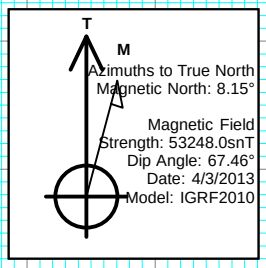
Whiting Petroleum Corporation

Project: Weld County, CO
Site: S27-T10N-R58W
Well: Razor #27J-2209A
Wellbore: HZ
Design: Plan #2

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP @ 500' MD
3	700.0	4.00	326.92	699.8	5.8	-3.8	2.00	326.92	6.1	EOB; Inc=4°
4	3296.5	4.00	326.92	3290.0	157.6	-102.7	0.00	0.00	165.2	
5	5193.1	4.00	326.92	5182.0	268.5	-174.9	0.00	0.00	281.4	Curve KOP @ 5193.1' MD
6	5975.1	90.00	331.89	5666.7	725.4	-422.3	11.00	4.99	756.5	Start 3° Turn
7	6912.1	90.00	0.00	5666.7	1625.3	-647.6	3.00	90.01	1671.4	EOT; Azm=0°
8	13462.3	90.00	0.00	5667.0	8175.5	-647.3	0.00	0.00	8201.0	PBHL @ 13462.3' MD



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
2209A BH Tgt	5667.0	7675.6	-637.3	1549356.16	3456289.76	40.829717	-103.851131
2209A BHL	5667.0	8175.5	-647.3	1549855.77	3456270.50	40.831089	-103.851167

Plan #2
Razor #27J-2209A
WELL @ 4783.5usft (Original Well Elev)
Ground Elevation @ 4767.0
North American Datum 1983
Well Razor #27J-2209A, True North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Project Weld County, CO

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site S27-T10N-R58W

Site Position:		**Northing:**	1,541,647.64 usft	**Latitude:**	40.808594
From:	Lat/Long	**Easting:**	3,455,684.98 usft	**Longitude:**	-103.853833
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	1.06 °

Well Razor #27J-2209A

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,541,693.78 usft	**Latitude:**	40.808650
	+E/-W	0.0 usft	**Easting:**	3,457,069.90 usft	**Longitude:**	-103.848828
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	4,767.0 usft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/3/2013	8.15	67.46	53,248

Design Plan #2

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	355.47

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	4.00	326.92	699.8	5.8	-3.8	2.00	2.00	0.00	326.92	
3,296.5	4.00	326.92	3,290.0	157.6	-102.7	0.00	0.00	0.00	0.00	
5,193.1	4.00	326.92	5,182.0	268.5	-174.9	0.00	0.00	0.00	0.00	
5,975.1	90.00	331.89	5,666.7	725.4	-422.3	11.00	11.00	0.64	4.99	
6,912.1	90.00	0.00	5,666.7	1,625.3	-647.6	3.00	0.00	3.00	90.01	
13,462.3	90.00	0.00	5,667.0	8,175.5	-647.3	0.00	0.00	0.00	0.00	2209A BHL

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500' MD
600.0	2.00	326.92	600.0	1.5	-1.0	1.5	2.00	2.00	
700.0	4.00	326.92	699.8	5.8	-3.8	6.1	2.00	2.00	EOB; Inc=4°
800.0	4.00	326.92	799.6	11.7	-7.6	12.3	0.00	0.00	
900.0	4.00	326.92	899.4	17.5	-11.4	18.4	0.00	0.00	
1,000.0	4.00	326.92	999.1	23.4	-15.2	24.5	0.00	0.00	
1,100.0	4.00	326.92	1,098.9	29.2	-19.0	30.6	0.00	0.00	
1,200.0	4.00	326.92	1,198.6	35.1	-22.8	36.8	0.00	0.00	
1,300.0	4.00	326.92	1,298.4	40.9	-26.7	42.9	0.00	0.00	
1,400.0	4.00	326.92	1,398.1	46.8	-30.5	49.0	0.00	0.00	
1,500.0	4.00	326.92	1,497.9	52.6	-34.3	55.1	0.00	0.00	
1,600.0	4.00	326.92	1,597.6	58.4	-38.1	61.3	0.00	0.00	
1,700.0	4.00	326.92	1,697.4	64.3	-41.9	67.4	0.00	0.00	
1,800.0	4.00	326.92	1,797.2	70.1	-45.7	73.5	0.00	0.00	
1,900.0	4.00	326.92	1,896.9	76.0	-49.5	79.7	0.00	0.00	
2,000.0	4.00	326.92	1,996.7	81.8	-53.3	85.8	0.00	0.00	
2,100.0	4.00	326.92	2,096.4	87.7	-57.1	91.9	0.00	0.00	
2,200.0	4.00	326.92	2,196.2	93.5	-60.9	98.0	0.00	0.00	
2,300.0	4.00	326.92	2,295.9	99.4	-64.7	104.2	0.00	0.00	
2,400.0	4.00	326.92	2,395.7	105.2	-68.5	110.3	0.00	0.00	
2,500.0	4.00	326.92	2,495.5	111.1	-72.3	116.4	0.00	0.00	
2,600.0	4.00	326.92	2,595.2	116.9	-76.2	122.5	0.00	0.00	
2,700.0	4.00	326.92	2,695.0	122.7	-80.0	128.7	0.00	0.00	
2,800.0	4.00	326.92	2,794.7	128.6	-83.8	134.8	0.00	0.00	
2,900.0	4.00	326.92	2,894.5	134.4	-87.6	140.9	0.00	0.00	
3,000.0	4.00	326.92	2,994.2	140.3	-91.4	147.1	0.00	0.00	
3,100.0	4.00	326.92	3,094.0	146.1	-95.2	153.2	0.00	0.00	
3,200.0	4.00	326.92	3,193.7	152.0	-99.0	159.3	0.00	0.00	
3,296.5	4.00	326.92	3,290.0	157.6	-102.7	165.2	0.00	0.00	
3,300.0	4.00	326.92	3,293.5	157.8	-102.8	165.4	0.00	0.00	
3,400.0	4.00	326.92	3,393.3	163.7	-106.6	171.6	0.00	0.00	
3,500.0	4.00	326.92	3,493.0	169.5	-110.4	177.7	0.00	0.00	
3,600.0	4.00	326.92	3,592.8	175.3	-114.2	183.8	0.00	0.00	
3,700.0	4.00	326.92	3,692.5	181.2	-118.0	189.9	0.00	0.00	
3,800.0	4.00	326.92	3,792.3	187.0	-121.8	196.1	0.00	0.00	
3,900.0	4.00	326.92	3,892.0	192.9	-125.7	202.2	0.00	0.00	
4,000.0	4.00	326.92	3,991.8	198.7	-129.5	208.3	0.00	0.00	
4,100.0	4.00	326.92	4,091.6	204.6	-133.3	214.4	0.00	0.00	
4,200.0	4.00	326.92	4,191.3	210.4	-137.1	220.6	0.00	0.00	
4,300.0	4.00	326.92	4,291.1	216.3	-140.9	226.7	0.00	0.00	
4,400.0	4.00	326.92	4,390.8	222.1	-144.7	232.8	0.00	0.00	
4,500.0	4.00	326.92	4,490.6	227.9	-148.5	239.0	0.00	0.00	
4,600.0	4.00	326.92	4,590.3	233.8	-152.3	245.1	0.00	0.00	
4,700.0	4.00	326.92	4,690.1	239.6	-156.1	251.2	0.00	0.00	
4,800.0	4.00	326.92	4,789.9	245.5	-159.9	257.3	0.00	0.00	
4,900.0	4.00	326.92	4,889.6	251.3	-163.7	263.5	0.00	0.00	
5,000.0	4.00	326.92	4,989.4	257.2	-167.5	269.6	0.00	0.00	

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Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
5,100.0	4.00	326.92	5,089.1	263.0	-171.3	275.7	0.00	0.00	
5,193.1	4.00	326.92	5,182.0	268.5	-174.9	281.4	0.00	0.00	Curve KOP @ 5193.1' MD
5,200.0	4.76	327.71	5,188.9	268.9	-175.2	281.9	10.99	10.95	
5,300.0	15.75	330.66	5,287.1	284.3	-184.1	297.9	11.00	10.99	
5,400.0	26.75	331.20	5,380.2	315.9	-201.6	330.9	11.00	11.00	
5,500.0	37.75	331.44	5,464.6	362.7	-227.2	379.5	11.00	11.00	
5,600.0	48.75	331.59	5,537.4	422.8	-259.8	442.0	11.00	11.00	
5,700.0	59.74	331.69	5,595.7	494.1	-298.3	516.1	11.00	11.00	
5,800.0	70.74	331.77	5,637.5	574.0	-341.2	599.1	11.00	11.00	
5,900.0	81.74	331.84	5,661.3	659.4	-387.0	687.9	11.00	11.00	
5,975.1	90.00	331.89	5,666.7	725.4	-422.3	756.5	10.99	10.99	Start 3° Turn
6,000.0	90.00	332.64	5,666.7	747.5	-433.9	779.4	3.00	0.00	
6,100.0	90.00	335.64	5,666.7	837.5	-477.5	872.5	3.00	0.00	
6,200.0	90.00	338.64	5,666.7	929.6	-516.4	967.4	3.00	0.00	
6,300.0	90.00	341.64	5,666.7	1,023.6	-550.3	1,063.9	3.00	0.00	
6,400.0	90.00	344.64	5,666.7	1,119.3	-579.4	1,161.5	3.00	0.00	
6,500.0	90.00	347.64	5,666.7	1,216.4	-603.3	1,260.2	3.00	0.00	
6,600.0	90.00	350.64	5,666.7	1,314.6	-622.1	1,359.6	3.00	0.00	
6,700.0	90.00	353.64	5,666.7	1,413.6	-635.8	1,459.4	3.00	0.00	
6,800.0	90.00	356.64	5,666.7	1,513.3	-644.3	1,559.4	3.00	0.00	
6,900.0	90.00	359.64	5,666.7	1,613.2	-647.5	1,659.3	3.00	0.00	
6,912.1	90.00	0.00	5,666.7	1,625.3	-647.6	1,671.3	3.00	0.00	EOT; Azm=0°
7,000.0	90.00	0.00	5,666.7	1,713.2	-647.6	1,759.0	0.00	0.00	
7,100.0	90.00	0.00	5,666.7	1,813.2	-647.6	1,858.7	0.00	0.00	
7,200.0	90.00	0.00	5,666.7	1,913.2	-647.6	1,958.3	0.00	0.00	
7,300.0	90.00	0.00	5,666.7	2,013.2	-647.6	2,058.0	0.00	0.00	
7,400.0	90.00	0.00	5,666.7	2,113.2	-647.6	2,157.7	0.00	0.00	
7,500.0	90.00	0.00	5,666.7	2,213.2	-647.6	2,257.4	0.00	0.00	
7,600.0	90.00	0.00	5,666.7	2,313.2	-647.6	2,357.1	0.00	0.00	
7,700.0	90.00	0.00	5,666.7	2,413.2	-647.5	2,456.8	0.00	0.00	
7,800.0	90.00	0.00	5,666.7	2,513.2	-647.5	2,556.5	0.00	0.00	
7,900.0	90.00	0.00	5,666.7	2,613.2	-647.5	2,656.2	0.00	0.00	
8,000.0	90.00	0.00	5,666.7	2,713.2	-647.5	2,755.8	0.00	0.00	
8,100.0	90.00	0.00	5,666.7	2,813.2	-647.5	2,855.5	0.00	0.00	
8,200.0	90.00	0.00	5,666.7	2,913.2	-647.5	2,955.2	0.00	0.00	
8,300.0	90.00	0.00	5,666.7	3,013.2	-647.5	3,054.9	0.00	0.00	
8,400.0	90.00	0.00	5,666.7	3,113.2	-647.5	3,154.6	0.00	0.00	
8,500.0	90.00	0.00	5,666.8	3,213.2	-647.5	3,254.3	0.00	0.00	
8,600.0	90.00	0.00	5,666.8	3,313.2	-647.5	3,354.0	0.00	0.00	
8,700.0	90.00	0.00	5,666.8	3,413.2	-647.5	3,453.7	0.00	0.00	
8,800.0	90.00	0.00	5,666.8	3,513.2	-647.5	3,553.3	0.00	0.00	
8,900.0	90.00	0.00	5,666.8	3,613.2	-647.5	3,653.0	0.00	0.00	
9,000.0	90.00	0.00	5,666.8	3,713.2	-647.5	3,752.7	0.00	0.00	
9,100.0	90.00	0.00	5,666.8	3,813.2	-647.5	3,852.4	0.00	0.00	
9,200.0	90.00	0.00	5,666.8	3,913.2	-647.5	3,952.1	0.00	0.00	
9,300.0	90.00	0.00	5,666.8	4,013.2	-647.5	4,051.8	0.00	0.00	
9,400.0	90.00	0.00	5,666.8	4,113.2	-647.5	4,151.5	0.00	0.00	
9,500.0	90.00	0.00	5,666.8	4,213.2	-647.5	4,251.2	0.00	0.00	
9,600.0	90.00	0.00	5,666.8	4,313.2	-647.5	4,350.8	0.00	0.00	
9,700.0	90.00	0.00	5,666.8	4,413.2	-647.5	4,450.5	0.00	0.00	
9,800.0	90.00	0.00	5,666.8	4,513.2	-647.5	4,550.2	0.00	0.00	
9,900.0	90.00	0.00	5,666.8	4,613.2	-647.5	4,649.9	0.00	0.00	

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Project:	Weld County, CO	**MD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
10,000.0	90.00	0.00	5,666.8	4,713.2	-647.4	4,749.6	0.00	0.00	
10,100.0	90.00	0.00	5,666.8	4,813.2	-647.4	4,849.3	0.00	0.00	
10,200.0	90.00	0.00	5,666.8	4,913.2	-647.4	4,949.0	0.00	0.00	
10,300.0	90.00	0.00	5,666.8	5,013.2	-647.4	5,048.7	0.00	0.00	
10,400.0	90.00	0.00	5,666.8	5,113.2	-647.4	5,148.4	0.00	0.00	
10,500.0	90.00	0.00	5,666.8	5,213.2	-647.4	5,248.0	0.00	0.00	
10,600.0	90.00	0.00	5,666.9	5,313.2	-647.4	5,347.7	0.00	0.00	
10,700.0	90.00	0.00	5,666.9	5,413.2	-647.4	5,447.4	0.00	0.00	
10,800.0	90.00	0.00	5,666.9	5,513.2	-647.4	5,547.1	0.00	0.00	
10,900.0	90.00	0.00	5,666.9	5,613.2	-647.4	5,646.8	0.00	0.00	
11,000.0	90.00	0.00	5,666.9	5,713.2	-647.4	5,746.5	0.00	0.00	
11,100.0	90.00	0.00	5,666.9	5,813.2	-647.4	5,846.2	0.00	0.00	
11,200.0	90.00	0.00	5,666.9	5,913.2	-647.4	5,945.9	0.00	0.00	
11,300.0	90.00	0.00	5,666.9	6,013.2	-647.4	6,045.5	0.00	0.00	
11,400.0	90.00	0.00	5,666.9	6,113.2	-647.4	6,145.2	0.00	0.00	
11,500.0	90.00	0.00	5,666.9	6,213.2	-647.4	6,244.9	0.00	0.00	
11,600.0	90.00	0.00	5,666.9	6,313.2	-647.4	6,344.6	0.00	0.00	
11,700.0	90.00	0.00	5,666.9	6,413.2	-647.4	6,444.3	0.00	0.00	
11,800.0	90.00	0.00	5,666.9	6,513.2	-647.4	6,544.0	0.00	0.00	
11,900.0	90.00	0.00	5,666.9	6,613.2	-647.4	6,643.7	0.00	0.00	
12,000.0	90.00	0.00	5,666.9	6,713.2	-647.4	6,743.4	0.00	0.00	
12,100.0	90.00	0.00	5,666.9	6,813.2	-647.4	6,843.0	0.00	0.00	
12,200.0	90.00	0.00	5,666.9	6,913.2	-647.3	6,942.7	0.00	0.00	
12,300.0	90.00	0.00	5,666.9	7,013.2	-647.3	7,042.4	0.00	0.00	
12,400.0	90.00	0.00	5,666.9	7,113.2	-647.3	7,142.1	0.00	0.00	
12,500.0	90.00	0.00	5,666.9	7,213.2	-647.3	7,241.8	0.00	0.00	
12,600.0	90.00	0.00	5,666.9	7,313.2	-647.3	7,341.5	0.00	0.00	
12,700.0	90.00	0.00	5,667.0	7,413.2	-647.3	7,441.2	0.00	0.00	
12,800.0	90.00	0.00	5,667.0	7,513.2	-647.3	7,540.9	0.00	0.00	
12,900.0	90.00	0.00	5,667.0	7,613.2	-647.3	7,640.5	0.00	0.00	
13,000.0	90.00	0.00	5,667.0	7,713.2	-647.3	7,740.2	0.00	0.00	
13,100.0	90.00	0.00	5,667.0	7,813.2	-647.3	7,839.9	0.00	0.00	
13,200.0	90.00	0.00	5,667.0	7,913.2	-647.3	7,939.6	0.00	0.00	
13,300.0	90.00	0.00	5,667.0	8,013.2	-647.3	8,039.3	0.00	0.00	
13,400.0	90.00	0.00	5,667.0	8,113.2	-647.3	8,139.0	0.00	0.00	
13,462.3	90.00	0.00	5,667.0	8,175.5	-647.3	8,201.0	0.00	0.00	PBHL @ 13462.3' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
2209A BH Tgt	0.00	1.07	5,667.0	7,675.6	-637.3	1,549,356.16	3,456,289.76	40.829717	-103.851131
- plan misses target center by 10.0usft at 12962.4usft MD (5667.0 TVD, 7675.6 N, -647.3 E)									
- Point									
2209A BHL	0.00	1.07	5,667.0	8,175.5	-647.3	1,549,855.77	3,456,270.50	40.831089	-103.851167
- plan hits target center									
- Point									

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4783.5usft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	KOP @ 500' MD
700.0	699.8	5.8	-3.8	EOB; Inc=4°
5,193.1	5,182.0	268.5	-174.9	Curve KOP @ 5193.1' MD
5,975.1	5,666.7	725.4	-422.3	Start 3° Turn
6,912.1	5,666.7	1,625.3	-647.6	EOT; Azm=0°
13,462.3	5,667.0	8,175.5	-647.3	PBHL @ 13462.3' MD

Whiting Petroleum Corporation

Weld County, CO
S27-T10N-R58W
Razor #27J-2209A
HZ
Plan #2

Anticollision Report

19 April, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Reference Plan #2

Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,546.3ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 4/19/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,462.3	Plan #2 (HZ)	MWD	Geolink MWD

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S27-T10N-R58W						
Razor #27J-2210B - HZ - Plan #2	500.0	497.0	81.6	79.9	48.518	CC
Razor #27J-2210B - HZ - Plan #2	13,462.8	13,822.7	341.7	59.7	1.212	Level 2, ES, SF
Razor #27J-2211A - HZ - Plan #2	500.0	500.0	66.2	64.5	39.202	CC, ES
Razor #27J-2211A - HZ - Plan #2	13,462.8	13,621.6	659.7	369.4	2.272	SF
Razor #27J-2212B - HZ - Plan #2	500.0	497.0	82.1	80.4	48.780	CC, ES
Razor #27J-2212B - HZ - Plan #2	13,462.8	13,726.5	993.3	702.8	3.419	SF
Razor #27J-3409A - Hz - Plan #2	618.2	617.7	31.8	29.7	15.106	CC, ES
Razor #27J-3409A - Hz - Plan #2	700.0	698.6	32.8	30.4	13.655	SF
Razor #27J-3410B - HZ - Plan #2	500.0	497.0	75.1	73.4	44.608	CC, ES
Razor #27J-3410B - HZ - Plan #2	5,200.0	5,185.9	386.4	368.3	21.381	SF
Razor #27J-3411A - HZ - Plan #2	466.7	466.7	33.2	31.6	21.140	CC
Razor #27J-3411A - HZ - Plan #2	500.0	500.0	33.2	31.5	19.683	ES
Razor #27J-3411A - HZ - Plan #2	700.0	698.5	40.7	38.3	16.967	SF
Razor #27J-3412B - HZ - Plan #2	500.0	497.0	100.1	98.4	59.465	CC, ES
Razor #27J-3412B - HZ - Plan #2	5,100.0	5,046.7	722.6	705.0	40.993	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-156.83	-75.0	-32.1	81.7				
100.0	100.0	97.0	97.0	0.1	0.1	-156.83	-75.0	-32.1	81.6	81.3	0.29	284.333	
200.0	200.0	197.0	197.0	0.3	0.3	-156.83	-75.0	-32.1	81.6	81.0	0.64	128.493	
300.0	300.0	297.0	297.0	0.5	0.5	-156.83	-75.0	-32.1	81.6	80.6	0.98	82.928	
400.0	400.0	397.0	397.0	0.7	0.7	-156.83	-75.0	-32.1	81.6	80.3	1.33	61.219	
500.0	500.0	497.0	497.0	0.8	0.8	-156.83	-75.0	-32.1	81.6	79.9	1.68	48.518	CC
600.0	600.0	597.0	597.0	1.0	1.0	-124.74	-75.0	-32.1	82.6	80.6	2.03	40.646	
700.0	699.8	696.8	696.8	1.2	1.2	-127.57	-75.0	-32.1	85.7	83.3	2.39	35.892	
800.0	799.6	796.6	796.6	1.4	1.4	-131.08	-75.0	-32.1	90.1	87.4	2.75	32.816	
900.0	899.4	896.4	896.4	1.6	1.5	-134.25	-75.0	-32.1	94.9	91.8	3.11	30.545	
1,000.0	999.1	996.1	996.1	1.8	1.7	-137.12	-75.0	-32.1	99.9	96.4	3.46	28.827	
1,100.0	1,098.9	1,095.9	1,095.9	2.0	1.9	-139.70	-75.0	-32.1	105.1	101.3	3.82	27.498	
1,200.0	1,198.6	1,195.6	1,195.6	2.2	2.1	-142.04	-75.0	-32.1	110.5	106.3	4.18	26.452	
1,300.0	1,298.4	1,295.4	1,295.4	2.4	2.2	-144.16	-75.0	-32.1	116.1	111.6	4.53	25.613	
1,400.0	1,398.1	1,395.1	1,395.1	2.6	2.4	-146.08	-75.0	-32.1	121.8	116.9	4.89	24.932	
1,500.0	1,497.9	1,494.9	1,494.9	2.8	2.6	-147.82	-75.0	-32.1	127.7	122.4	5.24	24.371	
1,600.0	1,597.6	1,594.6	1,594.6	3.0	2.8	-149.41	-75.0	-32.1	133.6	128.0	5.59	23.904	
1,700.0	1,697.4	1,694.4	1,694.4	3.3	2.9	-150.87	-75.0	-32.1	139.7	133.7	5.94	23.511	
1,800.0	1,797.2	1,794.2	1,794.2	3.5	3.1	-152.20	-75.0	-32.1	145.8	139.5	6.29	23.177	
1,900.0	1,896.9	1,893.9	1,893.9	3.7	3.3	-153.43	-75.0	-32.1	152.0	145.4	6.64	22.891	
2,000.0	1,996.7	1,993.7	1,993.7	3.9	3.5	-154.56	-75.0	-32.1	158.3	151.3	6.99	22.645	
2,100.0	2,096.4	2,093.4	2,093.4	4.1	3.6	-155.60	-75.0	-32.1	164.6	157.3	7.34	22.430	
2,200.0	2,196.2	2,193.2	2,193.2	4.3	3.8	-156.57	-75.0	-32.1	171.0	163.3	7.69	22.243	
2,300.0	2,295.9	2,292.9	2,292.9	4.5	4.0	-157.46	-75.0	-32.1	177.4	169.4	8.04	22.078	
2,400.0	2,395.7	2,392.7	2,392.7	4.7	4.1	-158.29	-75.0	-32.1	183.9	175.5	8.39	21.932	
2,500.0	2,495.5	2,492.5	2,492.5	4.9	4.3	-159.07	-75.0	-32.1	190.4	181.7	8.73	21.802	
2,600.0	2,595.2	2,592.2	2,592.2	5.2	4.5	-159.79	-75.0	-32.1	196.9	187.9	9.08	21.687	
2,700.0	2,695.0	2,692.0	2,692.0	5.4	4.7	-160.47	-75.0	-32.1	203.5	194.1	9.43	21.583	
2,800.0	2,794.7	2,791.7	2,791.7	5.6	4.8	-161.11	-75.0	-32.1	210.1	200.3	9.78	21.489	
2,900.0	2,894.5	2,891.5	2,891.5	5.8	5.0	-161.71	-75.0	-32.1	216.7	206.6	10.12	21.404	
3,000.0	2,994.2	2,991.2	2,991.2	6.0	5.2	-162.27	-75.0	-32.1	223.3	212.9	10.47	21.327	
3,100.0	3,094.0	3,091.0	3,091.0	6.2	5.4	-162.80	-75.0	-32.1	230.0	219.2	10.82	21.257	
3,200.0	3,193.7	3,190.7	3,190.7	6.4	5.5	-163.30	-75.0	-32.1	236.7	225.5	11.17	21.194	
3,300.0	3,293.5	3,290.5	3,290.5	6.6	5.7	-163.77	-75.0	-32.1	243.4	231.8	11.51	21.135	
3,400.0	3,393.3	3,390.3	3,390.3	6.9	5.9	-164.21	-75.0	-32.1	250.1	238.2	11.86	21.081	
3,500.0	3,493.0	3,490.0	3,490.0	7.1	6.1	-164.64	-75.0	-32.1	256.8	244.6	12.21	21.032	
3,600.0	3,592.8	3,589.8	3,589.8	7.3	6.2	-165.04	-75.0	-32.1	263.5	251.0	12.56	20.986	
3,700.0	3,692.5	3,689.5	3,689.5	7.5	6.4	-165.42	-75.0	-32.1	270.3	257.4	12.90	20.944	
3,800.0	3,792.3	3,789.3	3,789.3	7.7	6.6	-165.78	-75.0	-32.1	277.0	263.8	13.25	20.904	
3,900.0	3,892.0	3,889.0	3,889.0	7.9	6.8	-166.13	-75.0	-32.1	283.8	270.2	13.60	20.868	
4,000.0	3,991.8	3,988.8	3,988.8	8.1	6.9	-166.46	-75.0	-32.1	290.6	276.6	13.95	20.834	
4,100.0	4,091.6	4,088.6	4,088.6	8.3	7.1	-166.77	-75.0	-32.1	297.4	283.1	14.29	20.802	
4,200.0	4,191.3	4,188.3	4,188.3	8.5	7.3	-167.08	-75.0	-32.1	304.1	289.5	14.64	20.773	
4,300.0	4,291.1	4,288.1	4,288.1	8.8	7.5	-167.36	-75.0	-32.1	311.0	296.0	14.99	20.745	
4,400.0	4,390.8	4,387.8	4,387.8	9.0	7.6	-167.64	-75.0	-32.1	317.8	302.4	15.34	20.719	
4,500.0	4,490.6	4,487.6	4,487.6	9.2	7.8	-167.90	-75.0	-32.1	324.6	308.9	15.68	20.694	
4,600.0	4,590.3	4,587.3	4,587.3	9.4	8.0	-168.15	-75.0	-32.1	331.4	315.4	16.03	20.671	
4,700.0	4,690.1	4,687.1	4,687.1	9.6	8.2	-168.40	-75.0	-32.1	338.2	321.9	16.38	20.650	
4,800.0	4,789.9	4,786.9	4,786.9	9.8	8.3	-168.63	-75.0	-32.1	345.1	328.3	16.73	20.629	
4,900.0	4,889.6	4,886.6	4,886.6	10.0	8.5	-168.85	-75.0	-32.1	351.9	334.8	17.07	20.610	
5,000.0	4,989.4	4,986.4	4,986.4	10.2	8.7	-169.07	-75.0	-32.1	358.8	341.3	17.42	20.592	
5,100.0	5,089.1	5,086.1	5,086.1	10.5	8.8	-169.28	-75.0	-32.1	365.6	347.8	17.77	20.575	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,185.9	5,185.9	10.7	9.0	-170.26	-75.0	-32.1	372.5	354.4	18.11	20.569	
5,300.0	5,287.1	5,429.9	5,425.2	11.0	9.5	-174.33	-39.9	-44.6	380.0	361.6	18.36	20.693	
5,400.0	5,380.2	5,747.0	5,666.9	11.6	11.0	-179.57	146.3	-110.9	347.7	329.4	18.37	18.930	
5,500.0	5,464.6	5,953.3	5,743.5	12.3	13.1	172.63	325.3	-174.7	289.1	271.0	18.14	15.939	
5,600.0	5,537.4	6,073.6	5,752.4	13.3	14.7	164.48	438.2	-214.7	223.1	204.9	18.25	12.230	
5,700.0	5,595.7	6,151.0	5,752.4	14.5	15.9	157.00	511.9	-238.3	171.5	152.4	19.12	8.971	
5,800.0	5,637.5	6,236.1	5,752.4	15.9	17.1	145.72	594.0	-260.7	144.1	121.6	22.52	6.401	
5,849.7	5,651.7	6,280.1	5,752.4	16.7	17.8	139.34	636.8	-270.9	140.8	115.7	25.12	5.605	
5,900.0	5,661.3	6,325.1	5,752.4	17.5	18.4	133.13	680.8	-280.2	144.0	116.0	27.94	5.152	
6,000.0	5,666.7	6,414.1	5,752.4	19.1	19.8	123.82	768.5	-295.7	165.6	132.5	33.06	5.009	
6,100.0	5,666.7	6,500.0	5,752.4	20.8	21.1	118.66	853.7	-306.7	193.2	155.9	37.24	5.187	
6,200.0	5,666.7	6,588.4	5,752.4	22.5	22.4	114.71	941.7	-314.1	221.2	180.1	41.10	5.383	
6,300.0	5,666.7	6,673.9	5,752.4	24.2	23.7	111.76	1,027.2	-317.3	249.4	204.8	44.61	5.591	
6,400.0	5,666.7	6,766.0	5,752.4	25.8	25.2	109.36	1,119.3	-317.5	276.5	228.4	48.03	5.756	
6,500.0	5,666.7	6,863.1	5,752.4	27.5	26.7	107.63	1,216.4	-317.5	299.3	248.0	51.31	5.832	
6,600.0	5,666.7	6,961.3	5,752.4	29.1	28.2	106.45	1,314.6	-317.5	317.3	262.9	54.41	5.832	
6,700.0	5,666.7	7,060.3	5,752.4	30.7	29.8	105.67	1,413.6	-317.5	330.5	273.1	57.33	5.764	
6,800.0	5,666.7	7,160.0	5,752.4	32.3	31.5	105.22	1,513.2	-317.5	338.6	278.6	60.08	5.636	
6,900.0	5,666.7	7,259.9	5,752.4	33.8	33.1	105.05	1,613.2	-317.5	341.8	279.1	62.64	5.457	
7,000.0	5,666.7	7,359.9	5,752.5	35.3	34.7	105.05	1,713.2	-317.5	341.8	276.1	65.74	5.199	
7,100.0	5,666.7	7,459.9	5,752.5	36.9	36.4	105.05	1,813.2	-317.5	341.8	272.9	68.95	4.957	
7,200.0	5,666.7	7,559.9	5,752.5	38.5	38.1	105.05	1,913.2	-317.5	341.8	269.6	72.18	4.735	
7,300.0	5,666.7	7,659.9	5,752.5	40.1	39.7	105.05	2,013.2	-317.5	341.8	266.4	75.43	4.532	
7,400.0	5,666.7	7,759.9	5,752.5	41.7	41.4	105.05	2,113.2	-317.5	341.8	263.1	78.69	4.344	
7,500.0	5,666.7	7,859.9	5,752.5	43.3	43.1	105.06	2,213.2	-317.5	341.8	259.9	81.95	4.171	
7,600.0	5,666.7	7,959.9	5,752.5	45.0	44.8	105.06	2,313.2	-317.5	341.8	256.6	85.23	4.010	
7,700.0	5,666.7	8,059.9	5,752.5	46.6	46.5	105.06	2,413.2	-317.5	341.8	253.3	88.51	3.862	
7,800.0	5,666.7	8,159.9	5,752.5	48.2	48.2	105.06	2,513.2	-317.5	341.8	250.0	91.81	3.723	
7,900.0	5,666.7	8,259.9	5,752.5	49.9	49.9	105.06	2,613.2	-317.5	341.8	246.7	95.11	3.594	
8,000.0	5,666.7	8,359.9	5,752.5	51.6	51.6	105.06	2,713.2	-317.5	341.8	243.4	98.41	3.473	
8,100.0	5,666.7	8,459.9	5,752.6	53.2	53.3	105.06	2,813.2	-317.5	341.8	240.1	101.72	3.360	
8,200.0	5,666.7	8,559.9	5,752.6	54.9	55.0	105.06	2,913.2	-317.5	341.8	236.8	105.04	3.254	
8,300.0	5,666.8	8,659.9	5,752.6	56.6	56.7	105.06	3,013.2	-317.5	341.8	233.4	108.36	3.154	
8,400.0	5,666.8	8,759.9	5,752.6	58.3	58.5	105.06	3,113.2	-317.5	341.8	230.1	111.68	3.060	
8,500.0	5,666.8	8,859.9	5,752.6	60.0	60.2	105.06	3,213.2	-317.5	341.8	226.8	115.01	2.972	
8,600.0	5,666.8	8,959.9	5,752.6	61.6	61.9	105.06	3,313.2	-317.5	341.8	223.4	118.34	2.888	
8,700.0	5,666.8	9,059.9	5,752.6	63.3	63.6	105.06	3,413.2	-317.5	341.8	220.1	121.68	2.809	
8,800.0	5,666.8	9,159.9	5,752.6	65.0	65.4	105.07	3,513.2	-317.5	341.8	216.8	125.01	2.734	
8,900.0	5,666.8	9,259.9	5,752.6	66.7	67.1	105.07	3,613.2	-317.5	341.8	213.4	128.35	2.663	
9,000.0	5,666.8	9,359.9	5,752.6	68.4	68.8	105.07	3,713.2	-317.5	341.8	210.1	131.70	2.595	
9,100.0	5,666.8	9,459.9	5,752.6	70.1	70.5	105.07	3,813.2	-317.5	341.8	206.7	135.04	2.531	
9,200.0	5,666.8	9,559.9	5,752.6	71.9	72.3	105.07	3,913.2	-317.5	341.8	203.4	138.39	2.470	
9,300.0	5,666.8	9,659.9	5,752.7	73.6	74.0	105.07	4,013.2	-317.5	341.8	200.0	141.74	2.411	
9,400.0	5,666.8	9,759.9	5,752.7	75.3	75.7	105.07	4,113.2	-317.5	341.8	196.7	145.09	2.356	
9,500.0	5,666.8	9,859.9	5,752.7	77.0	77.5	105.07	4,213.2	-317.5	341.8	193.3	148.44	2.302	
9,600.0	5,666.8	9,959.9	5,752.7	78.7	79.2	105.07	4,313.2	-317.5	341.8	190.0	151.79	2.251	
9,700.0	5,666.8	10,059.9	5,752.7	80.4	80.9	105.07	4,413.2	-317.5	341.8	186.6	155.15	2.203	
9,800.0	5,666.8	10,159.9	5,752.7	82.1	82.7	105.07	4,513.2	-317.5	341.8	183.2	158.51	2.156	
9,900.0	5,666.8	10,259.9	5,752.7	83.9	84.4	105.07	4,613.2	-317.5	341.8	179.9	161.86	2.111	
10,000.0	5,666.8	10,359.9	5,752.7	85.6	86.2	105.07	4,713.2	-317.5	341.7	176.5	165.22	2.068	
10,100.0	5,666.8	10,459.9	5,752.7	87.3	87.9	105.07	4,813.2	-317.5	341.7	173.2	168.58	2.027	
10,200.0	5,666.8	10,559.9	5,752.7	89.0	89.6	105.08	4,913.2	-317.5	341.7	169.8	171.95	1.988	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2210B - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,666.8	10,659.9	5,752.7	90.8	91.4	105.08	5,013.2	-317.5	341.7	166.4	175.31	1.949	
10,400.0	5,666.9	10,759.9	5,752.7	92.5	93.1	105.08	5,113.2	-317.5	341.7	163.1	178.67	1.913	
10,500.0	5,666.9	10,859.9	5,752.8	94.2	94.9	105.08	5,213.2	-317.5	341.7	159.7	182.04	1.877	
10,600.0	5,666.9	10,959.9	5,752.8	95.9	96.6	105.08	5,313.2	-317.5	341.7	156.3	185.40	1.843	
10,700.0	5,666.9	11,059.9	5,752.8	97.7	98.3	105.08	5,413.2	-317.5	341.7	153.0	188.77	1.810	
10,800.0	5,666.9	11,159.9	5,752.8	99.4	100.1	105.08	5,513.2	-317.5	341.7	149.6	192.13	1.779	
10,900.0	5,666.9	11,259.9	5,752.8	101.1	101.8	105.08	5,613.2	-317.4	341.7	146.2	195.50	1.748	
11,000.0	5,666.9	11,359.9	5,752.8	102.9	103.6	105.08	5,713.2	-317.4	341.7	142.9	198.87	1.718	
11,100.0	5,666.9	11,459.9	5,752.8	104.6	105.3	105.08	5,813.2	-317.4	341.7	139.5	202.24	1.690	
11,200.0	5,666.9	11,559.9	5,752.8	106.3	107.1	105.08	5,913.2	-317.4	341.7	136.1	205.61	1.662	
11,300.0	5,666.9	11,659.9	5,752.8	108.1	108.8	105.08	6,013.2	-317.4	341.7	132.7	208.98	1.635	
11,400.0	5,666.9	11,759.9	5,752.8	109.8	110.5	105.08	6,113.2	-317.4	341.7	129.4	212.35	1.609	
11,500.0	5,666.9	11,859.9	5,752.8	111.5	112.3	105.09	6,213.2	-317.4	341.7	126.0	215.72	1.584	
11,600.0	5,666.9	11,959.9	5,752.9	113.3	114.0	105.09	6,313.2	-317.4	341.7	122.6	219.09	1.560	
11,700.0	5,666.9	12,059.9	5,752.9	115.0	115.8	105.09	6,413.2	-317.4	341.7	119.2	222.46	1.536	
11,800.0	5,666.9	12,159.9	5,752.9	116.7	117.5	105.09	6,513.2	-317.4	341.7	115.9	225.84	1.513	
11,900.0	5,666.9	12,259.9	5,752.9	118.5	119.3	105.09	6,613.2	-317.4	341.7	112.5	229.21	1.491	Level 3
12,000.0	5,666.9	12,359.9	5,752.9	120.2	121.0	105.09	6,713.2	-317.4	341.7	109.1	232.58	1.469	Level 3
12,100.0	5,666.9	12,459.9	5,752.9	122.0	122.8	105.09	6,813.2	-317.4	341.7	105.7	235.96	1.448	Level 3
12,200.0	5,666.9	12,559.9	5,752.9	123.7	124.5	105.09	6,913.2	-317.4	341.7	102.4	239.33	1.428	Level 3
12,300.0	5,666.9	12,659.9	5,752.9	125.4	126.3	105.09	7,013.2	-317.4	341.7	99.0	242.71	1.408	Level 3
12,400.0	5,666.9	12,759.9	5,752.9	127.2	128.0	105.09	7,113.2	-317.4	341.7	95.6	246.08	1.389	Level 3
12,500.0	5,667.0	12,859.9	5,752.9	128.9	129.7	105.09	7,213.2	-317.4	341.7	92.2	249.46	1.370	Level 3
12,600.0	5,667.0	12,959.9	5,752.9	130.7	131.5	105.09	7,313.2	-317.4	341.7	88.9	252.83	1.351	Level 3
12,700.0	5,667.0	13,059.9	5,752.9	132.4	133.2	105.09	7,413.2	-317.4	341.7	85.5	256.21	1.334	Level 3
12,800.0	5,667.0	13,159.9	5,753.0	134.1	135.0	105.10	7,513.2	-317.4	341.7	82.1	259.58	1.316	Level 3
12,900.0	5,667.0	13,259.9	5,753.0	135.9	136.7	105.10	7,613.2	-317.4	341.7	78.7	262.96	1.299	Level 3
13,000.0	5,667.0	13,359.9	5,753.0	137.6	138.5	105.10	7,713.2	-317.4	341.7	75.3	266.34	1.283	Level 3
13,100.0	5,667.0	13,459.9	5,753.0	139.4	140.2	105.10	7,813.2	-317.4	341.7	72.0	269.71	1.267	Level 3
13,200.0	5,667.0	13,559.9	5,753.0	141.1	142.0	105.10	7,913.2	-317.4	341.7	68.6	273.09	1.251	Level 3
13,300.0	5,667.0	13,659.9	5,753.0	142.9	143.7	105.10	8,013.2	-317.4	341.7	65.2	276.47	1.236	Level 2
13,400.0	5,667.0	13,759.9	5,753.0	144.6	145.5	105.10	8,113.2	-317.4	341.7	61.8	279.84	1.221	Level 2
13,462.8	5,667.0	13,822.7	5,753.0	145.7	146.6	105.10	8,176.0	-317.4	341.7	59.7	281.97	1.212	Level 2, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	66.2	66.2				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	66.2	66.2	65.9	0.29	226.997	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	66.2	66.2	65.5	0.64	103.293	
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	66.2	66.2	65.2	0.99	66.858	
400.0	400.0	400.0	400.0	0.7	0.7	90.00	0.0	66.2	66.2	64.8	1.34	49.424	
500.0	500.0	500.0	500.0	0.8	0.8	90.00	0.0	66.2	66.2	64.5	1.69	39.202	CC, ES
600.0	600.0	600.0	600.0	1.0	1.0	124.31	0.0	66.2	67.1	65.1	2.04	32.944	
700.0	699.8	699.8	699.8	1.2	1.2	127.79	0.0	66.2	70.2	67.8	2.39	29.342	
800.0	799.6	799.6	799.6	1.4	1.4	132.02	0.0	66.2	74.7	71.9	2.75	27.151	
900.0	899.4	899.4	899.4	1.6	1.5	135.75	0.0	66.2	79.5	76.4	3.11	25.581	
1,000.0	999.1	999.1	999.1	1.8	1.7	139.04	0.0	66.2	84.7	81.2	3.47	24.429	
1,100.0	1,098.9	1,098.9	1,098.9	2.0	1.9	141.95	0.0	66.2	90.1	86.3	3.82	23.565	
1,200.0	1,198.6	1,198.6	1,198.6	2.2	2.1	144.52	0.0	66.2	95.7	91.5	4.18	22.905	
1,300.0	1,298.4	1,298.4	1,298.4	2.4	2.2	146.81	0.0	66.2	101.4	96.9	4.53	22.393	
1,400.0	1,398.1	1,398.1	1,398.1	2.6	2.4	148.84	0.0	66.2	107.3	102.5	4.88	21.989	
1,500.0	1,497.9	1,497.9	1,497.9	2.8	2.6	150.67	0.0	66.2	113.4	108.1	5.23	21.666	
1,600.0	1,597.6	1,597.6	1,597.6	3.0	2.8	152.30	0.0	66.2	119.5	113.9	5.58	21.405	
1,700.0	1,697.4	1,697.4	1,697.4	3.3	2.9	153.78	0.0	66.2	125.7	119.8	5.93	21.192	
1,800.0	1,797.2	1,797.2	1,797.2	3.5	3.1	155.12	0.0	66.2	132.0	125.7	6.28	21.017	
1,900.0	1,896.9	1,896.9	1,896.9	3.7	3.3	156.33	0.0	66.2	138.4	131.8	6.63	20.870	
2,000.0	1,996.7	1,996.7	1,996.7	3.9	3.5	157.44	0.0	66.2	144.8	137.8	6.98	20.748	
2,100.0	2,096.4	2,096.4	2,096.4	4.1	3.6	158.45	0.0	66.2	151.3	143.9	7.33	20.644	
2,200.0	2,196.2	2,196.2	2,196.2	4.3	3.8	159.38	0.0	66.2	157.8	150.1	7.68	20.557	
2,300.0	2,295.9	2,295.9	2,295.9	4.5	4.0	160.24	0.0	66.2	164.3	156.3	8.02	20.481	
2,400.0	2,395.7	2,395.7	2,395.7	4.7	4.2	161.03	0.0	66.2	170.9	162.5	8.37	20.417	
2,500.0	2,495.5	2,495.5	2,495.5	4.9	4.3	161.76	0.0	66.2	177.5	168.8	8.72	20.361	
2,600.0	2,595.2	2,595.2	2,595.2	5.2	4.5	162.44	0.0	66.2	184.2	175.1	9.07	20.313	
2,700.0	2,695.0	2,695.0	2,695.0	5.4	4.7	163.07	0.0	66.2	190.8	181.4	9.41	20.270	
2,800.0	2,794.7	2,794.7	2,794.7	5.6	4.8	163.66	0.0	66.2	197.5	187.8	9.76	20.233	
2,900.0	2,894.5	2,894.5	2,894.5	5.8	5.0	164.21	0.0	66.2	204.2	194.1	10.11	20.201	
3,000.0	2,994.2	2,994.2	2,994.2	6.0	5.2	164.73	0.0	66.2	210.9	200.5	10.46	20.173	
3,100.0	3,094.0	3,094.0	3,094.0	6.2	5.4	165.21	0.0	66.2	217.7	206.9	10.80	20.147	
3,200.0	3,193.7	3,193.7	3,193.7	6.4	5.5	165.67	0.0	66.2	224.4	213.3	11.15	20.125	
3,300.0	3,293.5	3,293.5	3,293.5	6.6	5.7	166.09	0.0	66.2	231.2	219.7	11.50	20.105	
3,400.0	3,393.3	3,393.3	3,393.3	6.9	5.9	166.50	0.0	66.2	238.0	226.1	11.85	20.087	
3,500.0	3,493.0	3,493.0	3,493.0	7.1	6.1	166.88	0.0	66.2	244.8	232.6	12.19	20.072	
3,600.0	3,592.8	3,592.8	3,592.8	7.3	6.2	167.24	0.0	66.2	251.6	239.0	12.54	20.057	
3,700.0	3,692.5	3,692.5	3,692.5	7.5	6.4	167.58	0.0	66.2	258.4	245.5	12.89	20.045	
3,800.0	3,792.3	3,792.3	3,792.3	7.7	6.6	167.90	0.0	66.2	265.2	252.0	13.24	20.033	
3,900.0	3,892.0	3,892.0	3,892.0	7.9	6.8	168.21	0.0	66.2	272.0	258.4	13.59	20.023	
4,000.0	3,991.8	3,991.8	3,991.8	8.1	6.9	168.51	0.0	66.2	278.9	264.9	13.93	20.014	
4,100.0	4,091.6	4,091.6	4,091.6	8.3	7.1	168.78	0.0	66.2	285.7	271.4	14.28	20.006	
4,200.0	4,191.3	4,191.3	4,191.3	8.5	7.3	169.05	0.0	66.2	292.5	277.9	14.63	19.998	
4,300.0	4,291.1	4,291.1	4,291.1	8.8	7.5	169.30	0.0	66.2	299.4	284.4	14.98	19.992	
4,400.0	4,390.8	4,390.8	4,390.8	9.0	7.6	169.55	0.0	66.2	306.2	290.9	15.32	19.985	
4,500.0	4,490.6	4,490.6	4,490.6	9.2	7.8	169.78	0.0	66.2	313.1	297.4	15.67	19.980	
4,600.0	4,590.3	4,590.3	4,590.3	9.4	8.0	170.00	0.0	66.2	320.0	304.0	16.02	19.975	
4,700.0	4,690.1	4,690.1	4,690.1	9.6	8.2	170.21	0.0	66.2	326.9	310.5	16.37	19.970	
4,800.0	4,789.9	4,789.9	4,789.9	9.8	8.3	170.41	0.0	66.2	333.7	317.0	16.71	19.966	
4,900.0	4,889.6	4,889.6	4,889.6	10.0	8.5	170.61	0.0	66.2	340.6	323.5	17.06	19.962	
5,000.0	4,989.4	4,989.4	4,989.4	10.2	8.7	170.80	0.0	66.2	347.5	330.1	17.41	19.959	
5,100.0	5,089.1	5,089.1	5,089.1	10.5	8.9	170.98	0.0	66.2	354.4	336.6	17.76	19.956	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,241.3	5,240.8	10.7	9.1	169.63	8.7	65.4	358.2	340.0	18.20	19.681	
5,300.0	5,287.1	5,448.0	5,431.4	11.0	9.6	160.48	84.8	58.6	345.7	327.0	18.62	18.564	
5,400.0	5,380.2	5,619.5	5,556.9	11.6	10.5	149.57	200.0	48.3	327.3	308.0	19.36	16.911	
5,500.0	5,464.6	5,757.4	5,626.4	12.3	11.7	137.41	318.2	37.8	313.6	292.5	21.02	14.917	
5,558.5	5,508.8	5,826.3	5,648.7	12.9	12.4	130.20	383.1	32.0	311.0	288.5	22.51	13.819	
5,600.0	5,537.4	5,871.0	5,658.6	13.3	12.9	125.12	426.5	28.1	312.4	288.7	23.70	13.181	
5,700.0	5,595.7	5,967.3	5,666.9	14.5	14.1	113.11	521.9	19.6	326.9	300.0	26.95	12.129	
5,800.0	5,637.5	6,037.5	5,666.9	15.9	15.1	103.61	592.0	14.7	357.6	327.7	29.89	11.965	
5,900.0	5,661.3	6,110.1	5,666.9	17.5	16.1	95.15	664.5	12.4	399.6	366.8	32.74	12.205	
6,000.0	5,666.7	6,193.1	5,666.9	19.1	17.3	90.03	747.5	12.3	446.2	410.6	35.56	12.547	
6,100.0	5,666.7	6,283.0	5,666.9	20.8	18.6	90.03	837.4	12.3	489.8	451.2	38.60	12.688	
6,200.0	5,666.7	6,375.2	5,666.9	22.5	20.0	90.02	929.6	12.3	528.7	487.0	41.72	12.673	
6,300.0	5,666.7	6,469.2	5,666.9	24.2	21.5	90.02	1,023.6	12.3	562.7	517.8	44.87	12.540	
6,400.0	5,666.7	6,564.9	5,666.9	25.8	23.0	90.02	1,119.3	12.3	591.7	543.6	48.03	12.319	
6,500.0	5,666.7	6,662.0	5,666.9	27.5	24.6	90.02	1,216.4	12.3	615.6	564.4	51.16	12.032	
6,600.0	5,666.7	6,760.2	5,666.9	29.1	26.2	90.02	1,314.6	12.3	634.5	580.2	54.25	11.695	
6,700.0	5,666.7	6,859.2	5,666.9	30.7	27.8	90.02	1,413.6	12.3	648.1	590.9	57.26	11.319	
6,800.0	5,666.7	6,958.8	5,666.9	32.3	29.5	90.02	1,513.2	12.3	656.6	596.4	60.17	10.912	
6,900.0	5,666.7	7,058.8	5,666.9	33.8	31.1	90.02	1,613.2	12.3	659.9	596.9	62.96	10.481	
7,000.0	5,666.7	7,158.8	5,666.9	35.3	32.8	90.02	1,713.2	12.3	659.9	593.7	66.21	9.967	
7,100.0	5,666.7	7,258.8	5,666.9	36.9	34.5	90.02	1,813.2	12.3	659.9	590.3	69.55	9.488	
7,200.0	5,666.7	7,358.8	5,666.9	38.5	36.2	90.02	1,913.2	12.3	659.9	587.0	72.91	9.051	
7,300.0	5,666.7	7,458.8	5,666.9	40.1	37.9	90.02	2,013.2	12.3	659.9	583.6	76.28	8.651	
7,400.0	5,666.7	7,558.8	5,666.9	41.7	39.6	90.02	2,113.2	12.3	659.9	580.2	79.66	8.284	
7,500.0	5,666.7	7,658.8	5,666.9	43.3	41.3	90.02	2,213.2	12.3	659.9	576.8	83.05	7.946	
7,600.0	5,666.7	7,758.8	5,666.9	45.0	43.0	90.02	2,313.2	12.3	659.9	573.4	86.45	7.633	
7,700.0	5,666.7	7,858.8	5,666.9	46.6	44.7	90.02	2,413.2	12.3	659.9	570.0	89.86	7.343	
7,800.0	5,666.7	7,958.8	5,666.9	48.2	46.4	90.02	2,513.2	12.3	659.9	566.6	93.28	7.074	
7,900.0	5,666.7	8,058.8	5,666.9	49.9	48.1	90.02	2,613.2	12.3	659.9	563.2	96.70	6.824	
8,000.0	5,666.7	8,158.8	5,666.9	51.6	49.9	90.01	2,713.2	12.3	659.9	559.7	100.13	6.590	
8,100.0	5,666.7	8,258.8	5,666.9	53.2	51.6	90.01	2,813.2	12.3	659.9	556.3	103.56	6.372	
8,200.0	5,666.7	8,358.8	5,666.9	54.9	53.3	90.01	2,913.2	12.3	659.9	552.9	107.00	6.167	
8,300.0	5,666.8	8,458.8	5,666.9	56.6	55.0	90.01	3,013.2	12.3	659.9	549.4	110.45	5.975	
8,400.0	5,666.8	8,558.8	5,666.9	58.3	56.8	90.01	3,113.2	12.3	659.9	546.0	113.89	5.794	
8,500.0	5,666.8	8,658.8	5,666.9	60.0	58.5	90.01	3,213.2	12.3	659.9	542.5	117.35	5.623	
8,600.0	5,666.8	8,758.8	5,666.9	61.6	60.2	90.01	3,313.2	12.4	659.9	539.1	120.80	5.462	
8,700.0	5,666.8	8,858.8	5,666.9	63.3	62.0	90.01	3,413.2	12.4	659.9	535.6	124.26	5.310	
8,800.0	5,666.8	8,958.8	5,666.9	65.0	63.7	90.01	3,513.2	12.4	659.9	532.1	127.72	5.167	
8,900.0	5,666.8	9,058.8	5,666.9	66.7	65.4	90.01	3,613.2	12.4	659.9	528.7	131.18	5.030	
9,000.0	5,666.8	9,158.8	5,666.9	68.4	67.2	90.01	3,713.2	12.4	659.9	525.2	134.65	4.901	
9,100.0	5,666.8	9,258.8	5,666.9	70.1	68.9	90.01	3,813.2	12.4	659.9	521.7	138.11	4.778	
9,200.0	5,666.8	9,358.8	5,666.9	71.9	70.6	90.01	3,913.2	12.4	659.8	518.3	141.58	4.661	
9,300.0	5,666.8	9,458.8	5,666.9	73.6	72.4	90.01	4,013.2	12.4	659.8	514.8	145.05	4.549	
9,400.0	5,666.8	9,558.8	5,666.9	75.3	74.1	90.01	4,113.2	12.4	659.8	511.3	148.53	4.443	
9,500.0	5,666.8	9,658.8	5,666.9	77.0	75.9	90.01	4,213.2	12.4	659.8	507.8	152.00	4.341	
9,600.0	5,666.8	9,758.8	5,666.9	78.7	77.6	90.01	4,313.2	12.4	659.8	504.4	155.48	4.244	
9,700.0	5,666.8	9,858.8	5,666.9	80.4	79.3	90.01	4,413.2	12.4	659.8	500.9	158.95	4.151	
9,800.0	5,666.8	9,958.8	5,666.9	82.1	81.1	90.01	4,513.2	12.4	659.8	497.4	162.43	4.062	
9,900.0	5,666.8	10,058.8	5,666.9	83.9	82.8	90.01	4,613.2	12.4	659.8	493.9	165.91	3.977	
10,000.0	5,666.8	10,158.8	5,666.9	85.6	84.6	90.01	4,713.2	12.4	659.8	490.4	169.39	3.895	
10,100.0	5,666.8	10,258.8	5,666.9	87.3	86.3	90.01	4,813.2	12.4	659.8	487.0	172.88	3.817	
10,200.0	5,666.8	10,358.8	5,667.0	89.0	88.1	90.01	4,913.2	12.4	659.8	483.5	176.36	3.741	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2211A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,666.8	10,458.8	5,667.0	90.8	89.8	90.01	5,013.2	12.4	659.8	480.0	179.84	3.669	
10,400.0	5,666.9	10,558.8	5,667.0	92.5	91.5	90.01	5,113.2	12.4	659.8	476.5	183.33	3.599	
10,500.0	5,666.9	10,658.8	5,667.0	94.2	93.3	90.01	5,213.2	12.4	659.8	473.0	186.81	3.532	
10,600.0	5,666.9	10,758.8	5,667.0	95.9	95.0	90.01	5,313.2	12.4	659.8	469.5	190.30	3.467	
10,700.0	5,666.9	10,858.8	5,667.0	97.7	96.8	90.01	5,413.2	12.4	659.8	466.0	193.79	3.405	
10,800.0	5,666.9	10,958.8	5,667.0	99.4	98.5	90.01	5,513.2	12.4	659.8	462.5	197.28	3.345	
10,900.0	5,666.9	11,058.8	5,667.0	101.1	100.3	90.01	5,613.2	12.4	659.8	459.0	200.77	3.286	
11,000.0	5,666.9	11,158.8	5,667.0	102.9	102.0	90.01	5,713.2	12.4	659.8	455.6	204.25	3.230	
11,100.0	5,666.9	11,258.8	5,667.0	104.6	103.8	90.01	5,813.2	12.4	659.8	452.1	207.75	3.176	
11,200.0	5,666.9	11,358.8	5,667.0	106.3	105.5	90.01	5,913.2	12.4	659.8	448.6	211.24	3.124	
11,300.0	5,666.9	11,458.8	5,667.0	108.1	107.3	90.01	6,013.2	12.4	659.8	445.1	214.73	3.073	
11,400.0	5,666.9	11,558.8	5,667.0	109.8	109.0	90.01	6,113.2	12.4	659.8	441.6	218.22	3.024	
11,500.0	5,666.9	11,658.8	5,667.0	111.5	110.8	90.01	6,213.2	12.4	659.8	438.1	221.71	2.976	
11,600.0	5,666.9	11,758.8	5,667.0	113.3	112.5	90.01	6,313.2	12.4	659.8	434.6	225.20	2.930	
11,700.0	5,666.9	11,858.8	5,667.0	115.0	114.2	90.01	6,413.2	12.4	659.8	431.1	228.70	2.885	
11,800.0	5,666.9	11,958.8	5,667.0	116.7	116.0	90.01	6,513.2	12.4	659.8	427.6	232.19	2.842	
11,900.0	5,666.9	12,058.8	5,667.0	118.5	117.7	90.00	6,613.2	12.4	659.8	424.1	235.69	2.799	
12,000.0	5,666.9	12,158.8	5,667.0	120.2	119.5	90.00	6,713.2	12.4	659.8	420.6	239.18	2.759	
12,100.0	5,666.9	12,258.8	5,667.0	122.0	121.2	90.00	6,813.2	12.4	659.8	417.1	242.68	2.719	
12,200.0	5,666.9	12,358.8	5,667.0	123.7	123.0	90.00	6,913.2	12.4	659.8	413.6	246.17	2.680	
12,300.0	5,666.9	12,458.8	5,667.0	125.4	124.7	90.00	7,013.2	12.4	659.8	410.1	249.67	2.643	
12,400.0	5,666.9	12,558.8	5,667.0	127.2	126.5	90.00	7,113.2	12.4	659.8	406.6	253.16	2.606	
12,500.0	5,667.0	12,658.8	5,667.0	128.9	128.2	90.00	7,213.2	12.4	659.8	403.1	256.66	2.571	
12,600.0	5,667.0	12,758.8	5,667.0	130.7	130.0	90.00	7,313.2	12.4	659.8	399.6	260.16	2.536	
12,700.0	5,667.0	12,858.8	5,667.0	132.4	131.7	90.00	7,413.2	12.4	659.8	396.1	263.65	2.502	
12,800.0	5,667.0	12,958.8	5,667.0	134.1	133.5	90.00	7,513.2	12.4	659.8	392.6	267.15	2.470	
12,900.0	5,667.0	13,058.8	5,667.0	135.9	135.2	90.00	7,613.2	12.4	659.8	389.1	270.65	2.438	
13,000.0	5,667.0	13,158.8	5,667.0	137.6	137.0	90.00	7,713.2	12.4	659.8	385.6	274.15	2.407	
13,100.0	5,667.0	13,258.8	5,667.0	139.4	138.7	90.00	7,813.2	12.4	659.8	382.1	277.64	2.376	
13,200.0	5,667.0	13,358.8	5,667.0	141.1	140.5	90.00	7,913.2	12.4	659.8	378.6	281.14	2.347	
13,300.0	5,667.0	13,458.8	5,667.0	142.9	142.2	90.00	8,013.2	12.4	659.8	375.1	284.64	2.318	
13,400.0	5,667.0	13,558.8	5,667.0	144.6	144.0	90.00	8,113.2	12.5	659.7	371.6	288.14	2.290	
13,462.8	5,667.0	13,621.6	5,667.0	145.7	145.1	90.00	8,176.0	12.5	659.7	369.4	290.34	2.272	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	156.12	-75.0	33.2	82.1				
100.0	100.0	97.0	97.0	0.1	0.1	156.12	-75.0	33.2	82.1	81.8	0.29	285.859	
200.0	200.0	197.0	197.0	0.3	0.3	156.12	-75.0	33.2	82.1	81.4	0.64	129.185	
300.0	300.0	297.0	297.0	0.5	0.5	156.12	-75.0	33.2	82.1	81.1	0.98	83.376	
400.0	400.0	397.0	397.0	0.7	0.7	156.12	-75.0	33.2	82.1	80.7	1.33	61.550	
500.0	500.0	497.0	497.0	0.8	0.8	156.12	-75.0	33.2	82.1	80.4	1.68	48.780	CC, ES
600.0	600.0	597.0	597.0	1.0	1.0	-170.98	-75.0	33.2	83.8	81.8	2.03	41.262	
700.0	699.8	696.8	696.8	1.2	1.2	-171.49	-75.0	33.2	89.0	86.6	2.38	37.424	
800.0	799.6	796.6	796.6	1.4	1.4	-172.11	-75.0	33.2	95.9	93.1	2.73	35.167	
900.0	899.4	896.4	896.4	1.6	1.5	-172.64	-75.0	33.2	102.8	99.7	3.08	33.426	
1,000.0	999.1	996.1	996.1	1.8	1.7	-173.11	-75.0	33.2	109.7	106.3	3.42	32.042	
1,100.0	1,098.9	1,095.9	1,095.9	2.0	1.9	-173.52	-75.0	33.2	116.6	112.9	3.77	30.916	
1,200.0	1,198.6	1,195.6	1,195.6	2.2	2.1	-173.88	-75.0	33.2	123.6	119.5	4.12	29.983	
1,300.0	1,298.4	1,295.4	1,295.4	2.4	2.2	-174.21	-75.0	33.2	130.5	126.0	4.47	29.196	
1,400.0	1,398.1	1,395.1	1,395.1	2.6	2.4	-174.50	-75.0	33.2	137.5	132.6	4.82	28.524	
1,500.0	1,497.9	1,494.9	1,494.9	2.8	2.6	-174.77	-75.0	33.2	144.4	139.2	5.17	27.944	
1,600.0	1,597.6	1,595.6	1,595.6	3.0	2.8	-175.61	-74.0	34.5	151.1	145.5	5.52	27.377	
1,700.0	1,697.4	1,696.1	1,695.9	3.3	2.9	-177.64	-70.8	38.4	157.2	151.3	5.87	26.777	
1,800.0	1,797.2	1,795.7	1,795.3	3.5	3.1	179.84	-66.5	43.8	163.3	157.1	6.23	26.228	
1,900.0	1,896.9	1,895.3	1,894.6	3.7	3.3	177.51	-62.1	49.2	169.8	163.2	6.59	25.764	
2,000.0	1,996.7	1,994.8	1,993.9	3.9	3.5	175.35	-57.7	54.6	176.4	169.5	6.95	25.370	
2,100.0	2,096.4	2,094.4	2,093.3	4.1	3.7	173.35	-53.4	60.0	183.4	176.0	7.32	25.035	
2,200.0	2,196.2	2,193.9	2,192.6	4.3	3.9	171.50	-49.0	65.5	190.5	182.8	7.70	24.747	
2,300.0	2,295.9	2,293.5	2,291.9	4.5	4.1	169.78	-44.6	70.9	197.8	189.7	8.07	24.501	
2,400.0	2,395.7	2,393.1	2,391.2	4.7	4.3	168.19	-40.3	76.3	205.3	196.8	8.45	24.289	
2,500.0	2,495.5	2,492.6	2,490.5	4.9	4.5	166.70	-35.9	81.7	212.9	204.1	8.83	24.105	
2,600.0	2,595.2	2,592.2	2,589.9	5.2	4.7	165.33	-31.6	87.1	220.6	211.4	9.21	23.947	
2,700.0	2,695.0	2,691.8	2,689.2	5.4	4.9	164.04	-27.2	92.5	228.5	218.9	9.60	23.810	
2,800.0	2,794.7	2,791.3	2,788.5	5.6	5.1	162.84	-22.8	97.9	236.5	226.5	9.98	23.691	
2,900.0	2,894.5	2,890.9	2,887.8	5.8	5.3	161.72	-18.5	103.3	244.6	234.2	10.37	23.587	
3,000.0	2,994.2	2,990.5	2,987.1	6.0	5.5	160.67	-14.1	108.7	252.7	242.0	10.76	23.497	
3,100.0	3,094.0	3,090.0	3,086.5	6.2	5.7	159.69	-9.7	114.1	261.0	249.8	11.14	23.418	
3,200.0	3,193.7	3,189.6	3,185.8	6.4	5.9	158.77	-5.4	119.5	269.3	257.7	11.53	23.350	
3,300.0	3,293.5	3,289.1	3,285.1	6.6	6.1	157.90	-1.0	124.9	277.7	265.7	11.92	23.290	
3,400.0	3,393.3	3,388.7	3,384.4	6.9	6.3	157.09	3.4	130.3	286.1	273.8	12.31	23.238	
3,500.0	3,493.0	3,491.1	3,486.7	7.1	6.5	156.56	6.9	134.7	294.2	281.5	12.69	23.185	
3,600.0	3,592.8	3,594.1	3,589.6	7.3	6.7	156.73	8.2	136.3	301.2	288.1	13.04	23.100	
3,700.0	3,692.5	3,694.0	3,689.5	7.5	6.8	157.25	8.2	136.3	307.6	294.2	13.38	22.993	
3,800.0	3,792.3	3,793.8	3,789.3	7.7	7.0	157.74	8.2	136.3	314.0	300.3	13.72	22.893	
3,900.0	3,892.0	3,893.5	3,889.1	7.9	7.2	158.21	8.2	136.3	320.5	306.4	14.06	22.799	
4,000.0	3,991.8	3,993.3	3,988.8	8.1	7.3	158.66	8.2	136.3	327.0	312.6	14.40	22.710	
4,100.0	4,091.6	4,093.0	4,088.6	8.3	7.5	159.10	8.2	136.3	333.5	318.8	14.74	22.627	
4,200.0	4,191.3	4,192.8	4,188.3	8.5	7.6	159.52	8.2	136.3	340.0	325.0	15.08	22.549	
4,300.0	4,291.1	4,292.5	4,288.1	8.8	7.8	159.92	8.2	136.3	346.6	331.2	15.42	22.474	
4,400.0	4,390.8	4,392.3	4,387.8	9.0	8.0	160.31	8.2	136.3	353.1	337.4	15.76	22.404	
4,500.0	4,490.6	4,492.1	4,487.6	9.2	8.1	160.69	8.2	136.3	359.7	343.6	16.10	22.338	
4,600.0	4,590.3	4,591.8	4,587.3	9.4	8.3	161.05	8.2	136.3	366.3	349.9	16.44	22.275	
4,700.0	4,690.1	4,691.6	4,687.1	9.6	8.5	161.39	8.2	136.3	372.9	356.1	16.79	22.215	
4,800.0	4,789.9	4,791.3	4,786.9	9.8	8.6	161.73	8.2	136.3	379.5	362.4	17.13	22.158	
4,900.0	4,889.6	4,891.1	4,886.6	10.0	8.8	162.05	8.2	136.3	386.2	368.7	17.47	22.104	
5,000.0	4,989.4	4,990.8	4,986.4	10.2	9.0	162.37	8.2	136.3	392.8	375.0	17.81	22.053	
5,100.0	5,089.1	5,090.6	5,086.1	10.5	9.2	162.67	8.2	136.3	399.5	381.3	18.15	22.003	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,190.3	5,185.9	10.7	9.3	162.15	8.2	136.3	406.2	387.7	18.49	21.967	
5,300.0	5,287.1	5,315.7	5,310.9	11.0	9.6	158.99	14.0	137.9	421.2	402.6	18.63	22.612	
5,400.0	5,380.2	5,462.3	5,450.9	11.6	10.0	154.98	54.5	149.0	443.5	424.7	18.76	23.640	
5,500.0	5,464.6	5,598.9	5,566.0	12.3	10.7	148.34	124.7	168.2	473.1	453.9	19.20	24.643	
5,600.0	5,537.4	5,720.9	5,649.8	13.3	11.7	139.96	210.0	191.5	512.1	491.8	20.37	25.147	
5,700.0	5,595.7	5,829.1	5,705.1	14.5	12.8	130.36	299.4	216.0	561.2	538.7	22.49	24.953	
5,800.0	5,637.5	5,926.7	5,737.6	15.9	13.9	119.70	388.0	240.2	619.1	593.6	25.49	24.287	
5,900.0	5,661.3	6,017.5	5,752.0	17.5	15.2	108.24	474.3	263.8	683.1	654.2	28.94	23.608	
6,000.0	5,666.7	6,123.5	5,753.4	19.1	16.7	99.02	576.9	290.6	749.7	717.4	32.37	23.158	
6,100.0	5,666.7	6,257.7	5,753.4	20.8	18.7	97.62	708.4	316.8	809.7	773.8	35.90	22.551	
6,200.0	5,666.7	6,411.1	5,753.4	22.5	21.0	96.66	860.7	335.2	859.1	819.2	39.91	21.525	
6,300.0	5,666.7	6,574.1	5,753.4	24.2	23.5	96.05	1,023.5	341.5	896.3	852.0	44.26	20.250	
6,400.0	5,666.7	6,669.8	5,753.4	25.8	25.0	95.77	1,119.2	341.5	925.2	877.5	47.69	19.398	
6,500.0	5,666.7	6,766.8	5,753.3	27.5	26.5	95.55	1,216.3	341.5	949.0	897.9	51.11	18.567	
6,600.0	5,666.7	6,865.0	5,753.3	29.1	28.1	95.39	1,314.5	341.5	967.8	913.3	54.49	17.759	
6,700.0	5,666.7	6,964.1	5,753.3	30.7	29.7	95.27	1,413.6	341.5	981.4	923.6	57.80	16.979	
6,800.0	5,666.7	7,063.7	5,753.3	32.3	31.3	95.20	1,513.2	341.5	989.9	928.8	61.01	16.224	
6,900.0	5,666.7	7,163.7	5,753.3	33.8	33.0	95.18	1,613.1	341.5	993.1	929.0	64.10	15.493	
7,000.0	5,666.7	7,263.7	5,753.3	35.3	34.6	95.18	1,713.1	341.5	993.1	925.8	67.37	14.741	
7,100.0	5,666.7	7,363.7	5,753.3	36.9	36.3	95.18	1,813.1	341.5	993.1	922.5	70.70	14.048	
7,200.0	5,666.7	7,463.7	5,753.3	38.5	38.0	95.18	1,913.1	341.5	993.2	919.1	74.04	13.414	
7,300.0	5,666.7	7,563.7	5,753.3	40.1	39.6	95.18	2,013.1	341.5	993.2	915.8	77.39	12.833	
7,400.0	5,666.7	7,663.7	5,753.3	41.7	41.3	95.18	2,113.1	341.5	993.2	912.4	80.76	12.298	
7,500.0	5,666.7	7,763.7	5,753.3	43.3	43.0	95.17	2,213.1	341.6	993.2	909.0	84.13	11.804	
7,600.0	5,666.7	7,863.7	5,753.3	45.0	44.7	95.17	2,313.1	341.6	993.2	905.6	87.52	11.348	
7,700.0	5,666.7	7,963.7	5,753.3	46.6	46.4	95.17	2,413.1	341.6	993.2	902.3	90.91	10.924	
7,800.0	5,666.7	8,063.7	5,753.3	48.2	48.1	95.17	2,513.1	341.6	993.2	898.9	94.32	10.530	
7,900.0	5,666.7	8,163.7	5,753.3	49.9	49.8	95.17	2,613.1	341.6	993.2	895.4	97.72	10.163	
8,000.0	5,666.7	8,263.7	5,753.3	51.6	51.5	95.17	2,713.1	341.6	993.2	892.0	101.14	9.820	
8,100.0	5,666.7	8,363.7	5,753.3	53.2	53.2	95.17	2,813.1	341.6	993.2	888.6	104.56	9.499	
8,200.0	5,666.7	8,463.7	5,753.3	54.9	55.0	95.17	2,913.1	341.6	993.2	885.2	107.98	9.198	
8,300.0	5,666.8	8,563.7	5,753.3	56.6	56.7	95.17	3,013.1	341.6	993.2	881.8	111.41	8.915	
8,400.0	5,666.8	8,663.7	5,753.3	58.3	58.4	95.17	3,113.1	341.6	993.2	878.3	114.84	8.648	
8,500.0	5,666.8	8,763.7	5,753.3	60.0	60.1	95.17	3,213.1	341.6	993.2	874.9	118.28	8.397	
8,600.0	5,666.8	8,863.7	5,753.2	61.6	61.8	95.17	3,313.1	341.6	993.2	871.5	121.72	8.160	
8,700.0	5,666.8	8,963.7	5,753.2	63.3	63.6	95.17	3,413.1	341.7	993.2	868.0	125.16	7.935	
8,800.0	5,666.8	9,063.7	5,753.2	65.0	65.3	95.17	3,513.1	341.7	993.2	864.6	128.60	7.723	
8,900.0	5,666.8	9,163.7	5,753.2	66.7	67.0	95.17	3,613.1	341.7	993.2	861.2	132.05	7.521	
9,000.0	5,666.8	9,263.7	5,753.2	68.4	68.7	95.17	3,713.1	341.7	993.2	857.7	135.50	7.330	
9,100.0	5,666.8	9,363.7	5,753.2	70.1	70.5	95.17	3,813.1	341.7	993.2	854.3	138.95	7.148	
9,200.0	5,666.8	9,463.7	5,753.2	71.9	72.2	95.16	3,913.1	341.7	993.2	850.8	142.41	6.974	
9,300.0	5,666.8	9,563.7	5,753.2	73.6	73.9	95.16	4,013.1	341.7	993.2	847.4	145.86	6.809	
9,400.0	5,666.8	9,663.7	5,753.2	75.3	75.7	95.16	4,113.1	341.7	993.2	843.9	149.32	6.651	
9,500.0	5,666.8	9,763.7	5,753.2	77.0	77.4	95.16	4,213.1	341.7	993.2	840.4	152.78	6.501	
9,600.0	5,666.8	9,863.7	5,753.2	78.7	79.1	95.16	4,313.1	341.7	993.2	837.0	156.24	6.357	
9,700.0	5,666.8	9,963.7	5,753.2	80.4	80.9	95.16	4,413.1	341.7	993.2	833.5	159.71	6.219	
9,800.0	5,666.8	10,063.7	5,753.2	82.1	82.6	95.16	4,513.1	341.7	993.2	830.1	163.17	6.087	
9,900.0	5,666.8	10,163.7	5,753.2	83.9	84.4	95.16	4,613.1	341.8	993.2	826.6	166.64	5.961	
10,000.0	5,666.8	10,263.7	5,753.2	85.6	86.1	95.16	4,713.1	341.8	993.2	823.1	170.10	5.839	
10,100.0	5,666.8	10,363.7	5,753.2	87.3	87.8	95.16	4,813.1	341.8	993.2	819.7	173.57	5.722	
10,200.0	5,666.8	10,463.7	5,753.2	89.0	89.6	95.16	4,913.1	341.8	993.2	816.2	177.04	5.610	
10,300.0	5,666.8	10,563.7	5,753.2	90.8	91.3	95.16	5,013.1	341.8	993.2	812.7	180.51	5.503	

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

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-2212B - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	5,666.9	10,663.7	5,753.2	92.5	93.1	95.16	5,113.1	341.8	993.2	809.3	183.98	5.399	
10,500.0	5,666.9	10,763.7	5,753.2	94.2	94.8	95.16	5,213.1	341.8	993.3	805.8	187.45	5.299	
10,600.0	5,666.9	10,863.7	5,753.2	95.9	96.5	95.16	5,313.1	341.8	993.3	802.3	190.92	5.202	
10,700.0	5,666.9	10,963.7	5,753.1	97.7	98.3	95.16	5,413.1	341.8	993.3	798.9	194.39	5.109	
10,800.0	5,666.9	11,063.7	5,753.1	99.4	100.0	95.16	5,513.1	341.8	993.3	795.4	197.87	5.020	
10,900.0	5,666.9	11,163.7	5,753.1	101.1	101.8	95.16	5,613.1	341.8	993.3	791.9	201.34	4.933	
11,000.0	5,666.9	11,263.7	5,753.1	102.9	103.5	95.15	5,713.1	341.8	993.3	788.4	204.82	4.849	
11,100.0	5,666.9	11,363.7	5,753.1	104.6	105.3	95.15	5,813.1	341.9	993.3	785.0	208.29	4.769	
11,200.0	5,666.9	11,463.7	5,753.1	106.3	107.0	95.15	5,913.1	341.9	993.3	781.5	211.77	4.690	
11,300.0	5,666.9	11,563.7	5,753.1	108.1	108.7	95.15	6,013.1	341.9	993.3	778.0	215.25	4.615	
11,400.0	5,666.9	11,663.7	5,753.1	109.8	110.5	95.15	6,113.1	341.9	993.3	774.6	218.73	4.541	
11,500.0	5,666.9	11,763.7	5,753.1	111.5	112.2	95.15	6,213.1	341.9	993.3	771.1	222.20	4.470	
11,600.0	5,666.9	11,863.7	5,753.1	113.3	114.0	95.15	6,313.1	341.9	993.3	767.6	225.68	4.401	
11,700.0	5,666.9	11,963.7	5,753.1	115.0	115.7	95.15	6,413.1	341.9	993.3	764.1	229.16	4.334	
11,800.0	5,666.9	12,063.7	5,753.1	116.7	117.5	95.15	6,513.1	341.9	993.3	760.6	232.64	4.270	
11,900.0	5,666.9	12,163.7	5,753.1	118.5	119.2	95.15	6,613.1	341.9	993.3	757.2	236.12	4.207	
12,000.0	5,666.9	12,263.7	5,753.1	120.2	121.0	95.15	6,713.1	341.9	993.3	753.7	239.60	4.146	
12,100.0	5,666.9	12,363.7	5,753.1	122.0	122.7	95.15	6,813.1	341.9	993.3	750.2	243.08	4.086	
12,200.0	5,666.9	12,463.7	5,753.1	123.7	124.5	95.15	6,913.1	341.9	993.3	746.7	246.56	4.029	
12,300.0	5,666.9	12,563.7	5,753.1	125.4	126.2	95.15	7,013.1	342.0	993.3	743.3	250.04	3.973	
12,400.0	5,666.9	12,663.7	5,753.1	127.2	128.0	95.15	7,113.1	342.0	993.3	739.8	253.53	3.918	
12,500.0	5,667.0	12,763.7	5,753.1	128.9	129.7	95.15	7,213.1	342.0	993.3	736.3	257.01	3.865	
12,600.0	5,667.0	12,863.7	5,753.1	130.7	131.4	95.15	7,313.1	342.0	993.3	732.8	260.49	3.813	
12,700.0	5,667.0	12,963.7	5,753.0	132.4	133.2	95.14	7,413.1	342.0	993.3	729.3	263.97	3.763	
12,800.0	5,667.0	13,063.7	5,753.0	134.1	134.9	95.14	7,513.1	342.0	993.3	725.9	267.46	3.714	
12,900.0	5,667.0	13,163.7	5,753.0	135.9	136.7	95.14	7,613.1	342.0	993.3	722.4	270.94	3.666	
13,000.0	5,667.0	13,263.7	5,753.0	137.6	138.4	95.14	7,713.1	342.0	993.3	718.9	274.43	3.620	
13,100.0	5,667.0	13,363.7	5,753.0	139.4	140.2	95.14	7,813.1	342.0	993.3	715.4	277.91	3.574	
13,200.0	5,667.0	13,463.7	5,753.0	141.1	141.9	95.14	7,913.1	342.0	993.3	711.9	281.39	3.530	
13,300.0	5,667.0	13,563.7	5,753.0	142.9	143.7	95.14	8,013.1	342.0	993.3	708.5	284.88	3.487	
13,400.0	5,667.0	13,663.7	5,753.0	144.6	145.4	95.14	8,113.1	342.0	993.3	705.0	288.36	3.445	
13,462.8	5,667.0	13,726.5	5,753.0	145.7	146.5	95.14	8,175.9	342.0	993.3	702.8	290.55	3.419 SF	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3409A - Hz - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-32.1	32.1				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-32.1	32.1	31.8	0.29	110.168	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-32.1	32.1	31.5	0.64	50.132	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-32.1	32.1	31.1	0.99	32.449	
400.0	400.0	400.0	400.0	0.7	0.7	-90.00	0.0	-32.1	32.1	30.8	1.34	23.988	
466.7	466.7	466.7	466.7	0.8	0.8	-90.00	0.0	-32.1	32.1	30.5	1.57	20.436	
500.0	500.0	500.0	500.0	0.8	0.8	-90.00	0.0	-32.1	32.1	30.4	1.69	19.027	
600.0	600.0	599.6	599.6	1.0	1.0	-62.52	-1.7	-32.6	31.8	29.8	2.04	15.614	
618.2	618.2	617.7	617.6	1.1	1.1	-64.76	-2.3	-32.8	31.8	29.7	2.11	15.106	CC, ES
700.0	699.8	698.6	698.4	1.2	1.2	-78.99	-6.6	-34.2	32.8	30.4	2.40	13.655	SF
800.0	799.6	797.7	797.3	1.4	1.4	-97.61	-13.2	-36.3	38.0	35.2	2.77	13.698	
900.0	899.4	896.9	896.3	1.6	1.6	-110.81	-19.8	-38.3	46.1	43.0	3.13	14.706	
1,000.0	999.1	996.2	995.3	1.8	1.8	-119.77	-26.4	-40.4	55.9	52.4	3.49	16.006	
1,100.0	1,098.9	1,095.4	1,094.2	2.0	2.0	-125.96	-33.0	-42.5	66.6	62.8	3.85	17.316	
1,200.0	1,198.6	1,194.6	1,193.2	2.2	2.2	-130.41	-39.6	-44.6	77.9	73.7	4.20	18.535	
1,300.0	1,298.4	1,293.8	1,292.2	2.4	2.4	-133.71	-46.2	-46.6	89.6	85.0	4.56	19.638	
1,400.0	1,398.1	1,393.0	1,391.1	2.6	2.6	-136.26	-52.8	-48.7	101.4	96.5	4.92	20.624	
1,500.0	1,497.9	1,492.2	1,490.1	2.8	2.8	-138.26	-59.4	-50.8	113.5	108.2	5.28	21.503	
1,600.0	1,597.6	1,591.4	1,589.0	3.0	3.0	-139.88	-66.0	-52.9	125.6	120.0	5.63	22.289	
1,700.0	1,697.4	1,690.6	1,688.0	3.3	3.2	-141.22	-72.6	-55.0	137.8	131.8	5.99	22.992	
1,800.0	1,797.2	1,789.8	1,787.0	3.5	3.4	-142.34	-79.2	-57.0	150.1	143.7	6.35	23.625	
1,900.0	1,896.9	1,889.0	1,885.9	3.7	3.7	-143.28	-85.8	-59.1	162.4	155.7	6.71	24.196	
2,000.0	1,996.7	1,988.2	1,984.9	3.9	3.9	-144.10	-92.4	-61.2	174.8	167.7	7.07	24.713	
2,100.0	2,096.4	2,087.4	2,083.9	4.1	4.1	-144.80	-99.0	-63.3	187.2	179.7	7.43	25.183	
2,200.0	2,196.2	2,186.6	2,182.8	4.3	4.3	-145.42	-105.6	-65.4	199.6	191.8	7.79	25.613	
2,300.0	2,295.9	2,285.8	2,281.8	4.5	4.5	-145.97	-112.2	-67.4	212.0	203.9	8.15	26.006	
2,400.0	2,395.7	2,385.0	2,380.7	4.7	4.7	-146.46	-118.8	-69.5	224.5	216.0	8.51	26.368	
2,500.0	2,495.5	2,484.2	2,479.7	4.9	4.9	-146.89	-125.4	-71.6	236.9	228.1	8.87	26.701	
2,600.0	2,595.2	2,583.4	2,578.7	5.2	5.1	-147.28	-132.0	-73.7	249.4	240.2	9.23	27.010	
2,700.0	2,695.0	2,682.6	2,677.6	5.4	5.3	-147.64	-138.6	-75.8	261.9	252.3	9.60	27.296	
2,800.0	2,794.7	2,781.8	2,776.6	5.6	5.5	-147.96	-145.2	-77.8	274.4	264.5	9.96	27.562	
2,900.0	2,894.5	2,881.0	2,875.6	5.8	5.7	-148.25	-151.8	-79.9	286.9	276.6	10.32	27.810	
3,000.0	2,994.2	2,980.2	2,974.5	6.0	6.0	-148.52	-158.4	-82.0	299.4	288.8	10.68	28.041	
3,100.0	3,094.0	3,079.4	3,073.5	6.2	6.2	-148.77	-165.0	-84.1	312.0	300.9	11.04	28.258	
3,200.0	3,193.7	3,178.6	3,172.4	6.4	6.4	-149.00	-171.6	-86.1	324.5	313.1	11.40	28.462	
3,300.0	3,293.5	3,277.9	3,271.4	6.6	6.6	-149.21	-178.2	-88.2	337.0	325.3	11.76	28.653	
3,400.0	3,393.3	3,377.1	3,370.4	6.9	6.8	-149.40	-184.8	-90.3	349.6	337.4	12.12	28.833	
3,500.0	3,493.0	3,476.3	3,469.3	7.1	7.0	-149.59	-191.4	-92.4	362.1	349.6	12.49	29.003	
3,600.0	3,592.8	3,575.5	3,568.3	7.3	7.2	-149.76	-198.0	-94.5	374.6	361.8	12.85	29.163	
3,700.0	3,692.5	3,674.7	3,667.3	7.5	7.4	-149.92	-204.6	-96.5	387.2	374.0	13.21	29.315	
3,800.0	3,792.3	3,773.9	3,766.2	7.7	7.6	-150.06	-211.2	-98.6	399.7	386.2	13.57	29.459	
3,900.0	3,892.0	3,873.1	3,865.2	7.9	7.9	-150.21	-217.8	-100.7	412.3	398.4	13.93	29.595	
4,000.0	3,991.8	3,972.3	3,964.1	8.1	8.1	-150.34	-224.4	-102.8	424.8	410.6	14.29	29.725	
4,100.0	4,091.6	4,071.5	4,063.1	8.3	8.3	-150.46	-231.0	-104.9	437.4	422.7	14.65	29.849	
4,200.0	4,191.3	4,170.7	4,162.1	8.5	8.5	-150.58	-237.6	-106.9	450.0	434.9	15.02	29.966	
4,300.0	4,291.1	4,269.9	4,261.0	8.8	8.7	-150.69	-244.2	-109.0	462.5	447.1	15.38	30.078	
4,400.0	4,390.8	4,369.1	4,360.0	9.0	8.9	-150.80	-250.8	-111.1	475.1	459.3	15.74	30.185	
4,500.0	4,490.6	4,468.3	4,459.0	9.2	9.1	-150.90	-257.4	-113.2	487.6	471.5	16.10	30.287	
4,600.0	4,590.3	4,567.5	4,557.9	9.4	9.3	-150.99	-264.0	-115.2	500.2	483.7	16.46	30.385	
4,700.0	4,690.1	4,666.7	4,656.9	9.6	9.5	-151.08	-270.6	-117.3	512.8	495.9	16.82	30.479	
4,800.0	4,789.9	4,765.9	4,755.9	9.8	9.8	-151.17	-277.2	-119.4	525.3	508.1	17.19	30.569	
4,900.0	4,889.6	4,865.1	4,854.8	10.0	10.0	-151.25	-283.8	-121.5	537.9	520.4	17.55	30.655	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3409A - Hz - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,000.0	4,989.4	4,964.3	4,953.8	10.2	10.2	-151.33	-290.4	-123.6	550.5	532.6	17.91	30.738	
5,100.0	5,089.1	5,063.5	5,052.7	10.5	10.4	-151.40	-297.0	-125.6	563.0	544.8	18.27	30.817	
5,200.0	5,188.9	5,162.7	5,151.7	10.7	10.6	-152.23	-303.6	-127.7	575.7	557.0	18.62	30.913	
5,300.0	5,287.1	5,225.5	5,214.2	11.0	10.8	-154.25	-308.7	-129.3	600.0	581.4	18.60	32.256	
5,400.0	5,380.2	5,267.1	5,255.2	11.6	10.9	-152.59	-315.5	-131.5	647.5	629.2	18.30	35.391	
5,500.0	5,464.6	5,300.0	5,287.1	12.3	11.0	-148.61	-323.1	-133.9	714.5	696.4	18.03	39.637	
5,600.0	5,537.4	5,324.4	5,310.4	13.3	11.2	-140.72	-329.9	-136.0	795.9	777.3	18.55	42.901	
5,700.0	5,595.7	5,350.0	5,334.5	14.5	11.3	-125.56	-338.2	-138.6	886.8	865.5	21.29	41.661	
5,800.0	5,637.5	5,350.0	5,334.5	15.9	11.3	-92.40	-338.2	-138.6	982.3	956.1	26.18	37.515	
5,900.0	5,661.3	5,350.0	5,334.5	17.5	11.3	-54.41	-338.2	-138.6	1,078.8	1,054.8	23.97	45.008	
6,000.0	5,666.7	5,350.0	5,334.5	19.1	11.3	-35.48	-338.2	-138.6	1,173.1	1,153.2	19.95	58.802	
6,100.0	5,666.7	5,330.3	5,316.1	20.8	11.2	-26.09	-331.7	-136.6	1,267.3	1,249.5	17.83	71.066	
6,200.0	5,666.7	5,322.5	5,308.7	22.5	11.1	-16.22	-329.4	-135.8	1,363.0	1,347.7	15.34	88.880	
6,300.0	5,666.7	5,300.0	5,287.1	24.2	11.0	-4.36	-323.1	-133.9	1,459.8	1,446.8	13.03	112.034	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3410B - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	179.37	-75.0	0.8	75.1				
100.0	100.0	97.0	97.0	0.1	0.1	179.37	-75.0	0.8	75.1	74.8	0.29	261.412	
200.0	200.0	197.0	197.0	0.3	0.3	179.37	-75.0	0.8	75.1	74.4	0.64	118.137	
300.0	300.0	297.0	297.0	0.5	0.5	179.37	-75.0	0.8	75.1	74.1	0.98	76.245	
400.0	400.0	397.0	397.0	0.7	0.7	179.37	-75.0	0.8	75.1	73.7	1.33	56.286	
500.0	500.0	497.0	497.0	0.8	0.8	179.37	-75.0	0.8	75.1	73.4	1.68	44.608	CC, ES
600.0	600.0	597.0	597.0	1.0	1.0	-148.24	-75.0	0.8	76.5	74.5	2.03	37.674	
700.0	699.8	696.8	696.8	1.2	1.2	-150.14	-75.0	0.8	81.0	78.6	2.38	34.028	
800.0	799.6	796.6	796.6	1.4	1.4	-152.42	-75.0	0.8	87.2	84.4	2.73	31.883	
900.0	899.4	896.4	896.4	1.6	1.5	-154.40	-75.0	0.8	93.4	90.3	3.09	30.266	
1,000.0	999.1	996.1	996.1	1.8	1.7	-156.13	-75.0	0.8	99.7	96.3	3.44	29.013	
1,100.0	1,098.9	1,095.9	1,095.9	2.0	1.9	-157.66	-75.0	0.8	106.2	102.4	3.79	28.017	
1,200.0	1,198.6	1,195.6	1,195.6	2.2	2.1	-159.01	-75.0	0.8	112.6	108.5	4.14	27.210	
1,300.0	1,298.4	1,295.4	1,295.4	2.4	2.2	-160.21	-75.0	0.8	119.2	114.7	4.49	26.543	
1,400.0	1,398.1	1,395.1	1,395.1	2.6	2.4	-161.28	-75.0	0.8	125.8	120.9	4.84	25.985	
1,500.0	1,497.9	1,494.9	1,494.9	2.8	2.6	-162.25	-75.0	0.8	132.4	127.2	5.19	25.512	
1,600.0	1,597.6	1,594.7	1,594.7	3.0	2.8	-163.13	-75.0	0.8	139.1	133.5	5.54	25.105	
1,700.0	1,697.4	1,694.4	1,694.4	3.3	2.9	-163.92	-75.0	0.8	145.7	139.9	5.89	24.753	
1,800.0	1,797.2	1,794.2	1,794.2	3.5	3.1	-164.65	-75.0	0.8	152.5	146.2	6.24	24.445	
1,900.0	1,896.9	1,893.9	1,893.9	3.7	3.3	-165.31	-75.0	0.8	159.2	152.6	6.59	24.173	
2,000.0	1,996.7	1,993.7	1,993.7	3.9	3.5	-165.92	-75.0	0.8	166.0	159.0	6.93	23.932	
2,100.0	2,096.4	2,093.4	2,093.4	4.1	3.6	-166.49	-75.0	0.8	172.7	165.5	7.28	23.717	
2,200.0	2,196.2	2,193.2	2,193.2	4.3	3.8	-167.01	-75.0	0.8	179.5	171.9	7.63	23.524	
2,300.0	2,295.9	2,292.9	2,292.9	4.5	4.0	-167.49	-75.0	0.8	186.3	178.3	7.98	23.349	
2,400.0	2,395.7	2,392.7	2,392.7	4.7	4.1	-167.94	-75.0	0.8	193.1	184.8	8.33	23.191	
2,500.0	2,495.5	2,492.5	2,492.5	4.9	4.3	-168.35	-75.0	0.8	200.0	191.3	8.68	23.047	
2,600.0	2,595.2	2,592.2	2,592.2	5.2	4.5	-168.74	-75.0	0.8	206.8	197.8	9.03	22.915	
2,700.0	2,695.0	2,692.0	2,692.0	5.4	4.7	-169.11	-75.0	0.8	213.7	204.3	9.37	22.794	
2,800.0	2,794.7	2,791.7	2,791.7	5.6	4.8	-169.45	-75.0	0.8	220.5	210.8	9.72	22.683	
2,900.0	2,894.5	2,891.5	2,891.5	5.8	5.0	-169.77	-75.0	0.8	227.4	217.3	10.07	22.580	
3,000.0	2,994.2	2,991.2	2,991.2	6.0	5.2	-170.08	-75.0	0.8	234.2	223.8	10.42	22.485	
3,100.0	3,094.0	3,091.0	3,091.0	6.2	5.4	-170.36	-75.0	0.8	241.1	230.4	10.77	22.396	
3,200.0	3,193.7	3,190.8	3,190.8	6.4	5.5	-170.63	-75.0	0.8	248.0	236.9	11.11	22.313	
3,300.0	3,293.5	3,290.5	3,290.5	6.6	5.7	-170.89	-75.0	0.8	254.9	243.4	11.46	22.236	
3,400.0	3,393.3	3,390.3	3,390.3	6.9	5.9	-171.13	-75.0	0.8	261.8	250.0	11.81	22.164	
3,500.0	3,493.0	3,490.0	3,490.0	7.1	6.1	-171.36	-75.0	0.8	268.7	256.5	12.16	22.097	
3,600.0	3,592.8	3,589.8	3,589.8	7.3	6.2	-171.58	-75.0	0.8	275.6	263.1	12.51	22.033	
3,700.0	3,692.5	3,689.5	3,689.5	7.5	6.4	-171.78	-75.0	0.8	282.5	269.6	12.86	21.973	
3,800.0	3,792.3	3,789.3	3,789.3	7.7	6.6	-171.98	-75.0	0.8	289.4	276.2	13.20	21.917	
3,900.0	3,892.0	3,889.1	3,889.1	7.9	6.8	-172.17	-75.0	0.8	296.3	282.7	13.55	21.864	
4,000.0	3,991.8	3,988.8	3,988.8	8.1	6.9	-172.35	-75.0	0.8	303.2	289.3	13.90	21.813	
4,100.0	4,091.6	4,088.6	4,088.6	8.3	7.1	-172.52	-75.0	0.8	310.1	295.9	14.25	21.766	
4,200.0	4,191.3	4,188.3	4,188.3	8.5	7.3	-172.68	-75.0	0.8	317.0	302.4	14.60	21.720	
4,300.0	4,291.1	4,288.1	4,288.1	8.8	7.5	-172.84	-75.0	0.8	324.0	309.0	14.94	21.677	
4,400.0	4,390.8	4,387.8	4,387.8	9.0	7.6	-172.99	-75.0	0.8	330.9	315.6	15.29	21.636	
4,500.0	4,490.6	4,487.6	4,487.6	9.2	7.8	-173.14	-75.0	0.8	337.8	322.2	15.64	21.597	
4,600.0	4,590.3	4,587.3	4,587.3	9.4	8.0	-173.28	-75.0	0.8	344.7	328.7	15.99	21.560	
4,700.0	4,690.1	4,687.1	4,687.1	9.6	8.2	-173.41	-75.0	0.8	351.7	335.3	16.34	21.525	
4,800.0	4,789.9	4,786.9	4,786.9	9.8	8.3	-173.54	-75.0	0.8	358.6	341.9	16.69	21.491	
4,900.0	4,889.6	4,886.6	4,886.6	10.0	8.5	-173.66	-75.0	0.8	365.5	348.5	17.03	21.459	
5,000.0	4,989.4	4,986.4	4,986.4	10.2	8.7	-173.78	-75.0	0.8	372.5	355.1	17.38	21.428	
5,100.0	5,089.1	5,086.1	5,086.1	10.5	8.8	-173.89	-75.0	0.8	379.4	361.7	17.73	21.398	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3410B - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,185.9	5,185.9	10.7	9.0	-174.79	-75.0	0.8	386.4	368.3	18.07	21.381	SF
5,300.0	5,287.1	5,263.1	5,263.1	11.0	9.2	-177.70	-76.0	0.8	405.5	387.4	18.04	22.480	
5,400.0	5,380.2	5,314.9	5,314.6	11.6	9.2	-177.79	-81.6	0.6	450.4	432.9	17.53	25.687	
5,500.0	5,464.6	5,350.0	5,349.0	12.3	9.3	-177.27	-88.3	0.4	517.6	500.9	16.64	31.102	
5,600.0	5,537.4	5,383.6	5,381.5	13.3	9.4	-176.00	-96.9	0.1	600.8	585.3	15.51	38.749	
5,700.0	5,595.7	5,400.0	5,397.1	14.5	9.4	-173.11	-101.9	-0.1	694.5	680.1	14.37	48.343	
5,800.0	5,637.5	5,400.0	5,397.1	15.9	9.4	-143.06	-101.9	-0.1	793.4	774.9	18.53	42.815	
5,900.0	5,661.3	5,400.0	5,397.1	17.5	9.4	-7.61	-101.9	-0.1	893.0	880.5	12.54	71.187	
6,000.0	5,666.7	5,400.0	5,397.1	19.1	9.4	-1.09	-101.9	-0.1	990.3	978.3	12.01	82.479	
6,100.0	5,666.7	5,400.0	5,397.1	20.8	9.4	10.10	-101.9	-0.1	1,086.9	1,073.7	13.22	82.210	
6,200.0	5,666.7	5,377.4	5,375.5	22.5	9.4	20.50	-95.2	0.1	1,183.2	1,166.9	16.25	72.804	
6,300.0	5,666.7	5,369.3	5,367.7	24.2	9.4	29.99	-93.0	0.2	1,279.7	1,259.6	20.08	63.729	
6,400.0	5,666.7	5,350.0	5,349.0	25.8	9.3	37.23	-88.3	0.4	1,376.0	1,352.5	23.51	58.519	
6,500.0	5,666.7	5,350.0	5,349.0	27.5	9.3	44.61	-88.3	0.4	1,471.6	1,444.5	27.15	54.206	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3411A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	89.99	0.0	33.2	33.2				
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	33.2	33.2	32.9	0.29	113.967	
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	33.2	33.2	32.6	0.64	51.861	
300.0	300.0	300.0	300.0	0.5	0.5	89.99	0.0	33.2	33.2	32.2	0.99	33.568	
400.0	400.0	400.0	400.0	0.7	0.7	89.99	0.0	33.2	33.2	31.9	1.34	24.815	
466.7	466.7	466.7	466.7	0.8	0.8	89.99	0.0	33.2	33.2	31.6	1.57	21.140	CC
500.0	500.0	500.0	500.0	0.8	0.8	89.99	0.0	33.2	33.2	31.5	1.69	19.683	ES
600.0	600.0	599.6	599.6	1.0	1.0	128.24	-1.7	33.6	34.7	32.7	2.04	17.035	
700.0	699.8	698.5	698.4	1.2	1.2	140.87	-6.7	34.8	40.7	38.3	2.40	16.967	SF
800.0	799.6	797.6	797.2	1.4	1.4	152.56	-13.4	36.5	50.8	48.0	2.75	18.455	
900.0	899.4	896.6	896.0	1.6	1.6	160.19	-20.1	38.1	62.3	59.2	3.10	20.078	
1,000.0	999.1	995.7	994.8	1.8	1.8	165.38	-26.8	39.8	74.6	71.1	3.45	21.601	
1,100.0	1,098.9	1,094.7	1,093.6	2.0	2.0	169.09	-33.5	41.4	87.3	83.5	3.80	22.965	
1,200.0	1,198.6	1,193.8	1,192.4	2.2	2.2	171.85	-40.2	43.0	100.3	96.1	4.15	24.168	
1,300.0	1,298.4	1,292.8	1,291.2	2.4	2.4	173.98	-47.0	44.7	113.4	108.9	4.50	25.224	
1,400.0	1,398.1	1,391.9	1,390.0	2.6	2.6	175.66	-53.7	46.3	126.7	121.8	4.84	26.155	
1,500.0	1,497.9	1,491.0	1,488.9	2.8	2.8	177.02	-60.4	47.9	140.0	134.8	5.19	26.977	
1,600.0	1,597.6	1,590.0	1,587.7	3.0	3.0	178.15	-67.1	49.6	153.4	147.9	5.54	27.707	
1,700.0	1,697.4	1,689.1	1,686.5	3.3	3.2	179.09	-73.8	51.2	166.9	161.0	5.89	28.359	
1,800.0	1,797.2	1,788.1	1,785.3	3.5	3.4	179.89	-80.5	52.8	180.4	174.2	6.23	28.943	
1,900.0	1,896.9	1,887.2	1,884.1	3.7	3.6	-179.41	-87.2	54.5	194.0	187.4	6.58	29.470	
2,000.0	1,996.7	1,986.2	1,982.9	3.9	3.9	-178.81	-93.9	56.1	207.5	200.6	6.93	29.948	
2,100.0	2,096.4	2,085.3	2,081.7	4.1	4.1	-178.29	-100.7	57.8	221.1	213.8	7.28	30.382	
2,200.0	2,196.2	2,184.3	2,180.6	4.3	4.3	-177.82	-107.4	59.4	234.7	227.1	7.63	30.778	
2,300.0	2,295.9	2,283.4	2,279.4	4.5	4.5	-177.41	-114.1	61.0	248.3	240.3	7.97	31.141	
2,400.0	2,395.7	2,382.4	2,378.2	4.7	4.7	-177.03	-120.8	62.7	261.9	253.6	8.32	31.475	
2,500.0	2,495.5	2,481.5	2,477.0	4.9	4.9	-176.70	-127.5	64.3	275.5	266.9	8.67	31.783	
2,600.0	2,595.2	2,580.5	2,575.8	5.2	5.1	-176.39	-134.2	65.9	289.2	280.2	9.02	32.068	
2,700.0	2,695.0	2,679.6	2,674.6	5.4	5.3	-176.12	-140.9	67.6	302.8	293.5	9.37	32.332	
2,800.0	2,794.7	2,778.7	2,773.4	5.6	5.5	-175.87	-147.7	69.2	316.5	306.8	9.71	32.578	
2,900.0	2,894.5	2,877.7	2,872.2	5.8	5.7	-175.63	-154.4	70.9	330.1	320.1	10.06	32.808	
3,000.0	2,994.2	2,976.8	2,971.1	6.0	6.0	-175.42	-161.1	72.5	343.8	333.4	10.41	33.022	
3,100.0	3,094.0	3,075.8	3,069.9	6.2	6.2	-175.22	-167.8	74.1	357.5	346.7	10.76	33.223	
3,200.0	3,193.7	3,174.9	3,168.7	6.4	6.4	-175.04	-174.5	75.8	371.1	360.0	11.11	33.411	
3,300.0	3,293.5	3,273.9	3,267.5	6.6	6.6	-174.87	-181.2	77.4	384.8	373.4	11.46	33.589	
3,400.0	3,393.3	3,373.0	3,366.3	6.9	6.8	-174.71	-187.9	79.0	398.5	386.7	11.81	33.756	
3,500.0	3,493.0	3,472.0	3,465.1	7.1	7.0	-174.57	-194.6	80.7	412.2	400.0	12.15	33.913	
3,600.0	3,592.8	3,571.1	3,563.9	7.3	7.2	-174.43	-201.4	82.3	425.9	413.4	12.50	34.062	
3,700.0	3,692.5	3,670.1	3,662.7	7.5	7.4	-174.30	-208.1	83.9	439.6	426.7	12.85	34.203	
3,800.0	3,792.3	3,769.2	3,761.6	7.7	7.6	-174.18	-214.8	85.6	453.2	440.0	13.20	34.337	
3,900.0	3,892.0	3,868.3	3,860.4	7.9	7.8	-174.06	-221.5	87.2	466.9	453.4	13.55	34.464	
4,000.0	3,991.8	3,967.3	3,959.2	8.1	8.1	-173.96	-228.2	88.9	480.6	466.7	13.90	34.584	
4,100.0	4,091.6	4,066.4	4,058.0	8.3	8.3	-173.86	-234.9	90.5	494.3	480.1	14.25	34.699	
4,200.0	4,191.3	4,165.4	4,156.8	8.5	8.5	-173.76	-241.6	92.1	508.0	493.4	14.59	34.808	
4,300.0	4,291.1	4,264.5	4,255.6	8.8	8.7	-173.67	-248.3	93.8	521.7	506.8	14.94	34.913	
4,400.0	4,390.8	4,363.5	4,354.4	9.0	8.9	-173.58	-255.1	95.4	535.4	520.1	15.29	35.012	
4,500.0	4,490.6	4,462.6	4,453.3	9.2	9.1	-173.50	-261.8	97.0	549.1	533.5	15.64	35.108	
4,600.0	4,590.3	4,561.6	4,552.1	9.4	9.3	-173.42	-268.5	98.7	562.8	546.8	15.99	35.199	
4,700.0	4,690.1	4,660.7	4,650.9	9.6	9.5	-173.35	-275.2	100.3	576.5	560.2	16.34	35.286	
4,800.0	4,789.9	4,759.7	4,749.7	9.8	9.7	-173.27	-281.9	101.9	590.2	573.5	16.69	35.370	
4,900.0	4,889.6	4,858.8	4,848.5	10.0	9.9	-173.21	-288.6	103.6	603.9	586.9	17.04	35.450	
5,000.0	4,989.4	4,957.9	4,947.3	10.2	10.2	-173.14	-295.3	105.2	617.6	600.2	17.38	35.527	

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3411A - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,089.1	5,056.9	5,046.1	10.5	10.4	-173.08	-302.1	106.9	631.3	613.6	17.73	35.601	
5,200.0	5,188.9	5,156.0	5,144.9	10.7	10.6	-173.81	-308.8	108.5	645.1	627.0	18.07	35.699	
5,300.0	5,287.1	5,220.0	5,208.8	11.0	10.7	-176.58	-313.7	109.7	670.9	652.9	17.94	37.387	
5,400.0	5,380.2	5,250.0	5,238.4	11.6	10.8	-176.80	-318.0	110.8	720.8	703.5	17.34	41.571	
5,500.0	5,464.6	5,300.0	5,287.2	12.3	11.0	-176.40	-328.9	113.4	791.0	774.6	16.41	48.192	
5,600.0	5,537.4	5,300.0	5,287.2	13.3	11.0	-175.38	-328.9	113.4	875.7	860.5	15.20	57.625	
5,700.0	5,595.7	5,319.5	5,305.8	14.5	11.1	-172.26	-334.3	114.7	970.0	955.9	14.09	68.823	
5,800.0	5,637.5	5,323.8	5,309.9	15.9	11.1	-132.81	-335.6	115.0	1,069.0	1,047.6	21.44	49.868	
5,900.0	5,661.3	5,321.6	5,307.9	17.5	11.1	-8.04	-335.0	114.9	1,168.6	1,156.1	12.57	92.990	
6,000.0	5,666.7	5,300.0	5,287.2	19.1	11.0	-1.30	-328.9	113.4	1,265.8	1,253.8	11.94	106.039	
6,100.0	5,666.7	5,300.0	5,287.2	20.8	11.0	8.57	-328.9	113.4	1,361.5	1,348.5	12.94	105.242	
6,200.0	5,666.7	5,300.0	5,287.2	22.5	11.0	18.65	-328.9	113.4	1,457.5	1,441.6	15.92	91.569	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3412B - HZ - Plan #2 — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	138.60	-75.0	66.2	100.1				
100.0	100.0	97.0	97.0	0.1	0.1	138.60	-75.0	66.2	100.1	99.8	0.29	348.471	
200.0	200.0	197.0	197.0	0.3	0.3	138.60	-75.0	66.2	100.1	99.4	0.64	157.481	
300.0	300.0	297.0	297.0	0.5	0.5	138.60	-75.0	66.2	100.1	99.1	0.98	101.637	
400.0	400.0	397.0	397.0	0.7	0.7	138.60	-75.0	66.2	100.1	98.7	1.33	75.031	
500.0	500.0	497.0	497.0	0.8	0.8	138.60	-75.0	66.2	100.1	98.4	1.68	59.465	CC, ES
600.0	600.0	593.7	593.7	1.0	1.0	172.04	-76.4	66.8	103.3	101.3	2.03	51.008	
700.0	699.8	689.7	689.6	1.2	1.2	173.02	-80.7	68.9	113.3	110.9	2.37	47.883	
800.0	799.6	788.4	788.0	1.4	1.4	174.19	-86.9	71.8	126.9	124.2	2.71	46.790	
900.0	899.4	887.4	886.8	1.6	1.6	175.13	-93.1	74.8	140.6	137.6	3.06	45.956	
1,000.0	999.1	986.4	985.6	1.8	1.8	175.91	-99.4	77.8	154.4	151.0	3.41	45.304	
1,100.0	1,098.9	1,085.5	1,084.4	2.0	2.0	176.56	-105.6	80.7	168.1	164.4	3.75	44.780	
1,200.0	1,198.6	1,184.5	1,183.1	2.2	2.2	177.11	-111.9	83.7	181.9	177.8	4.10	44.351	
1,300.0	1,298.4	1,283.5	1,281.9	2.4	2.4	177.58	-118.1	86.7	195.7	191.3	4.45	43.993	
1,400.0	1,398.1	1,382.6	1,380.7	2.6	2.6	177.99	-124.3	89.7	209.5	204.7	4.80	43.690	
1,500.0	1,497.9	1,481.6	1,479.5	2.8	2.8	178.35	-130.6	92.6	223.4	218.2	5.14	43.430	
1,600.0	1,597.6	1,580.6	1,578.3	3.0	3.0	178.67	-136.8	95.6	237.2	231.7	5.49	43.204	
1,700.0	1,697.4	1,679.6	1,677.1	3.3	3.2	178.96	-143.0	98.6	251.0	245.2	5.84	43.007	
1,800.0	1,797.2	1,778.7	1,775.9	3.5	3.4	179.21	-149.3	101.6	264.9	258.7	6.18	42.833	
1,900.0	1,896.9	1,877.7	1,874.7	3.7	3.6	179.44	-155.5	104.5	278.7	272.2	6.53	42.678	
2,000.0	1,996.7	1,976.7	1,973.5	3.9	3.8	179.64	-161.7	107.5	292.6	285.7	6.88	42.540	
2,100.0	2,096.4	2,075.8	2,072.3	4.1	4.0	179.83	-168.0	110.5	306.4	299.2	7.22	42.415	
2,200.0	2,196.2	2,174.8	2,171.0	4.3	4.3	-180.00	-174.2	113.5	320.3	312.7	7.57	42.303	
2,300.0	2,295.9	2,273.8	2,269.8	4.5	4.5	-179.84	-180.4	116.4	334.1	326.2	7.92	42.200	
2,400.0	2,395.7	2,372.9	2,368.6	4.7	4.7	-179.69	-186.7	119.4	348.0	339.7	8.26	42.107	
2,500.0	2,495.5	2,471.9	2,467.4	4.9	4.9	-179.56	-192.9	122.4	361.9	353.2	8.61	42.021	
2,600.0	2,595.2	2,570.9	2,566.2	5.2	5.1	-179.43	-199.1	125.4	375.7	366.8	8.96	41.942	
2,700.0	2,695.0	2,670.0	2,665.0	5.4	5.3	-179.32	-205.4	128.3	389.6	380.3	9.30	41.869	
2,800.0	2,794.7	2,769.0	2,763.8	5.6	5.5	-179.21	-211.6	131.3	403.5	393.8	9.65	41.801	
2,900.0	2,894.5	2,868.0	2,862.6	5.8	5.7	-179.11	-217.8	134.3	417.3	407.3	10.00	41.739	
3,000.0	2,994.2	2,967.0	2,961.4	6.0	5.9	-179.02	-224.1	137.2	431.2	420.8	10.35	41.680	
3,100.0	3,094.0	3,066.1	3,060.2	6.2	6.1	-178.93	-230.3	140.2	445.1	434.4	10.69	41.626	
3,200.0	3,193.7	3,165.1	3,158.9	6.4	6.4	-178.85	-236.6	143.2	458.9	447.9	11.04	41.575	
3,300.0	3,293.5	3,264.1	3,257.7	6.6	6.6	-178.77	-242.8	146.2	472.8	461.4	11.39	41.527	
3,400.0	3,393.3	3,363.2	3,356.5	6.9	6.8	-178.70	-249.0	149.1	486.7	474.9	11.73	41.482	
3,500.0	3,493.0	3,462.2	3,455.3	7.1	7.0	-178.63	-255.3	152.1	500.6	488.5	12.08	41.440	
3,600.0	3,592.8	3,561.2	3,554.1	7.3	7.2	-178.56	-261.5	155.1	514.4	502.0	12.43	41.400	
3,700.0	3,692.5	3,660.3	3,652.9	7.5	7.4	-178.50	-267.7	158.1	528.3	515.5	12.77	41.363	
3,800.0	3,792.3	3,759.3	3,751.7	7.7	7.6	-178.44	-274.0	161.0	542.2	529.1	13.12	41.327	
3,900.0	3,892.0	3,858.3	3,850.5	7.9	7.8	-178.38	-280.2	164.0	556.1	542.6	13.47	41.293	
4,000.0	3,991.8	3,957.4	3,949.3	8.1	8.0	-178.33	-286.4	167.0	569.9	556.1	13.81	41.261	
4,100.0	4,091.6	4,056.4	4,048.1	8.3	8.2	-178.28	-292.7	170.0	583.8	569.7	14.16	41.231	
4,200.0	4,191.3	4,155.4	4,146.8	8.5	8.5	-178.23	-298.9	172.9	597.7	583.2	14.51	41.202	
4,300.0	4,291.1	4,254.5	4,245.6	8.8	8.7	-178.19	-305.1	175.9	611.6	596.7	14.85	41.174	
4,400.0	4,390.8	4,353.5	4,344.4	9.0	8.9	-178.14	-311.4	178.9	625.5	610.3	15.20	41.148	
4,500.0	4,490.6	4,452.5	4,443.2	9.2	9.1	-178.10	-317.6	181.9	639.3	623.8	15.55	41.123	
4,600.0	4,590.3	4,551.5	4,542.0	9.4	9.3	-178.06	-323.8	184.8	653.2	637.3	15.89	41.099	
4,700.0	4,690.1	4,650.6	4,640.8	9.6	9.5	-178.02	-330.1	187.8	667.1	650.8	16.24	41.076	
4,800.0	4,789.9	4,749.6	4,739.6	9.8	9.7	-177.98	-336.3	190.8	681.0	664.4	16.59	41.054	
4,900.0	4,889.6	4,848.6	4,838.4	10.0	9.9	-177.95	-342.6	193.8	694.8	677.9	16.93	41.033	
5,000.0	4,989.4	4,947.7	4,937.2	10.2	10.1	-177.91	-348.8	196.7	708.7	691.4	17.28	41.013	
5,100.0	5,089.1	5,046.7	5,036.0	10.5	10.3	-177.88	-355.0	199.7	722.6	705.0	17.63	40.993	SF

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

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27J-3412B - HZ - Plan #2

Survey Program: 0-MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,145.7	5,134.7	10.7	10.6	-178.65	-361.3	202.7	736.5	718.6	17.96	41.005	
5,300.0	5,287.1	5,242.5	5,231.3	11.0	10.8	178.37	-367.3	205.6	761.1	743.2	17.89	42.536	
5,400.0	5,380.2	5,300.0	5,288.6	11.6	10.9	177.67	-371.3	207.5	804.7	787.3	17.34	46.413	
5,500.0	5,464.6	5,330.2	5,318.5	12.3	11.0	177.03	-375.0	209.3	869.0	852.6	16.39	53.020	
5,600.0	5,537.4	5,350.0	5,338.0	13.3	11.1	175.98	-378.3	210.8	949.7	934.4	15.21	62.433	
5,700.0	5,595.7	5,350.0	5,338.0	14.5	11.1	173.20	-378.3	210.8	1,041.7	1,027.7	14.07	74.033	
5,800.0	5,637.5	5,371.4	5,358.8	15.9	11.2	161.08	-382.6	212.9	1,139.3	1,124.5	14.89	76.527	
5,900.0	5,661.3	5,371.2	5,358.7	17.5	11.2	16.67	-382.6	212.9	1,239.1	1,225.0	14.17	87.418	
6,000.0	5,666.7	5,350.0	5,338.0	19.1	11.1	9.62	-378.3	210.8	1,337.6	1,324.8	12.84	104.210	
6,100.0	5,666.7	5,350.0	5,338.0	20.8	11.1	21.08	-378.3	210.8	1,434.6	1,418.4	16.21	88.519	
6,200.0	5,666.7	5,350.0	5,338.0	22.5	11.1	31.66	-378.3	210.8	1,531.5	1,510.9	20.56	74.486	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27J-2209A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4783.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27J-2209A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4783.5ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Razor #27J-2209A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.07°