2.068		
10,000.0	5,918.0	10,045.7	6,011.0	87.6	87.9	105.72	4,572.0	-53.9	343.2	173.5	169.64	2.023		
10,100.0	5,918.0	10,145.7	6,011.0	89.5	89.8	105.72	4,672.0	-53.9	343.2	169.9	173.31	1.980		
10,200.0	5,918.0	10,245.7	6,011.0	91.4	91.7	105.72	4,772.0	-53.9	343.2	166.2	176.99	1.939		
10,300.0	5,918.0	10,345.7	6,011.0	93.3	93.6	105.72	4,872.0	-53.9	343.2	162.5	180.66	1.900		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0910B - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	5,918.0	10,445.7	6,011.0	95.2	95.5	105.72	4,972.0	-53.9	343.2	158.8	184.34	1.862	
10,500.0	5,918.0	10,545.7	6,011.0	97.1	97.4	105.72	5,072.0	-53.9	343.2	155.2	188.01	1.825	
10,600.0	5,918.0	10,645.7	6,011.0	99.0	99.3	105.72	5,172.0	-53.9	343.2	151.5	191.69	1.790	
10,700.0	5,918.0	10,745.7	6,011.0	100.9	101.2	105.72	5,272.0	-53.9	343.2	147.8	195.37	1.757	
10,800.0	5,918.0	10,845.7	6,011.0	102.8	103.1	105.72	5,372.0	-53.9	343.2	144.1	199.06	1.724	
10,900.0	5,918.0	10,945.7	6,011.0	104.7	105.0	105.72	5,472.0	-53.9	343.2	140.4	202.74	1.693	
11,000.0	5,918.0	11,045.7	6,011.0	106.6	106.9	105.72	5,572.0	-53.9	343.2	136.7	206.43	1.662	
11,100.0	5,918.0	11,145.7	6,011.0	108.5	108.8	105.72	5,672.0	-53.9	343.2	133.1	210.11	1.633	
11,200.0	5,918.0	11,245.7	6,011.0	110.4	110.7	105.72	5,772.0	-53.9	343.2	129.4	213.80	1.605	
11,300.0	5,918.0	11,345.7	6,011.0	112.3	112.6	105.72	5,872.0	-53.9	343.2	125.7	217.49	1.578	
11,400.0	5,918.0	11,445.7	6,011.0	114.2	114.5	105.72	5,972.0	-53.9	343.2	122.0	221.18	1.552	
11,500.0	5,918.0	11,545.7	6,011.0	116.1	116.4	105.72	6,072.0	-53.9	343.2	118.3	224.87	1.526	
11,600.0	5,918.0	11,645.7	6,011.0	118.0	118.3	105.72	6,172.0	-53.9	343.2	114.6	228.56	1.501	
11,700.0	5,918.0	11,745.7	6,011.0	119.9	120.2	105.72	6,272.0	-53.9	343.2	110.9	232.25	1.478	Level 3
11,800.0	5,918.0	11,845.7	6,011.0	121.8	122.1	105.72	6,372.0	-53.9	343.2	107.2	235.94	1.454	Level 3
11,900.0	5,918.0	11,945.7	6,011.0	123.7	124.1	105.72	6,472.0	-53.9	343.2	103.5	239.64	1.432	Level 3
12,000.0	5,918.0	12,045.7	6,011.0	125.6	126.0	105.72	6,572.0	-53.9	343.2	99.8	243.33	1.410	Level 3
12,100.0	5,918.0	12,145.7	6,011.0	127.5	127.9	105.72	6,672.0	-53.9	343.2	96.1	247.03	1.389	Level 3
12,200.0	5,918.0	12,245.7	6,011.0	129.4	129.8	105.72	6,772.0	-53.9	343.2	92.4	250.73	1.369	Level 3
12,300.0	5,918.0	12,345.7	6,011.0	131.3	131.7	105.72	6,872.0	-53.9	343.2	88.7	254.42	1.349	Level 3
12,400.0	5,918.0	12,445.7	6,011.0	133.2	133.6	105.72	6,972.0	-53.9	343.2	85.0	258.12	1.329	Level 3
12,500.0	5,918.0	12,545.7	6,011.0	135.1	135.5	105.72	7,072.0	-53.9	343.2	81.3	261.82	1.311	Level 3
12,600.0	5,918.0	12,645.7	6,011.0	137.0	137.4	105.72	7,172.0	-53.9	343.2	77.7	265.52	1.292	Level 3
12,700.0	5,918.0	12,745.7	6,011.0	138.9	139.3	105.72	7,272.0	-53.9	343.2	74.0	269.22	1.275	Level 3
12,800.0	5,918.0	12,845.7	6,011.0	140.8	141.3	105.72	7,372.0	-53.9	343.2	70.3	272.92	1.257	Level 3
12,900.0	5,918.0	12,945.7	6,011.0	142.7	143.2	105.72	7,472.0	-53.9	343.2	66.5	276.62	1.241	Level 2
13,000.0	5,918.0	13,045.7	6,011.0	144.7	145.1	105.72	7,572.0	-53.9	343.2	62.8	280.32	1.224	Level 2
13,100.0	5,918.0	13,145.7	6,011.0	146.6	147.0	105.72	7,672.0	-53.9	343.2	59.1	284.02	1.208	Level 2
13,200.0	5,918.0	13,245.7	6,011.0	148.5	148.9	105.72	7,772.0	-53.9	343.2	55.4	287.72	1.193	Level 2
13,300.0	5,918.0	13,345.7	6,011.0	150.4	150.8	105.72	7,872.0	-53.9	343.2	51.7	291.42	1.178	Level 2
13,400.0	5,918.0	13,445.7	6,011.0	152.3	152.7	105.72	7,972.0	-53.9	343.2	48.0	295.13	1.163	Level 2
13,500.0	5,918.0	13,545.7	6,011.0	154.2	154.6	105.72	8,072.0	-53.9	343.2	44.3	298.83	1.148	Level 2
13,600.0	5,918.0	13,645.7	6,011.0	156.1	156.6	105.72	8,172.0	-53.9	343.2	40.6	302.53	1.134	Level 2
13,700.0	5,918.0	13,745.7	6,011.0	158.0	158.5	105.72	8,272.0	-53.9	343.2	36.9	306.24	1.121	Level 2
13,705.4	5,918.0	13,751.0	6,011.0	158.1	158.6	105.72	8,277.4	-53.9	343.2	36.7	306.43	1.120	Level 2
13,706.6	5,918.0	13,751.2	6,011.0	158.1	158.6	105.72	8,277.5	-53.9	343.2	36.7	306.46	1.120	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	66.7	66.7					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	66.7	66.7	66.5	0.19	357.507		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	66.7	66.7	66.1	0.64	104.852		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	66.7	66.7	65.6	1.09	61.435		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	66.7	66.7	65.2	1.54	43.445		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	66.7	66.7	64.7	1.98	33.605 CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	110.43	0.0	66.7	67.3	64.9	2.43	27.655		
700.0	699.8	699.8	699.8	1.4	1.4	114.45	0.0	66.7	69.3	66.4	2.88	24.031		
800.0	799.6	799.6	799.6	1.7	1.7	119.47	0.0	66.7	72.5	69.1	3.34	21.705		
900.0	899.4	899.4	899.4	1.9	1.9	124.04	0.0	66.7	76.1	72.3	3.80	20.057		
1,000.0	999.1	999.4	999.4	2.2	2.1	126.95	1.7	67.0	80.1	75.8	4.25	18.814		
1,100.0	1,098.9	1,099.7	1,099.5	2.4	2.3	127.22	6.8	68.1	83.7	79.0	4.72	17.741		
1,200.0	1,198.6	1,199.6	1,199.2	2.7	2.6	126.31	13.6	69.5	87.1	81.9	5.19	16.798		
1,300.0	1,298.4	1,299.5	1,298.9	2.9	2.8	125.47	20.5	71.0	90.6	84.9	5.66	15.997		
1,400.0	1,398.1	1,399.5	1,398.6	3.2	3.0	124.70	27.3	72.4	94.1	87.9	6.15	15.311		
1,500.0	1,497.9	1,499.4	1,498.3	3.4	3.3	123.98	34.1	73.8	97.6	91.0	6.63	14.718		
1,600.0	1,597.6	1,599.3	1,598.0	3.7	3.5	123.31	40.9	75.2	101.1	94.0	7.12	14.202		
1,700.0	1,697.4	1,699.3	1,697.7	3.9	3.8	122.68	47.8	76.6	104.6	97.0	7.61	13.749		
1,800.0	1,797.2	1,799.2	1,797.3	4.2	4.0	122.10	54.6	78.0	108.2	100.1	8.10	13.348		
1,900.0	1,896.9	1,899.1	1,897.0	4.4	4.3	121.55	61.4	79.5	111.7	103.1	8.60	12.992		
2,000.0	1,996.7	1,999.1	1,996.7	4.7	4.5	121.04	68.2	80.9	115.3	106.2	9.10	12.674		
2,100.0	2,096.4	2,099.0	2,096.4	4.9	4.8	120.56	75.1	82.3	118.9	109.3	9.59	12.388		
2,200.0	2,196.2	2,198.9	2,196.1	5.2	5.0	120.10	81.9	83.7	122.4	112.3	10.09	12.130		
2,300.0	2,295.9	2,298.9	2,295.8	5.4	5.3	119.67	88.7	85.1	126.0	115.4	10.59	11.895		
2,400.0	2,395.7	2,398.8	2,395.5	5.7	5.5	119.27	95.5	86.6	129.6	118.5	11.10	11.681		
2,500.0	2,495.5	2,498.7	2,495.2	6.0	5.8	118.89	102.4	88.0	133.2	121.6	11.60	11.486		
2,600.0	2,595.2	2,598.7	2,594.8	6.2	6.0	118.52	109.2	89.4	136.8	124.7	12.10	11.307		
2,700.0	2,695.0	2,698.6	2,694.5	6.5	6.3	118.18	116.0	90.8	140.4	127.8	12.60	11.142		
2,800.0	2,794.7	2,798.5	2,794.2	6.7	6.5	117.85	122.8	92.2	144.0	130.9	13.11	10.989		
2,900.0	2,894.5	2,898.4	2,893.9	7.0	6.8	117.54	129.7	93.7	147.7	134.0	13.61	10.848		
3,000.0	2,994.2	2,998.4	2,993.6	7.2	7.0	117.24	136.5	95.1	151.3	137.2	14.12	10.717		
3,100.0	3,094.0	3,098.3	3,093.3	7.5	7.3	116.96	143.3	96.5	154.9	140.3	14.62	10.595		
3,200.0	3,193.7	3,198.2	3,193.0	7.7	7.5	116.69	150.1	97.9	158.5	143.4	15.13	10.481		
3,300.0	3,293.5	3,298.2	3,292.7	8.0	7.8	116.44	157.0	99.3	162.2	146.5	15.63	10.374		
3,400.0	3,393.3	3,398.1	3,392.3	8.3	8.0	116.19	163.8	100.8	165.8	149.7	16.14	10.275		
3,500.0	3,493.0	3,498.0	3,492.0	8.5	8.3	115.96	170.6	102.2	169.4	152.8	16.64	10.181		
3,600.0	3,592.8	3,598.0	3,591.7	8.8	8.5	115.73	177.4	103.6	173.1	155.9	17.15	10.093		
3,700.0	3,692.5	3,697.9	3,691.4	9.0	8.8	115.51	184.3	105.0	176.7	159.1	17.66	10.010		
3,800.0	3,792.3	3,797.8	3,791.1	9.3	9.0	115.31	191.1	106.4	180.4	162.2	18.16	9.931		
3,900.0	3,892.0	3,897.8	3,890.8	9.5	9.3	115.11	197.9	107.9	184.0	165.3	18.67	9.857		
4,000.0	3,991.8	3,997.7	3,990.5	9.8	9.6	114.92	204.7	109.3	187.7	168.5	19.18	9.787		
4,100.0	4,091.6	4,097.6	4,090.2	10.1	9.8	114.73	211.6	110.7	191.3	171.6	19.68	9.721		
4,200.0	4,191.3	4,197.6	4,189.8	10.3	10.1	114.55	218.4	112.1	195.0	174.8	20.19	9.657		
4,300.0	4,291.1	4,297.5	4,289.5	10.6	10.3	114.38	225.2	113.5	198.6	177.9	20.70	9.597		
4,400.0	4,390.8	4,397.4	4,389.2	10.8	10.6	114.22	232.0	115.0	202.3	181.1	21.20	9.540		
4,500.0	4,490.6	4,497.4	4,488.9	11.1	10.8	114.06	238.9	116.4	206.0	184.2	21.71	9.486		
4,600.0	4,590.3	4,597.3	4,588.6	11.3	11.1	113.91	245.7	117.8	209.6	187.4	22.22	9.434		
4,700.0	4,690.1	4,697.2	4,688.3	11.6	11.3	113.76	252.5	119.2	213.3	190.5	22.73	9.385		
4,800.0	4,789.9	4,797.1	4,788.0	11.9	11.6	113.62	259.3	120.6	216.9	193.7	23.23	9.337		
4,900.0	4,889.6	4,897.1	4,887.7	12.1	11.8	113.48	266.2	122.1	220.6	196.9	23.74	9.292		
5,000.0	4,989.4	4,997.0	4,987.4	12.4	12.1	113.35	273.0	123.5	224.3	200.0	24.25	9.249		
5,100.0	5,089.1	5,096.9	5,087.0	12.6	12.4	113.22	279.8	124.9	227.9	203.2	24.76	9.207		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,196.9	5,186.7	12.9	12.6	113.09	286.6	126.3	231.6	206.3	25.27	9.167		
5,300.0	5,288.6	5,296.8	5,286.4	13.1	12.9	112.97	293.5	127.7	235.3	209.5	25.77	9.129		
5,400.0	5,388.4	5,396.7	5,386.1	13.4	13.1	112.85	300.3	129.2	238.9	212.7	26.28	9.092		
5,500.0	5,487.8	5,493.4	5,482.3	13.7	13.4	112.43	309.1	131.0	244.1	217.3	26.79	9.112		
5,600.0	5,584.0	5,586.3	5,572.1	14.1	13.8	111.01	331.9	135.7	257.9	230.5	27.42	9.404		
5,700.0	5,673.4	5,677.1	5,654.6	14.7	14.2	108.72	368.9	143.4	280.8	252.5	28.30	9.922		
5,800.0	5,752.6	5,765.5	5,727.3	15.5	14.9	105.72	417.9	153.6	311.9	282.4	29.53	10.564		
5,900.0	5,818.7	5,850.0	5,788.1	16.5	15.6	102.15	475.2	165.5	349.9	318.8	31.13	11.240		
6,000.0	5,869.3	5,934.8	5,838.7	17.6	16.4	98.21	541.8	179.4	393.4	360.3	33.13	11.873		
6,100.0	5,902.6	6,017.0	5,876.6	19.0	17.4	94.00	613.0	194.2	440.8	405.4	35.39	12.456		
6,200.0	5,917.3	6,098.8	5,902.5	20.5	18.4	89.74	688.9	210.0	490.7	452.9	37.80	12.982		
6,300.0	5,918.0	6,183.0	5,916.2	22.0	19.6	89.78	770.2	226.9	540.4	500.0	40.40	13.377		
6,400.0	5,918.0	6,292.2	5,918.0	23.5	21.1	90.00	877.3	248.0	585.2	541.8	43.36	13.496		
6,500.0	5,918.0	6,429.5	5,918.0	25.0	23.0	90.00	1,013.2	266.4	619.5	572.7	46.80	13.237		
6,600.0	5,918.0	6,575.1	5,918.0	26.5	25.1	90.00	1,158.5	275.2	641.7	591.1	50.56	12.692		
6,700.0	5,918.0	6,688.7	5,918.0	28.1	26.9	90.00	1,272.2	275.7	653.1	599.1	53.96	12.103		
6,800.0	5,918.0	6,788.6	5,918.0	29.7	28.5	90.00	1,372.0	275.7	658.9	601.8	57.17	11.526		
6,900.0	5,918.0	6,888.5	5,918.0	31.3	30.1	90.00	1,472.0	275.7	659.9	599.5	60.40	10.926		
7,000.0	5,918.0	6,988.5	5,918.0	32.9	31.8	90.00	1,572.0	275.7	659.9	596.1	63.78	10.347		
7,100.0	5,918.0	7,088.5	5,918.0	34.6	33.6	90.00	1,672.0	275.7	659.9	592.7	67.22	9.818		
7,200.0	5,918.0	7,188.5	5,918.0	36.3	35.3	90.00	1,772.0	275.7	659.9	589.2	70.69	9.335		
7,300.0	5,918.0	7,288.5	5,918.0	38.0	37.0	90.00	1,872.0	275.7	659.9	585.7	74.21	8.893		
7,400.0	5,918.0	7,388.5	5,918.0	39.7	38.8	90.00	1,972.0	275.7	659.9	582.2	77.75	8.488		
7,500.0	5,918.0	7,488.5	5,918.0	41.5	40.6	90.00	2,072.0	275.7	659.9	578.6	81.32	8.115		
7,600.0	5,918.0	7,588.5	5,918.0	43.3	42.4	90.00	2,172.0	275.7	659.9	575.0	84.91	7.772		
7,700.0	5,918.0	7,688.5	5,918.0	45.0	44.2	90.00	2,272.0	275.7	659.9	571.4	88.53	7.454		
7,800.0	5,918.0	7,788.5	5,918.0	46.8	46.0	90.00	2,372.0	275.7	659.9	567.8	92.16	7.161		
7,900.0	5,918.0	7,888.5	5,918.0	48.6	47.8	90.00	2,472.0	275.7	659.9	564.1	95.81	6.888		
8,000.0	5,918.0	7,988.5	5,918.0	50.4	49.7	90.00	2,572.0	275.7	659.9	560.5	99.48	6.634		
8,100.0	5,918.0	8,088.5	5,918.0	52.3	51.5	90.00	2,672.0	275.7	659.9	556.8	103.16	6.398		
8,200.0	5,918.0	8,188.5	5,918.0	54.1	53.4	90.00	2,772.0	275.7	660.0	553.1	106.85	6.177		
8,300.0	5,918.0	8,288.5	5,918.0	55.9	55.2	90.00	2,872.0	275.7	660.0	549.4	110.55	5.970		
8,400.0	5,918.0	8,388.5	5,918.0	57.8	57.1	90.00	2,972.0	275.7	660.0	545.7	114.25	5.776		
8,500.0	5,918.0	8,488.5	5,918.0	59.6	58.9	90.00	3,072.0	275.7	660.0	542.0	117.97	5.594		
8,600.0	5,918.0	8,588.5	5,918.0	61.4	60.8	90.00	3,172.0	275.7	660.0	538.3	121.70	5.423		
8,700.0	5,918.0	8,688.5	5,918.0	63.3	62.6	90.00	3,272.0	275.7	660.0	534.5	125.43	5.262		
8,800.0	5,918.0	8,788.5	5,918.0	65.2	64.5	90.00	3,372.0	275.7	660.0	530.8	129.17	5.109		
8,900.0	5,918.0	8,888.5	5,918.0	67.0	66.4	90.00	3,472.0	275.7	660.0	527.1	132.91	4.965		
9,000.0	5,918.0	8,988.5	5,918.0	68.9	68.3	90.00	3,572.0	275.7	660.0	523.3	136.66	4.829		
9,100.0	5,918.0	9,088.5	5,918.0	70.7	70.1	90.00	3,672.0	275.7	660.0	519.6	140.42	4.700		
9,200.0	5,918.0	9,188.5	5,918.0	72.6	72.0	90.00	3,772.0	275.7	660.0	515.8	144.18	4.577		
9,300.0	5,918.0	9,288.5	5,918.0	74.5	73.9	90.00	3,872.0	275.7	660.0	512.0	147.94	4.461		
9,400.0	5,918.0	9,388.5	5,918.0	76.4	75.8	90.00	3,972.0	275.7	660.0	508.3	151.71	4.350		
9,500.0	5,918.0	9,488.5	5,918.0	78.2	77.7	90.00	4,072.0	275.7	660.0	504.5	155.48	4.245		
9,600.0	5,918.0	9,588.5	5,918.0	80.1	79.5	90.00	4,172.0	275.7	660.0	500.7	159.26	4.144		
9,700.0	5,918.0	9,688.5	5,918.0	82.0	81.4	90.00	4,272.0	275.7	660.0	497.0	163.04	4.048		
9,800.0	5,918.0	9,788.5	5,918.0	83.9	83.3	90.00	4,372.0	275.7	660.0	493.2	166.82	3.956		
9,900.0	5,918.0	9,888.5	5,918.0	85.8	85.2	90.00	4,472.0	275.7	660.0	489.4	170.60	3.869		
10,000.0	5,918.0	9,988.5	5,918.0	87.6	87.1	90.00	4,572.0	275.7	660.0	485.6	174.39	3.785		
10,100.0	5,918.0	10,088.5	5,918.0	89.5	89.0	90.00	4,672.0	275.7	660.0	481.8	178.18	3.704		
10,200.0	5,918.0	10,188.5	5,918.0	91.4	90.9	90.00	4,772.0	275.7	660.0	478.0	181.97	3.627		
10,300.0	5,918.0	10,288.5	5,918.0	93.3	92.8	90.00	4,872.0	275.7	660.0	474.2	185.76	3.553		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0911A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
10,400.0	5,918.0	10,388.5	5,918.0	95.2	94.7	90.00	4,972.0	275.7	660.0	470.4	189.56	3.482		
10,500.0	5,918.0	10,488.5	5,918.0	97.1	96.6	90.00	5,072.0	275.7	660.0	466.7	193.35	3.413		
10,600.0	5,918.0	10,588.5	5,918.0	99.0	98.5	90.00	5,172.0	275.7	660.0	462.9	197.15	3.348		
10,700.0	5,918.0	10,688.5	5,918.0	100.9	100.4	90.00	5,272.0	275.8	660.0	459.1	200.95	3.284		
10,800.0	5,918.0	10,788.5	5,918.0	102.8	102.3	90.00	5,372.0	275.8	660.0	455.3	204.76	3.223		
10,900.0	5,918.0	10,888.5	5,918.0	104.7	104.2	90.00	5,472.0	275.8	660.0	451.5	208.56	3.165		
11,000.0	5,918.0	10,988.5	5,918.0	106.6	106.1	90.00	5,572.0	275.8	660.0	447.7	212.36	3.108		
11,100.0	5,918.0	11,088.5	5,918.0	108.5	108.0	90.00	5,672.0	275.8	660.0	443.9	216.17	3.053		
11,200.0	5,918.0	11,188.5	5,918.0	110.4	109.9	90.00	5,772.0	275.8	660.0	440.0	219.98	3.000		
11,300.0	5,918.0	11,288.5	5,918.0	112.3	111.8	90.00	5,872.0	275.8	660.0	436.2	223.79	2.949		
11,400.0	5,918.0	11,388.5	5,918.0	114.2	113.7	90.00	5,972.0	275.8	660.0	432.4	227.60	2.900		
11,500.0	5,918.0	11,488.5	5,918.0	116.1	115.6	90.00	6,072.0	275.8	660.0	428.6	231.41	2.852		
11,600.0	5,918.0	11,588.5	5,918.0	118.0	117.5	90.00	6,172.0	275.8	660.0	424.8	235.22	2.806		
11,700.0	5,918.0	11,688.5	5,918.0	119.9	119.4	90.00	6,272.0	275.8	660.0	421.0	239.03	2.761		
11,800.0	5,918.0	11,788.5	5,918.0	121.8	121.3	90.00	6,372.0	275.8	660.0	417.2	242.85	2.718		
11,900.0	5,918.0	11,888.5	5,918.0	123.7	123.2	90.00	6,472.0	275.8	660.0	413.4	246.66	2.676		
12,000.0	5,918.0	11,988.5	5,918.0	125.6	125.1	90.00	6,572.0	275.8	660.0	409.6	250.48	2.635		
12,100.0	5,918.0	12,088.5	5,918.0	127.5	127.1	90.00	6,672.0	275.8	660.0	405.8	254.29	2.596		
12,200.0	5,918.0	12,188.5	5,918.0	129.4	129.0	90.00	6,772.0	275.8	660.0	401.9	258.11	2.557		
12,300.0	5,918.0	12,288.5	5,918.0	131.3	130.9	90.00	6,872.0	275.8	660.1	398.1	261.93	2.520		
12,400.0	5,918.0	12,388.5	5,918.0	133.2	132.8	90.00	6,972.0	275.8	660.1	394.3	265.75	2.484		
12,500.0	5,918.0	12,488.5	5,918.0	135.1	134.7	90.00	7,072.0	275.8	660.1	390.5	269.57	2.449		
12,600.0	5,918.0	12,588.5	5,918.0	137.0	136.6	90.00	7,172.0	275.8	660.1	386.7	273.39	2.414		
12,700.0	5,918.0	12,688.5	5,918.0	138.9	138.5	90.00	7,272.0	275.8	660.1	382.9	277.21	2.381		
12,800.0	5,918.0	12,788.5	5,918.0	140.8	140.4	90.00	7,372.0	275.8	660.1	379.0	281.03	2.349		
12,900.0	5,918.0	12,888.5	5,918.0	142.7	142.3	90.00	7,472.0	275.8	660.1	375.2	284.85	2.317		
13,000.0	5,918.0	12,988.5	5,918.0	144.7	144.2	90.00	7,572.0	275.8	660.1	371.4	288.67	2.287		
13,100.0	5,918.0	13,088.5	5,918.0	146.6	146.2	90.00	7,672.0	275.8	660.1	367.6	292.50	2.257		
13,200.0	5,918.0	13,188.5	5,918.0	148.5	148.1	90.00	7,772.0	275.8	660.1	363.8	296.32	2.228		
13,300.0	5,918.0	13,288.5	5,918.0	150.4	150.0	90.00	7,872.0	275.8	660.1	359.9	300.15	2.199		
13,400.0	5,918.0	13,388.5	5,918.0	152.3	151.9	90.00	7,972.0	275.8	660.1	356.1	303.97	2.172		
13,500.0	5,918.0	13,488.5	5,918.0	154.2	153.8	90.00	8,072.0	275.8	660.1	352.3	307.79	2.145		
13,600.0	5,918.0	13,588.5	5,918.0	156.1	155.7	90.00	8,172.0	275.8	660.1	348.5	311.62	2.118		
13,700.0	5,918.0	13,688.5	5,918.0	158.0	157.6	90.00	8,272.0	275.8	660.1	344.6	315.45	2.093		
13,700.4	5,918.0	13,688.9	5,918.0	158.0	157.6	90.00	8,272.4	275.8	660.1	344.6	315.46	2.092		
13,706.6	5,918.0	13,695.0	5,918.0	158.1	157.8	90.00	8,278.4	275.8	660.1	344.4	315.69	2.091 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	99.9	99.9					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	99.9	99.9	99.7	0.19	535.518		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	99.9	99.9	99.3	0.64	157.060		
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	99.9	99.9	98.8	1.09	92.025		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	99.9	99.9	98.4	1.54	65.078		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	99.9	99.9	97.9	1.98	50.338 CC, ES		
600.0	600.0	600.0	600.0	1.2	1.2	109.97	0.0	99.9	100.5	98.1	2.43	41.301		
700.0	699.8	699.8	699.8	1.4	1.4	112.68	0.0	99.9	102.4	99.5	2.88	35.515		
800.0	799.6	799.6	799.6	1.7	1.7	116.18	0.0	99.9	105.3	101.9	3.34	31.534		
900.0	899.4	899.4	899.4	1.9	1.9	119.48	0.0	99.9	108.5	104.8	3.80	28.581		
1,000.0	999.1	999.1	999.1	2.2	2.1	122.58	0.0	99.9	112.2	107.9	4.26	26.335		
1,100.0	1,098.9	1,098.9	1,098.9	2.4	2.3	125.48	0.0	99.9	116.1	111.3	4.72	24.591		
1,200.0	1,198.6	1,198.2	1,198.2	2.7	2.6	127.37	1.5	100.6	120.4	115.2	5.18	23.250		
1,300.0	1,298.4	1,297.7	1,297.5	2.9	2.8	127.56	6.2	102.7	125.2	119.5	5.64	22.192		
1,400.0	1,398.1	1,397.5	1,397.1	3.2	3.0	126.94	12.6	105.6	130.1	124.0	6.11	21.299		
1,500.0	1,497.9	1,497.4	1,496.8	3.4	3.2	126.36	18.9	108.4	135.1	128.5	6.58	20.518		
1,600.0	1,597.6	1,597.3	1,596.4	3.7	3.5	125.82	25.3	111.3	140.1	133.0	7.06	19.833		
1,700.0	1,697.4	1,697.1	1,696.0	3.9	3.7	125.32	31.6	114.1	145.1	137.5	7.55	19.226		
1,800.0	1,797.2	1,797.0	1,795.6	4.2	4.0	124.86	38.0	117.0	150.1	142.0	8.03	18.688		
1,900.0	1,896.9	1,896.9	1,895.3	4.4	4.2	124.42	44.3	119.9	155.1	146.6	8.52	18.206		
2,000.0	1,996.7	1,996.7	1,994.9	4.7	4.4	124.01	50.7	122.7	160.1	151.1	9.01	17.774		
2,100.0	2,096.4	2,096.6	2,094.5	4.9	4.7	123.63	57.0	125.6	165.1	155.6	9.50	17.384		
2,200.0	2,196.2	2,196.5	2,194.1	5.2	4.9	123.27	63.4	128.5	170.2	160.2	9.99	17.030		
2,300.0	2,295.9	2,296.3	2,293.8	5.4	5.2	122.93	69.7	131.3	175.2	164.7	10.49	16.709		
2,400.0	2,395.7	2,396.2	2,393.4	5.7	5.4	122.61	76.1	134.2	180.3	169.3	10.98	16.415		
2,500.0	2,495.5	2,496.1	2,493.0	6.0	5.7	122.30	82.4	137.0	185.3	173.8	11.48	16.146		
2,600.0	2,595.2	2,596.0	2,592.6	6.2	5.9	122.01	88.8	139.9	190.4	178.4	11.97	15.898		
2,700.0	2,695.0	2,695.8	2,692.3	6.5	6.2	121.74	95.1	142.8	195.4	183.0	12.47	15.670		
2,800.0	2,794.7	2,795.7	2,791.9	6.7	6.4	121.48	101.5	145.6	200.5	187.5	12.97	15.459		
2,900.0	2,894.5	2,895.6	2,891.5	7.0	6.7	121.24	107.8	148.5	205.6	192.1	13.47	15.262		
3,000.0	2,994.2	2,995.4	2,991.1	7.2	6.9	121.00	114.2	151.3	210.6	196.7	13.97	15.080		
3,100.0	3,094.0	3,095.3	3,090.8	7.5	7.2	120.78	120.5	154.2	215.7	201.3	14.47	14.910		
3,200.0	3,193.7	3,195.2	3,190.4	7.7	7.4	120.57	126.9	157.1	220.8	205.8	14.97	14.751		
3,300.0	3,293.5	3,295.0	3,290.0	8.0	7.7	120.36	133.3	159.9	225.9	210.4	15.47	14.603		
3,400.0	3,393.3	3,394.9	3,389.6	8.3	7.9	120.17	139.6	162.8	231.0	215.0	15.97	14.463		
3,500.0	3,493.0	3,494.8	3,489.3	8.5	8.2	119.98	146.0	165.7	236.1	219.6	16.47	14.332		
3,600.0	3,592.8	3,594.6	3,588.9	8.8	8.4	119.80	152.3	168.5	241.1	224.2	16.97	14.209		
3,700.0	3,692.5	3,694.5	3,688.5	9.0	8.7	119.63	158.7	171.4	246.2	228.8	17.47	14.092		
3,800.0	3,792.3	3,794.4	3,788.1	9.3	8.9	119.47	165.0	174.2	251.3	233.4	17.98	13.982		
3,900.0	3,892.0	3,894.2	3,887.7	9.5	9.2	119.31	171.4	177.1	256.4	238.0	18.48	13.878		
4,000.0	3,991.8	3,994.1	3,987.4	9.8	9.4	119.16	177.7	180.0	261.5	242.6	18.98	13.780		
4,100.0	4,091.6	4,094.0	4,087.0	10.1	9.7	119.02	184.1	182.8	266.6	247.2	19.48	13.686		
4,200.0	4,191.3	4,193.8	4,186.6	10.3	10.0	118.88	190.4	185.7	271.7	251.8	19.98	13.598		
4,300.0	4,291.1	4,293.7	4,286.2	10.6	10.2	118.74	196.8	188.5	276.8	256.4	20.49	13.513		
4,400.0	4,390.8	4,393.6	4,385.9	10.8	10.5	118.61	203.1	191.4	281.9	261.0	20.99	13.433		
4,500.0	4,490.6	4,493.4	4,485.5	11.1	10.7	118.48	209.5	194.3	287.0	265.6	21.49	13.356		
4,600.0	4,590.3	4,593.3	4,585.1	11.3	11.0	118.36	215.8	197.1	292.2	270.2	22.00	13.283		
4,700.0	4,690.1	4,693.2	4,684.7	11.6	11.2	118.25	222.2	200.0	297.3	274.8	22.50	13.213		
4,800.0	4,789.9	4,793.0	4,784.4	11.9	11.5	118.13	228.5	202.8	302.4	279.4	23.00	13.146		
4,900.0	4,889.6	4,892.9	4,884.0	12.1	11.7	118.03	234.9	205.7	307.5	284.0	23.51	13.082		
5,000.0	4,989.4	4,992.8	4,983.6	12.4	12.0	117.92	241.2	208.6	312.6	288.6	24.01	13.021		
5,100.0	5,089.1	5,092.6	5,083.2	12.6	12.2	117.82	247.6	211.4	317.7	293.2	24.51	12.962		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,192.5	5,182.9	12.9	12.5	117.72	253.9	214.3	322.8	297.8	25.02	12.905		
5,300.0	5,288.6	5,292.4	5,282.5	13.1	12.8	117.62	260.3	217.2	327.9	302.4	25.52	12.851		
5,400.0	5,388.4	5,392.2	5,382.1	13.4	13.0	117.53	266.6	220.0	333.1	307.0	26.02	12.799		
5,500.0	5,487.8	5,492.0	5,481.6	13.7	13.3	117.47	273.0	222.9	339.5	313.0	26.49	12.818		
5,600.0	5,584.0	5,582.4	5,571.6	14.1	13.5	118.17	280.5	226.3	354.7	327.9	26.85	13.210		
5,700.0	5,673.4	5,665.2	5,652.0	14.7	13.8	117.67	298.2	234.2	382.6	355.3	27.28	14.023		
5,800.0	5,752.6	5,745.6	5,726.2	15.5	14.2	115.76	326.3	246.9	422.1	394.1	27.97	15.091		
5,900.0	5,818.7	5,822.8	5,792.1	16.5	14.7	112.43	362.7	263.3	471.6	442.4	29.14	16.185		
6,000.0	5,869.3	5,896.4	5,848.9	17.6	15.3	107.76	405.4	282.5	529.2	498.3	30.89	17.132		
6,100.0	5,902.6	5,966.9	5,896.6	19.0	15.9	101.88	452.7	303.8	592.9	559.8	33.14	17.895		
6,200.0	5,917.3	6,035.2	5,935.7	20.5	16.6	95.10	503.7	326.8	661.0	625.4	35.57	18.584		
6,300.0	5,918.0	6,106.3	5,968.2	22.0	17.4	95.37	561.3	352.7	730.2	692.5	37.68	19.378		
6,400.0	5,918.0	6,190.2	5,995.2	23.5	18.5	97.19	633.6	385.3	795.9	756.0	39.87	19.959		
6,500.0	5,918.0	6,285.2	6,009.9	25.0	19.8	97.55	719.1	423.8	856.5	814.0	42.47	20.168		
6,600.0	5,918.0	6,424.7	6,011.0	26.5	21.8	96.69	847.4	478.4	910.0	864.2	45.80	19.868		
6,700.0	5,918.0	6,601.1	6,011.0	28.1	24.3	95.98	1,014.6	534.1	951.8	902.0	49.78	19.118		
6,800.0	5,918.0	6,794.4	6,011.0	29.7	27.2	95.56	1,203.1	577.2	979.6	925.3	54.31	18.039		
6,900.0	5,918.0	6,998.5	6,011.0	31.3	30.3	95.38	1,405.6	601.8	992.6	933.5	59.15	16.780		
7,000.0	5,918.0	7,165.1	6,011.0	32.9	32.9	95.36	1,572.0	606.1	994.7	931.2	63.50	15.664		
7,100.0	5,918.0	7,265.1	6,011.0	34.6	34.4	95.36	1,672.0	606.1	994.7	927.9	66.84	14.883		
7,200.0	5,918.0	7,365.1	6,011.0	36.3	36.1	95.36	1,772.0	606.1	994.7	924.5	70.22	14.166		
7,300.0	5,918.0	7,465.1	6,011.0	38.0	37.7	95.36	1,872.0	606.1	994.7	921.1	73.64	13.508		
7,400.0	5,918.0	7,565.1	6,011.0	39.7	39.4	95.36	1,972.0	606.1	994.7	917.6	77.10	12.901		
7,500.0	5,918.0	7,665.1	6,011.0	41.5	41.0	95.36	2,072.0	606.1	994.7	914.1	80.59	12.342		
7,600.0	5,918.0	7,765.1	6,011.0	43.3	42.7	95.36	2,172.0	606.1	994.7	910.6	84.12	11.825		
7,700.0	5,918.0	7,865.1	6,011.0	45.0	44.5	95.36	2,272.0	606.1	994.7	907.0	87.67	11.346		
7,800.0	5,918.0	7,965.1	6,011.0	46.8	46.2	95.36	2,372.0	606.1	994.7	903.5	91.24	10.902		
7,900.0	5,918.0	8,065.1	6,011.0	48.6	48.0	95.36	2,472.0	606.1	994.7	899.9	94.83	10.489		
8,000.0	5,918.0	8,165.1	6,011.0	50.4	49.7	95.36	2,572.0	606.1	994.7	896.3	98.44	10.105		
8,100.0	5,918.0	8,265.1	6,011.0	52.3	51.5	95.36	2,672.0	606.1	994.7	892.6	102.07	9.746		
8,200.0	5,918.0	8,365.1	6,011.0	54.1	53.3	95.36	2,772.0	606.1	994.7	889.0	105.71	9.410		
8,300.0	5,918.0	8,465.1	6,011.0	55.9	55.1	95.36	2,872.0	606.1	994.7	885.3	109.36	9.096		
8,400.0	5,918.0	8,565.1	6,011.0	57.8	56.9	95.36	2,972.0	606.1	994.7	881.7	113.02	8.801		
8,500.0	5,918.0	8,665.1	6,011.0	59.6	58.7	95.36	3,072.0	606.1	994.7	878.0	116.70	8.524		
8,600.0	5,918.0	8,765.1	6,011.0	61.4	60.5	95.36	3,172.0	606.1	994.7	874.3	120.38	8.263		
8,700.0	5,918.0	8,865.1	6,011.0	63.3	62.3	95.36	3,272.0	606.1	994.7	870.6	124.08	8.017		
8,800.0	5,918.0	8,965.1	6,011.0	65.2	64.1	95.36	3,372.0	606.1	994.7	866.9	127.78	7.785		
8,900.0	5,918.0	9,065.1	6,011.0	67.0	66.0	95.36	3,472.0	606.1	994.7	863.2	131.49	7.565		
9,000.0	5,918.0	9,165.1	6,011.0	68.9	67.8	95.36	3,572.0	606.1	994.7	859.5	135.20	7.357		
9,100.0	5,918.0	9,265.1	6,011.0	70.7	69.7	95.36	3,672.0	606.1	994.7	855.8	138.92	7.160		
9,200.0	5,918.0	9,365.1	6,011.0	72.6	71.5	95.36	3,772.0	606.1	994.7	852.1	142.65	6.973		
9,300.0	5,918.0	9,465.1	6,011.0	74.5	73.4	95.36	3,872.0	606.1	994.7	848.3	146.38	6.795		
9,400.0	5,918.0	9,565.1	6,011.0	76.4	75.2	95.36	3,972.0	606.1	994.7	844.6	150.12	6.626		
9,500.0	5,918.0	9,665.1	6,011.0	78.2	77.1	95.36	4,072.0	606.1	994.7	840.9	153.86	6.465		
9,600.0	5,918.0	9,765.1	6,011.0	80.1	78.9	95.36	4,172.0	606.1	994.7	837.1	157.61	6.311		
9,700.0	5,918.0	9,865.1	6,011.0	82.0	80.8	95.36	4,272.0	606.1	994.7	833.4	161.36	6.165		
9,800.0	5,918.0	9,965.1	6,011.0	83.9	82.7	95.36	4,372.0	606.1	994.7	829.6	165.11	6.025		
9,900.0	5,918.0	10,065.1	6,011.0	85.8	84.5	95.36	4,472.0	606.1	994.7	825.9	168.87	5.891		
10,000.0	5,918.0	10,165.1	6,011.0	87.6	86.4	95.36	4,572.0	606.1	994.7	822.1	172.63	5.762		
10,100.0	5,918.0	10,265.1	6,011.0	89.5	88.3	95.36	4,672.0	606.1	994.7	818.3	176.39	5.639		
10,200.0	5,918.0	10,365.1	6,011.0	91.4	90.2	95.36	4,772.0	606.1	994.7	814.6	180.15	5.522		
10,300.0	5,918.0	10,465.1	6,011.0	93.3	92.0	95.36	4,872.0	606.1	994.7	810.8	183.92	5.408		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-0912B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
10,400.0	5,918.0	10,565.1	6,011.0	95.2	93.9	95.36	4,972.0	606.1	994.7	807.0	187.69	5.300		
10,500.0	5,918.0	10,665.1	6,011.0	97.1	95.8	95.36	5,072.0	606.1	994.7	803.3	191.46	5.195		
10,600.0	5,918.0	10,765.1	6,011.0	99.0	97.7	95.36	5,172.0	606.1	994.7	799.5	195.24	5.095		
10,700.0	5,918.0	10,865.1	6,011.0	100.9	99.6	95.36	5,272.0	606.1	994.7	795.7	199.02	4.998		
10,800.0	5,918.0	10,965.1	6,011.0	102.8	101.4	95.36	5,372.0	606.1	994.7	791.9	202.79	4.905		
10,900.0	5,918.0	11,065.1	6,011.0	104.7	103.3	95.36	5,472.0	606.1	994.7	788.2	206.58	4.815		
11,000.0	5,918.0	11,165.1	6,011.0	106.6	105.2	95.36	5,572.0	606.1	994.7	784.4	210.36	4.729		
11,100.0	5,918.0	11,265.1	6,011.0	108.5	107.1	95.36	5,672.0	606.1	994.7	780.6	214.14	4.645		
11,200.0	5,918.0	11,365.1	6,011.0	110.4	109.0	95.36	5,772.0	606.1	994.7	776.8	217.93	4.565		
11,300.0	5,918.0	11,465.1	6,011.0	112.3	110.9	95.36	5,872.0	606.1	994.7	773.0	221.71	4.487		
11,400.0	5,918.0	11,565.1	6,011.0	114.2	112.8	95.36	5,972.0	606.1	994.7	769.2	225.50	4.411		
11,500.0	5,918.0	11,665.1	6,011.0	116.1	114.7	95.36	6,072.0	606.1	994.7	765.4	229.29	4.338		
11,600.0	5,918.0	11,765.1	6,011.0	118.0	116.6	95.36	6,172.0	606.1	994.7	761.7	233.08	4.268		
11,700.0	5,918.0	11,865.1	6,011.0	119.9	118.5	95.36	6,272.0	606.1	994.7	757.9	236.87	4.199		
11,800.0	5,918.0	11,965.1	6,011.0	121.8	120.4	95.36	6,372.0	606.1	994.7	754.1	240.67	4.133		
11,900.0	5,918.0	12,065.1	6,011.0	123.7	122.3	95.36	6,472.0	606.1	994.7	750.3	244.46	4.069		
12,000.0	5,918.0	12,165.1	6,011.0	125.6	124.2	95.36	6,572.0	606.1	994.7	746.5	248.26	4.007		
12,100.0	5,918.0	12,265.1	6,011.0	127.5	126.1	95.36	6,672.0	606.1	994.7	742.7	252.05	3.947		
12,200.0	5,918.0	12,365.1	6,011.0	129.4	128.0	95.36	6,772.0	606.1	994.7	738.9	255.85	3.888		
12,300.0	5,918.0	12,465.1	6,011.0	131.3	129.9	95.36	6,872.0	606.1	994.7	735.1	259.65	3.831		
12,400.0	5,918.0	12,565.1	6,011.0	133.2	131.8	95.36	6,972.0	606.1	994.7	731.3	263.45	3.776		
12,500.0	5,918.0	12,665.1	6,011.0	135.1	133.7	95.36	7,072.0	606.1	994.7	727.5	267.25	3.722		
12,600.0	5,918.0	12,765.1	6,011.0	137.0	135.6	95.36	7,172.0	606.1	994.8	723.7	271.05	3.670		
12,700.0	5,918.0	12,865.1	6,011.0	138.9	137.5	95.36	7,272.0	606.1	994.8	719.9	274.85	3.619		
12,800.0	5,918.0	12,965.1	6,011.0	140.8	139.4	95.36	7,372.0	606.1	994.8	716.1	278.65	3.570		
12,900.0	5,918.0	13,065.1	6,011.0	142.7	141.3	95.36	7,472.0	606.1	994.8	712.3	282.46	3.522		
13,000.0	5,918.0	13,165.1	6,011.0	144.7	143.2	95.36	7,572.0	606.1	994.8	708.5	286.26	3.475		
13,100.0	5,918.0	13,265.1	6,011.0	146.6	145.1	95.36	7,672.0	606.1	994.8	704.7	290.06	3.429		
13,200.0	5,918.0	13,365.1	6,011.0	148.5	147.0	95.36	7,772.0	606.1	994.8	700.9	293.87	3.385		
13,300.0	5,918.0	13,465.1	6,011.0	150.4	148.9	95.36	7,872.0	606.1	994.8	697.1	297.67	3.342		
13,400.0	5,918.0	13,565.1	6,011.0	152.3	150.8	95.36	7,972.0	606.1	994.8	693.3	301.48	3.300		
13,500.0	5,918.0	13,665.1	6,011.0	154.2	152.7	95.36	8,072.0	606.1	994.8	689.5	305.29	3.258		
13,600.0	5,918.0	13,765.1	6,011.0	156.1	154.6	95.36	8,172.0	606.1	994.8	685.7	309.09	3.218		
13,700.0	5,918.0	13,865.1	6,011.0	158.0	156.5	95.36	8,272.0	606.1	994.8	681.9	312.90	3.179		
13,700.4	5,918.0	13,865.4	6,011.0	158.0	156.5	95.36	8,272.4	606.1	994.8	681.8	312.91	3.179		
13,706.6	5,918.0	13,870.6	6,011.0	158.1	156.6	95.36	8,277.5	606.1	994.8	681.6	313.13	3.177 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: O-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	6.7	6.7	0.0	0.0	-91.17	-27.3	-1,340.8	1,341.1					
100.0	100.0	106.7	106.7	0.1	0.1	-91.17	-27.3	-1,340.8	1,341.1	1,340.9	0.20	6,652.127		
200.0	200.0	206.7	206.7	0.3	0.3	-91.17	-27.3	-1,340.8	1,341.1	1,340.4	0.65	2,059.627		
300.0	300.0	306.7	306.7	0.5	0.6	-91.17	-27.3	-1,340.8	1,341.1	1,340.0	1.10	1,218.440		
400.0	400.0	406.7	406.7	0.8	0.8	-91.17	-27.3	-1,340.8	1,341.1	1,339.5	1.55	865.113		
464.3	464.3	471.0	471.0	0.9	0.9	-91.17	-27.3	-1,340.8	1,341.1	1,339.3	1.84	729.204		
500.0	500.0	500.0	500.0	1.0	1.0	-91.17	-27.3	-1,340.8	1,341.1	1,339.1	1.98	675.737		
600.0	600.0	593.2	593.2	1.2	1.2	-72.13	-25.9	-1,341.3	1,341.1	1,338.7	2.42	555.024		
700.0	699.8	680.6	680.4	1.4	1.4	-72.15	-21.9	-1,342.7	1,341.0	1,338.1	2.84	472.429		
731.8	731.5	709.5	709.3	1.5	1.5	-72.15	-20.1	-1,343.3	1,341.0	1,338.0	2.98	450.086		
800.0	799.6	777.7	777.4	1.7	1.6	-72.15	-15.6	-1,344.9	1,341.0	1,337.7	3.30	406.811		
900.0	899.4	877.7	877.1	1.9	1.9	-72.15	-9.0	-1,347.2	1,341.0	1,337.2	3.77	355.537		
1,000.0	999.1	977.7	976.9	2.2	2.1	-72.15	-2.4	-1,349.5	1,341.0	1,336.7	4.25	315.180		
1,100.0	1,098.9	1,077.7	1,076.7	2.4	2.4	-72.15	4.2	-1,351.8	1,341.0	1,336.3	4.74	282.737		
1,200.0	1,198.6	1,177.7	1,176.4	2.7	2.6	-72.15	10.8	-1,354.1	1,341.0	1,335.8	5.24	256.165		
1,300.0	1,298.4	1,277.7	1,276.2	2.9	2.9	-72.15	17.4	-1,356.4	1,341.0	1,335.3	5.73	234.044		
1,400.0	1,398.1	1,377.7	1,375.9	3.2	3.1	-72.15	24.0	-1,358.7	1,341.1	1,334.8	6.23	215.366		
1,500.0	1,497.9	1,477.7	1,475.7	3.4	3.4	-72.15	30.5	-1,360.9	1,341.1	1,334.4	6.73	199.402		
1,600.0	1,597.6	1,577.7	1,575.4	3.7	3.6	-72.15	37.1	-1,363.2	1,341.1	1,333.9	7.23	185.605		
1,700.0	1,697.4	1,677.7	1,675.2	3.9	3.9	-72.15	43.7	-1,365.5	1,341.1	1,333.4	7.73	173.572		
1,800.0	1,797.2	1,777.7	1,775.0	4.2	4.1	-72.15	50.3	-1,367.8	1,341.1	1,332.9	8.23	162.987		
1,900.0	1,896.9	1,877.7	1,874.7	4.4	4.4	-72.15	56.9	-1,370.1	1,341.2	1,332.4	8.73	153.606		
2,000.0	1,996.7	1,977.7	1,974.5	4.7	4.6	-72.15	63.5	-1,372.4	1,341.2	1,331.9	9.23	145.237		
2,100.0	2,096.4	2,077.7	2,074.2	4.9	4.9	-72.15	70.1	-1,374.7	1,341.2	1,331.4	9.74	137.726		
2,200.0	2,196.2	2,177.7	2,174.0	5.2	5.1	-72.15	76.7	-1,377.0	1,341.2	1,331.0	10.24	130.948		
2,300.0	2,295.9	2,277.7	2,273.7	5.4	5.4	-72.15	83.3	-1,379.3	1,341.2	1,330.5	10.75	124.802		
2,400.0	2,395.7	2,377.7	2,373.5	5.7	5.6	-72.15	89.8	-1,381.6	1,341.2	1,330.0	11.25	119.204		
2,500.0	2,495.5	2,477.7	2,473.2	6.0	5.9	-72.15	96.4	-1,383.9	1,341.3	1,329.5	11.76	114.084		
2,600.0	2,595.2	2,577.7	2,573.0	6.2	6.2	-72.15	103.0	-1,386.2	1,341.3	1,329.0	12.26	109.383		
2,700.0	2,695.0	2,677.7	2,672.8	6.5	6.4	-72.15	109.6	-1,388.5	1,341.3	1,328.5	12.77	105.053		
2,800.0	2,794.7	2,777.7	2,772.5	6.7	6.7	-72.15	116.2	-1,390.7	1,341.3	1,328.0	13.27	101.051		
2,900.0	2,894.5	2,877.7	2,872.3	7.0	6.9	-72.15	122.8	-1,393.0	1,341.3	1,327.5	13.78	97.342		
3,000.0	2,994.2	2,977.7	2,972.0	7.2	7.2	-72.15	129.4	-1,395.3	1,341.3	1,327.1	14.29	93.894		
3,100.0	3,094.0	3,077.7	3,071.8	7.5	7.4	-72.15	136.0	-1,397.6	1,341.4	1,326.6	14.79	90.682		
3,200.0	3,193.7	3,177.7	3,171.5	7.7	7.7	-72.15	142.5	-1,399.9	1,341.4	1,326.1	15.30	87.681		
3,300.0	3,293.5	3,277.7	3,271.3	8.0	7.9	-72.15	149.1	-1,402.2	1,341.4	1,325.6	15.80	84.872		
3,400.0	3,393.3	3,377.7	3,371.1	8.3	8.2	-72.15	155.7	-1,404.5	1,341.4	1,325.1	16.31	82.238		
3,500.0	3,493.0	3,477.7	3,470.8	8.5	8.5	-72.15	162.3	-1,406.8	1,341.4	1,324.6	16.82	79.761		
3,600.0	3,592.8	3,577.7	3,570.6	8.8	8.7	-72.15	168.9	-1,409.1	1,341.4	1,324.1	17.32	77.429		
3,700.0	3,692.5	3,677.7	3,670.3	9.0	9.0	-72.15	175.5	-1,411.4	1,341.5	1,323.6	17.83	75.229		
3,800.0	3,792.3	3,777.7	3,770.1	9.3	9.2	-72.16	182.1	-1,413.7	1,341.5	1,323.1	18.34	73.150		
3,900.0	3,892.0	3,877.7	3,869.8	9.5	9.5	-72.16	188.7	-1,416.0	1,341.5	1,322.6	18.85	71.183		
4,000.0	3,991.8	3,977.7	3,969.6	9.8	9.7	-72.16	195.2	-1,418.3	1,341.5	1,322.2	19.35	69.319		
4,100.0	4,091.6	4,077.7	4,069.4	10.1	10.0	-72.16	201.8	-1,420.6	1,341.5	1,321.7	19.86	67.550		
4,200.0	4,191.3	4,177.7	4,169.1	10.3	10.3	-72.16	208.4	-1,422.8	1,341.5	1,321.2	20.37	65.869		
4,300.0	4,291.1	4,277.7	4,268.9	10.6	10.5	-72.16	215.0	-1,425.1	1,341.6	1,320.7	20.87	64.269		
4,400.0	4,390.8	4,377.7	4,368.6	10.8	10.8	-72.16	221.6	-1,427.4	1,341.6	1,320.2	21.38	62.745		
4,500.0	4,490.6	4,477.7	4,468.4	11.1	11.0	-72.16	228.2	-1,429.7	1,341.6	1,319.7	21.89	61.292		
4,600.0	4,590.3	4,577.7	4,568.1	11.3	11.3	-72.16	234.8	-1,432.0	1,341.6	1,319.2	22.40	59.904		
4,700.0	4,690.1	4,677.7	4,667.9	11.6	11.5	-72.16	241.4	-1,434.3	1,341.6	1,318.7	22.90	58.578		
4,800.0	4,789.9	4,777.7	4,767.6	11.9	11.8	-72.16	248.0	-1,436.6	1,341.6	1,318.2	23.41	57.309		
4,900.0	4,889.6	4,877.7	4,867.4	12.1	12.1	-72.16	254.5	-1,438.9	1,341.7	1,317.7	23.92	56.094		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,000.0	4,989.4	4,977.7	4,967.2	12.4	12.3	-72.16	261.1	-1,441.2	1,341.7	1,317.3	24.43	54.929		
5,100.0	5,089.1	5,077.7	5,066.9	12.6	12.6	-72.16	267.7	-1,443.5	1,341.7	1,316.8	24.93	53.812		
5,200.0	5,188.9	5,177.7	5,166.7	12.9	12.8	-72.16	274.3	-1,445.8	1,341.7	1,316.3	25.44	52.739		
5,300.0	5,288.6	5,277.7	5,266.4	13.1	13.1	-72.16	280.9	-1,448.1	1,341.7	1,315.8	25.95	51.708		
5,400.0	5,388.4	5,377.7	5,366.2	13.4	13.3	-72.16	287.5	-1,450.4	1,341.7	1,315.3	26.46	50.717		
5,500.0	5,487.8	5,464.6	5,452.9	13.7	13.6	-72.30	293.5	-1,452.4	1,341.0	1,314.1	26.95	49.760		
5,600.0	5,584.0	5,520.4	5,507.9	14.1	13.8	-72.93	301.6	-1,455.3	1,337.6	1,310.1	27.50	48.641		
5,700.0	5,673.4	5,576.3	5,561.9	14.7	14.0	-73.99	315.3	-1,460.0	1,331.9	1,303.6	28.26	47.122		
5,800.0	5,752.6	5,632.6	5,614.4	15.5	14.3	-75.46	334.5	-1,466.7	1,324.2	1,294.9	29.33	45.156		
5,900.0	5,818.7	5,689.4	5,664.7	16.5	14.6	-77.29	359.1	-1,475.3	1,315.3	1,284.6	30.75	42.768		
6,000.0	5,869.3	5,750.0	5,715.0	17.6	15.0	-79.47	391.0	-1,486.4	1,305.7	1,273.1	32.59	40.063		
6,100.0	5,902.6	5,800.0	5,753.4	19.0	15.5	-81.60	421.3	-1,496.9	1,296.3	1,261.7	34.67	37.393		
6,200.0	5,917.3	5,864.9	5,798.2	20.5	16.1	-84.15	465.6	-1,512.3	1,288.0	1,250.9	37.12	34.702		
6,300.0	5,918.0	5,929.0	5,836.4	22.0	16.8	-86.05	514.1	-1,529.2	1,283.4	1,243.9	39.56	32.441		
6,305.0	5,918.0	5,932.5	5,838.3	22.1	16.8	-86.14	516.9	-1,530.2	1,283.4	1,243.5	39.90	32.169 CC		
6,400.0	5,918.0	6,004.6	5,873.0	23.5	17.7	-87.69	576.5	-1,550.9	1,287.0	1,245.0	42.01	30.638		
6,500.0	5,918.0	6,091.3	5,902.6	25.0	18.8	-89.02	653.4	-1,577.7	1,297.9	1,253.3	44.58	29.114		
6,600.0	5,918.0	6,185.9	5,919.1	26.5	20.3	-89.75	741.2	-1,608.2	1,314.8	1,267.6	47.22	27.845		
6,700.0	5,918.0	6,405.9	5,921.0	28.1	23.5	-89.84	951.4	-1,672.8	1,334.5	1,283.3	51.26	26.035		
6,800.0	5,918.0	6,739.5	5,921.0	29.7	28.7	-89.84	1,280.6	-1,724.4	1,344.3	1,287.2	57.09	23.545		
6,900.0	5,918.0	6,931.1	5,921.0	31.3	31.7	-89.84	1,472.1	-1,728.8	1,344.6	1,283.2	61.41	21.894		
7,000.0	5,918.0	7,031.1	5,921.0	32.9	33.4	-89.84	1,572.1	-1,728.8	1,344.6	1,279.8	64.79	20.754		
7,100.0	5,918.0	7,131.1	5,921.0	34.6	35.1	-89.84	1,672.1	-1,728.8	1,344.6	1,276.3	68.21	19.711		
7,200.0	5,918.0	7,231.1	5,921.0	36.3	36.8	-89.84	1,772.1	-1,728.8	1,344.6	1,272.9	71.68	18.758		
7,300.0	5,918.0	7,331.1	5,921.0	38.0	38.5	-89.84	1,872.1	-1,728.8	1,344.6	1,269.4	75.18	17.884		
7,400.0	5,918.0	7,431.1	5,921.0	39.7	40.2	-89.84	1,972.1	-1,728.8	1,344.5	1,265.8	78.72	17.081		
7,500.0	5,918.0	7,531.1	5,921.0	41.5	42.0	-89.84	2,072.1	-1,728.8	1,344.5	1,262.3	82.28	16.341		
7,600.0	5,918.0	7,631.1	5,921.0	43.3	43.8	-89.84	2,172.1	-1,728.8	1,344.5	1,258.7	85.87	15.658		
7,700.0	5,918.0	7,731.1	5,921.0	45.0	45.6	-89.84	2,272.1	-1,728.8	1,344.5	1,255.1	89.48	15.027		
7,800.0	5,918.0	7,831.1	5,921.0	46.8	47.3	-89.84	2,372.1	-1,728.8	1,344.5	1,251.4	93.10	14.441		
7,900.0	5,918.0	7,931.1	5,921.0	48.6	49.1	-89.84	2,472.1	-1,728.8	1,344.5	1,247.8	96.75	13.897		
8,000.0	5,918.0	8,031.1	5,921.0	50.4	51.0	-89.84	2,572.1	-1,728.8	1,344.5	1,244.1	100.41	13.391		
8,100.0	5,918.0	8,131.1	5,921.0	52.3	52.8	-89.84	2,672.1	-1,728.8	1,344.5	1,240.4	104.08	12.918		
8,200.0	5,918.0	8,231.1	5,921.0	54.1	54.6	-89.84	2,772.1	-1,728.8	1,344.5	1,236.7	107.76	12.477		
8,300.0	5,918.0	8,331.1	5,921.0	55.9	56.4	-89.84	2,872.1	-1,728.8	1,344.5	1,233.0	111.46	12.063		
8,400.0	5,918.0	8,431.1	5,921.0	57.8	58.3	-89.84	2,972.1	-1,728.8	1,344.5	1,229.3	115.16	11.675		
8,500.0	5,918.0	8,531.1	5,921.0	59.6	60.1	-89.84	3,072.1	-1,728.7	1,344.5	1,225.6	118.87	11.310		
8,600.0	5,918.0	8,631.1	5,921.0	61.4	62.0	-89.84	3,172.1	-1,728.7	1,344.5	1,221.9	122.59	10.967		
8,700.0	5,918.0	8,731.1	5,921.0	63.3	63.8	-89.84	3,272.1	-1,728.7	1,344.5	1,218.2	126.32	10.643		
8,800.0	5,918.0	8,831.1	5,921.0	65.2	65.7	-89.84	3,372.1	-1,728.7	1,344.5	1,214.4	130.06	10.338		
8,900.0	5,918.0	8,931.1	5,921.0	67.0	67.5	-89.84	3,472.1	-1,728.7	1,344.5	1,210.7	133.80	10.049		
9,000.0	5,918.0	9,031.1	5,921.0	68.9	69.4	-89.84	3,572.1	-1,728.7	1,344.5	1,206.9	137.54	9.775		
9,100.0	5,918.0	9,131.1	5,921.0	70.7	71.3	-89.84	3,672.1	-1,728.7	1,344.5	1,203.2	141.30	9.515		
9,200.0	5,918.0	9,231.1	5,921.0	72.6	73.1	-89.84	3,772.1	-1,728.7	1,344.5	1,199.4	145.05	9.269		
9,300.0	5,918.0	9,331.1	5,921.0	74.5	75.0	-89.84	3,872.1	-1,728.7	1,344.5	1,195.6	148.81	9.035		
9,400.0	5,918.0	9,431.1	5,921.0	76.4	76.9	-89.84	3,972.1	-1,728.7	1,344.5	1,191.9	152.58	8.812		
9,500.0	5,918.0	9,531.1	5,921.0	78.2	78.8	-89.84	4,072.1	-1,728.7	1,344.4	1,188.1	156.35	8.599		
9,600.0	5,918.0	9,631.1	5,921.0	80.1	80.6	-89.84	4,172.1	-1,728.7	1,344.4	1,184.3	160.12	8.397		
9,700.0	5,918.0	9,731.1	5,921.0	82.0	82.5	-89.84	4,272.1	-1,728.7	1,344.4	1,180.5	163.89	8.203		
9,800.0	5,918.0	9,831.1	5,921.0	83.9	84.4	-89.84	4,372.1	-1,728.7	1,344.4	1,176.8	167.67	8.018		
9,900.0	5,918.0	9,931.1	5,921.0	85.8	86.3	-89.84	4,472.1	-1,728.7	1,344.4	1,173.0	171.45	7.841		
10,000.0	5,918.0	10,031.1	5,921.0	87.6	88.2	-89.84	4,572.1	-1,728.7	1,344.4	1,169.2	175.24	7.672		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
10,100.0	5,918.0	10,131.1	5,921.0	89.5	90.1	-89.84	4,672.1	-1,728.7	1,344.4	1,165.4	7.510		
10,200.0	5,918.0	10,231.1	5,921.0	91.4	91.9	-89.84	4,772.1	-1,728.7	1,344.4	1,161.6	7.354		
10,300.0	5,918.0	10,331.1	5,921.0	93.3	93.8	-89.84	4,872.1	-1,728.7	1,344.4	1,157.8	7.205		
10,400.0	5,918.0	10,431.1	5,921.0	95.2	95.7	-89.84	4,972.1	-1,728.7	1,344.4	1,154.0	7.061		
10,500.0	5,918.0	10,531.1	5,921.0	97.1	97.6	-89.84	5,072.1	-1,728.7	1,344.4	1,150.2	6.923		
10,600.0	5,918.0	10,631.1	5,921.0	99.0	99.5	-89.84	5,172.1	-1,728.7	1,344.4	1,146.4	6.790		
10,700.0	5,918.0	10,731.1	5,921.0	100.9	101.4	-89.84	5,272.1	-1,728.6	1,344.4	1,142.6	6.662		
10,800.0	5,918.0	10,831.1	5,921.0	102.8	103.3	-89.84	5,372.1	-1,728.6	1,344.4	1,138.8	6.539		
10,900.0	5,918.0	10,931.1	5,921.0	104.7	105.2	-89.84	5,472.1	-1,728.6	1,344.4	1,135.0	6.420		
11,000.0	5,918.0	11,031.1	5,921.0	106.6	107.1	-89.84	5,572.1	-1,728.6	1,344.4	1,131.2	6.306		
11,100.0	5,918.0	11,131.1	5,921.0	108.5	109.0	-89.84	5,672.1	-1,728.6	1,344.4	1,127.4	6.195		
11,200.0	5,918.0	11,231.1	5,921.0	110.4	110.9	-89.84	5,772.1	-1,728.6	1,344.4	1,123.6	6.088		
11,300.0	5,918.0	11,331.1	5,921.0	112.3	112.8	-89.84	5,872.1	-1,728.6	1,344.4	1,119.7	5.985		
11,400.0	5,918.0	11,431.1	5,921.0	114.2	114.7	-89.84	5,972.1	-1,728.6	1,344.4	1,115.9	5.885		
11,500.0	5,918.0	11,531.1	5,921.0	116.1	116.6	-89.84	6,072.1	-1,728.6	1,344.4	1,112.1	5.789		
11,600.0	5,918.0	11,631.1	5,921.0	118.0	118.5	-89.84	6,172.1	-1,728.6	1,344.3	1,108.3	5.695		
11,700.0	5,918.0	11,731.1	5,921.0	119.9	120.4	-89.84	6,272.1	-1,728.6	1,344.3	1,104.5	5.605		
11,800.0	5,918.0	11,831.1	5,921.0	121.8	122.3	-89.84	6,372.1	-1,728.6	1,344.3	1,100.7	5.517		
11,900.0	5,918.0	11,931.1	5,921.0	123.7	124.2	-89.84	6,472.1	-1,728.6	1,344.3	1,096.9	5.432		
12,000.0	5,918.0	12,031.1	5,921.0	125.6	126.1	-89.84	6,572.1	-1,728.6	1,344.3	1,093.0	5.350		
12,100.0	5,918.0	12,131.1	5,921.0	127.5	128.0	-89.84	6,672.1	-1,728.6	1,344.3	1,089.2	5.270		
12,200.0	5,918.0	12,231.1	5,921.0	129.4	129.9	-89.84	6,772.1	-1,728.6	1,344.3	1,085.4	5.192		
12,300.0	5,918.0	12,331.1	5,921.0	131.3	131.8	-89.84	6,872.1	-1,728.6	1,344.3	1,081.6	5.116		
12,400.0	5,918.0	12,431.1	5,921.0	133.2	133.7	-89.84	6,972.1	-1,728.6	1,344.3	1,077.7	5.043		
12,500.0	5,918.0	12,531.1	5,921.0	135.1	135.6	-89.84	7,072.1	-1,728.6	1,344.3	1,073.9	4.972		
12,600.0	5,918.0	12,631.1	5,921.0	137.0	137.5	-89.84	7,172.1	-1,728.6	1,344.3	1,070.1	4.903		
12,700.0	5,918.0	12,731.1	5,921.0	138.9	139.5	-89.84	7,272.1	-1,728.6	1,344.3	1,066.3	4.835		
12,800.0	5,918.0	12,831.1	5,921.0	140.8	141.4	-89.84	7,372.1	-1,728.5	1,344.3	1,062.5	4.770		
12,900.0	5,918.0	12,931.1	5,921.0	142.7	143.3	-89.84	7,472.1	-1,728.5	1,344.3	1,058.6	4.706		
13,000.0	5,918.0	13,031.1	5,921.0	144.7	145.2	-89.84	7,572.1	-1,728.5	1,344.3	1,054.8	4.644		
13,100.0	5,918.0	13,131.1	5,921.0	146.6	147.1	-89.84	7,672.1	-1,728.5	1,344.3	1,051.0	4.583		
13,200.0	5,918.0	13,231.1	5,921.0	148.5	149.0	-89.84	7,772.1	-1,728.5	1,344.3	1,047.1	4.524		
13,300.0	5,918.0	13,331.1	5,921.0	150.4	150.9	-89.84	7,872.1	-1,728.5	1,344.3	1,043.3	4.467		
13,400.0	5,918.0	13,431.1	5,921.0	152.3	152.8	-89.84	7,972.1	-1,728.5	1,344.3	1,039.5	4.411		
13,500.0	5,918.0	13,531.1	5,921.0	154.2	154.7	-89.84	8,072.1	-1,728.5	1,344.3	1,035.7	4.356		
13,600.0	5,918.0	13,631.1	5,921.0	156.1	156.6	-89.84	8,172.1	-1,728.5	1,344.3	1,031.8	4.303		
13,700.0	5,918.0	13,731.1	5,921.0	158.0	158.5	-89.84	8,272.1	-1,728.5	1,344.2	1,028.0	4.251		
13,706.6	5,918.0	13,737.7	5,921.0	158.1	158.7	-89.84	8,278.7	-1,728.5	1,344.2	1,027.7	4.247 ES, SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	6.7	6.7	0.0	0.0	-91.15	-26.2	-1,308.4	1,308.7					
100.0	100.0	106.7	106.7	0.1	0.1	-91.15	-26.2	-1,308.4	1,308.7	1,308.5	0.20	6,491.444		
200.0	200.0	206.7	206.7	0.3	0.3	-91.15	-26.2	-1,308.4	1,308.7	1,308.1	0.65	2,009.877		
300.0	300.0	306.7	306.7	0.5	0.6	-91.15	-26.2	-1,308.4	1,308.7	1,307.6	1.10	1,189.008		
400.0	400.0	406.7	406.7	0.8	0.8	-91.15	-26.2	-1,308.4	1,308.7	1,307.2	1.55	844.216		
500.0	500.0	506.7	506.7	1.0	1.0	-91.15	-26.2	-1,308.4	1,308.7	1,306.7	2.00	654.439		
600.0	600.0	606.7	606.7	1.2	1.2	-72.19	-26.2	-1,308.4	1,308.2	1,305.7	2.45	534.325		
700.0	699.8	706.3	706.3	1.4	1.5	-72.44	-26.2	-1,308.4	1,306.6	1,303.7	2.90	450.716		
800.0	799.6	803.2	803.2	1.7	1.7	-72.64	-24.3	-1,308.6	1,304.6	1,301.3	3.35	389.445		
900.0	899.4	900.2	900.1	1.9	1.9	-72.70	-19.2	-1,309.1	1,302.9	1,299.1	3.81	342.162		
1,000.0	999.1	1,000.2	999.8	2.2	2.1	-72.68	-12.3	-1,309.8	1,301.3	1,297.0	4.28	303.894		
1,100.0	1,098.9	1,100.2	1,099.6	2.4	2.4	-72.67	-5.3	-1,310.4	1,299.6	1,294.9	4.76	272.809		
1,200.0	1,198.6	1,200.2	1,199.3	2.7	2.6	-72.66	1.6	-1,311.1	1,298.0	1,292.8	5.25	247.171		
1,300.0	1,298.4	1,300.2	1,299.0	2.9	2.8	-72.64	8.5	-1,311.8	1,296.4	1,290.7	5.74	225.724		
1,400.0	1,398.1	1,400.2	1,398.8	3.2	3.1	-72.63	15.5	-1,312.4	1,294.8	1,288.5	6.24	207.553		
1,500.0	1,497.9	1,500.2	1,498.5	3.4	3.3	-72.62	22.4	-1,313.1	1,293.2	1,286.4	6.74	191.982		
1,600.0	1,597.6	1,600.1	1,598.3	3.7	3.6	-72.60	29.4	-1,313.8	1,291.5	1,284.3	7.24	178.503		
1,700.0	1,697.4	1,700.1	1,698.0	3.9	3.8	-72.59	36.3	-1,314.4	1,289.9	1,282.2	7.74	166.731		
1,800.0	1,797.2	1,800.1	1,797.8	4.2	4.1	-72.58	43.3	-1,315.1	1,288.3	1,280.1	8.24	156.366		
1,900.0	1,896.9	1,900.1	1,897.5	4.4	4.3	-72.56	50.2	-1,315.8	1,286.7	1,277.9	8.74	147.173		
2,000.0	1,996.7	2,000.1	1,997.2	4.7	4.6	-72.55	57.1	-1,316.4	1,285.1	1,275.8	9.25	138.968		
2,100.0	2,096.4	2,100.1	2,097.0	4.9	4.8	-72.54	64.1	-1,317.1	1,283.4	1,273.7	9.75	131.602		
2,200.0	2,196.2	2,200.1	2,196.7	5.2	5.1	-72.52	71.0	-1,317.8	1,281.8	1,271.6	10.26	124.953		
2,300.0	2,295.9	2,300.0	2,296.5	5.4	5.3	-72.51	78.0	-1,318.4	1,280.2	1,269.4	10.77	118.922		
2,400.0	2,395.7	2,400.0	2,396.2	5.7	5.6	-72.50	84.9	-1,319.1	1,278.6	1,267.3	11.27	113.428		
2,500.0	2,495.5	2,500.0	2,496.0	6.0	5.9	-72.48	91.9	-1,319.8	1,277.0	1,265.2	11.78	108.404		
2,600.0	2,595.2	2,600.0	2,595.7	6.2	6.1	-72.47	98.8	-1,320.4	1,275.4	1,263.1	12.29	103.791		
2,700.0	2,695.0	2,700.0	2,695.4	6.5	6.4	-72.45	105.7	-1,321.1	1,273.7	1,260.9	12.80	99.541		
2,800.0	2,794.7	2,800.0	2,795.2	6.7	6.6	-72.44	112.7	-1,321.8	1,272.1	1,258.8	13.30	95.614		
2,900.0	2,894.5	2,900.0	2,894.9	7.0	6.9	-72.43	119.6	-1,322.4	1,270.5	1,256.7	13.81	91.974		
3,000.0	2,994.2	3,000.0	2,994.7	7.2	7.1	-72.41	126.6	-1,323.1	1,268.9	1,254.6	14.32	88.592		
3,100.0	3,094.0	3,099.9	3,094.4	7.5	7.4	-72.40	133.5	-1,323.8	1,267.3	1,252.4	14.83	85.440		
3,200.0	3,193.7	3,199.9	3,194.2	7.7	7.6	-72.38	140.5	-1,324.4	1,265.6	1,250.3	15.34	82.496		
3,300.0	3,293.5	3,299.9	3,293.9	8.0	7.9	-72.37	147.4	-1,325.1	1,264.0	1,248.2	15.85	79.741		
3,400.0	3,393.3	3,399.9	3,393.6	8.3	8.1	-72.36	154.3	-1,325.8	1,262.4	1,246.1	16.36	77.156		
3,500.0	3,493.0	3,499.9	3,493.4	8.5	8.4	-72.34	161.3	-1,326.4	1,260.8	1,243.9	16.87	74.727		
3,600.0	3,592.8	3,599.9	3,593.1	8.8	8.7	-72.33	168.2	-1,327.1	1,259.2	1,241.8	17.38	72.440		
3,700.0	3,692.5	3,699.9	3,692.9	9.0	8.9	-72.31	175.2	-1,327.7	1,257.6	1,239.7	17.89	70.283		
3,800.0	3,792.3	3,799.8	3,792.6	9.3	9.2	-72.30	182.1	-1,328.4	1,255.9	1,237.5	18.40	68.245		
3,900.0	3,892.0	3,899.8	3,892.4	9.5	9.4	-72.29	189.1	-1,329.1	1,254.3	1,235.4	18.91	66.317		
4,000.0	3,991.8	3,999.8	3,992.1	9.8	9.7	-72.27	196.0	-1,329.7	1,252.7	1,233.3	19.42	64.489		
4,100.0	4,091.6	4,099.8	4,091.8	10.1	9.9	-72.26	202.9	-1,330.4	1,251.1	1,231.2	19.94	62.755		
4,200.0	4,191.3	4,199.8	4,191.6	10.3	10.2	-72.24	209.9	-1,331.1	1,249.5	1,229.0	20.45	61.108		
4,300.0	4,291.1	4,299.8	4,291.3	10.6	10.4	-72.23	216.8	-1,331.7	1,247.9	1,226.9	20.96	59.540		
4,400.0	4,390.8	4,399.8	4,391.1	10.8	10.7	-72.21	223.8	-1,332.4	1,246.2	1,224.8	21.47	58.047		
4,500.0	4,490.6	4,499.7	4,490.8	11.1	11.0	-72.20	230.7	-1,333.1	1,244.6	1,222.6	21.98	56.623		
4,600.0	4,590.3	4,599.7	4,590.6	11.3	11.2	-72.18	237.7	-1,333.7	1,243.0	1,220.5	22.49	55.263		
4,700.0	4,690.1	4,699.7	4,690.3	11.6	11.5	-72.17	244.6	-1,334.4	1,241.4	1,218.4	23.00	53.964		
4,800.0	4,789.9	4,799.7	4,790.0	11.9	11.7	-72.16	251.5	-1,335.1	1,239.8	1,216.3	23.52	52.721		
4,900.0	4,889.6	4,899.7	4,889.8	12.1	12.0	-72.14	258.5	-1,335.7	1,238.2	1,214.1	24.03	51.531		
5,000.0	4,989.4	4,999.7	4,989.5	12.4	12.2	-72.13	265.4	-1,336.4	1,236.5	1,212.0	24.54	50.391		
5,100.0	5,089.1	5,099.7	5,089.3	12.6	12.5	-72.11	272.4	-1,337.1	1,234.9	1,209.9	25.05	49.296		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: O-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,199.7	5,189.0	12.9	12.7	-72.10	279.3	-1,337.7	1,233.3	1,207.7	25.56	48.246		
5,300.0	5,288.6	5,299.6	5,288.8	13.1	13.0	-72.08	286.3	-1,338.4	1,231.7	1,205.6	26.07	47.237		
5,400.0	5,388.4	5,399.6	5,388.5	13.4	13.3	-72.07	293.2	-1,339.1	1,230.1	1,203.5	26.59	46.266		
5,500.0	5,487.8	5,499.5	5,488.1	13.7	13.5	-72.36	300.1	-1,339.7	1,227.6	1,200.5	27.11	45.281		
5,600.0	5,584.0	5,591.6	5,579.8	14.1	13.8	-73.88	308.1	-1,340.5	1,220.1	1,192.4	27.75	43.971		
5,700.0	5,673.4	5,678.0	5,663.9	14.7	14.1	-76.00	327.8	-1,342.4	1,208.5	1,179.9	28.67	42.161		
5,800.0	5,752.6	5,767.2	5,745.9	15.5	14.6	-78.64	362.2	-1,345.7	1,193.5	1,163.5	29.99	39.801		
5,900.0	5,818.7	5,859.5	5,823.4	16.5	15.2	-81.77	412.0	-1,350.4	1,175.6	1,143.8	31.77	37.003		
6,000.0	5,869.3	5,955.7	5,893.4	17.6	16.0	-85.31	477.5	-1,356.7	1,155.6	1,121.6	34.01	33.979		
6,100.0	5,902.6	6,056.5	5,952.5	19.0	17.0	-89.15	558.6	-1,364.5	1,134.4	1,097.8	36.63	30.973		
6,200.0	5,917.3	6,163.1	5,996.6	20.5	18.3	-93.18	654.9	-1,373.7	1,112.8	1,073.3	39.50	28.174		
6,300.0	5,918.0	6,277.8	6,021.1	22.0	19.9	-95.16	766.3	-1,384.3	1,092.3	1,049.7	42.62	25.627		
6,400.0	5,918.0	6,455.1	6,024.0	23.5	22.4	-95.43	943.0	-1,397.3	1,073.7	1,027.2	46.57	23.059		
6,500.0	5,918.0	6,586.4	6,024.0	25.0	24.3	-95.51	1,074.2	-1,398.3	1,052.9	1,002.8	50.01	21.053		
6,600.0	5,918.0	6,685.1	6,024.0	26.5	25.9	-95.55	1,172.9	-1,398.3	1,036.7	983.6	53.12	19.514		
6,700.0	5,918.0	6,784.4	6,024.0	28.1	27.5	-95.58	1,272.3	-1,398.3	1,025.7	969.5	56.21	18.247		
6,800.0	5,918.0	6,884.2	6,024.0	29.7	29.2	-95.59	1,372.1	-1,398.3	1,019.8	960.6	59.22	17.222		
6,893.1	5,918.0	6,977.4	6,024.0	31.2	30.8	-95.60	1,465.2	-1,398.2	1,018.2	956.1	62.10	16.398 CC		
6,900.0	5,918.0	6,984.2	6,024.0	31.3	30.9	-95.59	1,472.1	-1,398.2	1,018.8	956.5	62.30	16.354		
7,000.0	5,918.0	7,084.2	6,024.0	32.9	32.7	-95.59	1,572.1	-1,398.2	1,018.8	953.1	65.71	15.506		
7,100.0	5,918.0	7,184.2	6,024.0	34.6	34.4	-95.59	1,672.1	-1,398.2	1,018.8	949.7	69.16	14.732		
7,200.0	5,918.0	7,284.2	6,024.0	36.3	36.2	-95.59	1,772.1	-1,398.2	1,018.8	946.2	72.65	14.024		
7,300.0	5,918.0	7,384.2	6,024.0	38.0	38.0	-95.59	1,872.1	-1,398.2	1,018.8	942.7	76.17	13.376		
7,400.0	5,918.0	7,484.2	6,024.0	39.7	39.8	-95.59	1,972.1	-1,398.2	1,018.8	939.1	79.72	12.780		
7,500.0	5,918.0	7,584.2	6,024.0	41.5	41.6	-95.59	2,072.1	-1,398.2	1,018.8	935.5	83.30	12.231		
7,600.0	5,918.0	7,684.2	6,024.0	43.3	43.4	-95.59	2,172.1	-1,398.2	1,018.8	931.9	86.89	11.725		
7,700.0	5,918.0	7,784.2	6,024.0	45.0	45.2	-95.59	2,272.1	-1,398.2	1,018.8	928.3	90.51	11.256		
7,800.0	5,918.0	7,884.2	6,024.0	46.8	47.1	-95.59	2,372.1	-1,398.2	1,018.8	924.7	94.14	10.822		
7,900.0	5,918.0	7,984.2	6,024.0	48.6	48.9	-95.59	2,472.1	-1,398.2	1,018.8	921.0	97.79	10.418		
8,000.0	5,918.0	8,084.2	6,024.0	50.4	50.8	-95.59	2,572.1	-1,398.2	1,018.8	917.3	101.45	10.042		
8,100.0	5,918.0	8,184.2	6,024.0	52.3	52.6	-95.59	2,672.1	-1,398.2	1,018.8	913.7	105.13	9.691		
8,200.0	5,918.0	8,284.2	6,024.0	54.1	54.5	-95.59	2,772.1	-1,398.2	1,018.8	910.0	108.81	9.363		
8,300.0	5,918.0	8,384.2	6,024.0	55.9	56.3	-95.59	2,872.1	-1,398.2	1,018.8	906.3	112.51	9.055		
8,400.0	5,918.0	8,484.2	6,024.0	57.8	58.2	-95.59	2,972.1	-1,398.2	1,018.8	902.6	116.21	8.767		
8,500.0	5,918.0	8,584.2	6,024.0	59.6	60.1	-95.59	3,072.1	-1,398.2	1,018.8	898.8	119.92	8.495		
8,600.0	5,918.0	8,684.2	6,024.0	61.4	61.9	-95.59	3,172.1	-1,398.2	1,018.8	895.1	123.64	8.240		
8,700.0	5,918.0	8,784.2	6,024.0	63.3	63.8	-95.59	3,272.1	-1,398.2	1,018.8	891.4	127.36	7.999		
8,800.0	5,918.0	8,884.2	6,024.0	65.2	65.7	-95.59	3,372.1	-1,398.2	1,018.7	887.7	131.09	7.771		
8,900.0	5,918.0	8,984.2	6,024.0	67.0	67.6	-95.59	3,472.1	-1,398.1	1,018.7	883.9	134.83	7.556		
9,000.0	5,918.0	9,084.2	6,024.0	68.9	69.4	-95.59	3,572.1	-1,398.1	1,018.7	880.2	138.57	7.352		
9,100.0	5,918.0	9,184.2	6,024.0	70.7	71.3	-95.59	3,672.1	-1,398.1	1,018.7	876.4	142.32	7.158		
9,200.0	5,918.0	9,284.2	6,024.0	72.6	73.2	-95.59	3,772.1	-1,398.1	1,018.7	872.7	146.07	6.974		
9,300.0	5,918.0	9,384.2	6,024.0	74.5	75.1	-95.59	3,872.1	-1,398.1	1,018.7	868.9	149.82	6.800		
9,400.0	5,918.0	9,484.2	6,024.0	76.4	77.0	-95.59	3,972.1	-1,398.1	1,018.7	865.1	153.58	6.633		
9,500.0	5,918.0	9,584.2	6,024.0	78.2	78.9	-95.59	4,072.1	-1,398.1	1,018.7	861.4	157.34	6.475		
9,600.0	5,918.0	9,684.2	6,024.0	80.1	80.8	-95.59	4,172.1	-1,398.1	1,018.7	857.6	161.10	6.323		
9,700.0	5,918.0	9,784.2	6,024.0	82.0	82.7	-95.59	4,272.1	-1,398.1	1,018.7	853.8	164.87	6.179		
9,800.0	5,918.0	9,884.2	6,024.0	83.9	84.6	-95.59	4,372.1	-1,398.1	1,018.7	850.1	168.64	6.041		
9,900.0	5,918.0	9,984.2	6,024.0	85.8	86.5	-95.59	4,472.1	-1,398.1	1,018.7	846.3	172.41	5.908		
10,000.0	5,918.0	10,084.2	6,024.0	87.6	88.4	-95.59	4,572.1	-1,398.1	1,018.7	842.5	176.19	5.782		
10,100.0	5,918.0	10,184.2	6,024.0	89.5	90.3	-95.59	4,672.1	-1,398.1	1,018.7	838.7	179.96	5.660		
10,200.0	5,918.0	10,284.2	6,024.0	91.4	92.2	-95.59	4,772.1	-1,398.1	1,018.7	834.9	183.74	5.544		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
10,300.0	5,918.0	10,384.2	6,024.0	93.3	94.1	-95.59	4,872.1	-1,398.1	1,018.7	831.1	187.52	5.432	
10,400.0	5,918.0	10,484.2	6,024.0	95.2	96.0	-95.59	4,972.1	-1,398.1	1,018.7	827.4	191.31	5.325	
10,500.0	5,918.0	10,584.2	6,024.0	97.1	97.9	-95.59	5,072.1	-1,398.1	1,018.7	823.6	195.09	5.221	
10,600.0	5,918.0	10,684.2	6,024.0	99.0	99.8	-95.59	5,172.1	-1,398.1	1,018.7	819.8	198.88	5.122	
10,700.0	5,918.0	10,784.2	6,024.0	100.9	101.7	-95.59	5,272.1	-1,398.1	1,018.6	816.0	202.66	5.026	
10,800.0	5,918.0	10,884.2	6,024.0	102.8	103.6	-95.59	5,372.1	-1,398.1	1,018.6	812.2	206.45	4.934	
10,900.0	5,918.0	10,984.2	6,024.0	104.7	105.5	-95.59	5,472.1	-1,398.0	1,018.6	808.4	210.24	4.845	
11,000.0	5,918.0	11,084.2	6,024.0	106.6	107.4	-95.59	5,572.1	-1,398.0	1,018.6	804.6	214.04	4.759	
11,100.0	5,918.0	11,184.2	6,024.0	108.5	109.3	-95.59	5,672.1	-1,398.0	1,018.6	800.8	217.83	4.676	
11,200.0	5,918.0	11,284.2	6,024.0	110.4	111.2	-95.59	5,772.1	-1,398.0	1,018.6	797.0	221.62	4.596	
11,300.0	5,918.0	11,384.2	6,024.0	112.3	113.1	-95.59	5,872.1	-1,398.0	1,018.6	793.2	225.42	4.519	
11,400.0	5,918.0	11,484.2	6,024.0	114.2	115.0	-95.59	5,972.1	-1,398.0	1,018.6	789.4	229.22	4.444	
11,500.0	5,918.0	11,584.2	6,024.0	116.1	116.9	-95.59	6,072.1	-1,398.0	1,018.6	785.6	233.01	4.371	
11,600.0	5,918.0	11,684.2	6,024.0	118.0	118.8	-95.59	6,172.1	-1,398.0	1,018.6	781.8	236.81	4.301	
11,700.0	5,918.0	11,784.2	6,024.0	119.9	120.7	-95.59	6,272.1	-1,398.0	1,018.6	778.0	240.61	4.233	
11,800.0	5,918.0	11,884.2	6,024.0	121.8	122.6	-95.59	6,372.1	-1,398.0	1,018.6	774.2	244.41	4.168	
11,900.0	5,918.0	11,984.2	6,024.0	123.7	124.6	-95.59	6,472.1	-1,398.0	1,018.6	770.4	248.21	4.104	
12,000.0	5,918.0	12,084.2	6,024.0	125.6	126.5	-95.59	6,572.1	-1,398.0	1,018.6	766.6	252.01	4.042	
12,100.0	5,918.0	12,184.2	6,024.0	127.5	128.4	-95.59	6,672.1	-1,398.0	1,018.6	762.8	255.82	3.982	
12,200.0	5,918.0	12,284.2	6,024.0	129.4	130.3	-95.59	6,772.1	-1,398.0	1,018.6	759.0	259.62	3.923	
12,300.0	5,918.0	12,384.2	6,024.0	131.3	132.2	-95.59	6,872.1	-1,398.0	1,018.6	755.1	263.42	3.867	
12,400.0	5,918.0	12,484.2	6,024.0	133.2	134.1	-95.59	6,972.1	-1,398.0	1,018.6	751.3	267.23	3.812	
12,500.0	5,918.0	12,584.2	6,024.0	135.1	136.0	-95.59	7,072.1	-1,398.0	1,018.6	747.5	271.04	3.758	
12,600.0	5,918.0	12,684.2	6,024.0	137.0	137.9	-95.59	7,172.1	-1,398.0	1,018.6	743.7	274.84	3.706	
12,700.0	5,918.0	12,784.2	6,024.0	138.9	139.8	-95.59	7,272.1	-1,398.0	1,018.5	739.9	278.65	3.655	
12,800.0	5,918.0	12,884.2	6,024.0	140.8	141.8	-95.59	7,372.1	-1,398.0	1,018.5	736.1	282.45	3.606	
12,900.0	5,918.0	12,984.2	6,024.0	142.7	143.7	-95.59	7,472.1	-1,398.0	1,018.5	732.3	286.26	3.558	
13,000.0	5,918.0	13,084.2	6,024.0	144.7	145.6	-95.59	7,572.1	-1,397.9	1,018.5	728.5	290.07	3.511	
13,100.0	5,918.0	13,184.2	6,024.0	146.6	147.5	-95.59	7,672.1	-1,397.9	1,018.5	724.6	293.88	3.466	
13,200.0	5,918.0	13,284.2	6,024.0	148.5	149.4	-95.59	7,772.1	-1,397.9	1,018.5	720.8	297.69	3.421	
13,300.0	5,918.0	13,384.2	6,024.0	150.4	151.3	-95.60	7,872.1	-1,397.9	1,018.5	717.0	301.50	3.378	
13,400.0	5,918.0	13,484.2	6,024.0	152.3	153.2	-95.60	7,972.1	-1,397.9	1,018.5	713.2	305.31	3.336	
13,500.0	5,918.0	13,584.2	6,024.0	154.2	155.1	-95.60	8,072.1	-1,397.9	1,018.5	709.4	309.12	3.295	
13,600.0	5,918.0	13,684.2	6,024.0	156.1	157.1	-95.60	8,172.1	-1,397.9	1,018.5	705.6	312.93	3.255	
13,700.0	5,918.0	13,784.2	6,024.0	158.0	159.0	-95.60	8,272.1	-1,397.9	1,018.5	701.8	316.74	3.216	
13,706.6	5,918.0	13,790.8	6,024.0	158.1	159.1	-95.60	8,278.7	-1,397.9	1,018.5	701.5	316.99	3.213 ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	6.7	6.7	0.0	0.0	-91.18	-26.2	-1,275.5	1,275.8					
100.0	100.0	106.7	106.7	0.1	0.1	-91.18	-26.2	-1,275.5	1,275.8	1,275.6	0.20	6,328.126		
200.0	200.0	206.7	206.7	0.3	0.3	-91.18	-26.2	-1,275.5	1,275.8	1,275.1	0.65	1,959.310		
300.0	300.0	306.7	306.7	0.5	0.6	-91.18	-26.2	-1,275.5	1,275.8	1,274.7	1.10	1,159.094		
400.0	400.0	406.7	406.7	0.8	0.8	-91.18	-26.2	-1,275.5	1,275.8	1,274.2	1.55	822.976		
500.0	500.0	506.7	506.7	1.0	1.0	-91.18	-26.2	-1,275.5	1,275.8	1,273.8	2.00	637.974		
600.0	600.0	606.7	606.7	1.2	1.2	-72.22	-26.2	-1,275.5	1,275.2	1,272.8	2.45	520.877		
700.0	699.8	706.5	706.5	1.4	1.5	-72.48	-26.2	-1,275.5	1,273.7	1,270.8	2.90	439.279		
800.0	799.6	806.3	806.3	1.7	1.7	-72.77	-26.2	-1,275.5	1,271.6	1,268.2	3.36	378.653		
900.0	899.4	906.8	906.8	1.9	1.9	-73.08	-26.2	-1,275.5	1,269.5	1,265.7	3.82	331.988		
1,000.0	999.1	1,018.4	1,018.4	2.2	2.2	-73.31	-23.8	-1,275.0	1,267.0	1,262.7	4.32	293.416		
1,100.0	1,098.9	1,127.1	1,126.8	2.4	2.4	-73.35	-17.5	-1,273.7	1,263.5	1,258.7	4.81	262.701		
1,200.0	1,198.6	1,227.0	1,226.5	2.7	2.6	-73.35	-10.7	-1,272.3	1,259.8	1,254.6	5.29	238.226		
1,300.0	1,298.4	1,326.9	1,326.2	2.9	2.9	-73.35	-3.9	-1,270.9	1,256.2	1,250.4	5.77	217.609		
1,400.0	1,398.1	1,426.9	1,425.9	3.2	3.1	-73.34	3.0	-1,269.5	1,252.5	1,246.2	6.26	200.040		
1,500.0	1,497.9	1,526.8	1,525.6	3.4	3.3	-73.34	9.8	-1,268.1	1,248.8	1,242.0	6.75	184.918		
1,600.0	1,597.6	1,626.7	1,625.3	3.7	3.6	-73.33	16.6	-1,266.7	1,245.1	1,237.8	7.25	171.783		
1,700.0	1,697.4	1,726.7	1,725.0	3.9	3.8	-73.33	23.5	-1,265.3	1,241.4	1,233.6	7.75	160.279		
1,800.0	1,797.2	1,826.6	1,824.7	4.2	4.1	-73.33	30.3	-1,263.9	1,237.7	1,229.5	8.24	150.129		
1,900.0	1,896.9	1,926.5	1,924.3	4.4	4.3	-73.32	37.1	-1,262.5	1,234.0	1,225.3	8.74	141.112		
2,000.0	1,996.7	2,026.5	2,024.0	4.7	4.6	-73.32	43.9	-1,261.1	1,230.3	1,221.1	9.25	133.052		
2,100.0	2,096.4	2,126.4	2,123.7	4.9	4.8	-73.31	50.8	-1,259.7	1,226.6	1,216.9	9.75	125.807		
2,200.0	2,196.2	2,226.3	2,223.4	5.2	5.1	-73.31	57.6	-1,258.2	1,222.9	1,212.7	10.25	119.262		
2,300.0	2,295.9	2,326.2	2,323.1	5.4	5.3	-73.30	64.4	-1,256.8	1,219.3	1,208.5	10.76	113.321		
2,400.0	2,395.7	2,426.2	2,422.8	5.7	5.6	-73.30	71.2	-1,255.4	1,215.6	1,204.3	11.27	107.905		
2,500.0	2,495.5	2,526.1	2,522.5	6.0	5.8	-73.30	78.1	-1,254.0	1,211.9	1,200.1	11.77	102.949		
2,600.0	2,595.2	2,626.0	2,622.2	6.2	6.1	-73.29	84.9	-1,252.6	1,208.2	1,195.9	12.28	98.396		
2,700.0	2,695.0	2,726.0	2,721.9	6.5	6.3	-73.29	91.7	-1,251.2	1,204.5	1,191.7	12.79	94.201		
2,800.0	2,794.7	2,825.9	2,821.5	6.7	6.6	-73.28	98.6	-1,249.8	1,200.8	1,187.5	13.29	90.323		
2,900.0	2,894.5	2,925.8	2,921.2	7.0	6.8	-73.28	105.4	-1,248.4	1,197.1	1,183.3	13.80	86.727		
3,000.0	2,994.2	3,025.8	3,020.9	7.2	7.1	-73.27	112.2	-1,247.0	1,193.4	1,179.1	14.31	83.385		
3,100.0	3,094.0	3,125.7	3,120.6	7.5	7.3	-73.27	119.0	-1,245.6	1,189.7	1,174.9	14.82	80.270		
3,200.0	3,193.7	3,225.6	3,220.3	7.7	7.6	-73.27	125.9	-1,244.2	1,186.1	1,170.7	15.33	77.360		
3,300.0	3,293.5	3,325.6	3,320.0	8.0	7.8	-73.26	132.7	-1,242.8	1,182.4	1,166.5	15.84	74.636		
3,400.0	3,393.3	3,425.5	3,419.7	8.3	8.1	-73.26	139.5	-1,241.4	1,178.7	1,162.3	16.35	72.081		
3,500.0	3,493.0	3,525.4	3,519.4	8.5	8.4	-73.25	146.3	-1,240.0	1,175.0	1,158.1	16.86	69.679		
3,600.0	3,592.8	3,625.4	3,619.0	8.8	8.6	-73.25	153.2	-1,238.5	1,171.3	1,153.9	17.37	67.418		
3,700.0	3,692.5	3,725.3	3,718.7	9.0	8.9	-73.24	160.0	-1,237.1	1,167.6	1,149.7	17.88	65.284		
3,800.0	3,792.3	3,825.2	3,818.4	9.3	9.1	-73.24	166.8	-1,235.7	1,163.9	1,145.5	18.40	63.268		
3,900.0	3,892.0	3,925.2	3,918.1	9.5	9.4	-73.23	173.7	-1,234.3	1,160.2	1,141.3	18.91	61.361		
4,000.0	3,991.8	4,025.1	4,017.8	9.8	9.6	-73.23	180.5	-1,232.9	1,156.5	1,137.1	19.42	59.554		
4,100.0	4,091.6	4,125.0	4,117.5	10.1	9.9	-73.22	187.3	-1,231.5	1,152.8	1,132.9	19.93	57.838		
4,200.0	4,191.3	4,225.0	4,217.2	10.3	10.1	-73.22	194.1	-1,230.1	1,149.2	1,128.7	20.44	56.208		
4,300.0	4,291.1	4,324.9	4,316.9	10.6	10.4	-73.21	201.0	-1,228.7	1,145.5	1,124.5	20.96	54.658		
4,400.0	4,390.8	4,424.8	4,416.6	10.8	10.6	-73.21	207.8	-1,227.3	1,141.8	1,120.3	21.47	53.181		
4,500.0	4,490.6	4,524.7	4,516.2	11.1	10.9	-73.21	214.6	-1,225.9	1,138.1	1,116.1	21.98	51.772		
4,600.0	4,590.3	4,624.7	4,615.9	11.3	11.2	-73.20	221.4	-1,224.5	1,134.4	1,111.9	22.50	50.427		
4,700.0	4,690.1	4,724.6	4,715.6	11.6	11.4	-73.20	228.3	-1,223.1	1,130.7	1,107.7	23.01	49.142		
4,800.0	4,789.9	4,824.5	4,815.3	11.9	11.7	-73.19	235.1	-1,221.7	1,127.0	1,103.5	23.52	47.912		
4,900.0	4,889.6	4,924.5	4,915.0	12.1	11.9	-73.19	241.9	-1,220.3	1,123.3	1,099.3	24.04	46.735		
5,000.0	4,989.4	5,024.4	5,014.7	12.4	12.2	-73.18	248.8	-1,218.9	1,119.6	1,095.1	24.55	45.607		
5,100.0	5,089.1	5,124.3	5,114.4	12.6	12.4	-73.18	255.6	-1,217.4	1,116.0	1,090.9	25.06	44.524		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
5,200.0	5,188.9	5,224.3	5,214.1	12.9	12.7	-73.17	262.4	-1,216.0	1,112.3	1,086.7	25.58	43.485		
5,300.0	5,288.6	5,324.2	5,313.7	13.1	12.9	-73.17	269.2	-1,214.6	1,108.6	1,082.5	26.09	42.487		
5,400.0	5,388.4	5,424.1	5,413.4	13.4	13.2	-73.16	276.1	-1,213.2	1,104.9	1,078.3	26.61	41.527		
5,500.0	5,487.8	5,598.7	5,584.0	13.7	13.8	-72.87	309.2	-1,206.4	1,097.7	1,070.2	27.49	39.934		
5,600.0	5,584.0	5,774.3	5,734.8	14.1	14.9	-72.55	395.6	-1,188.6	1,078.0	1,049.1	28.93	37.260		
5,700.0	5,673.4	5,919.7	5,831.8	14.7	16.2	-72.78	501.1	-1,166.9	1,047.8	1,017.1	30.69	34.142		
5,800.0	5,752.6	6,039.6	5,886.9	15.5	17.6	-73.90	605.1	-1,145.4	1,009.9	977.3	32.65	30.935		
5,900.0	5,818.7	6,141.2	5,913.6	16.5	19.0	-75.92	701.0	-1,125.7	966.6	931.8	34.82	27.765		
6,000.0	5,869.3	6,229.0	5,921.0	17.6	20.2	-78.80	786.6	-1,108.0	919.7	882.5	37.22	24.712		
6,100.0	5,902.6	6,285.7	5,921.0	19.0	21.0	-83.22	842.3	-1,097.4	871.8	832.2	39.61	22.013		
6,200.0	5,917.3	6,346.1	5,921.0	20.5	21.8	-88.24	901.9	-1,087.9	825.3	783.1	42.23	19.543		
6,300.0	5,918.0	6,400.0	5,921.0	22.0	22.5	-89.70	955.3	-1,081.1	782.5	737.5	44.91	17.423		
6,400.0	5,918.0	6,476.5	5,921.0	23.5	23.6	-89.70	1,031.5	-1,073.9	747.2	699.3	47.88	15.606		
6,500.0	5,918.0	6,546.1	5,921.0	25.0	24.7	-89.70	1,101.0	-1,070.1	720.5	669.7	50.78	14.187		
6,600.0	5,918.0	6,618.0	5,921.0	26.5	25.7	-89.69	1,172.9	-1,068.7	702.4	648.7	53.68	13.085		
6,700.0	5,918.0	6,717.4	5,921.0	28.1	27.3	-89.69	1,272.3	-1,068.7	691.3	634.4	56.96	12.137		
6,800.0	5,918.0	6,817.2	5,921.0	29.7	28.9	-89.69	1,372.1	-1,068.7	685.5	625.3	60.20	11.388		
6,893.0	5,918.0	6,910.2	5,921.0	31.2	30.5	-89.69	1,465.1	-1,068.7	683.9	620.7	63.20	10.820 CC		
6,900.0	5,918.0	6,917.2	5,921.0	31.3	30.6	-89.69	1,472.1	-1,068.7	684.5	621.1	63.42	10.793		
7,000.0	5,918.0	7,017.2	5,921.0	32.9	32.3	-89.69	1,572.1	-1,068.7	684.5	617.7	66.81	10.245		
7,100.0	5,918.0	7,117.2	5,921.0	34.6	34.0	-89.69	1,672.1	-1,068.7	684.5	614.2	70.25	9.743		
7,200.0	5,918.0	7,217.2	5,921.0	36.3	35.8	-89.69	1,772.1	-1,068.7	684.5	610.7	73.73	9.283		
7,300.0	5,918.0	7,317.2	5,921.0	38.0	37.5	-89.69	1,872.1	-1,068.7	684.5	607.2	77.25	8.860		
7,400.0	5,918.0	7,417.2	5,921.0	39.7	39.3	-89.69	1,972.1	-1,068.7	684.5	603.7	80.80	8.471		
7,500.0	5,918.0	7,517.2	5,921.0	41.5	41.1	-89.69	2,072.1	-1,068.7	684.5	600.1	84.37	8.112		
7,600.0	5,918.0	7,617.2	5,921.0	43.3	42.9	-89.69	2,172.1	-1,068.7	684.5	596.5	87.97	7.780		
7,700.0	5,918.0	7,717.2	5,921.0	45.0	44.7	-89.69	2,272.1	-1,068.7	684.4	592.9	91.59	7.473		
7,800.0	5,918.0	7,817.2	5,921.0	46.8	46.5	-89.69	2,372.1	-1,068.7	684.4	589.2	95.22	7.188		
7,900.0	5,918.0	7,917.2	5,921.0	48.6	48.3	-89.69	2,472.1	-1,068.7	684.4	585.6	98.88	6.922		
8,000.0	5,918.0	8,017.2	5,921.0	50.4	50.2	-89.69	2,572.1	-1,068.7	684.4	581.9	102.54	6.675		
8,100.0	5,918.0	8,117.2	5,921.0	52.3	52.0	-89.69	2,672.1	-1,068.7	684.4	578.2	106.22	6.443		
8,200.0	5,918.0	8,217.2	5,921.0	54.1	53.8	-89.69	2,772.1	-1,068.7	684.4	574.5	109.91	6.227		
8,300.0	5,918.0	8,317.2	5,921.0	55.9	55.7	-89.69	2,872.1	-1,068.7	684.4	570.8	113.61	6.024		
8,400.0	5,918.0	8,417.2	5,921.0	57.8	57.5	-89.69	2,972.1	-1,068.7	684.4	567.1	117.32	5.834		
8,500.0	5,918.0	8,517.2	5,921.0	59.6	59.4	-89.69	3,072.1	-1,068.7	684.4	563.4	121.04	5.654		
8,600.0	5,918.0	8,617.2	5,921.0	61.4	61.3	-89.69	3,172.1	-1,068.7	684.4	559.6	124.77	5.485		
8,700.0	5,918.0	8,717.2	5,921.0	63.3	63.1	-89.69	3,272.1	-1,068.6	684.4	555.9	128.50	5.326		
8,800.0	5,918.0	8,817.2	5,921.0	65.2	65.0	-89.69	3,372.1	-1,068.6	684.4	552.2	132.24	5.175		
8,900.0	5,918.0	8,917.2	5,921.0	67.0	66.9	-89.69	3,472.1	-1,068.6	684.4	548.4	135.99	5.033		
9,000.0	5,918.0	9,017.2	5,921.0	68.9	68.8	-89.69	3,572.1	-1,068.6	684.4	544.6	139.74	4.898		
9,100.0	5,918.0	9,117.2	5,921.0	70.7	70.6	-89.69	3,672.1	-1,068.6	684.4	540.9	143.49	4.769		
9,200.0	5,918.0	9,217.2	5,921.0	72.6	72.5	-89.69	3,772.1	-1,068.6	684.4	537.1	147.25	4.648		
9,300.0	5,918.0	9,317.2	5,921.0	74.5	74.4	-89.69	3,872.1	-1,068.6	684.4	533.4	151.02	4.532		
9,400.0	5,918.0	9,417.2	5,921.0	76.4	76.3	-89.69	3,972.1	-1,068.6	684.4	529.6	154.79	4.421		
9,500.0	5,918.0	9,517.2	5,921.0	78.2	78.2	-89.69	4,072.1	-1,068.6	684.4	525.8	158.56	4.316		
9,600.0	5,918.0	9,617.2	5,921.0	80.1	80.0	-89.69	4,172.1	-1,068.6	684.4	522.0	162.34	4.216		
9,700.0	5,918.0	9,717.2	5,921.0	82.0	81.9	-89.69	4,272.1	-1,068.6	684.4	518.2	166.11	4.120		
9,800.0	5,918.0	9,817.2	5,921.0	83.9	83.8	-89.69	4,372.1	-1,068.6	684.3	514.5	169.90	4.028		
9,900.0	5,918.0	9,917.2	5,921.0	85.8	85.7	-89.69	4,472.1	-1,068.6	684.3	510.7	173.68	3.940		
10,000.0	5,918.0	10,017.2	5,921.0	87.6	87.6	-89.69	4,572.1	-1,068.6	684.3	506.9	177.47	3.856		
10,100.0	5,918.0	10,117.2	5,921.0	89.5	89.5	-89.69	4,672.1	-1,068.6	684.3	503.1	181.26	3.776		
10,200.0	5,918.0	10,217.2	5,921.0	91.4	91.4	-89.69	4,772.1	-1,068.6	684.3	499.3	185.05	3.698		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
10,300.0	5,918.0	10,317.2	5,921.0	93.3	93.3	-89.69	4,872.1	-1,068.6	684.3	495.5	188.84	3.624		
10,400.0	5,918.0	10,417.2	5,921.0	95.2	95.2	-89.69	4,972.1	-1,068.6	684.3	491.7	192.64	3.552		
10,500.0	5,918.0	10,517.2	5,921.0	97.1	97.1	-89.69	5,072.1	-1,068.6	684.3	487.9	196.43	3.484		
10,600.0	5,918.0	10,617.2	5,921.0	99.0	99.0	-89.69	5,172.1	-1,068.6	684.3	484.1	200.23	3.418		
10,700.0	5,918.0	10,717.2	5,921.0	100.9	100.9	-89.69	5,272.1	-1,068.6	684.3	480.3	204.03	3.354		
10,800.0	5,918.0	10,817.2	5,921.0	102.8	102.8	-89.69	5,372.1	-1,068.6	684.3	476.5	207.83	3.293		
10,900.0	5,918.0	10,917.2	5,921.0	104.7	104.7	-89.69	5,472.1	-1,068.5	684.3	472.7	211.64	3.233		
11,000.0	5,918.0	11,017.2	5,921.0	106.6	106.6	-89.69	5,572.1	-1,068.5	684.3	468.8	215.44	3.176		
11,100.0	5,918.0	11,117.2	5,921.0	108.5	108.5	-89.69	5,672.1	-1,068.5	684.3	465.0	219.25	3.121		
11,200.0	5,918.0	11,217.2	5,921.0	110.4	110.4	-89.69	5,772.1	-1,068.5	684.3	461.2	223.06	3.068		
11,300.0	5,918.0	11,317.2	5,921.0	112.3	112.3	-89.69	5,872.1	-1,068.5	684.3	457.4	226.87	3.016		
11,400.0	5,918.0	11,417.2	5,921.0	114.2	114.2	-89.69	5,972.1	-1,068.5	684.3	453.6	230.68	2.966		
11,500.0	5,918.0	11,517.2	5,921.0	116.1	116.1	-89.69	6,072.1	-1,068.5	684.3	449.8	234.49	2.918		
11,600.0	5,918.0	11,617.2	5,921.0	118.0	118.0	-89.69	6,172.1	-1,068.5	684.3	446.0	238.30	2.871		
11,700.0	5,918.0	11,717.2	5,921.0	119.9	119.9	-89.69	6,272.1	-1,068.5	684.3	442.1	242.11	2.826		
11,800.0	5,918.0	11,817.2	5,921.0	121.8	121.8	-89.69	6,372.1	-1,068.5	684.3	438.3	245.93	2.782		
11,900.0	5,918.0	11,917.2	5,921.0	123.7	123.7	-89.69	6,472.1	-1,068.5	684.2	434.5	249.74	2.740		
12,000.0	5,918.0	12,017.2	5,921.0	125.6	125.7	-89.69	6,572.1	-1,068.5	684.2	430.7	253.56	2.699		
12,100.0	5,918.0	12,117.2	5,921.0	127.5	127.6	-89.69	6,672.1	-1,068.5	684.2	426.9	257.37	2.659		
12,200.0	5,918.0	12,217.2	5,921.0	129.4	129.5	-89.69	6,772.1	-1,068.5	684.2	423.0	261.19	2.620		
12,300.0	5,918.0	12,317.2	5,921.0	131.3	131.4	-89.69	6,872.1	-1,068.5	684.2	419.2	265.01	2.582		
12,400.0	5,918.0	12,417.2	5,921.0	133.2	133.3	-89.69	6,972.1	-1,068.5	684.2	415.4	268.83	2.545		
12,500.0	5,918.0	12,517.2	5,921.0	135.1	135.2	-89.69	7,072.1	-1,068.5	684.2	411.6	272.65	2.510		
12,600.0	5,918.0	12,617.2	5,921.0	137.0	137.1	-89.69	7,172.1	-1,068.5	684.2	407.7	276.47	2.475		
12,700.0	5,918.0	12,717.2	5,921.0	138.9	139.0	-89.69	7,272.1	-1,068.5	684.2	403.9	280.29	2.441		
12,800.0	5,918.0	12,817.2	5,921.0	140.8	140.9	-89.69	7,372.1	-1,068.5	684.2	400.1	284.11	2.408		
12,900.0	5,918.0	12,917.2	5,921.0	142.7	142.8	-89.69	7,472.1	-1,068.5	684.2	396.3	287.93	2.376		
13,000.0	5,918.0	13,017.2	5,921.0	144.7	144.8	-89.69	7,572.1	-1,068.5	684.2	392.4	291.75	2.345		
13,100.0	5,918.0	13,117.2	5,921.0	146.6	146.7	-89.69	7,672.1	-1,068.4	684.2	388.6	295.58	2.315		
13,200.0	5,918.0	13,217.2	5,921.0	148.5	148.6	-89.69	7,772.1	-1,068.4	684.2	384.8	299.40	2.285		
13,300.0	5,918.0	13,317.2	5,921.0	150.4	150.5	-89.69	7,872.1	-1,068.4	684.2	381.0	303.22	2.256		
13,400.0	5,918.0	13,417.2	5,921.0	152.3	152.4	-89.69	7,972.1	-1,068.4	684.2	377.1	307.05	2.228		
13,500.0	5,918.0	13,517.2	5,921.0	154.2	154.3	-89.69	8,072.1	-1,068.4	684.2	373.3	310.87	2.201		
13,600.0	5,918.0	13,617.2	5,921.0	156.1	156.2	-89.69	8,172.1	-1,068.4	684.2	369.5	314.70	2.174		
13,700.0	5,918.0	13,717.2	5,921.0	158.0	158.1	-89.69	8,272.1	-1,068.4	684.2	365.6	318.52	2.148		
13,706.6	5,918.0	13,723.8	5,921.0	158.1	158.3	-89.69	8,278.6	-1,068.4	684.2	365.4	318.78	2.146 ES, SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0908B - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: O-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	6.7	6.7	0.0	0.0	-91.21	-26.2	-1,242.3	1,242.6					
100.0	100.0	106.7	106.7	0.1	0.1	-91.21	-26.2	-1,242.3	1,242.6	1,242.4	0.20	6,163.437		
200.0	200.0	206.7	206.7	0.3	0.3	-91.21	-26.2	-1,242.3	1,242.6	1,241.9	0.65	1,908.319		
300.0	300.0	306.7	306.7	0.5	0.6	-91.21	-26.2	-1,242.3	1,242.6	1,241.5	1.10	1,128.929		
400.0	400.0	406.7	406.7	0.8	0.8	-91.21	-26.2	-1,242.3	1,242.6	1,241.0	1.55	801.558		
500.0	500.0	506.7	506.7	1.0	1.0	-91.21	-26.2	-1,242.3	1,242.6	1,240.6	2.00	621.371		
600.0	600.0	606.7	606.7	1.2	1.2	-72.25	-26.2	-1,242.3	1,242.0	1,239.6	2.45	507.316		
700.0	699.8	706.5	706.5	1.4	1.5	-72.51	-26.2	-1,242.3	1,240.5	1,237.6	2.90	427.829		
800.0	799.6	806.3	806.3	1.7	1.7	-72.82	-26.2	-1,242.3	1,238.4	1,235.0	3.36	368.768		
900.0	899.4	906.1	906.1	1.9	1.9	-73.13	-26.2	-1,242.3	1,236.3	1,232.5	3.82	323.438		
1,000.0	999.1	1,005.8	1,005.8	2.2	2.1	-73.44	-26.2	-1,242.3	1,234.3	1,230.0	4.29	287.680		
1,100.0	1,098.9	1,106.9	1,106.9	2.4	2.4	-73.75	-26.2	-1,242.3	1,232.3	1,227.6	4.76	258.659		
1,200.0	1,198.6	1,230.9	1,230.9	2.7	2.6	-74.02	-23.5	-1,241.1	1,229.3	1,224.0	5.29	232.374		
1,300.0	1,298.4	1,344.3	1,344.0	2.9	2.9	-74.08	-17.0	-1,238.2	1,224.5	1,218.7	5.80	211.285		
1,400.0	1,398.1	1,444.2	1,443.7	3.2	3.1	-74.10	-10.6	-1,235.3	1,219.4	1,213.1	6.27	194.328		
1,500.0	1,497.9	1,544.0	1,543.3	3.4	3.3	-74.13	-4.3	-1,232.5	1,214.3	1,207.5	6.76	179.674		
1,600.0	1,597.6	1,643.9	1,642.9	3.7	3.6	-74.15	2.1	-1,229.6	1,209.2	1,201.9	7.25	166.893		
1,700.0	1,697.4	1,743.8	1,742.5	3.9	3.8	-74.17	8.4	-1,226.8	1,204.1	1,196.4	7.74	155.664		
1,800.0	1,797.2	1,843.6	1,842.2	4.2	4.1	-74.20	14.8	-1,223.9	1,199.0	1,190.8	8.23	145.728		
1,900.0	1,896.9	1,943.5	1,941.8	4.4	4.3	-74.22	21.1	-1,221.1	1,193.9	1,185.2	8.72	136.882		
2,000.0	1,996.7	2,043.4	2,041.4	4.7	4.5	-74.25	27.5	-1,218.3	1,188.8	1,179.6	9.22	128.961		
2,100.0	2,096.4	2,143.3	2,141.0	4.9	4.8	-74.27	33.9	-1,215.4	1,183.7	1,174.0	9.72	121.830		
2,200.0	2,196.2	2,243.1	2,240.7	5.2	5.0	-74.30	40.2	-1,212.6	1,178.6	1,168.4	10.21	115.379		
2,300.0	2,295.9	2,343.0	2,340.3	5.4	5.3	-74.32	46.6	-1,209.7	1,173.5	1,162.7	10.71	109.518		
2,400.0	2,395.7	2,442.9	2,439.9	5.7	5.5	-74.35	52.9	-1,206.9	1,168.4	1,157.1	11.22	104.170		
2,500.0	2,495.5	2,542.7	2,539.5	6.0	5.8	-74.37	59.3	-1,204.0	1,163.3	1,151.5	11.72	99.272		
2,600.0	2,595.2	2,642.6	2,639.2	6.2	6.0	-74.40	65.6	-1,201.2	1,158.2	1,145.9	12.22	94.770		
2,700.0	2,695.0	2,742.5	2,738.8	6.5	6.3	-74.43	72.0	-1,198.3	1,153.1	1,140.3	12.72	90.618		
2,800.0	2,794.7	2,842.3	2,838.4	6.7	6.5	-74.45	78.4	-1,195.5	1,147.9	1,134.7	13.23	86.779		
2,900.0	2,894.5	2,942.2	2,938.0	7.0	6.8	-74.48	84.7	-1,192.6	1,142.8	1,129.1	13.73	83.218		
3,000.0	2,994.2	3,042.1	3,037.7	7.2	7.0	-74.51	91.1	-1,189.8	1,137.7	1,123.5	14.24	79.906		
3,100.0	3,094.0	3,141.9	3,137.3	7.5	7.3	-74.53	97.4	-1,186.9	1,132.6	1,117.9	14.74	76.819		
3,200.0	3,193.7	3,241.8	3,236.9	7.7	7.5	-74.56	103.8	-1,184.1	1,127.5	1,112.3	15.25	73.934		
3,300.0	3,293.5	3,341.7	3,336.5	8.0	7.8	-74.59	110.2	-1,181.2	1,122.4	1,106.7	15.76	71.233		
3,400.0	3,393.3	3,441.5	3,436.2	8.3	8.0	-74.62	116.5	-1,178.4	1,117.3	1,101.1	16.26	68.698		
3,500.0	3,493.0	3,541.4	3,535.8	8.5	8.3	-74.65	122.9	-1,175.5	1,112.2	1,095.5	16.77	66.315		
3,600.0	3,592.8	3,641.3	3,635.4	8.8	8.6	-74.68	129.2	-1,172.7	1,107.1	1,089.9	17.28	64.071		
3,700.0	3,692.5	3,741.1	3,735.0	9.0	8.8	-74.70	135.6	-1,169.9	1,102.0	1,084.3	17.79	61.953		
3,800.0	3,792.3	3,841.0	3,834.7	9.3	9.1	-74.73	141.9	-1,167.0	1,096.9	1,078.6	18.30	59.953		
3,900.0	3,892.0	3,940.9	3,934.3	9.5	9.3	-74.76	148.3	-1,164.2	1,091.8	1,073.0	18.81	58.059		
4,000.0	3,991.8	4,040.8	4,033.9	9.8	9.6	-74.79	154.7	-1,161.3	1,086.7	1,067.4	19.31	56.265		
4,100.0	4,091.6	4,140.6	4,133.5	10.1	9.8	-74.82	161.0	-1,158.5	1,081.6	1,061.8	19.82	54.562		
4,200.0	4,191.3	4,240.5	4,233.2	10.3	10.1	-74.85	167.4	-1,155.6	1,076.5	1,056.2	20.33	52.944		
4,300.0	4,291.1	4,340.4	4,332.8	10.6	10.3	-74.88	173.7	-1,152.8	1,071.4	1,050.6	20.84	51.404		
4,400.0	4,390.8	4,440.2	4,432.4	10.8	10.6	-74.91	180.1	-1,149.9	1,066.4	1,045.0	21.35	49.937		
4,500.0	4,490.6	4,540.1	4,532.0	11.1	10.8	-74.94	186.5	-1,147.1	1,061.3	1,039.4	21.86	48.538		
4,600.0	4,590.3	4,640.0	4,631.7	11.3	11.1	-74.98	192.8	-1,144.2	1,056.2	1,033.8	22.38	47.202		
4,700.0	4,690.1	4,739.8	4,731.3	11.6	11.3	-75.01	199.2	-1,141.4	1,051.1	1,028.2	22.89	45.926		
4,800.0	4,789.9	4,839.7	4,830.9	11.9	11.6	-75.04	205.5	-1,138.5	1,046.0	1,022.6	23.40	44.705		
4,900.0	4,889.6	4,939.6	4,930.5	12.1	11.9	-75.07	211.9	-1,135.7	1,040.9	1,017.0	23.91	43.536		
5,000.0	4,989.4	5,039.4	5,030.2	12.4	12.1	-75.10	218.2	-1,132.8	1,035.8	1,011.4	24.42	42.415		
5,100.0	5,089.1	5,139.3	5,129.8	12.6	12.4	-75.14	224.6	-1,130.0	1,030.7	1,005.7	24.93	41.340		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0908B - HZ - Plan #2													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,188.9	5,239.2	5,229.4	12.9	12.6	-75.17	231.0	-1,127.1	1,025.6	1,000.1	25.44	40.308		
5,300.0	5,288.6	5,339.0	5,329.0	13.1	12.9	-75.20	237.3	-1,124.3	1,020.5	994.5	25.96	39.317		
5,400.0	5,388.4	5,438.9	5,428.7	13.4	13.1	-75.24	243.7	-1,121.5	1,015.4	988.9	26.47	38.363		
5,500.0	5,487.8	5,538.6	5,528.1	13.7	13.4	-75.81	250.0	-1,118.6	1,009.6	982.6	26.98	37.417		
5,600.0	5,584.0	6,212.0	6,010.3	14.1	18.7	-64.29	616.6	-954.4	970.0	937.4	32.64	29.721		
5,700.0	5,673.4	6,331.8	6,024.0	14.7	20.4	-64.44	725.0	-905.9	906.4	872.0	34.42	26.330		
5,800.0	5,752.6	6,371.6	6,024.0	15.5	20.9	-70.57	761.4	-890.0	840.3	805.0	35.31	23.800		
5,900.0	5,818.7	6,400.0	6,024.0	16.5	21.3	-78.09	787.7	-879.2	774.1	737.6	36.49	21.213		
6,000.0	5,869.3	6,459.4	6,024.0	17.6	22.1	-84.54	843.1	-857.7	708.3	669.9	38.38	18.453		
6,100.0	5,902.6	6,514.1	6,024.0	19.0	22.9	-92.02	894.6	-839.5	644.3	603.9	40.41	15.945		
6,200.0	5,917.3	6,574.1	6,024.0	20.5	23.7	-100.03	951.8	-821.2	583.5	541.1	42.41	13.758		
6,300.0	5,918.0	6,638.5	6,024.0	22.0	24.7	-102.69	1,013.7	-803.6	528.2	483.2	45.02	11.733		
6,400.0	5,918.0	6,700.0	6,024.0	23.5	25.6	-103.20	1,073.4	-788.7	480.4	432.6	47.82	10.047		
6,500.0	5,918.0	6,781.7	6,024.0	25.0	26.8	-103.96	1,153.3	-771.9	440.5	389.6	50.87	8.659		
6,600.0	5,918.0	6,859.5	6,024.0	26.5	28.0	-104.60	1,230.1	-759.1	409.1	355.3	53.87	7.595		
6,700.0	5,918.0	6,940.5	6,024.0	28.1	29.2	-105.13	1,310.4	-749.1	386.6	329.8	56.87	6.799		
6,800.0	5,918.0	7,023.5	6,024.0	29.7	30.5	-105.49	1,393.2	-742.4	373.3	313.4	59.84	6.237		
6,900.0	5,918.0	7,107.7	6,024.0	31.3	31.8	-105.62	1,477.3	-739.3	368.8	306.0	62.77	5.875		
6,950.5	5,918.0	7,152.9	6,024.0	32.1	32.5	-105.63	1,522.6	-739.1	368.5	304.2	64.35	5.727		
7,000.0	5,918.0	7,202.5	6,024.0	32.9	33.3	-105.63	1,572.1	-739.1	368.5	302.6	65.90	5.592		
7,100.0	5,918.0	7,302.5	6,024.0	34.6	34.9	-105.63	1,672.1	-739.1	368.5	299.4	69.14	5.330		
7,200.0	5,918.0	7,402.5	6,024.0	36.3	36.5	-105.63	1,772.1	-739.1	368.5	296.1	72.44	5.087		
7,300.0	5,918.0	7,502.5	6,024.0	38.0	38.1	-105.63	1,872.1	-739.1	368.5	292.7	75.77	4.863		
7,400.0	5,918.0	7,602.5	6,024.0	39.7	39.8	-105.63	1,972.1	-739.1	368.5	289.3	79.15	4.656		
7,500.0	5,918.0	7,702.5	6,024.0	41.5	41.5	-105.63	2,072.1	-739.1	368.5	285.9	82.55	4.464		
7,600.0	5,918.0	7,802.5	6,024.0	43.3	43.2	-105.63	2,172.1	-739.1	368.5	282.5	85.98	4.285		
7,700.0	5,918.0	7,902.5	6,024.0	45.0	44.9	-105.63	2,272.1	-739.1	368.5	279.0	89.44	4.120		
7,800.0	5,918.0	8,002.5	6,024.0	46.8	46.7	-105.64	2,372.1	-739.1	368.5	275.5	92.91	3.966		
7,900.0	5,918.0	8,102.5	6,024.0	48.6	48.4	-105.64	2,472.1	-739.1	368.4	272.0	96.41	3.822		
8,000.0	5,918.0	8,202.5	6,024.0	50.4	50.2	-105.64	2,572.1	-739.1	368.4	268.5	99.92	3.687		
8,100.0	5,918.0	8,302.5	6,024.0	52.3	52.0	-105.64	2,672.1	-739.1	368.4	265.0	103.45	3.561		
8,200.0	5,918.0	8,402.5	6,024.0	54.1	53.7	-105.64	2,772.1	-739.0	368.4	261.4	106.99	3.443		
8,300.0	5,918.0	8,502.5	6,024.0	55.9	55.5	-105.64	2,872.1	-739.0	368.4	257.9	110.55	3.333		
8,400.0	5,918.0	8,602.5	6,024.0	57.8	57.3	-105.64	2,972.1	-739.0	368.4	254.3	114.11	3.228		
8,500.0	5,918.0	8,702.5	6,024.0	59.6	59.2	-105.64	3,072.1	-739.0	368.4	250.7	117.69	3.130		
8,600.0	5,918.0	8,802.5	6,024.0	61.4	61.0	-105.64	3,172.1	-739.0	368.4	247.1	121.27	3.038		
8,700.0	5,918.0	8,902.5	6,024.0	63.3	62.8	-105.64	3,272.1	-739.0	368.4	243.5	124.87	2.950		
8,800.0	5,918.0	9,002.5	6,024.0	65.2	64.6	-105.64	3,372.1	-739.0	368.4	239.9	128.47	2.868		
8,900.0	5,918.0	9,102.5	6,024.0	67.0	66.5	-105.64	3,472.1	-739.0	368.4	236.3	132.07	2.789		
9,000.0	5,918.0	9,202.5	6,024.0	68.9	68.3	-105.64	3,572.1	-739.0	368.4	232.7	135.69	2.715		
9,100.0	5,918.0	9,302.5	6,024.0	70.7	70.2	-105.64	3,672.1	-739.0	368.4	229.1	139.31	2.644		
9,200.0	5,918.0	9,402.5	6,024.0	72.6	72.0	-105.64	3,772.1	-739.0	368.4	225.4	142.93	2.577		
9,300.0	5,918.0	9,502.5	6,024.0	74.5	73.9	-105.64	3,872.1	-739.0	368.3	221.8	146.56	2.513		
9,400.0	5,918.0	9,602.5	6,024.0	76.4	75.7	-105.64	3,972.1	-739.0	368.3	218.1	150.20	2.452		
9,500.0	5,918.0	9,702.5	6,024.0	78.2	77.6	-105.64	4,072.1	-739.0	368.3	214.5	153.83	2.394		
9,600.0	5,918.0	9,802.5	6,024.0	80.1	79.4	-105.64	4,172.1	-738.9	368.3	210.9	157.48	2.339		
9,700.0	5,918.0	9,902.5	6,024.0	82.0	81.3	-105.64	4,272.1	-738.9	368.3	207.2	161.12	2.286		
9,800.0	5,918.0	10,002.5	6,024.0	83.9	83.2	-105.64	4,372.1	-738.9	368.3	203.5	164.77	2.235		
9,900.0	5,918.0	10,102.5	6,024.0	85.8	85.0	-105.64	4,472.1	-738.9	368.3	199.9	168.43	2.187		
10,000.0	5,918.0	10,202.5	6,024.0	87.6	86.9	-105.64	4,572.1	-738.9	368.3	196.2	172.08	2.140		
10,100.0	5,918.0	10,302.5	6,024.0	89.5	88.8	-105.64	4,672.1	-738.9	368.3	192.6	175.74	2.096		
10,200.0	5,918.0	10,402.5	6,024.0	91.4	90.7	-105.64	4,772.1	-738.9	368.3	188.9	179.40	2.053		

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 #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0908B - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
10,300.0	5,918.0	10,502.5	6,024.0	93.3	92.5	-105.64	4,872.1	-738.9	368.3	185.2	183.07	2.012	
10,400.0	5,918.0	10,602.5	6,024.0	95.2	94.4	-105.64	4,972.1	-738.9	368.3	181.5	186.73	1.972	
10,500.0	5,918.0	10,702.5	6,024.0	97.1	96.3	-105.64	5,072.1	-738.9	368.3	177.9	190.40	1.934	
10,600.0	5,918.0	10,802.5	6,024.0	99.0	98.2	-105.64	5,172.1	-738.9	368.3	174.2	194.07	1.898	
10,700.0	5,918.0	10,902.5	6,024.0	100.9	100.1	-105.64	5,272.1	-738.9	368.2	170.5	197.74	1.862	
10,800.0	5,918.0	11,002.5	6,024.0	102.8	101.9	-105.64	5,372.1	-738.9	368.2	166.8	201.42	1.828	
10,900.0	5,918.0	11,102.5	6,024.0	104.7	103.8	-105.64	5,472.1	-738.9	368.2	163.1	205.09	1.795	
11,000.0	5,918.0	11,202.5	6,024.0	106.6	105.7	-105.64	5,572.1	-738.8	368.2	159.5	208.77	1.764	
11,100.0	5,918.0	11,302.5	6,024.0	108.5	107.6	-105.65	5,672.1	-738.8	368.2	155.8	212.45	1.733	
11,200.0	5,918.0	11,402.5	6,024.0	110.4	109.5	-105.65	5,772.1	-738.8	368.2	152.1	216.13	1.704	
11,300.0	5,918.0	11,502.5	6,024.0	112.3	111.4	-105.65	5,872.1	-738.8	368.2	148.4	219.81	1.675	
11,400.0	5,918.0	11,602.5	6,024.0	114.2	113.3	-105.65	5,972.1	-738.8	368.2	144.7	223.50	1.647	
11,500.0	5,918.0	11,702.5	6,024.0	116.1	115.2	-105.65	6,072.1	-738.8	368.2	141.0	227.18	1.621	
11,600.0	5,918.0	11,802.5	6,024.0	118.0	117.1	-105.65	6,172.1	-738.8	368.2	137.3	230.87	1.595	
11,700.0	5,918.0	11,902.5	6,024.0	119.9	119.0	-105.65	6,272.1	-738.8	368.2	133.6	234.55	1.570	
11,800.0	5,918.0	12,002.5	6,024.0	121.8	120.9	-105.65	6,372.1	-738.8	368.2	129.9	238.24	1.545	
11,900.0	5,918.0	12,102.5	6,024.0	123.7	122.8	-105.65	6,472.1	-738.8	368.2	126.2	241.93	1.522	
12,000.0	5,918.0	12,202.5	6,024.0	125.6	124.7	-105.65	6,572.1	-738.8	368.2	122.5	245.62	1.499 Level 3	
12,100.0	5,918.0	12,302.5	6,024.0	127.5	126.6	-105.65	6,672.1	-738.8	368.2	118.8	249.31	1.477 Level 3	
12,200.0	5,918.0	12,402.5	6,024.0	129.4	128.5	-105.65	6,772.1	-738.8	368.1	115.1	253.00	1.455 Level 3	
12,300.0	5,918.0	12,502.5	6,024.0	131.3	130.4	-105.65	6,872.1	-738.8	368.1	111.4	256.70	1.434 Level 3	
12,400.0	5,918.0	12,602.5	6,024.0	133.2	132.3	-105.65	6,972.1	-738.7	368.1	107.7	260.39	1.414 Level 3	
12,500.0	5,918.0	12,702.5	6,024.0	135.1	134.2	-105.65	7,072.1	-738.7	368.1	104.0	264.09	1.394 Level 3	
12,600.0	5,918.0	12,802.5	6,024.0	137.0	136.1	-105.65	7,172.1	-738.7	368.1	100.3	267.78	1.375 Level 3	
12,700.0	5,918.0	12,902.5	6,024.0	138.9	138.0	-105.65	7,272.1	-738.7	368.1	96.6	271.48	1.356 Level 3	
12,800.0	5,918.0	13,002.5	6,024.0	140.8	139.9	-105.65	7,372.1	-738.7	368.1	92.9	275.17	1.338 Level 3	
12,900.0	5,918.0	13,102.5	6,024.0	142.7	141.8	-105.65	7,472.1	-738.7	368.1	89.2	278.87	1.320 Level 3	
13,000.0	5,918.0	13,202.5	6,024.0	144.7	143.7	-105.65	7,572.1	-738.7	368.1	85.5	282.57	1.303 Level 3	
13,100.0	5,918.0	13,302.5	6,024.0	146.6	145.6	-105.65	7,672.1	-738.7	368.1	81.8	286.27	1.286 Level 3	
13,200.0	5,918.0	13,402.5	6,024.0	148.5	147.5	-105.65	7,772.1	-738.7	368.1	78.1	289.97	1.269 Level 3	
13,300.0	5,918.0	13,502.5	6,024.0	150.4	149.4	-105.65	7,872.1	-738.7	368.1	74.4	293.67	1.253 Level 3	
13,400.0	5,918.0	13,602.5	6,024.0	152.3	151.3	-105.65	7,972.1	-738.7	368.1	70.7	297.37	1.238 Level 2	
13,500.0	5,918.0	13,702.5	6,024.0	154.2	153.2	-105.65	8,072.1	-738.7	368.1	67.0	301.07	1.222 Level 2	
13,600.0	5,918.0	13,802.5	6,024.0	156.1	155.1	-105.65	8,172.1	-738.7	368.0	63.3	304.77	1.208 Level 2	
13,700.0	5,918.0	13,902.5	6,024.0	158.0	157.0	-105.65	8,272.1	-738.7	368.0	59.6	308.47	1.193 Level 2	
13,706.6	5,918.0	13,909.0	6,024.0	158.1	157.1	-105.65	8,278.6	-738.7	368.0	59.3	308.71	1.192 Level 2, CC, ES, SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #21B-0909A
Project:	Weld County, CO	TVD Reference:	KB=17 @ 4854.3usft
Reference Site:	S21-T10N-R58W	MD Reference:	KB=17 @ 4854.3usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	Razor #21B-0909A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB=17 @ 4854.3usft
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Razor #21B-0909A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.05°

