



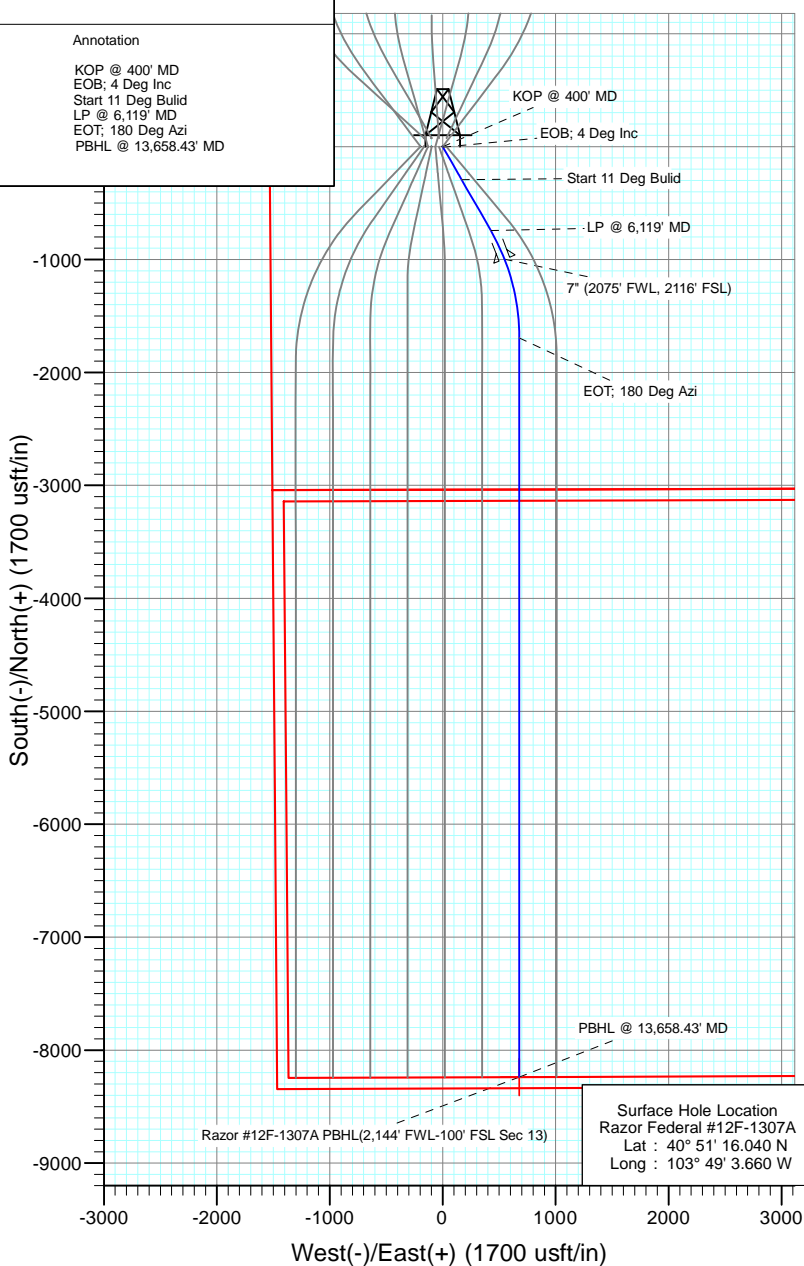
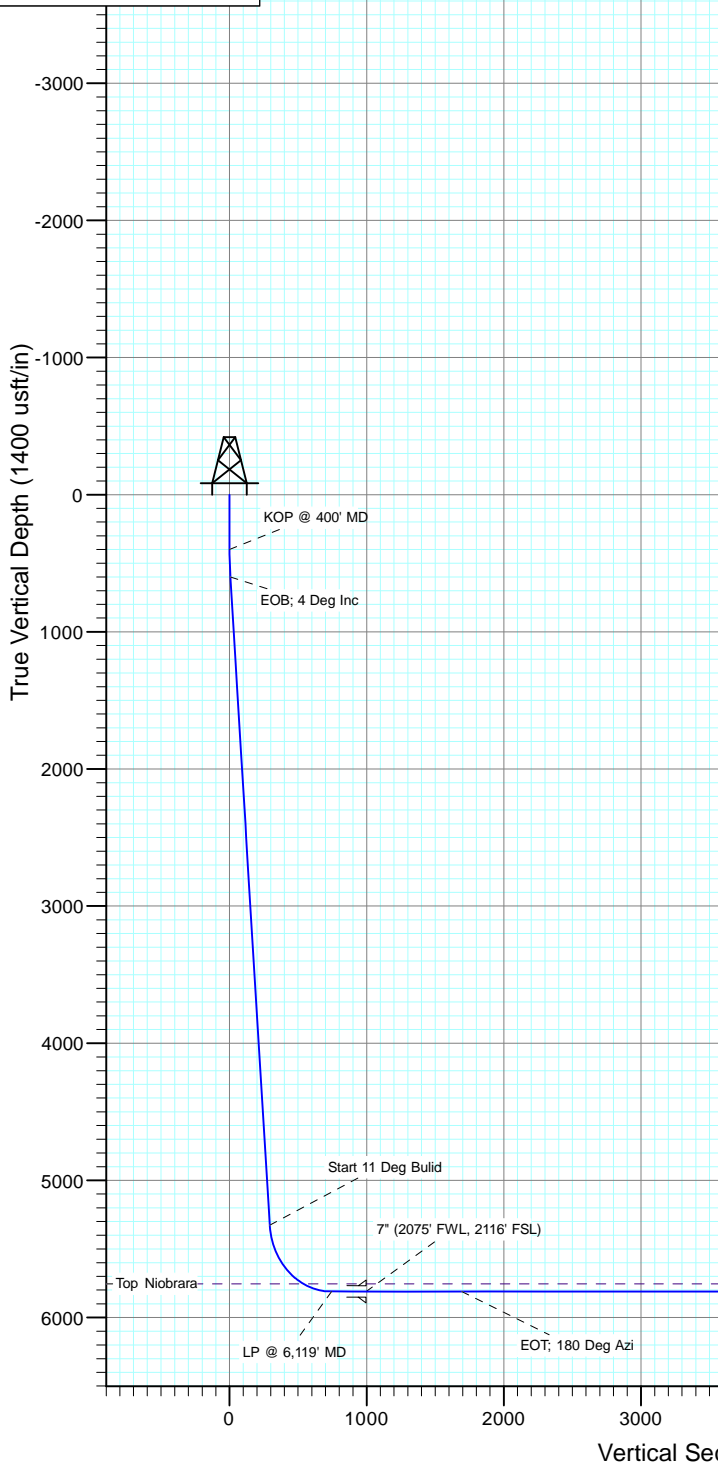
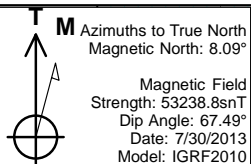
Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor Federal #12F-1307A
Wellbore: HZ
Design: Plan #3



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00
3	600.00	4.00	150.20	599.84	-6.06	3.47	2.00	150.20	6.06
4	5337.99	4.00	150.20	5326.29	-292.86	167.72	0.00	0.00	292.86
5	6119.81	90.00	150.20	5810.82	-743.75	425.95	11.00	0.00	743.75
6	7113.28	90.00	180.00	5810.83	-1693.04	678.50	3.00	90.00	1693.04
7	13658.43	90.00	180.00	5810.99	-8238.19	678.00	0.00	0.00	8238.19

Annotation
KOP @ 400' MD
EOB: 4 Deg Inc
Start 11 Deg Build
LP @ 6,119' MD
EOT: 180 Deg Azi
PBHL @ 13,658.43' MD



FORMATION TOP DETAILS

TVDPath	MDPath	Formation Top Niobrara
5754.99	5876.43	

Plan #3
Razor Federal #12F-1307A
WELL @ 4953.59usft (Original Well Elev)
Ground Elevation @ 4936.80
North American Datum 1983
Well Razor Federal #12F-1307A, True North

Vertical Section at 180.00° (1400 usft/in)

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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

Site		S12-T10N-R58W			
Site Position:		Northing:	1,558,537.97 usft	Latitude:	40° 51' 16.040 N
From:	Lat/Long	Easting:	3,465,176.15 usft	Longitude:	103° 49' 6.230 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.09 °

Well	Razor Federal #12F-1307A					
Well Position	+N/-S	0.00 usft	Northing:	1,558,541.71 usft	Latitude:	40° 51' 16.040 N
	+E/-W	0.00 usft	Easting:	3,465,373.61 usft	Longitude:	103° 49' 3.660 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,936.80 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/30/2013	8.09	67.49	53,239

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	180.00	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	4.00	150.20	599.84	-6.06	3.47	2.00	2.00	0.00	150.20	
5,337.99	4.00	150.20	5,326.29	-292.86	167.72	0.00	0.00	0.00	0.00	
6,119.81	90.00	150.20	5,810.82	-743.75	425.95	11.00	11.00	0.00	0.00	
7,113.28	90.00	180.00	5,810.83	-1,693.04	678.50	3.00	0.00	3.00	90.00	
13,658.43	90.00	180.00	5,810.99	-8,238.19	678.00	0.00	0.00	0.00	0.00	Razor #12F-1307A P1

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	KOP @ 400' MD
500.00	2.00	150.20	499.98	-1.51	0.87	1.51	2.00	2.00	
600.00	4.00	150.20	599.84	-6.06	3.47	6.06	2.00	2.00	EOB; 4 Deg Inc
700.00	4.00	150.20	699.59	-12.11	6.93	12.11	0.00	0.00	
800.00	4.00	150.20	799.35	-18.16	10.40	18.16	0.00	0.00	
900.00	4.00	150.20	899.11	-24.22	13.87	24.22	0.00	0.00	
1,000.00	4.00	150.20	998.86	-30.27	17.34	30.27	0.00	0.00	
1,100.00	4.00	150.20	1,098.62	-36.32	20.80	36.32	0.00	0.00	
1,200.00	4.00	150.20	1,198.38	-42.38	24.27	42.38	0.00	0.00	
1,300.00	4.00	150.20	1,298.13	-48.43	27.74	48.43	0.00	0.00	
1,400.00	4.00	150.20	1,397.89	-54.48	31.20	54.48	0.00	0.00	
1,500.00	4.00	150.20	1,497.65	-60.53	34.67	60.53	0.00	0.00	
1,600.00	4.00	150.20	1,597.40	-66.59	38.14	66.59	0.00	0.00	
1,700.00	4.00	150.20	1,697.16	-72.64	41.60	72.64	0.00	0.00	
1,800.00	4.00	150.20	1,796.91	-78.69	45.07	78.69	0.00	0.00	
1,900.00	4.00	150.20	1,896.67	-84.75	48.54	84.75	0.00	0.00	
2,000.00	4.00	150.20	1,996.43	-90.80	52.00	90.80	0.00	0.00	
2,100.00	4.00	150.20	2,096.18	-96.85	55.47	96.85	0.00	0.00	
2,200.00	4.00	150.20	2,195.94	-102.91	58.94	102.91	0.00	0.00	
2,300.00	4.00	150.20	2,295.70	-108.96	62.40	108.96	0.00	0.00	
2,400.00	4.00	150.20	2,395.45	-115.01	65.87	115.01	0.00	0.00	
2,500.00	4.00	150.20	2,495.21	-121.07	69.34	121.07	0.00	0.00	
2,600.00	4.00	150.20	2,594.97	-127.12	72.80	127.12	0.00	0.00	
2,700.00	4.00	150.20	2,694.72	-133.17	76.27	133.17	0.00	0.00	
2,800.00	4.00	150.20	2,794.48	-139.23	79.74	139.23	0.00	0.00	
2,900.00	4.00	150.20	2,894.23	-145.28	83.20	145.28	0.00	0.00	
3,000.00	4.00	150.20	2,993.99	-151.33	86.67	151.33	0.00	0.00	
3,100.00	4.00	150.20	3,093.75	-157.39	90.14	157.39	0.00	0.00	
3,200.00	4.00	150.20	3,193.50	-163.44	93.60	163.44	0.00	0.00	
3,300.00	4.00	150.20	3,293.26	-169.49	97.07	169.49	0.00	0.00	
3,400.00	4.00	150.20	3,393.02	-175.55	100.54	175.55	0.00	0.00	
3,500.00	4.00	150.20	3,492.77	-181.60	104.00	181.60	0.00	0.00	
3,600.00	4.00	150.20	3,592.53	-187.65	107.47	187.65	0.00	0.00	
3,700.00	4.00	150.20	3,692.29	-193.71	110.94	193.71	0.00	0.00	
3,800.00	4.00	150.20	3,792.04	-199.76	114.40	199.76	0.00	0.00	
3,900.00	4.00	150.20	3,891.80	-205.81	117.87	205.81	0.00	0.00	
4,000.00	4.00	150.20	3,991.56	-211.87	121.34	211.87	0.00	0.00	
4,100.00	4.00	150.20	4,091.31	-217.92	124.80	217.92	0.00	0.00	
4,200.00	4.00	150.20	4,191.07	-223.97	128.27	223.97	0.00	0.00	
4,300.00	4.00	150.20	4,290.82	-230.03	131.74	230.03	0.00	0.00	
4,400.00	4.00	150.20	4,390.58	-236.08	135.20	236.08	0.00	0.00	
4,500.00	4.00	150.20	4,490.34	-242.13	138.67	242.13	0.00	0.00	
4,600.00	4.00	150.20	4,590.09	-248.18	142.14	248.18	0.00	0.00	
4,700.00	4.00	150.20	4,689.85	-254.24	145.60	254.24	0.00	0.00	
4,800.00	4.00	150.20	4,789.61	-260.29	149.07	260.29	0.00	0.00	
4,900.00	4.00	150.20	4,889.36	-266.34	152.54	266.34	0.00	0.00	
5,000.00	4.00	150.20	4,989.12	-272.40	156.00	272.40	0.00	0.00	
5,100.00	4.00	150.20	5,088.88	-278.45	159.47	278.45	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,200.00	4.00	150.20	5,188.63	-284.50	162.94	284.50	0.00	0.00	
5,300.00	4.00	150.20	5,288.39	-290.56	166.40	290.56	0.00	0.00	
5,337.99	4.00	150.20	5,326.29	-292.86	167.72	292.86	0.00	0.00	Start 11 Deg Build
5,400.00	10.82	150.20	5,387.74	-299.79	171.69	299.79	11.00	11.00	
5,500.00	21.82	150.20	5,483.56	-324.14	185.64	324.14	11.00	11.00	
5,600.00	32.82	150.20	5,572.27	-363.91	208.41	363.91	11.00	11.00	
5,700.00	43.82	150.20	5,650.61	-417.63	239.18	417.63	11.00	11.00	
5,800.00	54.82	150.20	5,715.69	-483.34	276.81	483.34	11.00	11.00	
5,876.43	63.23	150.20	5,754.99	-540.16	309.35	540.16	11.00	11.00	Top Niobrara
5,900.00	65.82	150.20	5,765.13	-558.62	319.92	558.62	11.00	11.00	
6,000.00	76.82	150.20	5,797.10	-640.70	366.93	640.70	11.00	11.00	
6,100.00	87.82	150.20	5,810.44	-726.57	416.11	726.57	11.00	11.00	
6,119.81	90.00	150.20	5,810.82	-743.75	425.95	743.75	11.00	11.00	LP @ 6,119' MD
6,200.00	90.00	152.61	5,810.82	-814.15	464.33	814.15	3.00	0.00	
6,300.00	90.00	155.61	5,810.82	-904.10	508.00	904.10	3.00	0.00	
6,399.99	90.00	158.61	5,810.82	-996.20	546.89	996.20	3.00	0.00	7" (2075' FWL, 2116' FSL)
6,400.00	90.00	158.61	5,810.82	-996.22	546.90	996.22	3.00	0.00	
6,500.00	90.00	161.61	5,810.82	-1,090.24	580.92	1,090.24	3.00	0.00	
6,600.00	90.00	164.61	5,810.82	-1,185.91	609.98	1,185.91	3.00	0.00	
6,700.00	90.00	167.61	5,810.83	-1,282.97	633.99	1,282.97	3.00	0.00	
6,800.00	90.00	170.61	5,810.83	-1,381.16	652.88	1,381.16	3.00	0.00	
6,900.00	90.00	173.61	5,810.83	-1,480.20	666.62	1,480.20	3.00	0.00	
7,000.00	90.00	176.61	5,810.83	-1,579.83	675.15	1,579.83	3.00	0.00	
7,100.00	90.00	179.61	5,810.83	-1,679.76	678.45	1,679.76	3.00	0.00	
7,113.28	90.00	180.00	5,810.83	-1,693.04	678.50	1,693.04	3.00	0.00	EOT; 180 Deg Azi
7,200.00	90.00	180.00	5,810.84	-1,779.76	678.49	1,779.76	0.00	0.00	
7,300.00	90.00	180.00	5,810.84	-1,879.76	678.48	1,879.76	0.00	0.00	
7,400.00	90.00	180.00	5,810.84	-1,979.76	678.48	1,979.76	0.00	0.00	
7,500.00	90.00	180.00	5,810.84	-2,079.76	678.47	2,079.76	0.00	0.00	
7,600.00	90.00	180.00	5,810.84	-2,179.76	678.46	2,179.76	0.00	0.00	
7,700.00	90.00	180.00	5,810.85	-2,279.76	678.45	2,279.76	0.00	0.00	
7,800.00	90.00	180.00	5,810.85	-2,379.76	678.45	2,379.76	0.00	0.00	
7,900.00	90.00	180.00	5,810.85	-2,479.76	678.44	2,479.76	0.00	0.00	
8,000.00	90.00	180.00	5,810.85	-2,579.76	678.43	2,579.76	0.00	0.00	
8,100.00	90.00	180.00	5,810.86	-2,679.76	678.42	2,679.76	0.00	0.00	
8,200.00	90.00	180.00	5,810.86	-2,779.76	678.42	2,779.76	0.00	0.00	
8,300.00	90.00	180.00	5,810.86	-2,879.76	678.41	2,879.76	0.00	0.00	
8,400.00	90.00	180.00	5,810.86	-2,979.76	678.40	2,979.76	0.00	0.00	
8,500.00	90.00	180.00	5,810.87	-3,079.76	678.39	3,079.76	0.00	0.00	
8,600.00	90.00	180.00	5,810.87	-3,179.76	678.39	3,179.76	0.00	0.00	
8,700.00	90.00	180.00	5,810.87	-3,279.76	678.38	3,279.76	0.00	0.00	
8,800.00	90.00	180.00	5,810.87	-3,379.76	678.37	3,379.76	0.00	0.00	
8,900.00	90.00	180.00	5,810.88	-3,479.76	678.36	3,479.76	0.00	0.00	
9,000.00	90.00	180.00	5,810.88	-3,579.76	678.36	3,579.76	0.00	0.00	
9,100.00	90.00	180.00	5,810.88	-3,679.76	678.35	3,679.76	0.00	0.00	
9,200.00	90.00	180.00	5,810.88	-3,779.76	678.34	3,779.76	0.00	0.00	
9,300.00	90.00	180.00	5,810.88	-3,879.76	678.33	3,879.76	0.00	0.00	
9,400.00	90.00	180.00	5,810.89	-3,979.76	678.33	3,979.76	0.00	0.00	
9,500.00	90.00	180.00	5,810.89	-4,079.76	678.32	4,079.76	0.00	0.00	
9,600.00	90.00	180.00	5,810.89	-4,179.76	678.31	4,179.76	0.00	0.00	
9,700.00	90.00	180.00	5,810.89	-4,279.76	678.30	4,279.76	0.00	0.00	
9,800.00	90.00	180.00	5,810.90	-4,379.76	678.29	4,379.76	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,900.00	90.00	180.00	5,810.90	-4,479.76	678.29	4,479.76	0.00	0.00	
10,000.00	90.00	180.00	5,810.90	-4,579.76	678.28	4,579.76	0.00	0.00	
10,100.00	90.00	180.00	5,810.90	-4,679.76	678.27	4,679.76	0.00	0.00	
10,200.00	90.00	180.00	5,810.91	-4,779.76	678.26	4,779.76	0.00	0.00	
10,300.00	90.00	180.00	5,810.91	-4,879.76	678.26	4,879.76	0.00	0.00	
10,400.00	90.00	180.00	5,810.91	-4,979.76	678.25	4,979.76	0.00	0.00	
10,500.00	90.00	180.00	5,810.91	-5,079.76	678.24	5,079.76	0.00	0.00	
10,600.00	90.00	180.00	5,810.92	-5,179.76	678.23	5,179.76	0.00	0.00	
10,700.00	90.00	180.00	5,810.92	-5,279.76	678.23	5,279.76	0.00	0.00	
10,800.00	90.00	180.00	5,810.92	-5,379.76	678.22	5,379.76	0.00	0.00	
10,900.00	90.00	180.00	5,810.92	-5,479.76	678.21	5,479.76	0.00	0.00	
11,000.00	90.00	180.00	5,810.93	-5,579.76	678.20	5,579.76	0.00	0.00	
11,100.00	90.00	180.00	5,810.93	-5,679.76	678.20	5,679.76	0.00	0.00	
11,200.00	90.00	180.00	5,810.93	-5,779.76	678.19	5,779.76	0.00	0.00	
11,300.00	90.00	180.00	5,810.93	-5,879.76	678.18	5,879.76	0.00	0.00	
11,400.00	90.00	180.00	5,810.93	-5,979.76	678.17	5,979.76	0.00	0.00	
11,500.00	90.00	180.00	5,810.94	-6,079.76	678.17	6,079.76	0.00	0.00	
11,600.00	90.00	180.00	5,810.94	-6,179.76	678.16	6,179.76	0.00	0.00	
11,700.00	90.00	180.00	5,810.94	-6,279.76	678.15	6,279.76	0.00	0.00	
11,800.00	90.00	180.00	5,810.94	-6,379.76	678.14	6,379.76	0.00	0.00	
11,900.00	90.00	180.00	5,810.95	-6,479.76	678.14	6,479.76	0.00	0.00	
12,000.00	90.00	180.00	5,810.95	-6,579.76	678.13	6,579.76	0.00	0.00	
12,100.00	90.00	180.00	5,810.95	-6,679.76	678.12	6,679.76	0.00	0.00	
12,200.00	90.00	180.00	5,810.95	-6,779.76	678.11	6,779.76	0.00	0.00	
12,300.00	90.00	180.00	5,810.96	-6,879.76	678.11	6,879.76	0.00	0.00	
12,400.00	90.00	180.00	5,810.96	-6,979.76	678.10	6,979.76	0.00	0.00	
12,500.00	90.00	180.00	5,810.96	-7,079.76	678.09	7,079.76	0.00	0.00	
12,600.00	90.00	180.00	5,810.96	-7,179.76	678.08	7,179.76	0.00	0.00	
12,700.00	90.00	180.00	5,810.97	-7,279.76	678.08	7,279.76	0.00	0.00	
12,800.00	90.00	180.00	5,810.97	-7,379.76	678.07	7,379.76	0.00	0.00	
12,900.00	90.00	180.00	5,810.97	-7,479.76	678.06	7,479.76	0.00	0.00	
13,000.00	90.00	180.00	5,810.97	-7,579.76	678.05	7,579.76	0.00	0.00	
13,100.00	90.00	180.00	5,810.98	-7,679.76	678.05	7,679.76	0.00	0.00	
13,200.00	90.00	180.00	5,810.98	-7,779.76	678.04	7,779.76	0.00	0.00	
13,300.00	90.00	180.00	5,810.98	-7,879.76	678.03	7,879.76	0.00	0.00	
13,400.00	90.00	180.00	5,810.98	-7,979.76	678.02	7,979.76	0.00	0.00	
13,500.00	90.00	180.00	5,810.98	-8,079.76	678.02	8,079.76	0.00	0.00	
13,600.00	90.00	180.00	5,810.99	-8,179.76	678.01	8,179.76	0.00	0.00	
13,658.43	90.00	180.00	5,810.99	-8,238.19	678.00	8,238.19	0.00	0.00	PBHL @ 13,658.43' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Razor #12F-1307A PBH	0.00	0.00	5,810.99	-8,238.19	678.00	1,550,317.87	3,466,207.77	40° 49' 54.640 N	103° 48' 54.840 W
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Company:	Whiting Petroleum Corporation	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site:	S12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,399.99	5,810.82	7" (2075' FWL, 2116' FSL)	0	0	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,876.43	5,754.99	Top Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
400.00	400.00	0.00	0.00	KOP @ 400' MD	
600.00	599.84	-6.06	3.47	EOB; 4 Deg Inc	
5,337.99	5,326.29	-292.86	167.72	Start 11 Deg Bulid	
6,119.81	5,810.82	-743.75	425.95	LP @ 6,119' MD	
7,113.28	5,810.83	-1,693.04	678.50	EOT; 180 Deg Azi	
13,658.43	5,810.99	-8,238.19	678.00	PBHL @ 13,658.43' MD	

Whiting Petroleum Corporation

Weld County, CO

S12-T10N-R58W

Razor Federal #12F-1307A

HZ

Plan #3

Anticollision Report

08 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 687.19usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	11/8/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	13,658.43	Plan #3 (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
S12-T10N-R58W						
Razor #12F-0101A - HZ - Plan #2	400.00	400.01	211.21	209.68	137.541	CC, ES
Razor #12F-0101A - HZ - Plan #2	4,100.00	4,052.36	677.92	659.69	37.184	SF
Razor #12F-0102B - HZ - Plan #2	400.00	400.01	197.49	195.96	128.607	CC, ES
Razor #12F-0102B - HZ - Plan #2	4,500.00	4,453.23	677.04	656.94	33.679	SF
Razor #12F-0103A - HZ - Plan #2	400.00	400.01	123.62	122.09	80.504	CC, ES
Razor #12F-0103A - HZ - Plan #2	4,900.00	4,850.70	685.81	664.08	31.564	SF
Razor #12F-0104B - HZ - Plan #2	400.00	400.01	131.41	129.87	85.571	CC, ES
Razor #12F-0104B - HZ - Plan #2	3,600.00	3,568.80	468.12	452.17	29.352	SF
Razor #12F-0105A - HZ - Plan #2	400.00	400.01	81.85	80.32	53.301	CC, ES
Razor #12F-0105A - HZ - Plan #2	1,300.00	1,289.43	143.57	138.13	26.393	SF
Razor #12F-0106B - HZ - Plan #2	400.00	400.01	65.32	63.78	42.535	CC, ES
Razor #12F-0106B - HZ - Plan #2	1,200.00	1,196.17	107.32	102.27	21.244	SF
Razor #12F-0107A - HZ - Plan #2	400.00	400.01	81.86	80.32	53.306	CC, ES
Razor #12F-0107A - HZ - Plan #2	1,300.00	1,294.36	124.93	119.43	22.716	SF
Razor #12F-0108B - HZ - Plan #2	400.00	400.01	0.03	-1.50	0.020	Level 1, CC, ES, SF
Razor Federal #12F-1301A - HZ - Plan #3	400.00	400.00	197.49	195.96	128.608	CC, ES
Razor Federal #12F-1301A - HZ - Plan #3	5,300.00	5,275.02	572.71	547.54	22.756	SF
Razor Federal #12F-1302B - HZ - Plan #2	400.00	400.01	164.45	162.91	107.089	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	5,300.00	5,281.99	494.26	469.10	19.645	SF
Razor Federal #12F-1303A - HZ - Plan #3	400.00	400.00	131.41	129.87	85.572	CC, ES
Razor Federal #12F-1303A - HZ - Plan #3	5,300.00	5,287.00	430.54	404.50	16.531	SF
Razor Federal #12F-1304B - HZ - Plan #2	400.00	400.01	98.36	96.83	64.053	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	5,300.00	5,294.30	324.86	299.30	12.712	SF
Razor Federal #12F-1305A - HZ - Plan #3	400.00	400.00	65.32	63.78	42.536	CC, ES
Razor Federal #12F-1305A - HZ - Plan #3	13,658.43	13,538.61	659.55	341.79	2.076	SF
Razor Federal #12F-1306B - HZ - Plan #2	400.00	400.01	33.04	31.51	21.518	CC, ES
Razor Federal #12F-1306B - HZ - Plan #2	13,658.43	13,694.73	344.90	40.59	1.133	Level 2, SF
Razor Federal #12F-1308B - HZ - Plan #2	735.76	735.28	28.66	25.67	9.600	CC, ES
Razor Federal #12F-1308B - HZ - Plan #2	13,658.43	13,925.40	345.63	42.55	1.140	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.00 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)				
0.00	0.00	0.01	0.01	0.00	0.00	-69.24	74.88	-197.49	211.21					
100.00	100.00	100.01	100.01	0.09	0.09	-69.24	74.88	-197.49	211.21	211.02	0.19	1,129.239		
200.00	200.00	200.01	200.01	0.32	0.32	-69.24	74.88	-197.49	211.21	210.58	0.64	331.796		
300.00	300.00	300.01	300.01	0.54	0.54	-69.24	74.88	-197.49	211.21	210.13	1.09	194.467		
400.00	400.00	400.01	400.01	0.77	0.77	-69.24	74.88	-197.49	211.21	209.68	1.54	137.541 CC, ES		
500.00	499.98	499.99	499.99	0.97	0.99	140.85	74.88	-197.49	212.56	210.60	1.96	108.327		
600.00	599.84	593.20	593.19	1.17	1.20	141.73	75.90	-198.61	218.17	215.80	2.37	92.216		
700.00	699.59	685.73	685.60	1.38	1.41	143.14	78.93	-201.94	228.29	225.50	2.78	82.016		
800.00	799.35	783.70	783.33	1.61	1.63	144.65	83.51	-206.97	240.51	237.29	3.22	74.681		
900.00	899.11	882.75	882.14	1.85	1.87	146.03	88.16	-212.08	252.92	249.26	3.66	69.098		
1,000.00	998.86	981.80	980.95	2.10	2.11	147.28	92.81	-217.19	265.47	261.36	4.10	64.675		
1,100.00	1,098.62	1,080.85	1,079.76	2.35	2.36	148.42	97.46	-222.30	278.12	273.57	4.55	61.093		
1,200.00	1,198.38	1,179.90	1,178.57	2.61	2.60	149.46	102.11	-227.41	290.88	285.88	5.00	58.145		
1,300.00	1,298.13	1,278.95	1,277.38	2.86	2.85	150.41	106.76	-232.52	303.72	298.27	5.45	55.684		
1,400.00	1,397.89	1,378.00	1,376.19	3.12	3.10	151.29	111.41	-237.63	316.64	310.74	5.91	53.602		
1,500.00	1,497.65	1,477.05	1,475.00	3.38	3.35	152.09	116.06	-242.74	329.63	323.27	6.36	51.818		
1,600.00	1,597.40	1,576.10	1,573.81	3.63	3.61	152.84	120.71	-247.85	342.68	335.86	6.82	50.279		
1,700.00	1,697.16	1,675.15	1,672.61	3.89	3.86	153.53	125.36	-252.97	355.78	348.51	7.27	48.935		
1,800.00	1,796.91	1,774.20	1,771.42	4.15	4.11	154.17	130.01	-258.08	368.92	361.20	7.73	47.754		
1,900.00	1,896.67	1,873.25	1,870.23	4.42	4.36	154.77	134.66	-263.19	382.11	373.93	8.18	46.707		
2,000.00	1,996.43	1,972.30	1,969.04	4.68	4.62	155.33	139.31	-268.30	395.34	386.70	8.64	45.774		
2,100.00	2,096.18	2,071.35	2,067.85	4.94	4.87	155.85	143.96	-273.41	408.60	399.51	9.09	44.938		
2,200.00	2,195.94	2,170.40	2,166.66	5.20	5.13	156.34	148.61	-278.52	421.89	412.34	9.55	44.183		
2,300.00	2,295.70	2,269.45	2,265.47	5.46	5.38	156.79	153.26	-283.63	435.21	425.21	10.00	43.500		
2,400.00	2,395.45	2,368.51	2,364.28	5.73	5.63	157.23	157.91	-288.74	448.56	438.10	10.46	42.878		
2,500.00	2,495.21	2,467.56	2,463.09	5.99	5.89	157.63	162.56	-293.85	461.93	451.01	10.92	42.310		
2,600.00	2,594.97	2,566.61	2,561.90	6.25	6.14	158.02	167.21	-298.96	475.32	463.95	11.37	41.789		
2,700.00	2,694.72	2,665.66	2,660.71	6.51	6.40	158.38	171.86	-304.07	488.73	476.90	11.83	41.310		
2,800.00	2,794.48	2,764.71	2,759.51	6.78	6.65	158.72	176.51	-309.18	502.16	489.88	12.29	40.867		
2,900.00	2,894.23	2,863.76	2,858.32	7.04	6.91	159.05	181.16	-314.29	515.61	502.87	12.74	40.457		
3,000.00	2,993.99	2,962.81	2,957.13	7.30	7.16	159.36	185.81	-319.40	529.07	515.87	13.20	40.077		
3,100.00	3,093.75	3,061.86	3,055.94	7.57	7.42	159.65	190.46	-324.51	542.55	528.89	13.66	39.723		
3,200.00	3,193.50	3,160.91	3,154.75	7.83	7.67	159.93	195.11	-329.62	556.04	541.92	14.12	39.392		
3,300.00	3,293.26	3,259.96	3,253.56	8.09	7.93	160.20	199.76	-334.73	569.54	554.97	14.57	39.083		
3,400.00	3,393.02	3,359.01	3,352.37	8.36	8.18	160.45	204.41	-339.84	583.06	568.03	15.03	38.793		
3,500.00	3,492.77	3,458.06	3,451.18	8.62	8.44	160.69	209.06	-344.95	596.58	581.09	15.49	38.521		
3,600.00	3,592.53	3,557.11	3,549.99	8.89	8.70	160.92	213.71	-350.06	610.11	594.17	15.94	38.265		
3,700.00	3,692.29	3,656.16	3,648.80	9.15	8.95	161.15	218.36	-355.17	623.66	607.26	16.40	38.024		
3,800.00	3,792.04	3,755.21	3,747.61	9.41	9.21	161.36	223.01	-360.28	637.21	620.35	16.86	37.796		
3,900.00	3,891.80	3,854.26	3,846.41	9.68	9.46	161.56	227.66	-365.39	650.77	633.46	17.32	37.581		
4,000.00	3,991.56	3,953.31	3,945.22	9.94	9.72	161.76	232.31	-370.50	664.34	646.57	17.77	37.377		
4,100.00	4,091.31	4,052.36	4,044.03	10.21	9.97	161.94	236.96	-375.61	677.92	659.69	18.23	37.184 SF		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.01	0.01	0.00	0.00	-90.00	0.00	-197.49	197.49					
100.00	100.00	100.01	100.01	0.09	0.09	-90.00	0.00	-197.49	197.49	197.31	0.19	1,055.889		
200.00	200.00	200.01	200.01	0.32	0.32	-90.00	0.00	-197.49	197.49	196.86	0.64	310.244		
300.00	300.00	300.01	300.01	0.54	0.54	-90.00	0.00	-197.49	197.49	196.41	1.09	181.836		
400.00	400.00	400.01	400.01	0.77	0.77	-90.00	0.00	-197.49	197.49	195.96	1.54	128.607 CC, ES		
500.00	499.98	499.99	499.99	0.97	0.99	120.22	0.00	-197.49	198.37	196.40	1.96	101.151		
600.00	599.84	595.64	595.62	1.17	1.21	121.75	1.28	-198.45	202.09	199.72	2.37	85.287		
700.00	699.59	690.54	690.40	1.38	1.42	124.31	5.08	-201.28	209.12	206.33	2.80	74.771		
800.00	799.35	789.11	788.73	1.61	1.65	127.16	10.58	-205.38	217.94	214.70	3.25	67.150		
900.00	899.11	888.14	887.52	1.85	1.89	129.81	16.12	-209.50	227.28	223.58	3.70	61.424		
1,000.00	998.86	987.17	986.31	2.10	2.13	132.24	21.66	-213.63	237.06	232.91	4.16	57.007		
1,100.00	1,098.62	1,086.20	1,085.10	2.35	2.37	134.48	27.20	-217.76	247.24	242.62	4.62	53.532		
1,200.00	1,198.38	1,185.23	1,183.89	2.61	2.62	136.54	32.74	-221.89	257.77	252.69	5.08	50.750		
1,300.00	1,298.13	1,284.26	1,282.68	2.86	2.87	138.44	38.28	-226.01	268.60	263.06	5.54	48.487		
1,400.00	1,397.89	1,383.29	1,381.47	3.12	3.12	140.19	43.82	-230.14	279.70	273.70	6.00	46.621		
1,500.00	1,497.65	1,482.33	1,480.26	3.38	3.37	141.81	49.36	-234.27	291.04	284.58	6.46	45.061		
1,600.00	1,597.40	1,581.36	1,579.05	3.63	3.62	143.30	54.90	-238.40	302.60	295.68	6.92	43.745		
1,700.00	1,697.16	1,680.39	1,677.84	3.89	3.87	144.69	60.44	-242.52	314.34	306.97	7.38	42.622		
1,800.00	1,796.91	1,779.42	1,776.62	4.15	4.12	145.97	65.98	-246.65	326.25	318.42	7.83	41.655		
1,900.00	1,896.67	1,878.45	1,875.41	4.42	4.38	147.17	71.52	-250.78	338.32	330.03	8.29	40.816		
2,000.00	1,996.43	1,977.48	1,974.20	4.68	4.63	148.28	77.05	-254.90	350.52	341.77	8.74	40.082		
2,100.00	2,096.18	2,076.51	2,072.99	4.94	4.88	149.32	82.59	-259.03	362.84	353.64	9.20	39.436		
2,200.00	2,195.94	2,175.54	2,171.78	5.20	5.14	150.28	88.13	-263.16	375.27	365.61	9.66	38.864		
2,300.00	2,295.70	2,274.57	2,270.57	5.46	5.39	151.19	93.67	-267.29	387.80	377.69	10.11	38.354		
2,400.00	2,395.45	2,373.60	2,369.36	5.73	5.64	152.04	99.21	-271.41	400.42	389.85	10.57	37.898		
2,500.00	2,495.21	2,472.63	2,468.15	5.99	5.90	152.84	104.75	-275.54	413.12	402.10	11.02	37.487		
2,600.00	2,594.97	2,571.66	2,566.94	6.25	6.15	153.59	110.29	-279.67	425.89	414.42	11.47	37.116		
2,700.00	2,694.72	2,670.69	2,665.73	6.51	6.41	154.30	115.83	-283.80	438.74	426.81	11.93	36.780		
2,800.00	2,794.48	2,769.72	2,764.52	6.78	6.66	154.96	121.37	-287.92	451.64	439.26	12.38	36.473		
2,900.00	2,894.23	2,868.75	2,863.30	7.04	6.92	155.59	126.91	-292.05	464.61	451.77	12.84	36.192		
3,000.00	2,993.99	2,967.78	2,962.09	7.30	7.17	156.19	132.45	-296.18	477.62	464.33	13.29	35.935		
3,100.00	3,093.75	3,066.81	3,060.88	7.57	7.42	156.75	137.99	-300.31	490.69	476.94	13.75	35.699		
3,200.00	3,193.50	3,165.84	3,159.67	7.83	7.68	157.29	143.53	-304.43	503.79	489.59	14.20	35.480		
3,300.00	3,293.26	3,264.87	3,258.46	8.09	7.93	157.79	149.07	-308.56	516.94	502.29	14.65	35.279		
3,400.00	3,393.02	3,363.90	3,357.25	8.36	8.19	158.28	154.61	-312.69	530.13	515.02	15.11	35.091		
3,500.00	3,492.77	3,462.93	3,456.04	8.62	8.44	158.73	160.15	-316.82	543.35	527.79	15.56	34.917		
3,600.00	3,592.53	3,561.96	3,554.83	8.89	8.70	159.17	165.69	-320.94	556.60	540.59	16.02	34.755		
3,700.00	3,692.29	3,660.99	3,653.62	9.15	8.95	159.59	171.22	-325.07	569.89	553.42	16.47	34.603		
3,800.00	3,792.04	3,760.02	3,752.41	9.41	9.21	159.99	176.76	-329.20	583.20	566.28	16.92	34.462		
3,900.00	3,891.80	3,859.05	3,851.20	9.68	9.46	160.37	182.30	-333.33	596.54	579.16	17.38	34.329		
4,000.00	3,991.56	3,958.08	3,949.98	9.94	9.72	160.73	187.84	-337.45	609.90	592.07	17.83	34.204		
4,100.00	4,091.31	4,057.11	4,048.77	10.21	9.97	161.08	193.38	-341.58	623.29	605.01	18.29	34.086		
4,200.00	4,191.07	4,156.14	4,147.56	10.47	10.23	161.41	198.92	-345.71	636.70	617.96	18.74	33.976		
4,300.00	4,290.82	4,255.17	4,246.35	10.73	10.48	161.73	204.46	-349.83	650.13	630.94	19.19	33.871		
4,400.00	4,390.58	4,354.20	4,345.14	11.00	10.74	162.04	210.00	-353.96	663.58	643.93	19.65	33.773		
4,500.00	4,490.34	4,453.23	4,443.93	11.26	10.99	162.33	215.54	-358.09	677.04	656.94	20.10	33.679 SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-52.72	74.89	-98.36	123.62				
100.00	100.00	100.01	100.01	0.09	0.09	-52.72	74.89	-98.36	123.62	123.44	0.19	660.952	
200.00	200.00	200.01	200.01	0.32	0.32	-52.72	74.89	-98.36	123.62	122.99	0.64	194.203	
300.00	300.00	300.01	300.01	0.54	0.54	-52.72	74.89	-98.36	123.62	122.54	1.09	113.823	
400.00	400.00	400.01	400.01	0.77	0.77	-52.72	74.89	-98.36	123.62	122.09	1.54	80.504 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	157.38	74.89	-98.36	125.23	123.27	1.96	63.788	
600.00	599.84	599.85	599.85	1.17	1.22	158.23	74.89	-98.36	130.08	127.70	2.38	54.609	
700.00	699.59	699.60	699.60	1.38	1.44	159.32	74.89	-98.36	136.58	133.78	2.81	48.652	
800.00	799.35	799.36	799.36	1.61	1.67	160.30	74.89	-98.36	143.13	139.89	3.24	44.152	
900.00	899.11	899.12	899.12	1.85	1.89	161.20	74.89	-98.36	149.72	146.04	3.68	40.665	
1,000.00	998.86	998.87	998.87	2.10	2.11	162.03	74.89	-98.36	156.34	152.22	4.13	37.897	
1,100.00	1,098.62	1,093.51	1,093.49	2.35	2.33	162.90	76.21	-99.12	164.53	159.97	4.56	36.080	
1,200.00	1,198.38	1,187.45	1,187.32	2.61	2.54	163.98	80.20	-101.41	175.91	170.91	5.00	35.203	
1,300.00	1,298.13	1,285.74	1,285.37	2.86	2.76	165.13	86.13	-104.81	189.31	183.86	5.44	34.786	
1,400.00	1,397.89	1,384.77	1,384.15	3.12	2.99	166.13	92.12	-108.25	202.80	196.91	5.89	34.456	
1,500.00	1,497.65	1,483.79	1,482.94	3.38	3.22	167.01	98.11	-111.69	216.34	210.01	6.33	34.173	
1,600.00	1,597.40	1,582.82	1,581.73	3.63	3.46	167.79	104.10	-115.13	229.93	223.16	6.78	33.927	
1,700.00	1,697.16	1,681.85	1,680.51	3.89	3.70	168.48	110.09	-118.56	243.56	236.34	7.22	33.711	
1,800.00	1,796.91	1,780.87	1,779.30	4.15	3.94	169.10	116.08	-122.00	257.22	249.55	7.67	33.520	
1,900.00	1,896.67	1,879.90	1,878.08	4.42	4.18	169.66	122.07	-125.44	270.90	262.78	8.12	33.350	
2,000.00	1,996.43	1,978.93	1,976.87	4.68	4.43	170.16	128.06	-128.88	284.61	276.04	8.57	33.199	
2,100.00	2,096.18	2,077.95	2,075.65	4.94	4.67	170.61	134.06	-132.32	298.34	289.31	9.02	33.062	
2,200.00	2,195.94	2,176.98	2,174.44	5.20	4.92	171.03	140.05	-135.76	312.08	302.61	9.47	32.939	
2,300.00	2,295.70	2,276.01	2,273.22	5.46	5.17	171.41	146.04	-139.19	325.84	315.91	9.93	32.827	
2,400.00	2,395.45	2,375.03	2,372.01	5.73	5.42	171.76	152.03	-142.63	339.61	329.23	10.38	32.724	
2,500.00	2,495.21	2,474.06	2,470.80	5.99	5.67	172.08	158.02	-146.07	353.39	342.56	10.83	32.631	
2,600.00	2,594.97	2,573.09	2,569.58	6.25	5.91	172.38	164.01	-149.51	367.19	355.90	11.28	32.545	
2,700.00	2,694.72	2,672.11	2,668.37	6.51	6.16	172.66	170.00	-152.95	380.99	369.25	11.74	32.465	
2,800.00	2,794.48	2,771.14	2,767.15	6.78	6.41	172.91	176.00	-156.38	394.80	382.61	12.19	32.392	
2,900.00	2,894.23	2,870.17	2,865.94	7.04	6.67	173.15	181.99	-159.82	408.61	395.97	12.64	32.324	
3,000.00	2,993.99	2,969.20	2,964.72	7.30	6.92	173.38	187.98	-163.26	422.44	409.34	13.09	32.261	
3,100.00	3,093.75	3,068.22	3,063.51	7.57	7.17	173.59	193.97	-166.70	436.27	422.72	13.55	32.202	
3,200.00	3,193.50	3,167.25	3,162.29	7.83	7.42	173.78	199.96	-170.14	450.10	436.10	14.00	32.147	
3,300.00	3,293.26	3,266.28	3,261.08	8.09	7.67	173.97	205.95	-173.58	463.94	449.49	14.46	32.095	
3,400.00	3,393.02	3,365.30	3,359.87	8.36	7.92	174.14	211.94	-177.01	477.79	462.88	14.91	32.046	
3,500.00	3,492.77	3,464.33	3,458.65	8.62	8.18	174.31	217.93	-180.45	491.64	476.27	15.36	32.001	
3,600.00	3,592.53	3,563.36	3,557.44	8.89	8.43	174.46	223.93	-183.89	505.49	489.67	15.82	31.958	
3,700.00	3,692.29	3,662.38	3,656.22	9.15	8.68	174.61	229.92	-187.33	519.35	503.07	16.27	31.917	
3,800.00	3,792.04	3,761.41	3,755.01	9.41	8.93	174.75	235.91	-190.77	533.20	516.48	16.73	31.879	
3,900.00	3,891.80	3,860.44	3,853.79	9.68	9.19	174.88	241.90	-194.20	547.07	529.89	17.18	31.843	
4,000.00	3,991.56	3,959.46	3,952.58	9.94	9.44	175.01	247.89	-197.64	560.93	543.30	17.63	31.808	
4,100.00	4,091.31	4,058.49	4,051.36	10.21	9.69	175.13	253.88	-201.08	574.80	556.71	18.09	31.776	
4,200.00	4,191.07	4,157.52	4,150.15	10.47	9.94	175.25	259.87	-204.52	588.67	570.12	18.54	31.745	
4,300.00	4,290.82	4,256.54	4,248.94	10.73	10.20	175.35	265.87	-207.96	602.54	583.54	19.00	31.715	
4,400.00	4,390.58	4,355.57	4,347.72	11.00	10.45	175.46	271.86	-211.40	616.41	596.96	19.45	31.687	
4,500.00	4,490.34	4,454.60	4,446.51	11.26	10.70	175.56	277.85	-214.83	630.29	610.38	19.91	31.660	
4,600.00	4,590.09	4,553.62	4,545.29	11.53	10.96	175.65	283.84	-218.27	644.17	623.81	20.36	31.634	
4,700.00	4,689.85	4,652.65	4,644.08	11.79	11.21	175.74	289.83	-221.71	658.05	637.23	20.82	31.610	
4,800.00	4,789.61	4,751.68	4,742.86	12.05	11.47	175.83	295.82	-225.15	671.93	650.66	21.27	31.587	
4,900.00	4,889.36	4,850.70	4,841.65	12.32	11.72	175.92	301.81	-228.59	685.81	664.08	21.73	31.564 SF	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-90.00	-0.01	-131.41	131.41				
100.00	100.00	100.01	100.01	0.09	0.09	-90.00	-0.01	-131.41	131.41	131.22	0.19	702.556	
200.00	200.00	200.01	200.01	0.32	0.32	-90.00	-0.01	-131.41	131.41	130.77	0.64	206.427	
300.00	300.00	300.01	300.01	0.54	0.54	-90.00	-0.01	-131.41	131.41	130.32	1.09	120.988	
400.00	400.00	400.01	400.01	0.77	0.77	-90.00	-0.01	-131.41	131.41	129.87	1.54	85.571 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	120.44	-0.01	-131.41	132.28	130.32	1.96	67.453	
600.00	599.84	599.85	599.85	1.17	1.22	122.30	-0.01	-131.41	135.01	132.63	2.38	56.719	
700.00	699.59	699.60	699.60	1.38	1.44	124.73	-0.01	-131.41	138.87	136.05	2.82	49.296	
800.00	799.35	799.36	799.36	1.61	1.67	127.03	-0.01	-131.41	142.96	139.70	3.26	43.794	
900.00	899.11	896.96	896.94	1.85	1.89	129.72	1.57	-131.85	148.00	144.29	3.71	39.875	
1,000.00	998.86	993.88	993.73	2.10	2.11	133.29	6.31	-133.18	154.98	150.82	4.16	37.266	
1,100.00	1,098.62	1,092.76	1,092.37	2.35	2.33	137.17	12.94	-135.04	163.56	158.95	4.61	35.453	
1,200.00	1,198.38	1,191.80	1,191.17	2.61	2.56	140.66	19.59	-136.90	172.83	167.76	5.07	34.097	
1,300.00	1,298.13	1,290.84	1,289.97	2.86	2.80	143.78	26.25	-138.77	182.67	177.14	5.52	33.066	
1,400.00	1,397.89	1,389.88	1,388.77	3.12	3.04	146.58	32.90	-140.64	192.99	187.01	5.98	32.274	
1,500.00	1,497.65	1,488.92	1,487.57	3.38	3.28	149.10	39.55	-142.50	203.74	197.30	6.43	31.661	
1,600.00	1,597.40	1,587.97	1,586.37	3.63	3.52	151.36	46.20	-144.37	214.83	207.94	6.89	31.183	
1,700.00	1,697.16	1,687.01	1,685.17	3.89	3.77	153.40	52.85	-146.23	226.22	218.88	7.34	30.805	
1,800.00	1,796.91	1,786.05	1,783.97	4.15	4.01	155.24	59.51	-148.10	237.87	230.07	7.80	30.508	
1,900.00	1,896.67	1,885.09	1,882.77	4.42	4.26	156.91	66.16	-149.97	249.74	241.49	8.25	30.271	
2,000.00	1,996.43	1,984.13	1,981.57	4.68	4.51	158.42	72.81	-151.83	261.80	253.09	8.70	30.081	
2,100.00	2,096.18	2,083.17	2,080.37	4.94	4.76	159.80	79.46	-153.70	274.02	264.87	9.16	29.929	
2,200.00	2,195.94	2,182.21	2,179.17	5.20	5.01	161.07	86.11	-155.56	286.39	276.78	9.61	29.806	
2,300.00	2,295.70	2,281.26	2,277.97	5.46	5.26	162.23	92.77	-157.43	298.89	288.83	10.06	29.708	
2,400.00	2,395.45	2,380.30	2,376.77	5.73	5.51	163.29	99.42	-159.30	311.50	300.98	10.51	29.628	
2,500.00	2,495.21	2,479.34	2,475.57	5.99	5.76	164.28	106.07	-161.16	324.20	313.24	10.97	29.564	
2,600.00	2,594.97	2,578.38	2,574.37	6.25	6.01	165.19	112.72	-163.03	336.99	325.58	11.42	29.513	
2,700.00	2,694.72	2,677.42	2,673.17	6.51	6.26	166.03	119.37	-164.89	349.86	337.99	11.87	29.472	
2,800.00	2,794.48	2,776.46	2,771.97	6.78	6.51	166.81	126.03	-166.76	362.80	350.48	12.32	29.439	
2,900.00	2,894.23	2,875.51	2,870.77	7.04	6.76	167.54	132.68	-168.63	375.80	363.03	12.78	29.413	
3,000.00	2,993.99	2,974.55	2,969.57	7.30	7.02	168.22	139.33	-170.49	388.86	375.63	13.23	29.394	
3,100.00	3,093.75	3,073.59	3,068.37	7.57	7.27	168.86	145.98	-172.36	401.97	388.29	13.68	29.379	
3,200.00	3,193.50	3,172.63	3,167.18	7.83	7.52	169.45	152.63	-174.22	415.12	400.99	14.14	29.368	
3,300.00	3,293.26	3,271.67	3,265.98	8.09	7.77	170.01	159.29	-176.09	428.32	413.73	14.59	29.360	
3,400.00	3,393.02	3,370.71	3,364.78	8.36	8.02	170.54	165.94	-177.96	441.55	426.51	15.04	29.355	
3,500.00	3,492.77	3,469.75	3,463.58	8.62	8.28	171.03	172.59	-179.82	454.82	439.32	15.50	29.352	
3,600.00	3,592.53	3,568.80	3,562.38	8.89	8.53	171.50	179.24	-181.69	468.12	452.17	15.95	29.352 SF	
3,700.00	3,692.29	3,667.84	3,661.18	9.15	8.78	171.94	185.89	-183.55	481.44	465.04	16.40	29.352	
3,800.00	3,792.04	3,766.88	3,759.98	9.41	9.04	172.36	192.55	-185.42	494.80	477.94	16.86	29.355	
3,900.00	3,891.80	3,865.92	3,858.78	9.68	9.29	172.75	199.20	-187.29	508.18	490.87	17.31	29.358	
4,000.00	3,991.56	3,964.96	3,957.58	9.94	9.54	173.13	205.85	-189.15	521.58	503.82	17.76	29.363	
4,100.00	4,091.31	4,064.00	4,056.38	10.21	9.80	173.49	212.50	-191.02	535.00	516.78	18.22	29.368	
4,200.00	4,191.07	4,163.05	4,155.18	10.47	10.05	173.82	219.15	-192.88	548.44	529.77	18.67	29.374	
4,300.00	4,290.82	4,262.09	4,253.98	10.73	10.30	174.15	225.81	-194.75	561.90	542.78	19.13	29.380	
4,400.00	4,390.58	4,361.13	4,352.78	11.00	10.56	174.45	232.46	-196.62	575.38	555.80	19.58	29.387	
4,500.00	4,490.34	4,460.17	4,451.58	11.26	10.81	174.75	239.11	-198.48	588.87	568.84	20.03	29.394	
4,600.00	4,590.09	4,559.21	4,550.38	11.53	11.06	175.03	245.76	-200.35	602.38	581.89	20.49	29.401	
4,700.00	4,689.85	4,658.25	4,649.18	11.79	11.32	175.30	252.41	-202.21	615.90	594.95	20.94	29.409	
4,800.00	4,789.61	4,757.29	4,747.98	12.05	11.57	175.55	259.07	-204.08	629.43	608.03	21.40	29.417	
4,900.00	4,889.36	4,856.34	4,846.78	12.32	11.82	175.80	265.72	-205.95	642.97	621.12	21.85	29.425	
5,000.00	4,989.12	4,955.38	4,945.58	12.58	12.08	176.04	272.37	-207.81	656.53	634.22	22.31	29.433	
5,100.00	5,088.88	5,054.42	5,044.38	12.85	12.33	176.26	279.02	-209.68	670.10	647.33	22.76	29.441	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design											S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2			Offset Site Error:		0.00 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance						Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore +N/-S	Centre +E/-W	Between Centres	Between Ellipses	Total Uncertainty	Separation Factor				
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	Axis					
5,200.00	5,188.63	5,153.46	5,143.18	13.11	12.58	176.48	285.67	-211.54	683.67	660.46	23.22	29.449				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-23.81	74.89	-33.04	81.85				
100.00	100.00	100.01	100.01	0.09	0.09	-23.81	74.89	-33.04	81.85	81.66	0.19	437.617	
200.00	200.00	200.01	200.01	0.32	0.32	-23.81	74.89	-33.04	81.85	81.21	0.64	128.582	
300.00	300.00	300.01	300.01	0.54	0.54	-23.81	74.89	-33.04	81.85	80.77	1.09	75.363	
400.00	400.00	400.01	400.01	0.77	0.77	-23.81	74.89	-33.04	81.85	80.32	1.54	53.301 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	-174.13	74.89	-33.04	83.59	81.62	1.96	42.555	
600.00	599.84	599.85	599.85	1.17	1.22	-174.47	74.89	-33.04	88.79	86.41	2.38	37.252	
700.00	699.59	699.60	699.60	1.38	1.44	-174.87	74.89	-33.04	95.74	92.93	2.81	34.109	
800.00	799.35	799.36	799.36	1.61	1.67	-175.22	74.89	-33.04	102.69	99.45	3.24	31.708	
900.00	899.11	899.12	899.12	1.85	1.89	-175.52	74.89	-33.04	109.64	105.97	3.68	29.829	
1,000.00	998.86	998.87	998.87	2.10	2.11	-175.79	74.89	-33.04	116.60	112.48	4.12	28.325	
1,100.00	1,098.62	1,098.63	1,098.63	2.35	2.34	-176.03	74.89	-33.04	123.56	119.00	4.56	27.097	
1,200.00	1,198.38	1,194.36	1,194.34	2.61	2.55	-175.98	76.43	-33.16	132.02	127.02	5.00	26.414	
1,300.00	1,298.13	1,289.43	1,289.29	2.86	2.77	-175.47	81.13	-33.50	143.57	138.13	5.44	26.393 SF	
1,400.00	1,397.89	1,388.01	1,387.63	3.12	2.99	-174.76	87.97	-34.01	157.00	151.11	5.89	26.663	
1,500.00	1,497.65	1,487.08	1,486.46	3.38	3.22	-174.16	94.86	-34.52	170.47	164.13	6.34	26.906	
1,600.00	1,597.40	1,586.16	1,585.30	3.63	3.45	-173.65	101.75	-35.03	183.95	177.17	6.78	27.114	
1,700.00	1,697.16	1,685.23	1,684.13	3.89	3.69	-173.20	108.64	-35.53	197.44	190.21	7.23	27.293	
1,800.00	1,796.91	1,784.30	1,782.96	4.15	3.93	-172.82	115.54	-36.04	210.95	203.26	7.69	27.449	
1,900.00	1,896.67	1,883.38	1,881.80	4.42	4.17	-172.47	122.43	-36.55	224.46	216.33	8.14	27.584	
2,000.00	1,996.43	1,982.45	1,980.63	4.68	4.41	-172.17	129.32	-37.06	237.98	229.39	8.59	27.705	
2,100.00	2,096.18	2,081.53	2,079.46	4.94	4.65	-171.90	136.21	-37.57	251.51	242.47	9.04	27.812	
2,200.00	2,195.94	2,180.60	2,178.29	5.20	4.89	-171.66	143.11	-38.08	265.04	255.54	9.50	27.908	
2,300.00	2,295.70	2,279.68	2,277.13	5.46	5.14	-171.44	150.00	-38.59	278.57	268.62	9.95	27.994	
2,400.00	2,395.45	2,378.75	2,375.96	5.73	5.39	-171.25	156.89	-39.09	292.11	281.71	10.41	28.072	
2,500.00	2,495.21	2,477.83	2,474.79	5.99	5.63	-171.07	163.78	-39.60	305.65	294.79	10.86	28.143	
2,600.00	2,594.97	2,576.90	2,573.63	6.25	5.88	-170.90	170.68	-40.11	319.20	307.88	11.32	28.208	
2,700.00	2,694.72	2,675.97	2,672.46	6.51	6.13	-170.75	177.57	-40.62	332.74	320.97	11.77	28.267	
2,800.00	2,794.48	2,775.05	2,771.29	6.78	6.38	-170.61	184.46	-41.13	346.29	334.07	12.23	28.321	
2,900.00	2,894.23	2,874.12	2,870.13	7.04	6.62	-170.48	191.35	-41.64	359.84	347.16	12.68	28.372	
3,000.00	2,993.99	2,973.20	2,968.96	7.30	6.87	-170.36	198.24	-42.15	373.40	360.26	13.14	28.418	
3,100.00	3,093.75	3,072.27	3,067.79	7.57	7.12	-170.25	205.14	-42.65	386.95	373.35	13.60	28.461	
3,200.00	3,193.50	3,171.35	3,166.63	7.83	7.37	-170.14	212.03	-43.16	400.51	386.45	14.05	28.501	
3,300.00	3,293.26	3,270.42	3,265.46	8.09	7.62	-170.05	218.92	-43.67	414.06	399.55	14.51	28.539	
3,400.00	3,393.02	3,369.50	3,364.29	8.36	7.87	-169.96	225.81	-44.18	427.62	412.65	14.97	28.574	
3,500.00	3,492.77	3,468.57	3,463.13	8.62	8.12	-169.87	232.71	-44.69	441.18	425.76	15.42	28.607	
3,600.00	3,592.53	3,567.65	3,561.96	8.89	8.37	-169.79	239.60	-45.20	454.74	438.86	15.88	28.637	
3,700.00	3,692.29	3,666.72	3,660.79	9.15	8.63	-169.72	246.49	-45.71	468.30	451.96	16.34	28.666	
3,800.00	3,792.04	3,765.79	3,759.63	9.41	8.88	-169.64	253.38	-46.21	481.86	465.07	16.79	28.694	
3,900.00	3,891.80	3,864.87	3,858.46	9.68	9.13	-169.58	260.28	-46.72	495.42	478.17	17.25	28.719	
4,000.00	3,991.56	3,963.94	3,957.29	9.94	9.38	-169.51	267.17	-47.23	508.98	491.27	17.71	28.744	
4,100.00	4,091.31	4,063.02	4,056.12	10.21	9.63	-169.45	274.06	-47.74	522.55	504.38	18.16	28.767	
4,200.00	4,191.07	4,162.09	4,154.96	10.47	9.88	-169.39	280.95	-48.25	536.11	517.49	18.62	28.789	
4,300.00	4,290.82	4,261.17	4,253.79	10.73	10.13	-169.34	287.85	-48.76	549.67	530.59	19.08	28.809	
4,400.00	4,390.58	4,360.24	4,352.62	11.00	10.39	-169.29	294.74	-49.27	563.24	543.70	19.54	28.829	
4,500.00	4,490.34	4,459.32	4,451.46	11.26	10.64	-169.24	301.63	-49.77	576.80	556.81	19.99	28.848	
4,600.00	4,590.09	4,558.39	4,550.29	11.53	10.89	-169.19	308.52	-50.28	590.37	569.91	20.45	28.866	
4,700.00	4,689.85	4,657.46	4,649.12	11.79	11.14	-169.15	315.41	-50.79	603.93	583.02	20.91	28.883	
4,800.00	4,789.61	4,756.54	4,747.96	12.05	11.40	-169.10	322.31	-51.30	617.50	596.13	21.37	28.899	
4,900.00	4,889.36	4,855.61	4,846.79	12.32	11.65	-169.06	329.20	-51.81	631.06	609.24	21.83	28.915	
5,000.00	4,989.12	4,954.69	4,945.62	12.58	11.90	-169.02	336.09	-52.32	644.63	622.35	22.28	28.930	
5,100.00	5,088.88	5,053.76	5,044.46	12.85	12.15	-168.98	342.98	-52.83	658.20	635.46	22.74	28.944	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
5,200.00	5,188.63	5,152.84	5,143.29	13.11	12.41	-168.95	349.88	-53.33	671.77	648.57	23.20	28.958		
5,300.00	5,288.39	5,251.91	5,242.12	13.38	12.66	-168.91	356.77	-53.84	685.33	661.68	23.66	28.971		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-90.01	-0.02	-65.32	65.32				
100.00	100.00	100.01	100.01	0.09	0.09	-90.01	-0.02	-65.32	65.32	65.13	0.19	349.224	
200.00	200.00	200.01	200.01	0.32	0.32	-90.01	-0.02	-65.32	65.32	64.68	0.64	102.610	
300.00	300.00	300.01	300.01	0.54	0.54	-90.01	-0.02	-65.32	65.32	64.23	1.09	60.140	
400.00	400.00	400.01	400.01	0.77	0.77	-90.01	-0.02	-65.32	65.32	63.78	1.54	42.535 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	121.08	-0.02	-65.32	66.20	64.24	1.96	33.758	
600.00	599.84	599.85	599.85	1.17	1.22	124.75	-0.02	-65.32	69.05	66.67	2.38	29.009	
700.00	699.59	699.60	699.60	1.38	1.44	129.23	-0.02	-65.32	73.26	70.44	2.82	26.020	
800.00	799.35	799.42	799.40	1.61	1.67	134.48	1.65	-64.85	77.82	74.56	3.26	23.892	
900.00	899.11	898.66	898.50	1.85	1.89	141.45	6.62	-63.47	83.26	79.56	3.70	22.504	
1,000.00	998.86	997.83	997.42	2.10	2.12	148.59	13.28	-61.61	90.17	86.02	4.15	21.739	
1,100.00	1,098.62	1,097.00	1,096.35	2.35	2.35	154.64	19.94	-59.75	98.28	93.68	4.60	21.371	
1,200.00	1,198.38	1,196.17	1,195.28	2.61	2.59	159.73	26.60	-57.89	107.32	102.27	5.05	21.244 SF	
1,300.00	1,298.13	1,295.34	1,294.22	2.86	2.83	164.01	33.27	-56.03	117.07	111.56	5.51	21.263	
1,400.00	1,397.89	1,394.51	1,393.15	3.12	3.07	167.62	39.93	-54.17	127.37	121.41	5.96	21.367	
1,500.00	1,497.65	1,493.68	1,492.08	3.38	3.32	170.68	46.59	-52.30	138.10	131.68	6.42	21.521	
1,600.00	1,597.40	1,592.86	1,591.01	3.63	3.56	173.29	53.26	-50.44	149.16	142.29	6.87	21.700	
1,700.00	1,697.16	1,692.03	1,689.94	3.89	3.81	175.55	59.92	-48.58	160.49	153.16	7.33	21.891	
1,800.00	1,796.91	1,791.20	1,788.87	4.15	4.06	177.50	66.58	-46.72	172.04	164.25	7.79	22.084	
1,900.00	1,896.67	1,890.37	1,887.80	4.42	4.31	179.21	73.25	-44.86	183.75	175.50	8.25	22.276	
2,000.00	1,996.43	1,989.54	1,986.73	4.68	4.56	-179.29	79.91	-43.00	195.61	186.90	8.71	22.462	
2,100.00	2,096.18	2,088.71	2,085.66	4.94	4.81	-177.96	86.57	-41.14	207.58	198.41	9.17	22.642	
2,200.00	2,195.94	2,187.89	2,184.59	5.20	5.06	-176.78	93.23	-39.28	219.65	210.02	9.63	22.813	
2,300.00	2,295.70	2,287.06	2,283.52	5.46	5.31	-175.72	99.90	-37.42	231.81	221.72	10.09	22.976	
2,400.00	2,395.45	2,386.23	2,382.45	5.73	5.56	-174.76	106.56	-35.56	244.03	233.48	10.55	23.130	
2,500.00	2,495.21	2,485.40	2,481.38	5.99	5.81	-173.90	113.22	-33.70	256.32	245.31	11.01	23.277	
2,600.00	2,594.97	2,584.57	2,580.31	6.25	6.06	-173.12	119.89	-31.84	268.66	257.19	11.47	23.416	
2,700.00	2,694.72	2,683.74	2,679.24	6.51	6.31	-172.40	126.55	-29.98	281.04	269.11	11.94	23.547	
2,800.00	2,794.48	2,782.92	2,778.17	6.78	6.56	-171.75	133.21	-28.12	293.47	281.07	12.40	23.671	
2,900.00	2,894.23	2,882.09	2,877.10	7.04	6.82	-171.14	139.88	-26.26	305.92	293.06	12.86	23.789	
3,000.00	2,993.99	2,981.26	2,976.03	7.30	7.07	-170.59	146.54	-24.40	318.41	305.09	13.32	23.900	
3,100.00	3,093.75	3,080.43	3,074.96	7.57	7.32	-170.08	153.20	-22.54	330.93	317.14	13.79	24.006	
3,200.00	3,193.50	3,179.60	3,173.89	7.83	7.57	-169.60	159.86	-20.68	343.47	329.22	14.25	24.106	
3,300.00	3,293.26	3,278.78	3,272.82	8.09	7.83	-169.16	166.53	-18.82	356.03	341.32	14.71	24.201	
3,400.00	3,393.02	3,377.95	3,371.75	8.36	8.08	-168.75	173.19	-16.96	368.61	353.44	15.17	24.291	
3,500.00	3,492.77	3,477.12	3,470.68	8.62	8.33	-168.36	179.85	-15.10	381.21	365.57	15.64	24.377	
3,600.00	3,592.53	3,576.29	3,569.61	8.89	8.58	-168.00	186.52	-13.24	393.83	377.72	16.10	24.459	
3,700.00	3,692.29	3,675.46	3,668.54	9.15	8.84	-167.67	193.18	-11.38	406.45	389.89	16.56	24.537	
3,800.00	3,792.04	3,774.63	3,767.47	9.41	9.09	-167.35	199.84	-9.52	419.10	402.07	17.03	24.611	
3,900.00	3,891.80	3,873.81	3,866.40	9.68	9.34	-167.05	206.51	-7.66	431.75	414.26	17.49	24.682	
4,000.00	3,991.56	3,972.98	3,965.33	9.94	9.60	-166.77	213.17	-5.80	444.42	426.46	17.96	24.750	
4,100.00	4,091.31	4,072.15	4,064.26	10.21	9.85	-166.50	219.83	-3.94	457.09	438.67	18.42	24.815	
4,200.00	4,191.07	4,171.32	4,163.19	10.47	10.10	-166.25	226.50	-2.07	469.77	450.89	18.88	24.877	
4,300.00	4,290.82	4,270.49	4,262.12	10.73	10.36	-166.01	233.16	-0.21	482.47	463.12	19.35	24.936	
4,400.00	4,390.58	4,369.66	4,361.05	11.00	10.61	-165.78	239.82	1.65	495.17	475.36	19.81	24.993	
4,500.00	4,490.34	4,468.84	4,459.98	11.26	10.86	-165.57	246.48	3.51	507.87	487.60	20.28	25.048	
4,600.00	4,590.09	4,568.01	4,558.91	11.53	11.12	-165.36	253.15	5.37	520.59	499.85	20.74	25.100	
4,700.00	4,689.85	4,667.18	4,657.84	11.79	11.37	-165.17	259.81	7.23	533.31	512.10	21.20	25.151	
4,800.00	4,789.61	4,766.35	4,756.77	12.05	11.62	-164.98	266.47	9.09	546.04	524.37	21.67	25.199	
4,900.00	4,889.36	4,865.52	4,855.70	12.32	11.88	-164.81	273.14	10.95	558.77	536.63	22.13	25.246	
5,000.00	4,989.12	4,964.69	4,954.63	12.58	12.13	-164.64	279.80	12.81	571.50	548.91	22.60	25.291	
5,100.00	5,088.88	5,063.87	5,053.56	12.85	12.38	-164.48	286.46	14.67	584.25	561.18	23.06	25.334	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design												S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2		Offset Site Error:		0.00 usft	
Survey Program:												0-ISCWSA MWD		Offset Well Error:		0.00 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					
5,200.00	5,188.63	5,163.04	5,152.49	13.11	12.64	-164.32	293.13	16.53	596.99	573.46	23.53	25.375					
5,300.00	5,288.39	5,262.21	5,251.42	13.38	12.89	-164.17	299.79	18.39	609.74	585.75	23.99	25.416					
5,400.00	5,387.74	5,360.80	5,349.77	13.67	13.14	-163.77	306.41	20.24	625.99	601.84	24.15	25.918					
5,500.00	5,483.56	5,446.64	5,435.40	14.14	13.36	-163.02	312.23	21.86	658.88	635.36	23.51	28.024					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	23.81	74.89	33.04	81.86				
100.00	100.00	100.01	100.01	0.09	0.09	23.81	74.89	33.04	81.86	81.67	0.19	437.655	
200.00	200.00	200.01	200.01	0.32	0.32	23.81	74.89	33.04	81.86	81.22	0.64	128.593	
300.00	300.00	300.01	300.01	0.54	0.54	23.81	74.89	33.04	81.86	80.77	1.09	75.369	
400.00	400.00	400.01	400.01	0.77	0.77	23.81	74.89	33.04	81.86	80.32	1.54	53.306 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	-127.35	74.89	33.04	82.91	80.94	1.96	42.249	
600.00	599.84	599.85	599.85	1.17	1.22	-130.06	74.89	33.04	86.18	83.80	2.38	36.171	
700.00	699.59	699.60	699.60	1.38	1.44	-133.43	74.89	33.04	90.84	88.02	2.82	32.249	
800.00	799.35	799.36	799.36	1.61	1.67	-136.46	74.89	33.04	95.77	92.51	3.26	29.385	
900.00	899.11	899.12	899.12	1.85	1.89	-139.18	74.89	33.04	100.95	97.24	3.71	27.239	
1,000.00	998.86	998.87	998.87	2.10	2.11	-141.64	74.89	33.04	106.33	102.17	4.15	25.591	
1,100.00	1,098.62	1,098.63	1,098.63	2.35	2.34	-143.85	74.89	33.04	111.89	107.28	4.60	24.297	
1,200.00	1,198.38	1,198.39	1,198.39	2.61	2.56	-145.86	74.89	33.04	117.60	112.54	5.06	23.261	
1,300.00	1,298.13	1,294.36	1,294.35	2.86	2.78	-147.33	76.30	33.71	124.93	119.43	5.50	22.716 SF	
1,400.00	1,397.89	1,389.81	1,389.67	3.12	2.99	-148.08	80.57	35.74	135.38	129.43	5.95	22.764	
1,500.00	1,497.65	1,488.61	1,488.23	3.38	3.22	-148.44	86.78	38.69	147.67	141.27	6.40	23.064	
1,600.00	1,597.40	1,587.84	1,587.22	3.63	3.44	-148.74	93.03	41.66	159.99	153.13	6.86	23.329	
1,700.00	1,697.16	1,687.08	1,686.22	3.89	3.67	-149.00	99.29	44.63	172.30	164.99	7.31	23.557	
1,800.00	1,796.91	1,786.31	1,785.21	4.15	3.91	-149.22	105.54	47.60	184.62	176.85	7.77	23.754	
1,900.00	1,896.67	1,885.55	1,884.20	4.42	4.14	-149.42	111.79	50.56	196.95	188.72	8.23	23.925	
2,000.00	1,996.43	1,984.79	1,983.20	4.68	4.38	-149.59	118.05	53.53	209.27	200.58	8.69	24.075	
2,100.00	2,096.18	2,084.02	2,082.19	4.94	4.62	-149.74	124.30	56.50	221.60	212.45	9.15	24.209	
2,200.00	2,195.94	2,183.26	2,181.19	5.20	4.87	-149.88	130.55	59.47	233.93	224.31	9.62	24.327	
2,300.00	2,295.70	2,282.49	2,280.18	5.46	5.11	-150.00	136.81	62.44	246.26	236.18	10.08	24.433	
2,400.00	2,395.45	2,381.73	2,379.17	5.73	5.35	-150.12	143.06	65.41	258.59	248.04	10.54	24.529	
2,500.00	2,495.21	2,480.96	2,478.17	5.99	5.60	-150.22	149.31	68.38	270.92	259.91	11.01	24.615	
2,600.00	2,594.97	2,580.20	2,577.16	6.25	5.84	-150.31	155.57	71.35	283.25	271.78	11.47	24.693	
2,700.00	2,694.72	2,679.44	2,676.16	6.51	6.09	-150.39	161.82	74.32	295.58	283.65	11.94	24.765	
2,800.00	2,794.48	2,778.67	2,775.15	6.78	6.34	-150.47	168.07	77.29	307.92	295.52	12.40	24.830	
2,900.00	2,894.23	2,877.91	2,874.14	7.04	6.59	-150.54	174.33	80.26	320.25	307.38	12.87	24.890	
3,000.00	2,993.99	2,977.14	2,973.14	7.30	6.83	-150.61	180.58	83.23	332.58	319.25	13.33	24.945	
3,100.00	3,093.75	3,076.38	3,072.13	7.57	7.08	-150.67	186.83	86.20	344.92	331.12	13.80	24.997	
3,200.00	3,193.50	3,175.61	3,171.13	7.83	7.33	-150.73	193.08	89.16	357.25	342.99	14.27	25.044	
3,300.00	3,293.26	3,274.85	3,270.12	8.09	7.58	-150.78	199.34	92.13	369.59	354.86	14.73	25.088	
3,400.00	3,393.02	3,374.09	3,369.11	8.36	7.83	-150.83	205.59	95.10	381.93	366.73	15.20	25.129	
3,500.00	3,492.77	3,473.32	3,468.11	8.62	8.08	-150.88	211.84	98.07	394.26	378.60	15.67	25.167	
3,600.00	3,592.53	3,572.56	3,567.10	8.89	8.33	-150.93	218.10	101.04	406.60	390.46	16.13	25.203	
3,700.00	3,692.29	3,671.79	3,666.10	9.15	8.58	-150.97	224.35	104.01	418.93	402.33	16.60	25.237	
3,800.00	3,792.04	3,771.03	3,765.09	9.41	8.84	-151.01	230.60	106.98	431.27	414.20	17.07	25.268	
3,900.00	3,891.80	3,870.26	3,864.08	9.68	9.09	-151.04	236.86	109.95	443.61	426.07	17.54	25.298	
4,000.00	3,991.56	3,969.50	3,963.08	9.94	9.34	-151.08	243.11	112.92	455.94	437.94	18.00	25.326	
4,100.00	4,091.31	4,068.74	4,062.07	10.21	9.59	-151.11	249.36	115.89	468.28	449.81	18.47	25.352	
4,200.00	4,191.07	4,167.97	4,161.07	10.47	9.84	-151.14	255.62	118.86	480.62	461.68	18.94	25.377	
4,300.00	4,290.82	4,267.21	4,260.06	10.73	10.09	-151.17	261.87	121.83	492.96	473.55	19.41	25.401	
4,400.00	4,390.58	4,366.44	4,359.05	11.00	10.35	-151.20	268.12	124.80	505.29	485.42	19.88	25.423	
4,500.00	4,490.34	4,465.68	4,458.05	11.26	10.60	-151.23	274.38	127.76	517.63	497.29	20.34	25.445	
4,600.00	4,590.09	4,564.91	4,557.04	11.53	10.85	-151.26	280.63	130.73	529.97	509.16	20.81	25.465	
4,700.00	4,689.85	4,664.15	4,656.04	11.79	11.10	-151.28	286.88	133.70	542.31	521.03	21.28	25.484	
4,800.00	4,789.61	4,763.39	4,755.03	12.05	11.35	-151.30	293.14	136.67	554.65	532.90	21.75	25.503	
4,900.00	4,889.36	4,862.62	4,854.02	12.32	11.61	-151.33	299.39	139.64	566.98	544.77	22.22	25.520	
5,000.00	4,989.12	4,961.86	4,953.02	12.58	11.86	-151.35	305.64	142.61	579.32	556.64	22.69	25.537	
5,100.00	5,088.88	5,061.09	5,052.01	12.85	12.11	-151.37	311.90	145.58	591.66	568.51	23.15	25.553	

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 Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design										S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2				Offset Site Error:		0.00 usft
Survey Program: 0-ISCWSA MWD														Offset Well Error:		0.00 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				
5,200.00	5,188.63	5,160.33	5,151.01	13.11	12.37	-151.39	318.15	148.55	604.00	580.37	23.62	25.568				
5,300.00	5,288.39	5,259.56	5,250.00	13.38	12.62	-151.41	324.40	151.52	616.34	592.24	24.09	25.583				
5,400.00	5,387.74	5,349.99	5,340.19	13.67	12.85	-150.95	330.27	154.30	632.09	607.79	24.31	26.006				
5,500.00	5,483.56	5,399.99	5,389.65	14.14	13.00	-149.23	336.78	157.39	668.16	644.26	23.90	27.962				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-180.00	-0.03	0.00	0.03	-0.16	0.19	0.168	Level 1
100.00	100.00	100.01	100.01	0.09	0.09	-180.00	-0.03	0.00	0.03	-0.61	0.64	0.049	Level 1
200.00	200.00	200.01	200.01	0.32	0.32	-180.00	-0.03	0.00	0.03	-1.05	1.09	0.029	Level 1
300.00	300.00	300.01	300.01	0.54	0.54	-180.00	-0.03	0.00	0.03	-1.50	1.54	0.020	Level 1, CC, ES, SF
400.00	400.00	400.01	400.01	0.77	0.77	-180.00	-0.03	0.00	0.03	-1.50	1.54	0.020	Level 1, CC, ES, SF
500.00	499.98	499.99	499.99	0.97	0.99	179.48	-0.03	0.00	1.72	-0.25	1.96	0.875	Level 1
600.00	599.84	599.85	599.85	1.17	1.22	179.87	-0.03	0.00	6.95	4.57	2.38	2.917	
700.00	699.59	699.60	699.60	1.38	1.44	179.94	-0.03	0.00	13.93	11.12	2.81	4.962	
800.00	799.35	799.36	799.36	1.61	1.67	179.96	-0.03	0.00	20.90	17.66	3.24	6.455	
900.00	899.11	898.70	898.68	1.85	1.89	-176.88	1.32	1.03	28.59	24.92	3.67	7.783	
1,000.00	998.86	997.62	997.46	2.10	2.11	-170.49	5.40	4.11	38.07	33.95	4.12	9.247	
1,100.00	1,098.62	1,096.92	1,096.52	2.35	2.34	-164.95	10.92	8.29	48.92	44.35	4.57	10.703	
1,200.00	1,198.38	1,196.24	1,195.60	2.61	2.57	-161.44	16.45	12.48	60.06	55.03	5.03	11.947	
1,300.00	1,298.13	1,295.57	1,294.69	2.86	2.80	-159.03	21.97	16.66	71.35	65.86	5.49	13.003	
1,400.00	1,397.89	1,394.89	1,393.77	3.12	3.04	-157.28	27.49	20.84	82.73	76.78	5.95	13.905	
1,500.00	1,497.65	1,494.21	1,492.85	3.38	3.28	-155.95	33.02	25.02	94.17	87.76	6.41	14.681	
1,600.00	1,597.40	1,593.54	1,591.93	3.63	3.53	-154.91	38.54	29.20	105.65	98.77	6.88	15.354	
1,700.00	1,697.16	1,692.86	1,691.01	3.89	3.77	-154.08	44.07	33.39	117.16	109.81	7.35	15.943	
1,800.00	1,796.91	1,792.18	1,790.09	4.15	4.02	-153.39	49.59	37.57	128.68	120.87	7.82	16.461	
1,900.00	1,896.67	1,891.50	1,889.17	4.42	4.27	-152.82	55.11	41.75	140.23	131.94	8.29	16.921	
2,000.00	1,996.43	1,990.83	1,988.25	4.68	4.52	-152.34	60.64	45.93	151.78	143.02	8.76	17.331	
2,100.00	2,096.18	2,090.15	2,087.33	4.94	4.76	-151.92	66.16	50.12	163.34	154.11	9.23	17.700	
2,200.00	2,195.94	2,189.47	2,186.41	5.20	5.01	-151.56	71.68	54.30	174.91	165.21	9.70	18.032	
2,300.00	2,295.70	2,288.79	2,285.49	5.46	5.26	-151.24	77.21	58.48	186.49	176.32	10.17	18.333	
2,400.00	2,395.45	2,388.12	2,384.57	5.73	5.52	-150.96	82.73	62.66	198.07	187.43	10.64	18.608	
2,500.00	2,495.21	2,487.44	2,483.65	5.99	5.77	-150.71	88.26	66.84	209.66	198.54	11.12	18.858	
2,600.00	2,594.97	2,586.76	2,582.74	6.25	6.02	-150.49	93.78	71.03	221.25	209.66	11.59	19.088	
2,700.00	2,694.72	2,686.09	2,681.82	6.51	6.27	-150.29	99.30	75.21	232.84	220.77	12.06	19.300	
2,800.00	2,794.48	2,785.41	2,780.90	6.78	6.52	-150.11	104.83	79.39	244.43	231.89	12.54	19.496	
2,900.00	2,894.23	2,884.73	2,879.98	7.04	6.78	-149.94	110.35	83.57	256.03	243.02	13.01	19.677	
3,000.00	2,993.99	2,984.05	2,979.06	7.30	7.03	-149.79	115.87	87.75	267.63	254.14	13.49	19.846	
3,100.00	3,093.75	3,083.38	3,078.14	7.57	7.28	-149.66	121.40	91.94	279.23	265.27	13.96	20.003	
3,200.00	3,193.50	3,182.70	3,177.22	7.83	7.53	-149.53	126.92	96.12	290.83	276.40	14.43	20.149	
3,300.00	3,293.26	3,282.02	3,276.30	8.09	7.79	-149.41	132.45	100.30	302.43	287.52	14.91	20.286	
3,400.00	3,393.02	3,381.34	3,375.38	8.36	8.04	-149.30	137.97	104.48	314.04	298.65	15.38	20.415	
3,500.00	3,492.77	3,480.67	3,474.46	8.62	8.29	-149.20	143.49	108.67	325.64	309.78	15.86	20.535	
3,600.00	3,592.53	3,579.99	3,573.54	8.89	8.55	-149.11	149.02	112.85	337.25	320.92	16.33	20.649	
3,700.00	3,692.29	3,679.31	3,672.62	9.15	8.80	-149.02	154.54	117.03	348.86	332.05	16.81	20.756	
3,800.00	3,792.04	3,778.64	3,771.70	9.41	9.06	-148.94	160.06	121.21	360.46	343.18	17.28	20.857	
3,900.00	3,891.80	3,877.96	3,870.79	9.68	9.31	-148.86	165.59	125.39	372.07	354.31	17.76	20.953	
4,000.00	3,991.56	3,977.28	3,969.87	9.94	9.56	-148.79	171.11	129.58	383.68	365.45	18.23	21.044	
4,100.00	4,091.31	4,076.60	4,068.95	10.21	9.82	-148.72	176.64	133.76	395.29	376.58	18.71	21.130	
4,200.00	4,191.07	4,175.93	4,168.03	10.47	10.07	-148.66	182.16	137.94	406.90	387.72	19.18	21.211	
4,300.00	4,290.82	4,275.25	4,267.11	10.73	10.33	-148.60	187.68	142.12	418.51	398.85	19.66	21.289	
4,400.00	4,390.58	4,374.57	4,366.19	11.00	10.58	-148.54	193.21	146.30	430.12	409.99	20.13	21.363	
4,500.00	4,490.34	4,473.89	4,465.27	11.26	10.83	-148.48	198.73	150.49	441.73	421.12	20.61	21.434	
4,600.00	4,590.09	4,573.22	4,564.35	11.53	11.09	-148.43	204.26	154.67	453.35	432.26	21.08	21.501	
4,700.00	4,689.85	4,672.54	4,663.43	11.79	11.34	-148.38	209.78	158.85	464.96	443.40	21.56	21.565	
4,800.00	4,789.61	4,771.86	4,762.51	12.05	11.60	-148.34	215.30	163.03	476.57	454.53	22.04	21.627	
4,900.00	4,889.36	4,871.19	4,861.59	12.32	11.85	-148.29	220.83	167.22	488.18	465.67	22.51	21.686	
5,000.00	4,989.12	4,970.51	4,960.67	12.58	12.11	-148.25	226.35	171.40	499.80	476.81	22.99	21.742	
5,100.00	5,088.88	5,069.83	5,059.75	12.85	12.36	-148.21	231.87	175.58	511.41	487.95	23.46	21.796	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2		Offset Site Error:		0.00 usft
Survey Program: 0-ISCSWA MWD															Offset Well Error:		0.00 usft
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	+N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)						
5,200.00	5,188.63	5,169.15	5,158.84	13.11	12.62	-148.17	237.40	179.76		523.02	499.08	23.94	21.848				
5,300.00	5,288.39	5,268.48	5,257.92	13.38	12.87	-148.13	242.92	183.94		534.64	510.22	24.41	21.898				
5,400.00	5,387.74	5,367.30	5,356.50	13.67	13.12	-147.69	248.42	188.11		549.35	524.69	24.66	22.276				
5,500.00	5,483.56	5,449.99	5,438.98	14.14	13.34	-146.76	253.13	191.67		579.02	554.69	24.33	23.799				
5,600.00	5,572.27	5,499.99	5,488.46	14.81	13.49	-144.19	258.72	195.90		628.37	604.70	23.67	26.547				

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3													Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-197.49	197.49					
100.00	100.00	100.00	100.00	0.09	0.09	-90.00	0.00	-197.49	197.49	197.31	0.19	1,055.953		
200.00	200.00	200.00	200.00	0.32	0.32	-90.00	0.00	-197.49	197.49	196.86	0.64	310.250		
300.00	300.00	300.00	300.00	0.54	0.54	-90.00	0.00	-197.49	197.49	196.41	1.09	181.838		
400.00	400.00	400.00	400.00	0.77	0.77	-90.00	0.00	-197.49	197.49	195.96	1.54	128.608 CC, ES		
500.00	499.98	499.98	499.98	0.97	0.99	120.22	0.00	-197.49	198.37	196.40	1.96	101.151		
600.00	599.84	599.84	599.84	1.17	1.22	121.46	0.00	-197.49	201.05	198.67	2.38	84.465		
700.00	699.59	699.59	699.59	1.38	1.44	123.13	0.00	-197.49	204.79	201.97	2.82	72.682		
800.00	799.35	799.35	799.35	1.61	1.67	124.73	0.00	-197.49	208.69	205.42	3.27	63.891		
900.00	899.11	899.11	899.11	1.85	1.89	126.27	0.00	-197.49	212.74	209.02	3.72	57.165		
1,000.00	998.86	998.86	998.86	2.10	2.11	127.75	0.00	-197.49	216.95	212.77	4.18	51.896		
1,100.00	1,098.62	1,094.44	1,094.42	2.35	2.31	128.79	-1.12	-198.57	222.22	217.61	4.61	48.200		
1,200.00	1,198.38	1,189.88	1,189.74	2.61	2.49	129.12	-4.52	-201.87	229.44	224.42	5.03	45.622		
1,300.00	1,298.13	1,289.07	1,288.69	2.86	2.68	129.04	-9.48	-206.67	237.80	232.34	5.47	43.511		
1,400.00	1,397.89	1,388.72	1,388.10	3.12	2.89	128.97	-14.47	-211.50	246.17	240.26	5.91	41.642		
1,500.00	1,497.65	1,488.37	1,487.50	3.38	3.10	128.90	-19.47	-216.33	254.54	248.18	6.37	39.982		
1,600.00	1,597.40	1,588.02	1,586.91	3.63	3.32	128.83	-24.46	-221.17	262.91	256.08	6.83	38.505		
1,700.00	1,697.16	1,687.67	1,686.31	3.89	3.55	128.77	-29.46	-226.00	271.28	263.99	7.30	37.182		
1,800.00	1,796.91	1,787.31	1,785.72	4.15	3.78	128.72	-34.45	-230.84	279.65	271.88	7.77	35.995		
1,900.00	1,896.67	1,886.96	1,885.13	4.42	4.02	128.66	-39.45	-235.67	288.02	279.78	8.25	34.927		
2,000.00	1,996.43	1,986.61	1,984.53	4.68	4.26	128.61	-44.44	-240.50	296.40	287.67	8.73	33.963		
2,100.00	2,096.18	2,086.26	2,083.94	4.94	4.50	128.56	-49.44	-245.34	304.77	295.56	9.21	33.089		
2,200.00	2,195.94	2,185.91	2,183.34	5.20	4.75	128.52	-54.44	-250.17	313.14	303.44	9.70	32.295		
2,300.00	2,295.70	2,285.56	2,282.75	5.46	4.99	128.47	-59.43	-255.01	321.51	311.33	10.18	31.570		
2,400.00	2,395.45	2,385.21	2,382.16	5.73	5.24	128.43	-64.43	-259.84	329.88	319.21	10.67	30.906		
2,500.00	2,495.21	2,484.85	2,481.56	5.99	5.49	128.40	-69.42	-264.67	338.25	327.09	11.16	30.296		
2,600.00	2,594.97	2,584.50	2,580.97	6.25	5.74	128.36	-74.42	-269.51	346.63	334.97	11.66	29.735		
2,700.00	2,694.72	2,684.15	2,680.37	6.51	6.00	128.32	-79.41	-274.34	355.00	342.85	12.15	29.216		
2,800.00	2,794.48	2,783.80	2,779.78	6.78	6.25	128.29	-84.41	-279.18	363.37	350.73	12.65	28.735		
2,900.00	2,894.23	2,883.45	2,879.19	7.04	6.50	128.26	-89.40	-284.01	371.74	358.60	13.14	28.288		
3,000.00	2,993.99	2,983.10	2,978.59	7.30	6.76	128.23	-94.40	-288.84	380.12	366.48	13.64	27.872		
3,100.00	3,093.75	3,082.75	3,078.00	7.57	7.01	128.20	-99.39	-293.68	388.49	374.35	14.13	27.484		
3,200.00	3,193.50	3,182.40	3,177.40	7.83	7.27	128.17	-104.39	-298.51	396.86	382.23	14.63	27.122		
3,300.00	3,293.26	3,282.04	3,276.81	8.09	7.53	128.14	-109.38	-303.35	405.24	390.10	15.13	26.782		
3,400.00	3,393.02	3,381.69	3,376.22	8.36	7.78	128.12	-114.38	-308.18	413.61	397.98	15.63	26.462		
3,500.00	3,492.77	3,481.34	3,475.62	8.62	8.04	128.09	-119.37	-313.01	421.98	405.85	16.13	26.162		
3,600.00	3,592.53	3,580.99	3,575.03	8.89	8.30	128.07	-124.37	-317.85	430.36	413.73	16.63	25.879		
3,700.00	3,692.29	3,680.64	3,674.43	9.15	8.56	128.04	-129.36	-322.68	438.73	421.60	17.13	25.612		
3,800.00	3,792.04	3,780.29	3,773.84	9.41	8.81	128.02	-134.36	-327.51	447.10	429.47	17.63	25.360		
3,900.00	3,891.80	3,879.94	3,873.25	9.68	9.07	128.00	-139.35	-332.35	455.48	437.34	18.13	25.121		
4,000.00	3,991.56	3,979.58	3,972.65	9.94	9.33	127.98	-144.35	-337.18	463.85	445.22	18.63	24.895		
4,100.00	4,091.31	4,079.23	4,072.06	10.21	9.59	127.96	-149.34	-342.02	472.22	453.09	19.13	24.680		
4,200.00	4,191.07	4,178.88	4,171.46	10.47	9.85	127.94	-154.34	-346.85	480.60	460.96	19.64	24.476		
4,300.00	4,290.82	4,278.53	4,270.87	10.73	10.11	127.92	-159.33	-351.68	488.97	468.83	20.14	24.282		
4,400.00	4,390.58	4,378.18	4,370.27	11.00	10.37	127.90	-164.33	-356.52	497.34	476.70	20.64	24.096		
4,500.00	4,490.34	4,477.83	4,469.68	11.26	10.63	127.89	-169.32	-361.35	505.72	484.58	21.14	23.920		
4,600.00	4,590.09	4,577.48	4,569.09	11.53	10.89	127.87	-174.32	-366.19	514.09	492.45	21.64	23.751		
4,700.00	4,689.85	4,677.13	4,668.49	11.79	11.15	127.85	-179.31	-371.02	522.47	500.32	22.15	23.590		
4,800.00	4,789.61	4,776.77	4,767.90	12.05	11.41	127.84	-184.31	-375.85	530.84	508.19	22.65	23.436		
4,900.00	4,889.36	4,876.42	4,867.30	12.32	11.67	127.82	-189.30	-380.69	539.21	516.06	23.15	23.288		
5,000.00	4,989.12	4,976.07	4,966.71	12.58	11.93	127.81	-194.30	-385.52	547.59	523.93	23.66	23.147		
5,100.00	5,088.88	5,075.72	5,066.12	12.85	12.20	127.80	-199.29	-390.36	555.96	531.80	24.16	23.011		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design												S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3		Offset Site Error:		0.00 usft	
Survey Program: 0-ISCWSA MWD														Offset Well Error:		0.00 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					
5,200.00	5,188.63	5,175.37	5,165.52	13.11	12.46	127.78	-204.29	-395.19	564.34	539.67	24.66	22.881					
5,300.00	5,288.39	5,275.02	5,264.93	13.38	12.72	127.77	-209.28	-400.02	572.71	547.54	25.17	22.756 SF					
5,400.00	5,387.74	5,350.00	5,339.72	13.67	12.92	127.15	-213.16	-403.77	583.93	558.42	25.51	22.888					
5,500.00	5,483.56	5,417.19	5,406.01	14.14	13.15	125.25	-220.81	-411.18	610.64	584.91	25.73	23.735					
5,600.00	5,572.27	5,470.02	5,456.84	14.81	13.38	121.75	-231.10	-421.13	653.68	627.65	26.02	25.120					

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-90.00	0.00	-164.45	164.45	164.45	0.19	879.222	
100.00	100.00	100.01	100.01	0.09	0.09	-90.00	0.00	-164.45	164.45	163.81	0.64	258.336	
200.00	200.00	200.01	200.01	0.32	0.32	-90.00	0.00	-164.45	164.45	163.36	1.09	151.412	
300.00	300.00	300.01	300.01	0.54	0.54	-90.00	0.00	-164.45	164.45	162.91	1.54	107.089 CC, ES	
400.00	400.00	400.01	400.01	0.77	0.77	-90.00	0.00	-164.45	164.45	162.91	1.96	84.302	
500.00	499.98	499.99	499.99	0.97	0.99	120.31	0.00	-164.45	165.32	163.36			
600.00	599.84	599.85	599.85	1.17	1.22	121.80	0.00	-164.45	168.03	165.65	2.38	70.590	
700.00	699.59	699.60	699.60	1.38	1.44	123.78	0.00	-164.45	171.81	168.99	2.82	60.983	
800.00	799.35	799.36	799.36	1.61	1.67	125.66	0.00	-164.45	175.79	172.53	3.27	53.831	
900.00	899.11	899.12	899.12	1.85	1.89	127.46	0.00	-164.45	179.95	176.23	3.72	48.375	
1,000.00	998.86	998.87	998.87	2.10	2.11	129.18	0.00	-164.45	184.29	180.11	4.18	44.111	
1,100.00	1,098.62	1,098.63	1,098.63	2.35	2.34	130.82	0.00	-164.45	188.78	184.14	4.64	40.708	
1,200.00	1,198.38	1,198.39	1,198.39	2.61	2.56	132.38	0.00	-164.45	193.42	188.32	5.10	37.943	
1,300.00	1,298.13	1,295.75	1,295.73	2.86	2.76	133.41	-1.31	-165.37	198.78	193.25	5.53	35.950	
1,400.00	1,397.89	1,393.06	1,392.91	3.12	2.93	133.51	-5.33	-168.17	205.41	199.46	5.95	34.539	
1,500.00	1,497.65	1,492.60	1,492.21	3.38	3.12	133.12	-11.02	-172.15	212.73	206.35	6.38	33.340	
1,600.00	1,597.40	1,592.32	1,591.69	3.63	3.32	132.76	-16.72	-176.13	220.07	213.24	6.82	32.246	
1,700.00	1,697.16	1,692.04	1,691.16	3.89	3.53	132.41	-22.42	-180.12	227.41	220.14	7.28	31.248	
1,800.00	1,796.91	1,791.76	1,790.64	4.15	3.75	132.10	-28.12	-184.10	234.77	227.03	7.74	30.339	
1,900.00	1,896.67	1,891.48	1,890.12	4.42	3.97	131.80	-33.82	-188.09	242.13	233.92	8.20	29.510	
2,000.00	1,996.43	1,991.20	1,989.60	4.68	4.19	131.51	-39.53	-192.07	249.50	240.82	8.68	28.754	
2,100.00	2,096.18	2,090.92	2,089.08	4.94	4.42	131.25	-45.23	-196.06	256.87	247.71	9.15	28.063	
2,200.00	2,195.94	2,190.64	2,188.55	5.20	4.66	131.00	-50.93	-200.04	264.25	254.61	9.63	27.430	
2,300.00	2,295.70	2,290.36	2,288.03	5.46	4.89	130.76	-56.63	-204.03	271.63	261.51	10.12	26.849	
2,400.00	2,395.45	2,390.09	2,387.51	5.73	5.13	130.53	-62.33	-208.01	279.01	268.41	10.60	26.314	
2,500.00	2,495.21	2,489.81	2,486.99	5.99	5.38	130.32	-68.03	-212.00	286.41	275.31	11.09	25.821	
2,600.00	2,594.97	2,589.53	2,586.47	6.25	5.62	130.12	-73.74	-215.98	293.80	282.22	11.58	25.366	
2,700.00	2,694.72	2,689.25	2,685.95	6.51	5.87	129.92	-79.44	-219.97	301.20	289.12	12.08	24.944	
2,800.00	2,794.48	2,788.97	2,785.42	6.78	6.11	129.74	-85.14	-223.95	308.60	296.03	12.57	24.552	
2,900.00	2,894.23	2,888.69	2,884.90	7.04	6.36	129.56	-90.84	-227.94	316.00	302.94	13.06	24.187	
3,000.00	2,993.99	2,988.41	2,984.38	7.30	6.61	129.40	-96.54	-231.92	323.41	309.85	13.56	23.847	
3,100.00	3,093.75	3,088.13	3,083.86	7.57	6.86	129.24	-102.24	-235.91	330.82	316.76	14.06	23.530	
3,200.00	3,193.50	3,187.85	3,183.34	7.83	7.11	129.09	-107.95	-239.89	338.23	323.67	14.56	23.232	
3,300.00	3,293.26	3,287.57	3,282.81	8.09	7.37	128.94	-113.65	-243.88	345.65	330.59	15.06	22.954	
3,400.00	3,393.02	3,387.29	3,382.29	8.36	7.62	128.80	-119.35	-247.86	353.06	337.50	15.56	22.692	
3,500.00	3,492.77	3,487.02	3,481.77	8.62	7.87	128.67	-125.05	-251.85	360.48	344.42	16.06	22.445	
3,600.00	3,592.53	3,586.74	3,581.25	8.89	8.13	128.54	-130.75	-255.83	367.90	351.34	16.56	22.213	
3,700.00	3,692.29	3,686.46	3,680.73	9.15	8.38	128.41	-136.45	-259.82	375.33	358.26	17.07	21.993	
3,800.00	3,792.04	3,786.18	3,780.20	9.41	8.64	128.29	-142.15	-263.80	382.75	365.18	17.57	21.786	
3,900.00	3,891.80	3,885.90	3,879.68	9.68	8.90	128.18	-147.86	-267.79	390.17	372.10	18.07	21.590	
4,000.00	3,991.56	3,985.62	3,979.16	9.94	9.15	128.07	-153.56	-271.77	397.60	379.03	18.58	21.404	
4,100.00	4,091.31	4,085.34	4,078.64	10.21	9.41	127.96	-159.26	-275.76	405.03	385.95	19.08	21.227	
4,200.00	4,191.07	4,185.06	4,178.12	10.47	9.67	127.86	-164.96	-279.74	412.46	392.87	19.59	21.059	
4,300.00	4,290.82	4,284.78	4,277.59	10.73	9.93	127.76	-170.66	-283.73	419.89	399.80	20.09	20.899	
4,400.00	4,390.58	4,384.50	4,377.07	11.00	10.19	127.67	-176.36	-287.71	427.32	406.73	20.60	20.747	
4,500.00	4,490.34	4,484.23	4,476.55	11.26	10.44	127.58	-182.07	-291.70	434.76	413.65	21.10	20.602	
4,600.00	4,590.09	4,583.95	4,576.03	11.53	10.70	127.49	-187.77	-295.68	442.19	420.58	21.61	20.463	
4,700.00	4,689.85	4,683.67	4,675.51	11.79	10.96	127.40	-193.47	-299.67	449.63	427.51	22.12	20.331	
4,800.00	4,789.61	4,783.39	4,774.98	12.05	11.22	127.32	-199.17	-303.65	457.06	434.44	22.62	20.204	
4,900.00	4,889.36	4,883.11	4,874.46	12.32	11.48	127.24	-204.87	-307.64	464.50	441.37	23.13	20.083	
5,000.00	4,989.12	4,982.83	4,973.94	12.58	11.74	127.16	-210.57	-311.62	471.94	448.30	23.64	19.967	
5,100.00	5,088.88	5,082.55	5,073.42	12.85	12.00	127.09	-216.28	-315.61	479.38	455.23	24.14	19.855	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.00	5,188.63	5,182.27	5,172.90	13.11	12.26	127.01	-221.98	-319.59	486.82	462.17	24.65	19.748	
5,300.00	5,288.39	5,281.99	5,272.37	13.38	12.52	126.94	-227.68	-323.58	494.26	469.10	25.16	19.645 SF	
5,400.00	5,387.74	5,381.42	5,371.56	13.67	12.78	126.61	-233.36	-327.55	503.90	478.33	25.58	19.701	
5,500.00	5,483.56	5,465.73	5,455.60	14.14	13.01	126.16	-238.79	-331.34	524.72	498.93	25.79	20.347	
5,600.00	5,572.27	5,529.05	5,517.81	14.81	13.24	124.18	-248.27	-337.97	561.13	535.14	26.00	21.584	
5,700.00	5,650.61	5,586.88	5,573.03	15.67	13.50	120.45	-262.27	-347.75	612.09	585.53	26.56	23.049	
5,800.00	5,715.69	5,637.84	5,619.86	16.76	13.78	114.59	-278.71	-359.24	675.00	647.01	27.99	24.116	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-131.41	131.41				
100.00	100.00	100.00	100.00	0.09	0.09	-90.00	0.00	-131.41	131.41	131.22	0.19	702.599	
200.00	200.00	200.00	200.00	0.32	0.32	-90.00	0.00	-131.41	131.41	130.77	0.64	206.431	
300.00	300.00	300.00	300.00	0.54	0.54	-90.00	0.00	-131.41	131.41	130.32	1.09	120.989	
400.00	400.00	400.00	400.00	0.77	0.77	-90.00	0.00	-131.41	131.41	129.87	1.54	85.572 CC, ES	
500.00	499.98	499.98	499.98	0.97	0.99	120.44	0.00	-131.41	132.28	130.32	1.96	67.453	
600.00	599.84	598.12	598.10	1.17	1.19	121.60	-1.54	-132.09	135.64	133.29	2.35	57.680	
700.00	699.59	696.20	696.05	1.38	1.38	122.07	-6.14	-134.13	141.23	138.48	2.75	51.325	
800.00	799.35	795.93	795.54	1.61	1.58	121.85	-12.50	-136.94	147.50	144.32	3.19	46.305	
900.00	899.11	895.74	895.10	1.85	1.80	121.64	-18.86	-139.76	153.78	150.14	3.64	42.247	
1,000.00	998.86	995.54	994.65	2.10	2.04	121.45	-25.23	-142.59	160.05	155.95	4.11	38.950	
1,100.00	1,098.62	1,095.34	1,094.21	2.35	2.28	121.28	-31.59	-145.41	166.33	161.74	4.59	36.249	
1,200.00	1,198.38	1,195.14	1,193.77	2.61	2.52	121.11	-37.96	-148.23	172.61	167.54	5.08	34.010	
1,300.00	1,298.13	1,294.94	1,293.33	2.86	2.77	120.96	-44.32	-151.05	178.89	173.33	5.57	32.132	
1,400.00	1,397.89	1,394.74	1,392.89	3.12	3.02	120.82	-50.69	-153.87	185.18	179.11	6.06	30.539	
1,500.00	1,497.65	1,494.54	1,492.45	3.38	3.28	120.69	-57.05	-156.69	191.46	184.90	6.56	29.174	
1,600.00	1,597.40	1,594.35	1,592.01	3.63	3.53	120.56	-63.42	-159.51	197.74	190.68	7.06	27.992	
1,700.00	1,697.16	1,694.15	1,691.56	3.89	3.79	120.45	-69.78	-162.33	204.03	196.46	7.57	26.961	
1,800.00	1,796.91	1,793.95	1,791.12	4.15	4.04	120.34	-76.15	-165.15	210.31	202.24	8.07	26.054	
1,900.00	1,896.67	1,893.75	1,890.68	4.42	4.30	120.24	-82.51	-167.97	216.60	208.02	8.58	25.250	
2,000.00	1,996.43	1,993.55	1,990.24	4.68	4.56	120.14	-88.88	-170.79	222.89	213.80	9.09	24.533	
2,100.00	2,096.18	2,093.35	2,089.80	4.94	4.82	120.05	-95.24	-173.61	229.17	219.58	9.59	23.888	
2,200.00	2,195.94	2,193.15	2,189.36	5.20	5.08	119.96	-101.61	-176.43	235.46	225.36	10.10	23.305	
2,300.00	2,295.70	2,292.96	2,288.91	5.46	5.34	119.88	-107.97	-179.25	241.75	231.14	10.61	22.777	
2,400.00	2,395.45	2,392.76	2,388.47	5.73	5.60	119.80	-114.34	-182.07	248.04	236.92	11.12	22.296	
2,500.00	2,495.21	2,492.56	2,488.03	5.99	5.86	119.72	-120.70	-184.89	254.33	242.69	11.64	21.856	
2,600.00	2,594.97	2,592.36	2,587.59	6.25	6.12	119.65	-127.07	-187.71	260.62	248.47	12.15	21.453	
2,700.00	2,694.72	2,692.16	2,687.15	6.51	6.39	119.59	-133.43	-190.53	266.91	254.25	12.66	21.082	
2,800.00	2,794.48	2,791.96	2,786.71	6.78	6.65	119.52	-139.79	-193.36	273.20	260.03	13.17	20.739	
2,900.00	2,894.23	2,891.77	2,886.26	7.04	6.91	119.46	-146.16	-196.18	279.49	265.81	13.69	20.421	
3,000.00	2,993.99	2,991.57	2,985.82	7.30	7.17	119.40	-152.52	-199.00	285.78	271.58	14.20	20.126	
3,100.00	3,093.75	3,091.37	3,085.38	7.57	7.43	119.35	-158.89	-201.82	292.08	277.36	14.71	19.851	
3,200.00	3,193.50	3,191.17	3,184.94	7.83	7.70	119.29	-165.25	-204.64	298.37	283.14	15.23	19.594	
3,300.00	3,293.26	3,290.97	3,284.50	8.09	7.96	119.24	-171.62	-207.46	304.66	288.92	15.74	19.354	
3,400.00	3,393.02	3,390.77	3,384.06	8.36	8.22	119.19	-177.98	-210.28	310.95	294.70	16.26	19.129	
3,500.00	3,492.77	3,490.57	3,483.61	8.62	8.49	119.14	-184.35	-213.10	317.25	300.48	16.77	18.918	
3,600.00	3,592.53	3,590.38	3,583.17	8.89	8.75	119.10	-190.71	-215.92	323.54	306.25	17.28	18.719	
3,700.00	3,692.29	3,690.18	3,682.73	9.15	9.01	119.05	-197.08	-218.74	329.83	312.03	17.80	18.531	
3,800.00	3,792.04	3,789.98	3,782.29	9.41	9.27	119.01	-203.44	-221.56	336.13	317.81	18.31	18.354	
3,900.00	3,891.80	3,889.78	3,881.85	9.68	9.54	118.97	-209.81	-224.38	342.42	323.59	18.83	18.186	
4,000.00	3,991.56	3,989.58	3,981.41	9.94	9.80	118.93	-216.17	-227.20	348.71	329.37	19.34	18.027	
4,100.00	4,091.31	4,089.38	4,080.96	10.21	10.06	118.89	-222.54	-230.02	355.01	335.15	19.86	17.877	
4,200.00	4,191.07	4,189.18	4,180.52	10.47	10.33	118.86	-228.90	-232.84	361.30	340.93	20.37	17.734	
4,300.00	4,290.82	4,288.99	4,280.08	10.73	10.59	118.82	-235.27	-235.66	367.59	346.71	20.89	17.598	
4,400.00	4,390.58	4,388.79	4,379.64	11.00	10.85	118.79	-241.63	-238.48	373.89	352.48	21.40	17.468	
4,500.00	4,490.34	4,488.59	4,479.20	11.26	11.12	118.75	-248.00	-241.30	380.18	358.26	21.92	17.344	
4,600.00	4,590.09	4,588.39	4,578.76	11.53	11.38	118.72	-254.36	-244.12	386.48	364.04	22.43	17.227	
4,700.00	4,689.85	4,688.19	4,678.31	11.79	11.65	118.69	-260.73	-246.95	392.77	369.82	22.95	17.114	
4,800.00	4,789.61	4,787.99	4,777.87	12.05	11.91	118.66	-267.09	-249.77	399.07	375.60	23.47	17.006	
4,900.00	4,889.36	4,887.79	4,877.43	12.32	12.17	118.63	-273.46	-252.59	405.36	381.38	23.98	16.903	
5,000.00	4,989.12	4,987.60	4,976.99	12.58	12.44	118.60	-279.82	-255.41	411.66	387.16	24.50	16.804	
5,100.00	5,088.88	5,087.40	5,076.55	12.85	12.70	118.58	-286.19	-258.23	417.95	392.94	25.01	16.709	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3													Offset Site Error:	0.00 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.00 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		
5,200.00	5,188.63	5,187.20	5,176.11	13.11	12.96	118.55	-292.55	-261.05	424.25	398.72	25.53	16.618		
5,300.00	5,288.39	5,287.00	5,275.66	13.38	13.23	118.52	-298.92	-263.87	430.54	404.50	26.04	16.531	SF	
5,400.00	5,387.74	5,373.84	5,362.18	13.67	13.47	118.05	-305.57	-266.82	439.30	412.81	26.49	16.583		
5,500.00	5,483.56	5,450.00	5,436.57	14.14	13.77	116.49	-320.19	-273.32	461.37	434.43	26.94	17.125		
5,600.00	5,572.27	5,513.24	5,496.04	14.81	14.10	113.65	-339.75	-282.01	496.90	469.37	27.54	18.045		
5,700.00	5,650.61	5,576.22	5,552.25	15.67	14.51	109.61	-365.62	-293.52	544.20	515.66	28.54	19.065		
5,800.00	5,715.69	5,633.71	5,600.24	16.76	14.94	104.22	-394.50	-306.37	601.10	570.96	30.14	19.946		
5,900.00	5,765.13	5,685.57	5,640.30	18.06	15.39	97.46	-424.55	-319.73	665.37	633.18	32.19	20.672		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-90.01	-0.02	-98.36	98.36				
100.00	100.00	100.01	100.01	0.09	0.09	-90.01	-0.02	-98.36	98.36	98.18	0.19	525.890	
200.00	200.00	200.01	200.01	0.32	0.32	-90.01	-0.02	-98.36	98.36	97.73	0.64	154.519	
300.00	300.00	300.01	300.01	0.54	0.54	-90.01	-0.02	-98.36	98.36	97.28	1.09	90.564	
400.00	400.00	400.01	400.01	0.77	0.77	-90.01	-0.02	-98.36	98.36	96.83	1.54	64.053 CC, ES	
500.00	499.98	499.99	499.99	0.97	0.99	120.65	-0.02	-98.36	99.24	97.28	1.96	50.604	
600.00	599.84	599.85	599.85	1.17	1.22	123.13	-0.02	-98.36	102.01	99.63	2.38	42.855	
700.00	699.59	699.60	699.60	1.38	1.44	126.29	-0.02	-98.36	105.99	103.17	2.82	37.632	
800.00	799.35	799.36	799.36	1.61	1.67	129.20	-0.02	-98.36	110.27	107.00	3.26	33.796	
900.00	899.11	899.12	899.12	1.85	1.89	131.90	-0.02	-98.36	114.81	111.10	3.71	30.912	
1,000.00	998.86	998.87	998.87	2.10	2.11	134.38	-0.02	-98.36	119.59	115.42	4.17	28.692	
1,100.00	1,098.62	1,098.63	1,098.63	2.35	2.34	136.67	-0.02	-98.36	124.57	119.95	4.62	26.948	
1,200.00	1,198.38	1,198.89	1,198.87	2.61	2.54	138.05	-1.68	-98.72	129.55	124.49	5.05	25.639	
1,300.00	1,298.13	1,299.28	1,299.12	2.86	2.72	137.83	-6.79	-99.81	134.18	128.71	5.47	24.540	
1,400.00	1,397.89	1,399.16	1,398.75	3.12	2.90	136.90	-13.60	-101.27	138.64	132.74	5.90	23.503	
1,500.00	1,497.65	1,499.03	1,498.38	3.38	3.10	136.02	-20.41	-102.74	143.14	136.80	6.34	22.565	
1,600.00	1,597.40	1,598.91	1,598.02	3.63	3.30	135.20	-27.23	-104.20	147.67	140.88	6.80	21.721	
1,700.00	1,697.16	1,698.78	1,697.65	3.89	3.52	134.43	-34.04	-105.66	152.23	144.97	7.26	20.960	
1,800.00	1,796.91	1,798.66	1,797.28	4.15	3.74	133.70	-40.85	-107.12	156.82	149.09	7.73	20.274	
1,900.00	1,896.67	1,898.53	1,896.91	4.42	3.97	133.02	-47.66	-108.58	161.43	153.22	8.21	19.656	
2,000.00	1,996.43	1,998.41	1,996.55	4.68	4.20	132.37	-54.48	-110.04	166.06	157.37	8.70	19.096	
2,100.00	2,096.18	2,098.28	2,096.18	4.94	4.43	131.76	-61.29	-111.50	170.71	161.53	9.18	18.588	
2,200.00	2,195.94	2,198.16	2,195.81	5.20	4.67	131.18	-68.10	-112.96	175.38	165.71	9.68	18.126	
2,300.00	2,295.70	2,298.04	2,295.44	5.46	4.91	130.63	-74.91	-114.42	180.07	169.90	10.17	17.705	
2,400.00	2,395.45	2,397.91	2,395.07	5.73	5.16	130.10	-81.72	-115.88	184.77	174.10	10.67	17.320	
2,500.00	2,495.21	2,497.79	2,494.71	5.99	5.40	129.61	-88.54	-117.34	189.49	178.32	11.17	16.967	
2,600.00	2,594.97	2,597.66	2,594.34	6.25	5.65	129.14	-95.35	-118.80	194.22	182.55	11.67	16.642	
2,700.00	2,694.72	2,697.54	2,693.97	6.51	5.90	128.69	-102.16	-120.26	198.96	186.79	12.17	16.343	
2,800.00	2,794.48	2,797.41	2,793.60	6.78	6.15	128.26	-108.97	-121.72	203.72	191.04	12.68	16.066	
2,900.00	2,894.23	2,897.29	2,893.24	7.04	6.40	127.85	-115.78	-123.18	208.48	195.30	13.19	15.810	
3,000.00	2,993.99	2,997.17	2,992.87	7.30	6.65	127.46	-122.60	-124.64	213.26	199.56	13.70	15.572	
3,100.00	3,093.75	3,097.04	3,092.50	7.57	6.90	127.09	-129.41	-126.10	218.04	203.84	14.20	15.350	
3,200.00	3,193.50	3,196.92	3,192.13	7.83	7.16	126.73	-136.22	-127.56	222.84	208.12	14.72	15.143	
3,300.00	3,293.26	3,296.79	3,291.77	8.09	7.41	126.39	-143.03	-129.02	227.64	212.41	15.23	14.950	
3,400.00	3,393.02	3,396.67	3,391.40	8.36	7.67	126.06	-149.85	-130.48	232.45	216.71	15.74	14.769	
3,500.00	3,492.77	3,496.54	3,491.03	8.62	7.92	125.74	-156.66	-131.94	237.27	221.02	16.25	14.599	
3,600.00	3,592.53	3,596.42	3,590.66	8.89	8.18	125.44	-163.47	-133.40	242.09	225.33	16.77	14.440	
3,700.00	3,692.29	3,696.29	3,690.29	9.15	8.44	125.15	-170.28	-134.86	246.92	229.64	17.28	14.290	
3,800.00	3,792.04	3,796.17	3,789.93	9.41	8.69	124.87	-177.09	-136.33	251.76	233.97	17.79	14.148	
3,900.00	3,891.80	3,896.05	3,889.56	9.68	8.95	124.60	-183.91	-137.79	256.60	238.29	18.31	14.015	
4,000.00	3,991.56	3,995.92	3,989.19	9.94	9.21	124.34	-190.72	-139.25	261.45	242.62	18.83	13.888	
4,100.00	4,091.31	4,095.80	4,088.82	10.21	9.47	124.09	-197.53	-140.71	266.30	246.96	19.34	13.769	
4,200.00	4,191.07	4,195.67	4,188.46	10.47	9.73	123.85	-204.34	-142.17	271.16	251.30	19.86	13.655	
4,300.00	4,290.82	4,295.55	4,288.09	10.73	9.99	123.62	-211.16	-143.63	276.02	255.65	20.37	13.548	
4,400.00	4,390.58	4,395.42	4,387.72	11.00	10.25	123.40	-217.97	-145.09	280.89	260.00	20.89	13.445	
4,500.00	4,490.34	4,495.30	4,487.35	11.26	10.51	123.18	-224.78	-146.55	285.76	264.35	21.41	13.348	
4,600.00	4,590.09	4,595.17	4,586.99	11.53	10.77	122.97	-231.59	-148.01	290.64	268.71	21.93	13.255	
4,700.00	4,689.85	4,695.05	4,686.62	11.79	11.03	122.77	-238.40	-149.47	295.51	273.07	22.44	13.167	
4,800.00	4,789.61	4,794.93	4,786.25	12.05	11.29	122.58	-245.22	-150.93	300.40	277.43	22.96	13.082	
4,900.00	4,889.36	4,894.80	4,885.88	12.32	11.55	122.39	-252.03	-152.39	305.28	281.80	23.48	13.001	
5,000.00	4,989.12	4,994.68	4,985.51	12.58	11.81	122.20	-258.84	-153.85	310.17	286.17	24.00	12.924	
5,100.00	5,088.88	5,094.55	5,085.15	12.85	12.07	122.03	-265.65	-155.31	315.06	290.55	24.52	12.850	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2												Offset Site Error: 0.00 usft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.00 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
5,200.00	5,188.63	5,194.43	5,184.78	13.11	12.33	121.85	-272.46	-156.77	319.96	294.92	25.04	12.780	
5,300.00	5,288.39	5,294.30	5,284.41	13.38	12.59	121.69	-279.28	-158.23	324.86	299.30	25.56	12.712 SF	
5,400.00	5,387.74	5,393.97	5,383.83	13.67	12.85	121.60	-286.07	-159.69	331.69	305.67	26.02	12.747	
5,500.00	5,483.56	5,486.91	5,476.32	14.14	13.12	122.31	-294.65	-161.53	348.49	322.13	26.36	13.219	
5,600.00	5,572.27	5,574.83	5,561.44	14.81	13.48	121.66	-315.73	-166.05	377.70	350.91	26.79	14.098	
5,700.00	5,650.61	5,660.60	5,639.85	15.67	13.96	119.47	-349.50	-173.29	418.20	390.64	27.56	15.175	
5,800.00	5,715.69	5,743.33	5,709.13	16.76	14.55	115.79	-393.55	-182.73	468.28	439.27	29.01	16.142	
5,900.00	5,765.13	5,822.84	5,768.20	18.06	15.24	110.75	-445.48	-193.86	526.11	494.90	31.21	16.857	
6,000.00	5,797.10	5,899.70	5,816.98	19.55	16.01	104.56	-503.47	-206.29	589.76	555.73	34.03	17.329	
6,100.00	5,810.44	5,975.19	5,855.90	21.17	16.88	97.56	-566.64	-219.84	657.32	620.17	37.15	17.692	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3												Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-65.32	65.32				
100.00	100.00	100.00	100.00	0.09	0.09	-90.00	0.00	-65.32	65.32	65.13	0.19	349.245	
200.00	200.00	200.00	200.00	0.32	0.32	-90.00	0.00	-65.32	65.32	64.68	0.64	102.612	
300.00	300.00	300.00	300.00	0.54	0.54	-90.00	0.00	-65.32	65.32	64.23	1.09	60.141	
400.00	400.00	400.00	400.00	0.77	0.77	-90.00	0.00	-65.32	65.32	63.78	1.54	42.536 CC, ES	
500.00	499.98	499.98	499.98	0.97	0.99	121.10	0.00	-65.32	66.20	64.24	1.96	33.758	
600.00	599.84	599.84	599.84	1.17	1.22	124.77	0.00	-65.32	69.05	66.67	2.38	29.010	
700.00	699.59	699.59	699.59	1.38	1.44	129.25	0.00	-65.32	73.26	70.45	2.82	26.021	
800.00	799.35	799.35	799.35	1.61	1.67	133.22	0.00	-65.32	77.87	74.61	3.26	23.890	
900.00	899.11	899.11	899.11	1.85	1.89	136.73	0.00	-65.32	82.81	79.10	3.71	22.334	
1,000.00	998.86	1,000.14	1,000.12	2.10	2.09	138.84	-1.74	-65.16	87.30	83.16	4.13	21.124	
1,100.00	1,098.62	1,101.37	1,101.21	2.35	2.27	138.71	-7.04	-64.67	90.39	85.84	4.54	19.888	
1,200.00	1,198.38	1,201.33	1,200.92	2.61	2.46	137.63	-13.99	-64.03	92.79	87.81	4.98	18.650	
1,300.00	1,298.13	1,301.28	1,300.63	2.86	2.66	136.59	-20.93	-63.40	95.22	89.80	5.42	17.566	
1,400.00	1,397.89	1,401.24	1,400.34	3.12	2.88	135.61	-27.87	-62.76	97.68	91.81	5.88	16.618	
1,500.00	1,497.65	1,501.19	1,500.06	3.38	3.10	134.68	-34.82	-62.12	100.18	93.83	6.35	15.787	
1,600.00	1,597.40	1,601.15	1,599.77	3.63	3.33	133.79	-41.76	-61.48	102.69	95.87	6.82	15.055	
1,700.00	1,697.16	1,701.11	1,699.48	3.89	3.56	132.95	-48.70	-60.84	105.23	97.93	7.30	14.409	
1,800.00	1,796.91	1,801.06	1,799.19	4.15	3.80	132.14	-55.65	-60.21	107.79	100.00	7.79	13.836	
1,900.00	1,896.67	1,901.02	1,898.91	4.42	4.04	131.37	-62.59	-59.57	110.37	102.09	8.28	13.325	
2,000.00	1,996.43	2,000.98	1,998.62	4.68	4.28	130.64	-69.53	-58.93	112.97	104.19	8.78	12.867	
2,100.00	2,096.18	2,100.93	2,098.33	4.94	4.53	129.94	-76.48	-58.29	115.59	106.31	9.28	12.456	
2,200.00	2,195.94	2,200.89	2,198.04	5.20	4.78	129.28	-83.42	-57.65	118.22	108.44	9.78	12.085	
2,300.00	2,295.70	2,300.84	2,297.76	5.46	5.03	128.64	-90.36	-57.02	120.87	110.59	10.29	11.749	
2,400.00	2,395.45	2,400.80	2,397.47	5.73	5.28	128.03	-97.31	-56.38	123.54	112.74	10.80	11.443	
2,500.00	2,495.21	2,500.76	2,497.18	5.99	5.53	127.44	-104.25	-55.74	126.22	114.91	11.31	11.164	
2,600.00	2,594.97	2,600.71	2,596.89	6.25	5.78	126.88	-111.19	-55.10	128.91	117.09	11.82	10.909	
2,700.00	2,694.72	2,700.67	2,696.61	6.51	6.04	126.34	-118.14	-54.46	131.61	119.28	12.33	10.674	
2,800.00	2,794.48	2,800.62	2,796.32	6.78	6.29	125.82	-125.08	-53.83	134.32	121.48	12.84	10.458	
2,900.00	2,894.23	2,900.58	2,896.03	7.04	6.55	125.33	-132.02	-53.19	137.04	123.69	13.36	10.258	
3,000.00	2,993.99	3,000.54	2,995.74	7.30	6.81	124.85	-138.97	-52.55	139.78	125.90	13.88	10.073	
3,100.00	3,093.75	3,100.49	3,095.46	7.57	7.07	124.39	-145.91	-51.91	142.52	128.13	14.39	9.902	
3,200.00	3,193.50	3,200.45	3,195.17	7.83	7.32	123.95	-152.85	-51.27	145.27	130.36	14.91	9.742	
3,300.00	3,293.26	3,300.40	3,294.88	8.09	7.58	123.53	-159.80	-50.64	148.03	132.60	15.43	9.593	
3,400.00	3,393.02	3,400.36	3,394.59	8.36	7.84	123.12	-166.74	-50.00	150.80	134.85	15.95	9.454	
3,500.00	3,492.77	3,500.32	3,494.31	8.62	8.10	122.72	-173.68	-49.36	153.57	137.10	16.47	9.324	
3,600.00	3,592.53	3,600.27	3,594.02	8.89	8.36	122.34	-180.63	-48.72	156.36	139.36	16.99	9.202	
3,700.00	3,692.29	3,700.23	3,693.73	9.15	8.62	121.98	-187.57	-48.08	159.14	141.63	17.51	9.087	
3,800.00	3,792.04	3,800.18	3,793.44	9.41	8.88	121.62	-194.51	-47.45	161.94	143.90	18.04	8.979	
3,900.00	3,891.80	3,900.14	3,893.16	9.68	9.14	121.28	-201.46	-46.81	164.74	146.18	18.56	8.877	
4,000.00	3,991.56	4,000.10	3,992.87	9.94	9.40	120.95	-208.40	-46.17	167.55	148.47	19.08	8.781	
4,100.00	4,091.31	4,100.05	4,092.58	10.21	9.66	120.63	-215.34	-45.53	170.36	150.76	19.60	8.690	
4,200.00	4,191.07	4,200.01	4,192.29	10.47	9.92	120.32	-222.29	-44.89	173.18	153.05	20.13	8.604	
4,300.00	4,290.82	4,299.96	4,292.01	10.73	10.18	120.02	-229.23	-44.26	176.00	155.35	20.65	8.522	
4,400.00	4,390.58	4,399.92	4,391.72	11.00	10.45	119.73	-236.17	-43.62	178.82	157.65	21.18	8.445	
4,500.00	4,490.34	4,499.88	4,491.43	11.26	10.71	119.45	-243.12	-42.98	181.66	159.96	21.70	8.371	
4,600.00	4,590.09	4,599.83	4,591.14	11.53	10.97	119.18	-250.06	-42.34	184.49	162.27	22.22	8.301	
4,700.00	4,689.85	4,699.79	4,690.86	11.79	11.23	118.91	-257.00	-41.70	187.33	164.58	22.75	8.235	
4,800.00	4,789.61	4,799.74	4,790.57	12.05	11.49	118.66	-263.95	-41.07	190.17	166.90	23.27	8.171	
4,900.00	4,889.36	4,899.70	4,890.28	12.32	11.75	118.41	-270.89	-40.43	193.02	169.22	23.80	8.111	
5,000.00	4,989.12	4,999.66	4,989.99	12.58	12.02	118.17	-277.83	-39.79	195.87	171.55	24.32	8.053	
5,100.00	5,088.88	5,099.61	5,089.71	12.85	12.28	117.93	-284.78	-39.15	198.72	173.88	24.85	7.997	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.00	5,188.63	5,199.57	5,189.42	13.11	12.54	117.70	-291.72	-38.51	201.58	176.21	25.37	7.944	
5,300.00	5,288.39	5,299.52	5,289.13	13.38	12.80	117.48	-298.66	-37.88	204.44	178.54	25.90	7.893	
5,400.00	5,387.74	5,400.63	5,389.57	13.67	13.10	116.80	-309.53	-36.88	208.81	182.35	26.45	7.894	
5,500.00	5,483.56	5,501.49	5,486.09	14.14	13.56	114.75	-338.09	-34.25	220.35	193.14	27.20	8.100	
5,600.00	5,572.27	5,600.46	5,573.72	14.81	14.19	111.65	-383.59	-30.07	239.30	211.02	28.29	8.460	
5,700.00	5,650.61	5,697.06	5,649.43	15.67	14.98	107.86	-443.11	-24.60	265.02	235.20	29.82	8.888	
5,800.00	5,715.69	5,791.25	5,711.40	16.76	15.93	103.65	-513.58	-18.13	296.52	264.61	31.91	9.292	
5,900.00	5,765.13	5,883.37	5,758.74	18.06	17.02	99.27	-592.13	-10.91	332.59	298.12	34.46	9.650	
6,000.00	5,797.10	5,974.11	5,791.08	19.55	18.23	94.89	-676.43	-3.17	371.87	334.53	37.34	9.959	
6,100.00	5,810.44	6,064.38	5,808.21	21.17	19.53	90.65	-764.58	4.93	412.93	372.54	40.40	10.222	
6,200.00	5,810.82	6,148.77	5,811.05	22.77	20.78	90.03	-848.54	12.41	453.22	409.74	43.49	10.422	
6,300.00	5,810.82	6,222.75	5,811.05	24.30	21.82	90.03	-922.40	16.60	491.74	445.40	46.35	10.610	
6,400.00	5,810.82	6,296.63	5,811.05	25.88	22.82	90.03	-996.26	17.92	528.98	479.80	49.18	10.757	
6,500.00	5,810.82	6,390.65	5,811.05	27.50	24.35	90.02	-1,090.28	17.92	563.00	510.56	52.43	10.738	
6,600.00	5,810.82	6,486.33	5,811.05	29.13	25.94	90.02	-1,185.95	17.93	592.05	536.34	55.70	10.629	
6,700.00	5,810.83	6,583.39	5,811.05	30.77	27.59	90.02	-1,283.02	17.94	616.05	557.11	58.94	10.452	
6,800.00	5,810.83	6,681.58	5,811.05	32.39	29.28	90.02	-1,381.21	17.95	634.94	572.82	62.11	10.222	
6,900.00	5,810.83	6,780.62	5,811.05	34.01	31.01	90.02	-1,480.25	17.95	648.66	583.48	65.19	9.951	
7,000.00	5,810.83	6,880.25	5,811.05	35.60	32.77	90.02	-1,579.87	17.96	657.19	589.06	68.13	9.646	
7,100.00	5,810.83	6,980.18	5,811.05	37.17	34.55	90.02	-1,679.81	17.97	660.48	589.57	70.91	9.314	
7,200.00	5,810.84	7,080.18	5,811.04	38.75	36.34	90.02	-1,779.81	17.98	660.52	586.22	74.29	8.891	
7,300.00	5,810.84	7,180.18	5,811.04	40.38	38.15	90.02	-1,879.81	17.98	660.50	582.67	77.83	8.486	
7,400.00	5,810.84	7,280.18	5,811.04	42.03	39.97	90.02	-1,979.81	17.99	660.49	579.09	81.40	8.115	
7,500.00	5,810.84	7,380.18	5,811.04	43.71	41.80	90.02	-2,079.81	18.00	660.47	575.49	84.99	7.772	
7,600.00	5,810.84	7,480.18	5,811.04	45.40	43.64	90.02	-2,179.81	18.00	660.46	571.86	88.60	7.455	
7,700.00	5,810.85	7,580.18	5,811.04	47.11	45.48	90.02	-2,279.81	18.01	660.44	568.21	92.23	7.161	
7,800.00	5,810.85	7,680.18	5,811.04	48.84	47.33	90.02	-2,379.81	18.02	660.43	564.55	95.88	6.888	
7,900.00	5,810.85	7,780.18	5,811.04	50.58	49.19	90.02	-2,479.81	18.03	660.41	560.87	99.54	6.635	
8,000.00	5,810.85	7,880.18	5,811.04	52.33	51.05	90.02	-2,579.81	18.03	660.40	557.18	103.22	6.398	
8,100.00	5,810.86	7,980.18	5,811.04	54.10	52.91	90.02	-2,679.81	18.04	660.38	553.48	106.90	6.177	
8,200.00	5,810.86	8,080.18	5,811.04	55.87	54.78	90.02	-2,779.81	18.05	660.37	549.77	110.60	5.971	
8,300.00	5,810.86	8,180.18	5,811.03	57.66	56.65	90.02	-2,879.81	18.06	660.35	546.04	114.31	5.777	
8,400.00	5,810.86	8,280.18	5,811.03	59.45	58.53	90.01	-2,979.81	18.06	660.34	542.31	118.03	5.595	
8,500.00	5,810.87	8,380.18	5,811.03	61.25	60.40	90.01	-3,079.81	18.07	660.32	538.57	121.75	5.423	
8,600.00	5,810.87	8,480.18	5,811.03	63.06	62.28	90.01	-3,179.81	18.08	660.31	534.82	125.48	5.262	
8,700.00	5,810.87	8,580.18	5,811.03	64.88	64.17	90.01	-3,279.81	18.09	660.29	531.07	129.22	5.110	
8,800.00	5,810.87	8,680.18	5,811.03	66.70	66.05	90.01	-3,379.81	18.09	660.28	527.31	132.97	4.966	
8,900.00	5,810.88	8,780.18	5,811.03	68.52	67.94	90.01	-3,479.81	18.10	660.26	523.54	136.72	4.829	
9,000.00	5,810.88	8,880.18	5,811.03	70.35	69.83	90.01	-3,579.81	18.11	660.25	519.77	140.47	4.700	
9,100.00	5,810.88	8,980.18	5,811.03	72.19	71.72	90.01	-3,679.81	18.11	660.23	516.00	144.23	4.578	
9,200.00	5,810.88	9,080.18	5,811.03	74.03	73.61	90.01	-3,779.81	18.12	660.22	512.22	148.00	4.461	
9,300.00	5,810.88	9,180.18	5,811.03	75.87	75.51	90.01	-3,879.81	18.13	660.20	508.44	151.77	4.350	
9,400.00	5,810.89	9,280.18	5,811.03	77.72	77.40	90.01	-3,979.81	18.14	660.19	504.65	155.54	4.245	
9,500.00	5,810.89	9,380.18	5,811.02	79.57	79.30	90.01	-4,079.81	18.14	660.17	500.86	159.31	4.144	
9,600.00	5,810.89	9,480.18	5,811.02	81.43	81.20	90.01	-4,179.81	18.15	660.16	497.07	163.09	4.048	
9,700.00	5,810.89	9,580.18	5,811.02	83.29	83.10	90.01	-4,279.81	18.16	660.14	493.27	166.88	3.956	
9,800.00	5,810.90	9,680.18	5,811.02	85.15	85.00	90.01	-4,379.81	18.17	660.13	489.47	170.66	3.868	
9,900.00	5,810.90	9,780.18	5,811.02	87.01	86.90	90.01	-4,479.81	18.17	660.11	485.67	174.45	3.784	
10,000.00	5,810.90	9,880.18	5,811.02	88.87	88.80	90.01	-4,579.81	18.18	660.10	481.86	178.24	3.703	
10,100.00	5,810.90	9,980.18	5,811.02	90.74	90.70	90.01	-4,679.81	18.19	660.08	478.06	182.03	3.626	
10,200.00	5,810.91	10,080.18	5,811.02	92.61	92.61	90.01	-4,779.81	18.20	660.07	474.25	185.82	3.552	
10,300.00	5,810.91	10,180.18	5,811.02	94.49	94.51	90.01	-4,879.81	18.20	660.05	470.44	189.62	3.481	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3												Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.00 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
10,400.00	5,810.91	10,280.18	5,811.02	96.36	96.42	90.01	-4,979.81	18.21	660.04	466.62	193.42	3.413	
10,500.00	5,810.91	10,380.18	5,811.02	98.24	98.32	90.01	-5,079.81	18.22	660.02	462.81	197.22	3.347	
10,600.00	5,810.92	10,480.18	5,811.01	100.11	100.23	90.01	-5,179.81	18.22	660.01	458.99	201.02	3.283	
10,700.00	5,810.92	10,580.18	5,811.01	101.99	102.13	90.01	-5,279.81	18.23	659.99	455.17	204.82	3.222	
10,800.00	5,810.92	10,680.18	5,811.01	103.88	104.04	90.01	-5,379.81	18.24	659.98	451.36	208.62	3.163	
10,900.00	5,810.92	10,780.18	5,811.01	105.76	105.95	90.01	-5,479.81	18.25	659.97	447.53	212.43	3.107	
11,000.00	5,810.93	10,880.18	5,811.01	107.64	107.86	90.01	-5,579.81	18.25	659.95	443.71	216.24	3.052	
11,100.00	5,810.93	10,980.18	5,811.01	109.53	109.77	90.01	-5,679.81	18.26	659.94	439.89	220.05	2.999	
11,200.00	5,810.93	11,080.18	5,811.01	111.41	111.68	90.01	-5,779.81	18.27	659.92	436.06	223.86	2.948	
11,300.00	5,810.93	11,180.18	5,811.01	113.30	113.59	90.01	-5,879.81	18.28	659.91	432.24	227.67	2.899	
11,400.00	5,810.93	11,280.18	5,811.01	115.19	115.50	90.01	-5,979.81	18.28	659.89	428.41	231.48	2.851	
11,500.00	5,810.94	11,380.18	5,811.01	117.08	117.41	90.01	-6,079.81	18.29	659.88	424.58	235.29	2.805	
11,600.00	5,810.94	11,480.18	5,811.01	118.97	119.32	90.01	-6,179.81	18.30	659.86	420.76	239.10	2.760	
11,700.00	5,810.94	11,580.18	5,811.01	120.86	121.23	90.01	-6,279.81	18.31	659.85	416.93	242.92	2.716	
11,800.00	5,810.94	11,680.18	5,811.00	122.76	123.14	90.01	-6,379.81	18.31	659.83	413.10	246.74	2.674	
11,900.00	5,810.95	11,780.18	5,811.00	124.65	125.05	90.00	-6,479.81	18.32	659.82	409.26	250.55	2.633	
12,000.00	5,810.95	11,880.18	5,811.00	126.55	126.96	90.00	-6,579.81	18.33	659.80	405.43	254.37	2.594	
12,100.00	5,810.95	11,980.18	5,811.00	128.44	128.88	90.00	-6,679.81	18.33	659.79	401.60	258.19	2.555	
12,200.00	5,810.95	12,080.18	5,811.00	130.34	130.79	90.00	-6,779.81	18.34	659.77	397.77	262.01	2.518	
12,300.00	5,810.96	12,180.18	5,811.00	132.23	132.70	90.00	-6,879.81	18.35	659.76	393.93	265.83	2.482	
12,400.00	5,810.96	12,280.18	5,811.00	134.13	134.62	90.00	-6,979.81	18.36	659.74	390.10	269.65	2.447	
12,500.00	5,810.96	12,380.18	5,811.00	136.03	136.53	90.00	-7,079.81	18.36	659.73	386.26	273.47	2.412	
12,600.00	5,810.96	12,480.18	5,811.00	137.93	138.44	90.00	-7,179.81	18.37	659.71	382.42	277.29	2.379	
12,700.00	5,810.97	12,580.18	5,811.00	139.83	140.36	90.00	-7,279.81	18.38	659.70	378.59	281.11	2.347	
12,800.00	5,810.97	12,680.18	5,811.00	141.73	142.27	90.00	-7,379.81	18.39	659.68	374.75	284.93	2.315	
12,900.00	5,810.97	12,780.18	5,810.99	143.63	144.18	90.00	-7,479.81	18.39	659.67	370.91	288.76	2.285	
13,000.00	5,810.97	12,880.18	5,810.99	145.53	146.10	90.00	-7,579.81	18.40	659.65	367.07	292.58	2.255	
13,100.00	5,810.98	12,980.18	5,810.99	147.43	148.01	90.00	-7,679.81	18.41	659.64	363.23	296.40	2.225	
13,200.00	5,810.98	13,080.18	5,810.99	149.34	149.93	90.00	-7,779.81	18.42	659.62	359.39	300.23	2.197	
13,300.00	5,810.98	13,180.18	5,810.99	151.24	151.84	90.00	-7,879.81	18.42	659.61	355.55	304.05	2.169	
13,400.00	5,810.98	13,280.18	5,810.99	153.14	153.76	90.00	-7,979.81	18.43	659.59	351.71	307.88	2.142	
13,500.00	5,810.98	13,380.18	5,810.99	155.05	155.67	90.00	-8,079.81	18.44	659.58	347.87	311.71	2.116	
13,600.00	5,810.99	13,480.18	5,810.99	156.95	157.59	90.00	-8,179.81	18.44	659.56	344.03	315.53	2.090	
13,658.43	5,810.99	13,538.61	5,810.99	158.06	158.71	90.00	-8,238.23	18.45	659.55	341.79	317.77	2.076 SF	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	-90.04	-0.02	-33.04	33.04	32.86	0.19	176.666	
100.00	100.00	100.01	100.01	0.09	0.09	-90.04	-0.02	-33.04	33.04	32.41	0.64	51.909	
200.00	200.00	200.01	200.01	0.32	0.32	-90.04	-0.02	-33.04	33.04	31.96	1.09	30.424	
300.00	300.00	300.01	300.01	0.54	0.54	-90.04	-0.02	-33.04	33.04	31.51	1.54	21.518 CC, ES	
400.00	400.00	400.01	400.01	0.77	0.77	-90.04	-0.02	-33.04	33.04	31.98	1.96	17.308	
500.00	499.98	499.99	499.99	0.97	0.99	122.30	-0.02	-33.04	33.94				
600.00	599.84	599.85	599.85	1.17	1.22	129.11	-0.02	-33.04	37.01	34.63	2.38	15.546	
700.00	699.59	699.60	699.60	1.38	1.44	136.55	-0.02	-33.04	41.77	38.95	2.81	14.848	
800.00	799.35	799.36	799.36	1.61	1.67	142.39	-0.02	-33.04	47.08	43.83	3.25	14.477	
900.00	899.11	899.12	899.12	1.85	1.89	147.02	-0.02	-33.04	52.78	49.09	3.69	14.285	
1,000.00	998.86	998.87	998.87	2.10	2.11	150.72	-0.02	-33.04	58.76	54.62	4.14	14.194	
1,100.00	1,098.62	1,100.42	1,100.40	2.35	2.32	152.83	-1.68	-32.46	63.56	59.00	4.56	13.932	
1,200.00	1,198.38	1,202.18	1,202.01	2.61	2.50	152.80	-6.75	-30.68	65.58	60.61	4.97	13.197	
1,300.00	1,298.13	1,302.17	1,301.76	2.86	2.69	151.88	-13.33	-28.36	66.27	60.88	5.39	12.295	
1,400.00	1,397.89	1,402.16	1,401.51	3.12	2.89	150.98	-19.91	-26.04	66.97	61.15	5.82	11.504	
1,500.00	1,497.65	1,502.16	1,501.26	3.38	3.10	150.09	-26.49	-23.72	67.69	61.43	6.26	10.809	
1,600.00	1,597.40	1,602.15	1,601.01	3.63	3.32	149.23	-33.07	-21.41	68.43	61.71	6.71	10.195	
1,700.00	1,697.16	1,702.14	1,700.75	3.89	3.55	148.38	-39.64	-19.09	69.18	62.01	7.17	9.650	
1,800.00	1,796.91	1,802.13	1,800.50	4.15	3.78	147.55	-46.22	-16.77	69.94	62.31	7.63	9.166	
1,900.00	1,896.67	1,902.12	1,900.25	4.42	4.02	146.74	-52.80	-14.46	70.72	62.62	8.10	8.732	
2,000.00	1,996.43	2,002.12	2,000.00	4.68	4.25	145.94	-59.38	-12.14	71.51	62.94	8.57	8.343	
2,100.00	2,096.18	2,102.11	2,099.75	4.94	4.50	145.17	-65.96	-9.82	72.32	63.27	9.05	7.993	
2,200.00	2,195.94	2,202.10	2,199.50	5.20	4.74	144.41	-72.54	-7.51	73.14	63.61	9.53	7.675	
2,300.00	2,295.70	2,302.09	2,299.24	5.46	4.99	143.67	-79.12	-5.19	73.97	63.96	10.01	7.387	
2,400.00	2,395.45	2,402.08	2,398.99	5.73	5.23	142.94	-85.70	-2.87	74.82	64.31	10.50	7.124	
2,500.00	2,495.21	2,502.08	2,498.74	5.99	5.48	142.23	-92.28	-0.56	75.67	64.68	10.99	6.884	
2,600.00	2,594.97	2,602.07	2,598.49	6.25	5.74	141.54	-98.86	1.76	76.54	65.05	11.48	6.664	
2,700.00	2,694.72	2,702.06	2,698.24	6.51	5.99	140.86	-105.44	4.08	77.42	65.44	11.98	6.462	
2,800.00	2,794.48	2,802.05	2,797.99	6.78	6.24	140.20	-112.01	6.39	78.31	65.83	12.48	6.275	
2,900.00	2,894.23	2,902.04	2,897.74	7.04	6.49	139.56	-118.59	8.71	79.20	66.23	12.98	6.103	
3,000.00	2,993.99	3,002.04	2,997.48	7.30	6.75	138.92	-125.17	11.03	80.11	66.63	13.48	5.943	
3,100.00	3,093.75	3,102.03	3,097.23	7.57	7.01	138.31	-131.75	13.35	81.03	67.05	13.98	5.794	
3,200.00	3,193.50	3,202.02	3,196.98	7.83	7.26	137.70	-138.33	15.66	81.96	67.47	14.49	5.656	
3,300.00	3,293.26	3,302.01	3,296.73	8.09	7.52	137.11	-144.91	17.98	82.90	67.90	15.00	5.527	
3,400.00	3,393.02	3,402.00	3,396.48	8.36	7.78	136.53	-151.49	20.30	83.84	68.33	15.51	5.407	
3,500.00	3,492.77	3,502.00	3,496.23	8.62	8.03	135.97	-158.07	22.61	84.79	68.78	16.02	5.294	
3,600.00	3,592.53	3,601.99	3,595.97	8.89	8.29	135.42	-164.65	24.93	85.76	69.23	16.53	5.188	
3,700.00	3,692.29	3,701.98	3,695.72	9.15	8.55	134.88	-171.23	27.25	86.72	69.68	17.04	5.089	
3,800.00	3,792.04	3,801.97	3,795.47	9.41	8.81	134.35	-177.80	29.56	87.70	70.15	17.56	4.996	
3,900.00	3,891.80	3,901.96	3,895.22	9.68	9.07	133.83	-184.38	31.88	88.69	70.61	18.07	4.908	
4,000.00	3,991.56	4,001.96	3,994.97	9.94	9.33	133.33	-190.96	34.20	89.68	71.09	18.59	4.825	
4,100.00	4,091.31	4,101.95	4,094.72	10.21	9.59	132.84	-197.54	36.51	90.67	71.57	19.10	4.747	
4,200.00	4,191.07	4,201.94	4,194.46	10.47	9.85	132.35	-204.12	38.83	91.68	72.06	19.62	4.672	
4,300.00	4,290.82	4,301.93	4,294.21	10.73	10.11	131.88	-210.70	41.15	92.69	72.55	20.14	4.602	
4,400.00	4,390.58	4,401.92	4,393.96	11.00	10.37	131.42	-217.28	43.46	93.71	73.05	20.66	4.536	
4,500.00	4,490.34	4,501.92	4,493.71	11.26	10.63	130.97	-223.86	45.78	94.73	73.55	21.18	4.473	
4,600.00	4,590.09	4,601.91	4,593.46	11.53	10.89	130.52	-230.44	48.10	95.76	74.06	21.70	4.413	
4,700.00	4,689.85	4,701.90	4,693.21	11.79	11.16	130.09	-237.02	50.41	96.79	74.57	22.22	4.356	
4,800.00	4,789.61	4,801.89	4,792.96	12.05	11.42	129.67	-243.60	52.73	97.83	75.09	22.74	4.301	
4,900.00	4,889.36	4,901.88	4,892.70	12.32	11.68	129.25	-250.17	55.05	98.88	75.61	23.27	4.250	
5,000.00	4,989.12	5,001.88	4,992.45	12.58	11.94	128.85	-256.75	57.37	99.93	76.14	23.79	4.200	
5,100.00	5,088.88	5,101.87	5,092.20	12.85	12.20	128.45	-263.33	59.68	100.98	76.67	24.31	4.153	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error: 0.00 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.00 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		
5,200.00	5,188.63	5,201.86	5,191.95	13.11	12.46	128.06	-269.91	62.00	102.04	77.20	24.84	4.108		
5,300.00	5,288.39	5,301.85	5,291.70	13.38	12.73	127.68	-276.49	64.32	103.11	77.74	25.36	4.065		
5,400.00	5,387.74	5,401.69	5,391.30	13.67	12.99	128.63	-283.06	66.63	106.45	80.66	25.78	4.128		
5,500.00	5,483.56	5,508.54	5,497.33	14.14	13.31	133.94	-294.56	70.68	119.50	93.74	25.76	4.639		
5,600.00	5,572.27	5,623.68	5,606.56	14.81	13.87	136.72	-328.22	82.53	135.26	109.62	25.64	5.275		
5,700.00	5,650.61	5,742.71	5,708.40	15.67	14.69	136.69	-385.87	102.83	151.45	125.70	25.75	5.881		
5,800.00	5,715.69	5,864.67	5,795.60	16.76	15.83	134.48	-465.93	131.03	167.15	140.53	26.62	6.279		
5,900.00	5,765.13	5,988.32	5,861.45	18.06	17.29	130.62	-564.31	165.67	181.94	153.23	28.71	6.337		
6,000.00	5,797.10	6,112.24	5,900.98	19.55	19.03	125.55	-674.80	204.58	195.73	163.57	32.16	6.087		
6,100.00	5,810.44	6,231.02	5,912.05	21.17	20.86	119.85	-786.13	243.75	208.75	172.18	36.57	5.708		
6,200.00	5,810.82	6,320.18	5,912.05	22.77	22.17	117.09	-871.05	270.90	225.61	185.36	40.25	5.606		
6,300.00	5,810.82	6,408.62	5,912.05	24.30	23.44	115.05	-956.44	293.88	242.55	198.89	43.66	5.555		
6,400.00	5,810.82	6,499.99	5,912.05	25.88	24.79	113.27	-1,045.68	313.44	259.22	212.15	47.07	5.508		
6,500.00	5,810.82	6,583.56	5,912.05	27.50	26.06	111.86	-1,128.04	327.58	275.42	225.16	50.26	5.480		
6,600.00	5,810.82	6,670.14	5,912.05	29.13	27.39	110.60	-1,213.93	338.41	291.16	237.77	53.39	5.453		
6,700.00	5,810.83	6,756.16	5,912.05	30.77	28.73	109.52	-1,299.67	345.31	306.36	249.97	56.39	5.432		
6,800.00	5,810.83	6,841.67	5,912.05	32.39	30.05	108.58	-1,385.12	348.34	320.95	261.71	59.24	5.418		
6,900.00	5,810.83	6,936.74	5,912.05	34.01	31.59	107.75	-1,480.19	348.49	333.83	271.70	62.13	5.373		
7,000.00	5,810.83	7,036.37	5,912.05	35.60	33.26	107.24	-1,579.81	348.49	341.98	277.08	64.90	5.269		
7,100.00	5,810.83	7,136.30	5,912.05	37.17	34.97	107.05	-1,679.75	348.49	345.14	277.72	67.42	5.119		
7,200.00	5,810.84	7,236.30	5,912.05	38.75	36.69	107.05	-1,779.75	348.48	345.18	274.55	70.62	4.888		
7,300.00	5,810.84	7,336.30	5,912.05	40.38	38.44	107.05	-1,879.75	348.48	345.17	271.17	74.00	4.664		
7,400.00	5,810.84	7,436.30	5,912.04	42.03	40.20	107.05	-1,979.75	348.47	345.17	267.76	77.41	4.459		
7,500.00	5,810.84	7,536.30	5,912.04	43.71	41.97	107.05	-2,079.75	348.47	345.16	264.32	80.84	4.270		
7,600.00	5,810.84	7,636.30	5,912.04	45.40	43.76	107.05	-2,179.75	348.47	345.16	260.86	84.30	4.094		
7,700.00	5,810.85	7,736.30	5,912.04	47.11	45.56	107.05	-2,279.75	348.46	345.16	257.38	87.78	3.932		
7,800.00	5,810.85	7,836.30	5,912.04	48.84	47.37	107.05	-2,379.75	348.46	345.15	253.88	91.27	3.782		
7,900.00	5,810.85	7,936.30	5,912.04	50.58	49.18	107.05	-2,479.75	348.45	345.15	250.37	94.78	3.641		
8,000.00	5,810.85	8,036.30	5,912.04	52.33	51.01	107.05	-2,579.75	348.45	345.14	246.84	98.31	3.511		
8,100.00	5,810.86	8,136.30	5,912.04	54.10	52.84	107.05	-2,679.75	348.45	345.14	243.30	101.84	3.389		
8,200.00	5,810.86	8,236.30	5,912.04	55.87	54.68	107.05	-2,779.75	348.44	345.13	239.74	105.39	3.275		
8,300.00	5,810.86	8,336.30	5,912.04	57.66	56.52	107.05	-2,879.75	348.44	345.13	236.18	108.95	3.168		
8,400.00	5,810.86	8,436.30	5,912.04	59.45	58.37	107.04	-2,979.75	348.43	345.13	232.61	112.52	3.067		
8,500.00	5,810.87	8,536.30	5,912.04	61.25	60.22	107.04	-3,079.75	348.43	345.12	229.03	116.09	2.973		
8,600.00	5,810.87	8,636.30	5,912.04	63.06	62.08	107.04	-3,179.75	348.43	345.12	225.44	119.68	2.884		
8,700.00	5,810.87	8,736.30	5,912.04	64.88	63.94	107.04	-3,279.75	348.42	345.11	221.85	123.27	2.800		
8,800.00	5,810.87	8,836.30	5,912.03	66.70	65.80	107.04	-3,379.75	348.42	345.11	218.24	126.86	2.720		
8,900.00	5,810.88	8,936.30	5,912.03	68.52	67.67	107.04	-3,479.75	348.41	345.10	214.64	130.47	2.645		
9,000.00	5,810.88	9,036.30	5,912.03	70.35	69.54	107.04	-3,579.75	348.41	345.10	211.03	134.07	2.574		
9,100.00	5,810.88	9,136.30	5,912.03	72.19	71.41	107.04	-3,679.75	348.41	345.10	207.41	137.69	2.506		
9,200.00	5,810.88	9,236.30	5,912.03	74.03	73.29	107.04	-3,779.75	348.40	345.09	203.79	141.30	2.442		
9,300.00	5,810.88	9,336.30	5,912.03	75.87	75.17	107.04	-3,879.75	348.40	345.09	200.16	144.93	2.381		
9,400.00	5,810.89	9,436.30	5,912.03	77.72	77.05	107.04	-3,979.75	348.40	345.08	196.53	148.55	2.323		
9,500.00	5,810.89	9,536.30	5,912.03	79.57	78.93	107.04	-4,079.75	348.39	345.08	192.90	152.18	2.268		
9,600.00	5,810.89	9,636.30	5,912.03	81.43	80.81	107.04	-4,179.75	348.39	345.07	189.26	155.81	2.215		
9,700.00	5,810.89	9,736.30	5,912.03	83.29	82.70	107.04	-4,279.75	348.38	345.07	185.62	159.45	2.164		
9,800.00	5,810.90	9,836.30	5,912.03	85.15	84.59	107.04	-4,379.75	348.38	345.06	181.98	163.09	2.116		
9,900.00	5,810.90	9,936.30	5,912.03	87.01	86.48	107.04	-4,479.75	348.38	345.06	178.33	166.73	2.070		
10,000.00	5,810.90	10,036.30	5,912.03	88.87	88.37	107.04	-4,579.75	348.37	345.06	174.68	170.37	2.025		
10,100.00	5,810.90	10,136.30	5,912.03	90.74	90.26	107.04	-4,679.75	348.37	345.05	171.03	174.02	1.983		
10,200.00	5,810.91	10,236.30	5,912.02	92.61	92.15	107.04	-4,779.75	348.36	345.05	167.38	177.67	1.942		
10,300.00	5,810.91	10,336.30	5,912.02	94.49	94.04	107.04	-4,879.75	348.36	345.04	163.72	181.32	1.903		

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2													Offset Site Error:	0.00 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.00 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		
10,400.00	5,810.91	10,436.30	5,912.02	96.36	95.94	107.04	-4,979.75	348.36	345.04	160.07	184.97	1.865		
10,500.00	5,810.91	10,536.30	5,912.02	98.24	97.84	107.04	-5,079.75	348.35	345.03	156.41	188.63	1.829		
10,600.00	5,810.92	10,636.30	5,912.02	100.11	99.73	107.04	-5,179.75	348.35	345.03	152.75	192.28	1.794		
10,700.00	5,810.92	10,736.30	5,912.02	101.99	101.63	107.04	-5,279.75	348.34	345.03	149.08	195.94	1.761		
10,800.00	5,810.92	10,836.30	5,912.02	103.88	103.53	107.04	-5,379.75	348.34	345.02	145.42	199.60	1.729		
10,900.00	5,810.92	10,936.30	5,912.02	105.76	105.43	107.04	-5,479.75	348.34	345.02	141.75	203.26	1.697		
11,000.00	5,810.93	11,036.30	5,912.02	107.64	107.33	107.04	-5,579.75	348.33	345.01	138.09	206.93	1.667		
11,100.00	5,810.93	11,136.30	5,912.02	109.53	109.23	107.04	-5,679.75	348.33	345.01	134.42	210.59	1.638		
11,200.00	5,810.93	11,236.30	5,912.02	111.41	111.13	107.04	-5,779.75	348.32	345.00	130.75	214.26	1.610		
11,300.00	5,810.93	11,336.30	5,912.02	113.30	113.04	107.04	-5,879.75	348.32	345.00	127.08	217.92	1.583		
11,400.00	5,810.93	11,436.30	5,912.02	115.19	114.94	107.04	-5,979.75	348.32	345.00	123.41	221.59	1.557		
11,500.00	5,810.94	11,536.30	5,912.02	117.08	116.84	107.04	-6,079.75	348.31	344.99	119.73	225.26	1.532		
11,600.00	5,810.94	11,636.30	5,912.01	118.97	118.75	107.03	-6,179.75	348.31	344.99	116.06	228.93	1.507		
11,700.00	5,810.94	11,736.30	5,912.01	120.86	120.65	107.03	-6,279.75	348.30	344.98	112.38	232.60	1.483 Level 3		
11,800.00	5,810.94	11,836.30	5,912.01	122.76	122.56	107.03	-6,379.75	348.30	344.98	108.71	236.27	1.460 Level 3		
11,900.00	5,810.95	11,936.30	5,912.01	124.65	124.46	107.03	-6,479.75	348.30	344.97	105.03	239.94	1.438 Level 3		
12,000.00	5,810.95	12,036.30	5,912.01	126.55	126.37	107.03	-6,579.75	348.29	344.97	101.35	243.62	1.416 Level 3		
12,100.00	5,810.95	12,136.30	5,912.01	128.44	128.28	107.03	-6,679.75	348.29	344.97	97.67	247.29	1.395 Level 3		
12,200.00	5,810.95	12,236.30	5,912.01	130.34	130.18	107.03	-6,779.75	348.28	344.96	93.99	250.97	1.375 Level 3		
12,300.00	5,810.96	12,336.30	5,912.01	132.23	132.09	107.03	-6,879.75	348.28	344.96	90.31	254.64	1.355 Level 3		
12,400.00	5,810.96	12,436.30	5,912.01	134.13	134.00	107.03	-6,979.75	348.28	344.95	86.63	258.32	1.335 Level 3		
12,500.00	5,810.96	12,536.30	5,912.01	136.03	135.91	107.03	-7,079.75	348.27	344.95	82.95	262.00	1.317 Level 3		
12,600.00	5,810.96	12,636.30	5,912.01	137.93	137.82	107.03	-7,179.75	348.27	344.94	79.27	265.67	1.298 Level 3		
12,700.00	5,810.97	12,736.30	5,912.01	139.83	139.73	107.03	-7,279.75	348.26	344.94	75.59	269.35	1.281 Level 3		
12,800.00	5,810.97	12,836.30	5,912.01	141.73	141.64	107.03	-7,379.75	348.26	344.93	71.90	273.03	1.263 Level 3		
12,900.00	5,810.97	12,936.30	5,912.01	143.63	143.55	107.03	-7,479.75	348.26	344.93	68.22	276.71	1.247 Level 2		
13,000.00	5,810.97	13,036.30	5,912.00	145.53	145.46	107.03	-7,579.75	348.25	344.93	64.53	280.39	1.230 Level 2		
13,100.00	5,810.98	13,136.30	5,912.00	147.43	147.37	107.03	-7,679.75	348.25	344.92	60.85	284.07	1.214 Level 2		
13,200.00	5,810.98	13,236.30	5,912.00	149.34	149.28	107.03	-7,779.75	348.24	344.92	57.16	287.75	1.199 Level 2		
13,300.00	5,810.98	13,336.30	5,912.00	151.24	151.19	107.03	-7,879.75	348.24	344.91	53.48	291.44	1.183 Level 2		
13,400.00	5,810.98	13,436.30	5,912.00	153.14	153.10	107.03	-7,979.75	348.24	344.91	49.79	295.12	1.169 Level 2		
13,500.00	5,810.98	13,536.30	5,912.00	155.05	155.01	107.03	-8,079.75	348.23	344.90	46.10	298.80	1.154 Level 2		
13,600.00	5,810.99	13,636.30	5,912.00	156.95	156.80	107.03	-8,179.75	348.23	344.90	42.54	302.36	1.141 Level 2		
13,658.43	5,810.99	13,694.73	5,912.00	158.06	157.71	107.03	-8,238.17	348.23	344.90	40.59	304.31	1.133 Level 2, SF		

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.01	0.01	0.00	0.00	90.05	-0.03	33.04	33.04	32.86	0.19	176.666	
100.00	100.00	100.01	100.01	0.09	0.09	90.05	-0.03	33.04	33.04	32.41	0.64	51.909	
200.00	200.00	200.01	200.01	0.32	0.32	90.05	-0.03	33.04	33.04	31.96	1.09	30.424	
300.00	300.00	300.01	300.01	0.54	0.54	90.05	-0.03	33.04	33.04	31.51	1.54	21.518	
400.00	400.00	400.01	400.01	0.77	0.77	90.05	-0.03	33.04	32.21	30.25	1.96	16.427	
500.00	499.98	499.99	499.99	0.97	0.99	-62.85	-0.03	33.04	30.18	27.80	2.38	12.685	
600.00	599.84	599.85	599.85	1.17	1.22	-71.75	-0.03	33.04	28.77	25.94	2.82	10.193	
700.00	699.59	699.60	699.60	1.38	1.44	-85.04	-0.03	33.04	28.66	25.67	2.99	9.600 CC, ES	
735.76	735.27	735.28	735.28	1.46	1.52	-90.00	-0.03	33.04	29.01	25.73	3.28	8.848	
800.00	799.35	799.36	799.36	1.61	1.67	-98.87	-0.03	33.04	30.86	27.13	3.74	8.262	
900.00	899.11	899.12	899.12	1.85	1.89	-111.74	-0.03	33.04	33.45	29.28	4.17	8.027	
1,000.00	998.86	999.29	999.27	2.10	2.09	-120.01	-1.35	34.15	35.18	30.59	4.59	7.662	
1,100.00	1,098.62	1,099.70	1,099.54	2.35	2.28	-121.87	-5.37	37.50	36.28	31.24	5.04	7.203	
1,200.00	1,198.38	1,199.70	1,199.29	2.61	2.48	-121.00	-10.72	41.98	37.39	31.89	5.50	6.803	
1,300.00	1,298.13	1,299.69	1,299.04	2.86	2.69	-120.17	-16.08	46.45	38.50	32.53	5.96	6.455	
1,400.00	1,397.89	1,399.68	1,398.79	3.12	2.91	-119.40	-21.43	50.92	39.62	33.18	6.44	6.151	
1,500.00	1,497.65	1,499.67	1,498.54	3.38	3.13	-118.67	-26.78	55.39	40.74	33.82	6.92	5.884	
1,600.00	1,597.40	1,599.67	1,598.29	3.63	3.36	-117.98	-32.13	59.87	41.88	34.46	7.41	5.648	
1,700.00	1,697.16	1,699.66	1,698.03	3.89	3.60	-117.32	-37.49	64.34	43.01	35.10	7.91	5.439	
1,800.00	1,796.91	1,799.65	1,797.78	4.15	3.84	-116.70	-42.84	68.81	44.15	35.75	8.41	5.253	
1,900.00	1,896.67	1,899.64	1,897.53	4.42	4.08	-116.12	-48.19	73.28	45.30	36.39	8.91	5.086	
2,000.00	1,996.43	1,999.64	1,997.28	4.68	4.33	-115.56	-53.54	77.76	46.45	37.04	9.41	4.935	
2,100.00	2,096.18	2,099.63	2,097.03	4.94	4.58	-115.03	-58.90	82.23	47.60	37.68	9.92	4.800	
2,200.00	2,195.94	2,199.62	2,196.78	5.20	4.83	-114.52	-64.25	86.70	48.76	38.33	10.43	4.676	
2,300.00	2,295.70	2,299.61	2,295.53	5.46	5.08	-114.04	-69.60	91.17	49.92	38.98	10.94	4.564	
2,400.00	2,395.45	2,399.61	2,396.28	5.73	5.33	-113.58	-74.96	95.65	51.08	39.63	11.45	4.462	
2,500.00	2,495.21	2,499.60	2,496.03	5.99	5.58	-113.15	-80.31	100.12	52.25	40.29	11.96	4.368	
2,600.00	2,594.97	2,599.59	2,595.78	6.25	5.84	-112.73	-85.66	104.59	53.42	40.94	12.48	4.281	
2,700.00	2,694.72	2,699.58	2,695.52	6.51	6.09	-112.33	-91.01	109.06	54.59	41.60	12.99	4.201	
2,800.00	2,794.48	2,799.58	2,795.27	6.78	6.35	-111.95	-96.37	113.53	55.76	42.25	13.51	4.127	
2,900.00	2,894.23	2,899.57	2,895.02	7.04	6.60	-111.58	-101.72	118.01	56.94	42.91	14.03	4.059	
3,000.00	2,993.99	2,999.56	2,994.77	7.30	6.86	-111.23	-107.07	122.48	58.12	43.57	14.55	3.995	
3,100.00	3,093.75	3,099.55	3,094.52	7.57	7.12	-110.89	-112.42	126.95	59.30	44.23	15.07	3.936	
3,200.00	3,193.50	3,199.55	3,194.27	7.83	7.38	-110.57	-117.78	131.42	60.48	44.89	15.59	3.880	
3,300.00	3,293.26	3,299.54	3,294.02	8.09	7.64	-110.26	-123.13	135.90	61.66	45.55	16.11	3.828	
3,400.00	3,393.02	3,399.53	3,393.77	8.36	7.89	-109.96	-128.48	140.37	62.85	46.22	16.63	3.779	
3,500.00	3,492.77	3,499.52	3,493.52	8.62	8.15	-109.67	-133.83	144.84	64.03	46.88	17.15	3.734	
3,600.00	3,592.53	3,599.52	3,593.26	8.89	8.41	-109.39	-139.19	149.31	65.22	47.55	17.67	3.691	
3,700.00	3,692.29	3,699.51	3,693.01	9.15	8.67	-109.13	-144.54	153.79	66.41	48.22	18.19	3.650	
3,800.00	3,792.04	3,799.50	3,792.76	9.41	8.93	-108.87	-149.89	158.26	67.60	48.88	18.72	3.612	
3,900.00	3,891.80	3,899.49	3,892.51	9.68	9.19	-108.62	-155.24	162.73	68.79	49.55	19.24	3.575	
4,000.00	3,991.56	3,999.49	3,992.26	9.94	9.45	-108.38	-160.60	167.20	69.99	50.22	19.76	3.541	
4,100.00	4,091.31	4,099.48	4,092.01	10.21	9.71	-108.15	-165.95	171.67	71.18	50.89	20.29	3.508	
4,200.00	4,191.07	4,199.47	4,191.76	10.47	9.98	-107.92	-171.30	176.15	72.38	51.56	20.81	3.478	
4,300.00	4,290.82	4,299.46	4,291.51	10.73	10.24	-107.71	-176.65	180.62	73.57	52.24	21.34	3.448	
4,400.00	4,390.58	4,399.46	4,391.26	11.00	10.50	-107.50	-182.01	185.09	74.77	52.91	21.86	3.420	
4,500.00	4,490.34	4,499.45	4,491.00	11.26	10.76	-107.30	-187.36	189.56	75.97	53.58	22.39	3.394	
4,600.00	4,590.09	4,599.44	4,590.75	11.53	11.02	-107.10	-192.71	194.04	77.17	54.26	22.91	3.368	
4,700.00	4,689.85	4,699.43	4,690.50	11.79	11.28	-106.91	-198.07	198.51	78.37	54.93	23.44	3.344	
4,800.00	4,789.61	4,799.43	4,790.25	12.05	11.54	-106.72	-203.42	202.98	79.57	55.61	23.96	3.321	
4,900.00	4,889.36	4,899.42	4,890.00	12.32	11.81	-106.55	-208.77	207.45	80.77	56.28	24.49	3.298	
5,000.00	4,989.12	4,999.41	4,989.75	12.58	12.07	-106.37	-214.12	211.93					

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: O-ISCWSA MWD												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.00	5,088.88	5,099.40	5,089.50	12.85	12.33	-106.20	-219.48	216.40	81.97	56.96	25.01	3.277	
5,200.00	5,188.63	5,199.40	5,189.25	13.11	12.59	-106.04	-224.83	220.87	83.17	57.63	25.54	3.257	
5,300.00	5,288.39	5,299.39	5,289.00	13.38	12.85	-105.88	-230.18	225.34	84.38	58.31	26.06	3.237	
5,400.00	5,387.74	5,399.23	5,388.59	13.67	13.12	-107.88	-235.53	229.81	86.65	60.10	26.55	3.263	
5,500.00	5,483.56	5,500.41	5,489.12	14.14	13.42	-117.16	-243.79	236.72	95.37	68.60	26.77	3.563	
5,600.00	5,572.27	5,606.31	5,590.38	14.81	13.91	-124.02	-267.09	256.18	109.47	82.61	26.86	4.076	
5,700.00	5,650.61	5,716.10	5,686.64	15.67	14.64	-127.55	-307.29	289.77	126.62	99.58	27.04	4.683	
5,800.00	5,715.69	5,829.64	5,772.37	16.76	15.66	-128.42	-364.15	337.28	145.17	117.46	27.71	5.239	
5,900.00	5,765.13	5,946.52	5,841.73	18.06	17.02	-127.31	-436.11	397.41	163.95	134.64	29.30	5.595	
6,000.00	5,797.10	6,066.11	5,889.28	19.55	18.73	-124.76	-520.10	467.58	182.13	150.06	32.06	5.680	
6,100.00	5,810.44	6,187.52	5,910.80	21.17	20.71	-121.15	-611.58	544.02	199.12	163.23	35.90	5.547	
6,200.00	5,810.82	6,299.87	5,911.80	22.77	22.60	-118.42	-698.84	614.74	214.74	174.99	39.75	5.402	
6,300.00	5,810.82	6,409.78	5,911.80	24.30	24.40	-116.36	-787.93	679.06	230.12	186.87	43.24	5.322	
6,400.00	5,810.82	6,520.89	5,911.80	25.88	26.29	-114.61	-881.61	738.78	245.25	198.55	46.70	5.252	
6,500.00	5,810.82	6,633.20	5,911.80	27.50	28.24	-113.11	-979.68	793.50	260.02	209.94	50.07	5.193	
6,600.00	5,810.82	6,746.71	5,911.80	29.13	30.22	-111.82	-1,081.87	842.85	274.31	220.97	53.34	5.143	
6,700.00	5,810.83	6,861.38	5,911.80	30.77	32.22	-110.71	-1,187.91	886.45	288.05	231.58	56.47	5.101	
6,800.00	5,810.83	6,977.19	5,911.80	32.39	34.21	-109.76	-1,297.46	923.95	301.13	241.70	59.43	5.067	
6,900.00	5,810.83	7,094.10	5,911.80	34.01	36.19	-108.93	-1,410.16	955.00	313.48	251.27	62.20	5.039	
7,000.00	5,810.83	7,212.07	5,911.81	35.60	38.14	-108.22	-1,525.58	979.29	325.02	260.24	64.78	5.017	
7,100.00	5,810.83	7,331.04	5,911.81	37.17	40.05	-107.60	-1,643.28	996.52	335.69	268.56	67.13	5.000	
7,200.00	5,810.84	7,451.10	5,911.81	38.75	41.92	-107.11	-1,762.91	1,006.44	343.55	272.81	70.74	4.857	
7,300.00	5,810.84	7,568.01	5,911.82	40.38	43.70	-106.99	-1,879.78	1,008.95	345.55	271.18	74.38	4.646	
7,400.00	5,810.84	7,668.01	5,911.82	42.03	45.21	-106.99	-1,979.78	1,008.95	345.55	267.87	77.68	4.448	
7,500.00	5,810.84	7,768.01	5,911.82	43.71	46.76	-106.99	-2,079.78	1,008.94	345.55	264.54	81.01	4.265	
7,600.00	5,810.84	7,868.01	5,911.82	45.40	48.32	-106.99	-2,179.78	1,008.94	345.56	261.18	84.38	4.095	
7,700.00	5,810.85	7,968.01	5,911.83	47.11	49.92	-106.99	-2,279.78	1,008.93	345.56	257.79	87.77	3.937	
7,800.00	5,810.85	8,068.01	5,911.83	48.84	51.53	-106.99	-2,379.78	1,008.92	345.56	254.37	91.18	3.790	
7,900.00	5,810.85	8,168.01	5,911.83	50.58	53.16	-106.99	-2,479.78	1,008.92	345.56	250.94	94.62	3.652	
8,000.00	5,810.85	8,268.01	5,911.84	52.33	54.82	-106.99	-2,579.78	1,008.91	345.56	247.48	98.08	3.523	
8,100.00	5,810.86	8,368.01	5,911.84	54.10	56.48	-106.99	-2,679.78	1,008.90	345.56	244.01	101.55	3.403	
8,200.00	5,810.86	8,468.01	5,911.84	55.87	58.17	-106.99	-2,779.78	1,008.90	345.56	240.52	105.04	3.290	
8,300.00	5,810.86	8,568.01	5,911.84	57.66	59.86	-106.99	-2,879.78	1,008.89	345.56	237.02	108.55	3.184	
8,400.00	5,810.86	8,668.01	5,911.85	59.45	61.58	-106.99	-2,979.78	1,008.88	345.57	233.50	112.06	3.084	
8,500.00	5,810.87	8,768.01	5,911.85	61.25	63.30	-106.99	-3,079.78	1,008.88	345.57	229.98	115.59	2.990	
8,600.00	5,810.87	8,868.01	5,911.85	63.06	65.03	-106.99	-3,179.78	1,008.87	345.57	226.44	119.13	2.901	
8,700.00	5,810.87	8,968.01	5,911.86	64.88	66.78	-106.99	-3,279.78	1,008.87	345.57	222.89	122.67	2.817	
8,800.00	5,810.87	9,068.01	5,911.86	66.70	68.53	-106.99	-3,379.78	1,008.86	345.57	219.34	126.23	2.738	
8,900.00	5,810.88	9,168.01	5,911.86	68.52	70.29	-106.99	-3,479.78	1,008.85	345.57	215.78	129.80	2.662	
9,000.00	5,810.88	9,268.01	5,911.87	70.35	72.06	-106.99	-3,579.78	1,008.85	345.57	212.21	133.37	2.591	
9,100.00	5,810.88	9,368.01	5,911.87	72.19	73.84	-106.99	-3,679.78	1,008.84	345.57	208.63	136.95	2.523	
9,200.00	5,810.88	9,468.01	5,911.87	74.03	75.62	-106.99	-3,779.78	1,008.83	345.58	205.04	140.53	2.459	
9,300.00	5,810.88	9,568.01	5,911.87	75.87	77.42	-106.99	-3,879.78	1,008.83	345.58	201.46	144.12	2.398	
9,400.00	5,810.89	9,668.01	5,911.88	77.72	79.21	-106.99	-3,979.78	1,008.82	345.58	197.86	147.72	2.339	
9,500.00	5,810.89	9,768.01	5,911.88	79.57	81.02	-106.99	-4,079.78	1,008.81	345.58	194.26	151.32	2.284	
9,600.00	5,810.89	9,868.01	5,911.88	81.43	82.83	-106.99	-4,179.78	1,008.81	345.58	190.66	154.92	2.231	
9,700.00	5,810.89	9,968.01	5,911.89	83.29	84.64	-106.99	-4,279.78	1,008.80	345.58	187.05	158.54	2.180	
9,800.00	5,810.90	10,068.01	5,911.89	85.15	86.46	-106.99	-4,379.78	1,008.80	345.58	183.43	162.15	2.131	
9,900.00	5,810.90	10,168.01	5,911.89	87.01	88.28	-106.99	-4,479.78	1,008.79	345.58	179.82	165.77	2.085	
10,000.00	5,810.90	10,268.01	5,911.89	88.87	90.11	-106.99	-4,579.78	1,008.78	345.59	176.20	169.39	2.040	
10,100.00	5,810.90	10,368.01	5,911.90	90.74	91.94	-106.99	-4,679.78	1,008.78	345.59	172.57	173.01	1.997	
10,200.00	5,810.91	10,468.01	5,911.90	92.61	93.77	-106.99	-4,779.78	1,008.77	345.59	168.95	176.64	1.956	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #12F-1307A
Project:	Weld County, CO	TVD Reference:	WELL @ 4953.59usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	MD Reference:	WELL @ 4953.59usft (Original Well Elev)
Site Error:	0.00usft	North Reference:	True
Reference Well:	Razor Federal #12F-1307A	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00usft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2												Offset Site Error:	0.00 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.00 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
10,300.00	5,810.91	10,568.01	5,911.90	94.49	95.61	-106.99	-4,879.78	1,008.76	345.59	165.32		180.27	1.917
10,400.00	5,810.91	10,668.01	5,911.91	96.36	97.45	-106.99	-4,979.78	1,008.76	345.59	161.68		183.91	1.879
10,500.00	5,810.91	10,768.01	5,911.91	98.24	99.30	-106.99	-5,079.78	1,008.75	345.59	158.05		187.54	1.843
10,600.00	5,810.92	10,868.01	5,911.91	100.11	101.15	-106.99	-5,179.78	1,008.74	345.59	154.41		191.18	1.808
10,700.00	5,810.92	10,968.01	5,911.91	101.99	103.00	-106.99	-5,279.78	1,008.74	345.59	150.77		194.82	1.774
10,800.00	5,810.92	11,068.01	5,911.92	103.88	104.85	-106.99	-5,379.78	1,008.73	345.60	147.13		198.47	1.741
10,900.00	5,810.92	11,168.01	5,911.92	105.76	106.70	-106.99	-5,479.78	1,008.73	345.60	143.49		202.11	1.710
11,000.00	5,810.93	11,268.01	5,911.92	107.64	108.56	-106.99	-5,579.78	1,008.72	345.60	139.84		205.76	1.680
11,100.00	5,810.93	11,368.01	5,911.93	109.53	110.42	-106.99	-5,679.78	1,008.71	345.60	136.19		209.41	1.650
11,200.00	5,810.93	11,468.01	5,911.93	111.41	112.28	-106.99	-5,779.78	1,008.71	345.60	132.54		213.06	1.622
11,300.00	5,810.93	11,568.01	5,911.93	113.30	114.15	-106.99	-5,879.78	1,008.70	345.60	128.89		216.71	1.595
11,400.00	5,810.93	11,668.01	5,911.93	115.19	116.01	-106.99	-5,979.78	1,008.69	345.60	125.24		220.37	1.568
11,500.00	5,810.94	11,768.01	5,911.94	117.08	117.88	-106.99	-6,079.78	1,008.69	345.61	121.58		224.02	1.543
11,600.00	5,810.94	11,868.01	5,911.94	118.97	119.75	-106.99	-6,179.78	1,008.68	345.61	117.93		227.68	1.518
11,700.00	5,810.94	11,968.01	5,911.94	120.86	121.62	-106.99	-6,279.78	1,008.67	345.61	114.27		231.34	1.494 Level 3
11,800.00	5,810.94	12,068.01	5,911.95	122.76	123.50	-106.99	-6,379.78	1,008.67	345.61	110.61		235.00	1.471 Level 3
11,900.00	5,810.95	12,168.01	5,911.95	124.65	125.37	-106.99	-6,479.78	1,008.66	345.61	106.95		238.66	1.448 Level 3
12,000.00	5,810.95	12,268.01	5,911.95	126.55	127.25	-106.99	-6,579.78	1,008.66	345.61	103.29		242.32	1.426 Level 3
12,100.00	5,810.95	12,368.01	5,911.95	128.44	129.12	-106.99	-6,679.78	1,008.65	345.61	99.63		245.98	1.405 Level 3
12,200.00	5,810.95	12,468.01	5,911.96	130.34	131.00	-106.99	-6,779.78	1,008.64	345.61	95.97		249.65	1.384 Level 3
12,300.00	5,810.96	12,568.01	5,911.96	132.23	132.88	-106.99	-6,879.78	1,008.64	345.62	92.30		253.31	1.364 Level 3
12,400.00	5,810.96	12,668.01	5,911.96	134.13	134.76	-106.99	-6,979.78	1,008.63	345.62	88.64		256.98	1.345 Level 3
12,500.00	5,810.96	12,768.01	5,911.97	136.03	136.64	-106.99	-7,079.78	1,008.62	345.62	84.97		260.65	1.326 Level 3
12,600.00	5,810.96	12,868.01	5,911.97	137.93	138.53	-106.99	-7,179.78	1,008.62	345.62	81.30		264.31	1.308 Level 3
12,700.00	5,810.97	12,968.01	5,911.97	139.83	140.41	-106.99	-7,279.78	1,008.61	345.62	77.64		267.98	1.290 Level 3
12,800.00	5,810.97	13,068.01	5,911.98	141.73	142.30	-106.99	-7,379.78	1,008.60	345.62	73.97		271.65	1.272 Level 3
12,900.00	5,810.97	13,168.01	5,911.98	143.63	144.18	-106.99	-7,479.78	1,008.60	345.62	70.30		275.32	1.255 Level 3
13,000.00	5,810.97	13,268.01	5,911.98	145.53	146.07	-106.99	-7,579.78	1,008.59	345.62	66.63		279.00	1.239 Level 2
13,100.00	5,810.98	13,368.01	5,911.98	147.43	147.96	-106.99	-7,679.78	1,008.58	345.63	62.96		282.67	1.223 Level 2
13,200.00	5,810.98	13,468.01	5,911.99	149.34	149.85	-106.99	-7,779.78	1,008.58	345.63	59.29		286.34	1.207 Level 2
13,300.00	5,810.98	13,568.01	5,911.99	151.24	151.74	-106.99	-7,879.78	1,008.57	345.63	55.61		290.01	1.192 Level 2
13,400.00	5,810.98	13,668.01	5,911.99	153.14	153.63	-106.99	-7,979.78	1,008.57	345.63	51.94		293.69	1.177 Level 2
13,500.00	5,810.98	13,768.01	5,912.00	155.05	155.52	-106.99	-8,079.78	1,008.56	345.63	48.27		297.36	1.162 Level 2
13,600.00	5,810.99	13,868.01	5,912.00	156.95	157.41	-106.99	-8,179.78	1,008.55	345.63	44.59		301.04	1.148 Level 2
13,632.92	5,810.99	13,900.94	5,912.00	157.58	158.03	-106.99	-8,212.70	1,008.55	345.63	43.41		302.23	1.144 Level 2
13,658.43	5,810.99	13,925.40	5,912.00	158.06	158.41	-106.99	-8,237.17	1,008.55	345.63	42.55		303.08	1.140 Level 2, SF

Cathedral Energy Services

Anticollision Report

Company: Whiting Petroleum Corporation
Project: Weld County, CO
Reference Site: S12-T10N-R58W
Site Error: 0.00usft
Reference Well: Razor Federal #12F-1307A
Well Error: 0.00usft
Reference Wellbore: HZ
Reference Design: Plan #3

Local Co-ordinate Reference: Well Razor Federal #12F-1307A
TVD Reference: WELL @ 4953.59usft (Original Well Elev)
MD Reference: WELL @ 4953.59usft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 4953.59usft (Original Well E
 Offset Depths are relative to Offset Datum
 Central Meridian is 105° 30' 0.000 W °

Coordinates are relative to: Razor Federal #12F-1307A
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 1.09°

