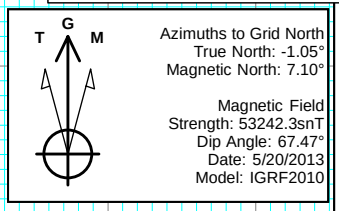
WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S21-T10N-R58W
Well: Razor #21C-2808B
Wellbore: HZ
Design: Plan #1

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0		KOP @ 800' MD
3	1000.0	4.00	150.70	999.8	-6.1	3.4	2.00	150.70	6.4		EOB; 4°
4	5418.4	4.00	150.70	5407.5	-274.9	154.2	0.00	0.00	287.4		Start 11° Build
5	6200.2	90.00	150.70	5892.0	-728.0	408.5	11.00	0.00	761.2		LP @ 6200' MD
6	7176.9	90.00	180.00	5892.0	-1662.7	652.9	3.00	90.00	1713.8		EOT; 180° Az
7	12881.4	90.00	180.00	5892.0	-7367.1	652.7	0.00	0.00	7396.0	21C-2808B BHL	PBHL @ 12881' MD



Azimuths to Grid North
True North: -1.05°
Magnetic North: 7.10°

Magnetic Field
Strength: 53242.3snT
Dip Angle: 67.47°
Date: 5/20/2013
Model: IGRF2010

Surface Hole Location
Razor #21C-2808B
X: 3450293.42
Y: 1549324.11

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
21C-2808B BHL	5892.0	-7367.1	652.7	1541956.99	3450946.10

Plan #1
Razor #21C-2808B
WELL @ 4860.5ft (Original Well Elev)
Ground Elevation @ 4844.0
North American Datum 1983
Well Razor #21C-2808B, Grid North

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site:	S21-T10N-R58W	**North Reference:**	Grid
Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project Weld County, CO

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

Site S21-T10N-R58W

Site Position:		**Northing:**	1,549,497.72 ft	**Latitude:**	40° 49' 48.98 N
From:	Lat/Long	**Easting:**	3,452,853.58 ft	**Longitude:**	103° 51' 48.82 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	1.06 °

Well Razor #21C-2808B

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,549,324.11 ft	**Latitude:**	40° 49' 47.73 N
	+E/-W	0.0 ft	**Easting:**	3,450,293.42 ft	**Longitude:**	103° 52' 22.16 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,844.0 ft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/20/2013	8.15	67.47	53,242

Design Plan #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	174.94

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	4.00	150.70	999.8	-6.1	3.4	2.00	2.00	0.00	150.70	
5,418.4	4.00	150.70	5,407.5	-274.9	154.2	0.00	0.00	0.00	0.00	
6,200.2	90.00	150.70	5,892.0	-728.0	408.5	11.00	11.00	0.00	0.00	
7,176.9	90.00	180.00	5,892.0	-1,662.7	652.9	3.00	0.00	3.00	90.00	
12,881.4	90.00	180.00	5,892.0	-7,367.1	652.7	0.00	0.00	0.00	0.00	21C-2808B BHL

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site:	S21-T10N-R58W	**North Reference:**	Grid
Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	KOP @ 800' MD
900.0	2.00	150.70	900.0	-1.5	0.9	1.6	2.00	2.00	
1,000.0	4.00	150.70	999.8	-6.1	3.4	6.4	2.00	2.00	EOB; 4°
1,100.0	4.00	150.70	1,099.6	-12.2	6.8	12.7	0.00	0.00	
1,200.0	4.00	150.70	1,199.4	-18.3	10.2	19.1	0.00	0.00	
1,300.0	4.00	150.70	1,299.1	-24.3	13.7	25.4	0.00	0.00	
1,400.0	4.00	150.70	1,398.9	-30.4	17.1	31.8	0.00	0.00	
1,500.0	4.00	150.70	1,498.6	-36.5	20.5	38.2	0.00	0.00	
1,600.0	4.00	150.70	1,598.4	-42.6	23.9	44.5	0.00	0.00	
1,700.0	4.00	150.70	1,698.1	-48.7	27.3	50.9	0.00	0.00	
1,800.0	4.00	150.70	1,797.9	-54.8	30.7	57.2	0.00	0.00	
1,900.0	4.00	150.70	1,897.6	-60.8	34.1	63.6	0.00	0.00	
2,000.0	4.00	150.70	1,997.4	-66.9	37.6	70.0	0.00	0.00	
2,100.0	4.00	150.70	2,097.2	-73.0	41.0	76.3	0.00	0.00	
2,200.0	4.00	150.70	2,196.9	-79.1	44.4	82.7	0.00	0.00	
2,300.0	4.00	150.70	2,296.7	-85.2	47.8	89.1	0.00	0.00	
2,400.0	4.00	150.70	2,396.4	-91.3	51.2	95.4	0.00	0.00	
2,500.0	4.00	150.70	2,496.2	-97.3	54.6	101.8	0.00	0.00	
2,600.0	4.00	150.70	2,595.9	-103.4	58.0	108.1	0.00	0.00	
2,700.0	4.00	150.70	2,695.7	-109.5	61.4	114.5	0.00	0.00	
2,800.0	4.00	150.70	2,795.5	-115.6	64.9	120.9	0.00	0.00	
2,900.0	4.00	150.70	2,895.2	-121.7	68.3	127.2	0.00	0.00	
3,000.0	4.00	150.70	2,995.0	-127.8	71.7	133.6	0.00	0.00	
3,100.0	4.00	150.70	3,094.7	-133.8	75.1	139.9	0.00	0.00	
3,200.0	4.00	150.70	3,194.5	-139.9	78.5	146.3	0.00	0.00	
3,300.0	4.00	150.70	3,294.2	-146.0	81.9	152.7	0.00	0.00	
3,400.0	4.00	150.70	3,394.0	-152.1	85.3	159.0	0.00	0.00	
3,500.0	4.00	150.70	3,493.7	-158.2	88.8	165.4	0.00	0.00	
3,600.0	4.00	150.70	3,593.5	-164.3	92.2	171.7	0.00	0.00	
3,700.0	4.00	150.70	3,693.3	-170.3	95.6	178.1	0.00	0.00	
3,800.0	4.00	150.70	3,793.0	-176.4	99.0	184.5	0.00	0.00	
3,900.0	4.00	150.70	3,892.8	-182.5	102.4	190.8	0.00	0.00	
4,000.0	4.00	150.70	3,992.5	-188.6	105.8	197.2	0.00	0.00	
4,100.0	4.00	150.70	4,092.3	-194.7	109.2	203.5	0.00	0.00	
4,200.0	4.00	150.70	4,192.0	-200.7	112.7	209.9	0.00	0.00	
4,300.0	4.00	150.70	4,291.8	-206.8	116.1	216.3	0.00	0.00	
4,400.0	4.00	150.70	4,391.6	-212.9	119.5	222.6	0.00	0.00	
4,500.0	4.00	150.70	4,491.3	-219.0	122.9	229.0	0.00	0.00	
4,600.0	4.00	150.70	4,591.1	-225.1	126.3	235.4	0.00	0.00	
4,700.0	4.00	150.70	4,690.8	-231.2	129.7	241.7	0.00	0.00	
4,800.0	4.00	150.70	4,790.6	-237.2	133.1	248.1	0.00	0.00	
4,900.0	4.00	150.70	4,890.3	-243.3	136.6	254.4	0.00	0.00	
5,000.0	4.00	150.70	4,990.1	-249.4	140.0	260.8	0.00	0.00	
5,100.0	4.00	150.70	5,089.9	-255.5	143.4	267.2	0.00	0.00	

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Project:	Weld County, CO	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site:	S21-T10N-R58W	**North Reference:**	Grid
Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	150.70	5,189.6	-261.6	146.8	273.5	0.00	0.00	
5,300.0	4.00	150.70	5,289.4	-267.7	150.2	279.9	0.00	0.00	
5,400.0	4.00	150.70	5,389.1	-273.7	153.6	286.2	0.00	0.00	
5,418.4	4.00	150.70	5,407.5	-274.9	154.2	287.4	0.00	0.00	Start 11° Build
5,500.0	12.98	150.70	5,488.1	-285.4	160.1	298.4	11.00	11.00	
5,600.0	23.98	150.70	5,582.8	-313.0	175.6	327.2	11.00	11.00	
5,700.0	34.98	150.70	5,669.7	-355.8	199.7	372.0	11.00	11.00	
5,800.0	45.98	150.70	5,745.7	-412.3	231.4	431.1	11.00	11.00	
5,807.7	46.83	150.70	5,751.0	-417.2	234.1	436.2	11.00	11.00	Top Niobrara
5,900.0	56.98	150.70	5,807.9	-480.4	269.6	502.4	11.00	11.00	
6,000.0	67.98	150.70	5,854.0	-557.7	312.9	583.1	11.00	11.00	
6,100.0	78.98	150.70	5,882.4	-641.1	359.8	670.4	11.00	11.00	
6,200.0	89.98	150.70	5,892.0	-727.8	408.4	761.0	11.00	11.00	
6,200.2	90.00	150.70	5,892.0	-728.0	408.5	761.2	11.00	11.00	LP @ 6200' MD
6,300.0	90.00	153.69	5,892.0	-816.2	455.1	853.2	3.00	0.00	7"
6,400.0	90.00	156.69	5,892.0	-907.0	497.0	947.3	3.00	0.00	
6,500.0	90.00	159.69	5,892.0	-999.8	534.2	1,043.1	3.00	0.00	
6,600.0	90.00	162.69	5,892.0	-1,094.5	566.4	1,140.2	3.00	0.00	
6,700.0	90.00	165.69	5,892.0	-1,190.7	593.6	1,238.4	3.00	0.00	
6,800.0	90.00	168.69	5,892.0	-1,288.2	615.8	1,337.5	3.00	0.00	
6,900.0	90.00	171.69	5,892.0	-1,386.7	632.8	1,437.2	3.00	0.00	
7,000.0	90.00	174.69	5,892.0	-1,486.0	644.7	1,537.1	3.00	0.00	
7,100.0	90.00	177.69	5,892.0	-1,585.8	651.3	1,637.1	3.00	0.00	
7,176.9	90.00	180.00	5,892.0	-1,662.7	652.9	1,713.8	3.00	0.00	EOT; 180° Az
7,200.0	90.00	180.00	5,892.0	-1,685.8	652.9	1,736.8	0.00	0.00	
7,300.0	90.00	180.00	5,892.0	-1,785.8	652.9	1,836.4	0.00	0.00	
7,400.0	90.00	180.00	5,892.0	-1,885.8	652.9	1,936.0	0.00	0.00	
7,500.0	90.00	180.00	5,892.0	-1,985.8	652.9	2,035.6	0.00	0.00	
7,600.0	90.00	180.00	5,892.0	-2,085.8	652.8	2,135.2	0.00	0.00	
7,700.0	90.00	180.00	5,892.0	-2,185.8	652.8	2,234.8	0.00	0.00	
7,800.0	90.00	180.00	5,892.0	-2,285.8	652.8	2,334.5	0.00	0.00	
7,900.0	90.00	180.00	5,892.0	-2,385.8	652.8	2,434.1	0.00	0.00	
8,000.0	90.00	180.00	5,892.0	-2,485.8	652.8	2,533.7	0.00	0.00	
8,100.0	90.00	180.00	5,892.0	-2,585.8	652.8	2,633.3	0.00	0.00	
8,200.0	90.00	180.00	5,892.0	-2,685.8	652.8	2,732.9	0.00	0.00	
8,300.0	90.00	180.00	5,892.0	-2,785.8	652.8	2,832.5	0.00	0.00	
8,400.0	90.00	180.00	5,892.0	-2,885.8	652.8	2,932.1	0.00	0.00	
8,500.0	90.00	180.00	5,892.0	-2,985.8	652.8	3,031.7	0.00	0.00	
8,600.0	90.00	180.00	5,892.0	-3,085.8	652.8	3,131.3	0.00	0.00	
8,700.0	90.00	180.00	5,892.0	-3,185.8	652.8	3,230.9	0.00	0.00	
8,800.0	90.00	180.00	5,892.0	-3,285.8	652.8	3,330.6	0.00	0.00	
8,900.0	90.00	180.00	5,892.0	-3,385.8	652.8	3,430.2	0.00	0.00	
9,000.0	90.00	180.00	5,892.0	-3,485.8	652.8	3,529.8	0.00	0.00	
9,100.0	90.00	180.00	5,892.0	-3,585.8	652.8	3,629.4	0.00	0.00	
9,200.0	90.00	180.00	5,892.0	-3,685.8	652.8	3,729.0	0.00	0.00	
9,300.0	90.00	180.00	5,892.0	-3,785.8	652.8	3,828.6	0.00	0.00	
9,400.0	90.00	180.00	5,892.0	-3,885.8	652.8	3,928.2	0.00	0.00	
9,500.0	90.00	180.00	5,892.0	-3,985.8	652.8	4,027.8	0.00	0.00	
9,600.0	90.00	180.00	5,892.0	-4,085.8	652.8	4,127.4	0.00	0.00	
9,700.0	90.00	180.00	5,892.0	-4,185.8	652.8	4,227.0	0.00	0.00	
9,800.0	90.00	180.00	5,892.0	-4,285.8	652.8	4,326.6	0.00	0.00	
9,900.0	90.00	180.00	5,892.0	-4,385.8	652.8	4,426.3	0.00	0.00	

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Project:	Weld County, CO	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site:	S21-T10N-R58W	**North Reference:**	Grid
Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
10,000.0	90.00	180.00	5,892.0	-4,485.8	652.8	4,525.9	0.00	0.00	
10,100.0	90.00	180.00	5,892.0	-4,585.8	652.8	4,625.5	0.00	0.00	
10,200.0	90.00	180.00	5,892.0	-4,685.8	652.8	4,725.1	0.00	0.00	
10,300.0	90.00	180.00	5,892.0	-4,785.8	652.8	4,824.7	0.00	0.00	
10,400.0	90.00	180.00	5,892.0	-4,885.8	652.8	4,924.3	0.00	0.00	
10,500.0	90.00	180.00	5,892.0	-4,985.8	652.8	5,023.9	0.00	0.00	
10,600.0	90.00	180.00	5,892.0	-5,085.8	652.8	5,123.5	0.00	0.00	
10,700.0	90.00	180.00	5,892.0	-5,185.8	652.7	5,223.1	0.00	0.00	
10,800.0	90.00	180.00	5,892.0	-5,285.8	652.7	5,322.7	0.00	0.00	
10,900.0	90.00	180.00	5,892.0	-5,385.8	652.7	5,422.4	0.00	0.00	
11,000.0	90.00	180.00	5,892.0	-5,485.8	652.7	5,522.0	0.00	0.00	
11,100.0	90.00	180.00	5,892.0	-5,585.8	652.7	5,621.6	0.00	0.00	
11,200.0	90.00	180.00	5,892.0	-5,685.8	652.7	5,721.2	0.00	0.00	
11,300.0	90.00	180.00	5,892.0	-5,785.8	652.7	5,820.8	0.00	0.00	
11,400.0	90.00	180.00	5,892.0	-5,885.8	652.7	5,920.4	0.00	0.00	
11,500.0	90.00	180.00	5,892.0	-5,985.8	652.7	6,020.0	0.00	0.00	
11,600.0	90.00	180.00	5,892.0	-6,085.8	652.7	6,119.6	0.00	0.00	
11,700.0	90.00	180.00	5,892.0	-6,185.8	652.7	6,219.2	0.00	0.00	
11,800.0	90.00	180.00	5,892.0	-6,285.8	652.7	6,318.8	0.00	0.00	
11,900.0	90.00	180.00	5,892.0	-6,385.8	652.7	6,418.5	0.00	0.00	
12,000.0	90.00	180.00	5,892.0	-6,485.8	652.7	6,518.1	0.00	0.00	
12,100.0	90.00	180.00	5,892.0	-6,585.8	652.7	6,617.7	0.00	0.00	
12,200.0	90.00	180.00	5,892.0	-6,685.8	652.7	6,717.3	0.00	0.00	
12,300.0	90.00	180.00	5,892.0	-6,785.8	652.7	6,816.9	0.00	0.00	
12,400.0	90.00	180.00	5,892.0	-6,885.8	652.7	6,916.5	0.00	0.00	
12,500.0	90.00	180.00	5,892.0	-6,985.8	652.7	7,016.1	0.00	0.00	
12,600.0	90.00	180.00	5,892.0	-7,085.8	652.7	7,115.7	0.00	0.00	
12,700.0	90.00	180.00	5,892.0	-7,185.8	652.7	7,215.3	0.00	0.00	
12,800.0	90.00	180.00	5,892.0	-7,285.8	652.7	7,314.9	0.00	0.00	
12,881.4	90.00	180.00	5,892.0	-7,367.1	652.7	7,396.0	0.00	0.00	PBHL @ 12881' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
21C-2808B BHL - plan hits target center - Point	0.00	0.00	5,892.0	-7,367.1	652.7	1,541,956.99	3,450,946.10	40° 48' 34.83 N	103° 52' 15.43 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,300.0	5,892.0	7"	0.000	0.000

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site:	S21-T10N-R58W	**North Reference:**	Grid
Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,807.7	5,751.0	Top Niobrara		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
800.0	800.0	0.0	0.0	KOP @ 800' MD
1,000.0	999.8	-6.1	3.4	EOB; 4°
5,418.4	5,407.5	-274.9	154.2	Start 11° Build
6,200.2	5,892.0	-728.0	408.5	LP @ 6200' MD
7,176.9	5,892.0	-1,662.7	652.9	EOT; 180° Az
12,881.4	5,892.0	-7,367.1	652.7	PBHL @ 12881' MD

Whiting Petroleum Corporation

Weld County, CO
S21-T10N-R58W
Razor #21C-2808B
HZ
Plan #1

Anticollision Report

28 May, 2013

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1

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

Survey Tool Program **Date** 5/28/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,881.4	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

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
S21-T10N-R58W						
Fregeau 1 (Existing) - Existing - ASSUMED VERTICAL						Out of range
Fregeau 2 (Existing) - Existing - ASSUMED VERTICAL						Out of range
Nelson Ranches E-1 (Existing) - Existing - ASSUMED VE						Out of range
Razor #21A-0913A - HZ - Plan #1						Out of range
Razor #21A-0914B - HZ - Plan #1						Out of range
Razor #21A-0915A - HZ - Plan #1						Out of range
Razor #21A-0916B - HZ - Plan #1						Out of range
Razor #21A-2813A - HZ - Plan #1						Out of range
Razor #21A-2814B - HZ - Plan #1						Out of range
Razor #21A-2815A - HZ - Plan #1						Out of range
Razor #21A-2816B - HZ - Plan #1						Out of range
Razor #21B-0909A - HZ - Plan #1						Out of range
Razor #21B-0910B - HZ - Plan #1						Out of range
Razor #21B-0911A - HZ - Plan #1						Out of range
Razor #21B-0912B - HZ - Plan #1						Out of range
Razor #21B-2809A - HZ - Plan #1	12,856.6	12,814.2	356.7	82.4	1.301	Level 3, CC
Razor #21B-2809A - HZ - Plan #1	12,881.4	12,831.5	356.8	81.8	1.297	Level 3, ES, SF
Razor #21B-2810B - HZ - Plan #1						Out of range
Razor #21B-2811A - HZ - Plan #1						Out of range
Razor #21B-2812B - HZ - Plan #1						Out of range
Razor #21C-0905A - HZ - Plan #1	500.0	500.0	99.5	97.5	50.111	CC, ES
Razor #21C-0905A - HZ - Plan #1	3,600.0	3,566.2	494.3	478.6	31.544	SF
Razor #21C-0906B - HZ - Plan #1	700.0	700.0	98.5	95.6	34.151	CC, ES
Razor #21C-0906B - HZ - Plan #1	1,400.0	1,392.9	145.6	139.7	24.727	SF
Razor #21C-0907A - HZ - Plan #1	800.0	800.0	75.1	71.7	22.509	CC, ES
Razor #21C-0907A - HZ - Plan #1	1,000.0	997.1	83.0	78.8	19.940	SF
Razor #21C-0908B - HZ - Plan #1	800.0	800.0	33.2	29.9	9.960	CC, ES
Razor #21C-0908B - HZ - Plan #1	1,000.0	999.8	37.0	32.9	8.897	SF
Razor #21C-2805A - HZ - Plan #1	800.0	800.0	123.9	120.5	37.150	CC, ES
Razor #21C-2805A - HZ - Plan #1	5,400.0	5,397.4	327.0	301.5	12.841	SF
Razor #21C-2806B - HZ - Plan #1	800.0	800.0	65.3	62.0	19.587	CC, ES
Razor #21C-2806B - HZ - Plan #1	5,400.0	5,398.6	200.6	174.6	7.714	SF
Razor #21C-2807A - HZ - Plan #1	996.7	1,001.6	61.3	57.2	15.193	CC
Razor #21C-2807A - HZ - Plan #1	5,541.3	5,561.0	78.9	51.3	2.857	ES
Razor #21C-2807A - HZ - Plan #1	12,881.4	12,760.1	340.2	64.5	1.234	Level 2, SF
Razor #21D-0901A - HZ - Plan #1						Out of range
Razor #21D-0902B - HZ - Plan #1						Out of range
Razor #21D-0903A - HZ - Plan #1						Out of range
Razor #21D-0904B - HZ - Plan #1						Out of range
Razor #21D-2801A - HZ - Plan #1						Out of range
Razor #21D-2802B - HZ - Plan #1						Out of range
Razor #21D-2803A - HZ - Plan #1						Out of range
Razor #21D-2804B - HZ - Plan #1						Out of range

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-2809A - HZ - Plan #1

Survey Program: 0-ISCWSA 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
6,500.0	5,892.0	6,489.4	5,793.0	25.8	24.9	-77.88	-1,017.7	999.1	474.4	427.8	46.55	10.191	
6,600.0	5,892.0	6,566.3	5,793.0	27.4	26.1	-77.36	-1,094.5	997.7	441.1	391.7	49.42	8.925	
6,700.0	5,892.0	6,662.5	5,793.0	29.0	27.6	-76.73	-1,190.7	997.7	414.5	361.9	52.65	7.874	
6,800.0	5,892.0	6,760.0	5,793.0	30.6	29.3	-76.15	-1,288.2	997.7	392.9	337.0	55.89	7.031	
6,900.0	5,892.0	6,858.6	5,793.0	32.2	30.9	-75.65	-1,386.8	997.7	376.4	317.3	59.11	6.368	
7,000.0	5,892.0	6,957.8	5,793.0	33.8	32.6	-75.28	-1,486.0	997.7	364.9	302.6	62.28	5.859	
7,100.0	5,892.0	7,057.6	5,793.0	35.4	34.4	-75.06	-1,585.8	997.7	358.5	293.1	65.39	5.482	
7,200.0	5,892.0	7,157.6	5,793.0	36.9	36.1	-75.01	-1,685.8	997.7	357.0	288.5	68.51	5.211	
7,300.0	5,892.0	7,257.6	5,793.0	38.5	37.9	-75.01	-1,785.8	997.7	357.0	285.1	71.90	4.965	
7,400.0	5,892.0	7,357.6	5,793.0	40.2	39.7	-75.01	-1,885.8	997.7	357.0	281.6	75.33	4.739	
7,500.0	5,892.0	7,457.6	5,793.0	41.8	41.5	-75.01	-1,985.8	997.7	357.0	278.2	78.78	4.531	
7,600.0	5,892.0	7,557.6	5,793.0	43.5	43.3	-75.01	-2,085.8	997.7	357.0	274.7	82.26	4.339	
7,700.0	5,892.0	7,657.6	5,793.0	45.2	45.1	-75.01	-2,185.8	997.7	357.0	271.2	85.76	4.162	
7,800.0	5,892.0	7,757.6	5,793.0	46.9	46.9	-75.01	-2,285.8	997.6	357.0	267.7	89.28	3.998	
7,900.0	5,892.0	7,857.6	5,793.0	48.7	48.8	-75.01	-2,385.8	997.6	356.9	264.1	92.81	3.846	
8,000.0	5,892.0	7,957.6	5,793.0	50.4	50.6	-75.01	-2,485.8	997.6	356.9	260.6	96.36	3.704	
8,100.0	5,892.0	8,057.6	5,793.0	52.2	52.5	-75.01	-2,585.8	997.6	356.9	257.0	99.92	3.572	
8,200.0	5,892.0	8,157.6	5,793.0	53.9	54.3	-75.01	-2,685.8	997.6	356.9	253.4	103.49	3.449	
8,300.0	5,892.0	8,257.6	5,793.0	55.7	56.2	-75.01	-2,785.8	997.6	356.9	249.9	107.07	3.334	
8,400.0	5,892.0	8,357.6	5,793.0	57.5	58.0	-75.01	-2,885.8	997.6	356.9	246.3	110.66	3.225	
8,500.0	5,892.0	8,457.6	5,793.0	59.3	59.9	-75.01	-2,985.8	997.6	356.9	242.7	114.26	3.124	
8,600.0	5,892.0	8,557.6	5,793.0	61.1	61.8	-75.01	-3,085.8	997.6	356.9	239.0	117.87	3.028	
8,700.0	5,892.0	8,657.6	5,793.0	62.9	63.6	-75.01	-3,185.8	997.6	356.9	235.4	121.49	2.938	
8,800.0	5,892.0	8,757.6	5,793.0	64.7	65.5	-75.01	-3,285.8	997.6	356.9	231.8	125.11	2.853	
8,900.0	5,892.0	8,857.6	5,793.0	66.5	67.4	-75.01	-3,385.8	997.6	356.9	228.2	128.73	2.772	
9,000.0	5,892.0	8,957.6	5,793.0	68.3	69.2	-75.01	-3,485.8	997.6	356.9	224.5	132.37	2.696	
9,100.0	5,892.0	9,057.6	5,793.0	70.2	71.1	-75.01	-3,585.8	997.5	356.9	220.9	136.00	2.624	
9,200.0	5,892.0	9,157.6	5,793.0	72.0	73.0	-75.01	-3,685.8	997.5	356.9	217.2	139.65	2.556	
9,300.0	5,892.0	9,257.6	5,793.0	73.9	74.9	-75.01	-3,785.8	997.5	356.9	213.6	143.29	2.491	
9,400.0	5,892.0	9,357.6	5,793.0	75.7	76.8	-75.01	-3,885.8	997.5	356.9	209.9	146.94	2.429	
9,500.0	5,892.0	9,457.6	5,793.0	77.5	78.7	-75.01	-3,985.8	997.5	356.9	206.3	150.60	2.370	
9,600.0	5,892.0	9,557.6	5,793.0	79.4	80.5	-75.01	-4,085.8	997.5	356.9	202.6	154.25	2.314	
9,700.0	5,892.0	9,657.6	5,793.0	81.2	82.4	-75.01	-4,185.8	997.5	356.9	199.0	157.91	2.260	
9,800.0	5,892.0	9,757.6	5,793.0	83.1	84.3	-75.01	-4,285.8	997.5	356.9	195.3	161.58	2.209	
9,900.0	5,892.0	9,857.6	5,793.0	85.0	86.2	-75.01	-4,385.8	997.5	356.9	191.6	165.24	2.160	
10,000.0	5,892.0	9,957.6	5,793.0	86.8	88.1	-75.01	-4,485.8	997.5	356.9	187.9	168.91	2.113	
10,100.0	5,892.0	10,057.6	5,793.0	88.7	90.0	-75.01	-4,585.8	997.5	356.8	184.3	172.58	2.068	
10,200.0	5,892.0	10,157.6	5,793.0	90.6	91.9	-75.01	-4,685.8	997.5	356.8	180.6	176.25	2.025	
10,300.0	5,892.0	10,257.6	5,793.0	92.4	93.8	-75.01	-4,785.8	997.5	356.8	176.9	179.93	1.983	
10,400.0	5,892.0	10,357.6	5,793.0	94.3	95.7	-75.01	-4,885.8	997.4	356.8	173.2	183.60	1.943	
10,500.0	5,892.0	10,457.6	5,793.0	96.2	97.6	-75.01	-4,985.8	997.4	356.8	169.5	187.28	1.905	
10,600.0	5,892.0	10,557.6	5,793.0	98.0	99.5	-75.01	-5,085.8	997.4	356.8	165.9	190.96	1.869	
10,700.0	5,892.0	10,657.6	5,793.0	99.9	101.4	-75.01	-5,185.8	997.4	356.8	162.2	194.65	1.833	
10,800.0	5,892.0	10,757.6	5,793.0	101.8	103.3	-75.01	-5,285.8	997.4	356.8	158.5	198.33	1.799	
10,900.0	5,892.0	10,857.6	5,793.0	103.7	105.2	-75.01	-5,385.8	997.4	356.8	154.8	202.02	1.766	
11,000.0	5,892.0	10,957.6	5,793.0	105.5	107.1	-75.01	-5,485.8	997.4	356.8	151.1	205.70	1.735	
11,100.0	5,892.0	11,057.6	5,793.0	107.4	109.0	-75.01	-5,585.8	997.4	356.8	147.4	209.39	1.704	
11,200.0	5,892.0	11,157.6	5,793.0	109.3	110.9	-75.01	-5,685.8	997.4	356.8	143.7	213.08	1.674	
11,300.0	5,892.0	11,257.6	5,793.0	111.2	112.8	-75.01	-5,785.8	997.4	356.8	140.0	216.77	1.646	
11,400.0	5,892.0	11,357.6	5,793.0	113.1	114.7	-75.01	-5,885.8	997.4	356.8	136.3	220.46	1.618	
11,500.0	5,892.0	11,457.6	5,793.0	115.0	116.6	-75.01	-5,985.8	997.4	356.8	132.6	224.15	1.592	
11,600.0	5,892.0	11,557.6	5,793.0	116.8	118.5	-75.01	-6,085.8	997.4	356.8	128.9	227.85	1.566	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21B-2809A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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
11,700.0	5,892.0	11,657.6	5,793.0	118.7	120.4	-75.01	-6,185.8	997.3	356.8	125.2	231.54	1.541	
11,800.0	5,892.0	11,757.6	5,793.0	120.6	122.3	-75.01	-6,285.8	997.3	356.8	121.5	235.24	1.517	
11,900.0	5,892.0	11,857.6	5,793.0	122.5	124.2	-75.01	-6,385.8	997.3	356.8	117.8	238.93	1.493	Level 3
12,000.0	5,892.0	11,957.6	5,793.0	124.4	126.1	-75.01	-6,485.8	997.3	356.8	114.1	242.63	1.470	Level 3
12,100.0	5,892.0	12,057.6	5,793.0	126.3	128.0	-75.01	-6,585.8	997.3	356.8	110.4	246.33	1.448	Level 3
12,200.0	5,892.0	12,157.6	5,793.0	128.2	129.9	-75.01	-6,685.8	997.3	356.8	106.7	250.03	1.427	Level 3
12,300.0	5,892.0	12,257.6	5,793.0	130.1	131.8	-75.01	-6,785.8	997.3	356.7	103.0	253.73	1.406	Level 3
12,400.0	5,892.0	12,357.6	5,793.0	132.0	133.7	-75.00	-6,885.8	997.3	356.7	99.3	257.43	1.386	Level 3
12,500.0	5,892.0	12,457.6	5,793.0	133.9	135.6	-75.00	-6,985.8	997.3	356.7	95.6	261.13	1.366	Level 3
12,600.0	5,892.0	12,557.6	5,793.0	135.8	137.6	-75.00	-7,085.8	997.3	356.7	91.9	264.83	1.347	Level 3
12,700.0	5,892.0	12,657.6	5,793.0	137.7	139.5	-75.00	-7,185.8	997.3	356.7	88.2	268.53	1.328	Level 3
12,800.0	5,892.0	12,757.6	5,793.0	139.6	141.4	-75.00	-7,285.8	997.3	356.7	84.5	272.23	1.310	Level 3
12,856.6	5,892.0	12,814.2	5,793.0	140.6	142.4	-75.00	-7,342.4	997.3	356.7	82.4	274.28	1.301	Level 3, CC
12,881.4	5,892.0	12,831.5	5,793.0	141.1	142.7	-75.00	-7,359.7	997.3	356.8	81.8	275.00	1.297	Level 3, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0905A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-42.07	73.9	-66.7	99.5				
100.0	100.0	100.0	100.0	0.1	0.1	-42.07	73.9	-66.7	99.5	99.3	0.19	530.214	
200.0	200.0	200.0	200.0	0.3	0.3	-42.07	73.9	-66.7	99.5	98.9	0.64	156.165	
300.0	300.0	300.0	300.0	0.5	0.5	-42.07	73.9	-66.7	99.5	98.4	1.09	91.568	
400.0	400.0	400.0	400.0	0.8	0.8	-42.07	73.9	-66.7	99.5	98.0	1.54	64.774	
500.0	500.0	500.0	500.0	1.0	1.0	-42.07	73.9	-66.7	99.5	97.5	1.99	50.111	CC, ES
600.0	600.0	596.7	596.6	1.2	1.2	-41.90	75.3	-67.5	101.2	98.7	2.43	41.676	
700.0	700.0	693.1	693.0	1.4	1.4	-41.42	79.4	-70.1	106.1	103.3	2.87	36.939	
800.0	800.0	792.6	792.2	1.7	1.7	-40.80	85.3	-73.7	113.0	109.7	3.33	33.970	
900.0	900.0	892.2	891.6	1.9	1.9	169.16	91.3	-77.3	121.6	117.9	3.75	32.442	
1,000.0	999.8	991.5	990.6	2.1	2.1	170.00	97.2	-80.9	133.6	129.5	4.15	32.176	
1,100.0	1,099.6	1,090.5	1,089.4	2.2	2.4	170.84	103.1	-84.5	147.4	142.8	4.56	32.304	
1,200.0	1,199.4	1,189.5	1,188.2	2.5	2.6	171.54	109.0	-88.1	161.2	156.2	4.98	32.363	
1,300.0	1,299.1	1,288.6	1,287.0	2.7	2.9	172.13	114.9	-91.7	175.0	169.6	5.40	32.378	
1,400.0	1,398.9	1,387.6	1,385.7	2.9	3.1	172.63	120.8	-95.3	188.8	183.0	5.83	32.367	
1,500.0	1,498.6	1,486.6	1,484.5	3.1	3.4	173.06	126.7	-98.9	202.7	196.4	6.27	32.338	
1,600.0	1,598.4	1,585.6	1,583.3	3.4	3.6	173.44	132.6	-102.5	216.5	209.8	6.70	32.300	
1,700.0	1,698.1	1,684.7	1,682.1	3.6	3.9	173.77	138.5	-106.1	230.4	223.2	7.14	32.257	
1,800.0	1,797.9	1,783.7	1,780.9	3.9	4.1	174.07	144.4	-109.7	244.2	236.6	7.58	32.210	
1,900.0	1,897.6	1,882.7	1,879.7	4.1	4.4	174.33	150.3	-113.3	258.1	250.1	8.02	32.162	
2,000.0	1,997.4	1,981.7	1,978.5	4.4	4.6	174.57	156.2	-116.9	272.0	263.5	8.47	32.114	
2,100.0	2,097.2	2,080.8	2,077.2	4.6	4.9	174.78	162.1	-120.5	285.8	276.9	8.91	32.067	
2,200.0	2,196.9	2,179.8	2,176.0	4.9	5.1	174.98	168.0	-124.1	299.7	290.4	9.36	32.021	
2,300.0	2,296.7	2,278.8	2,274.8	5.1	5.4	175.15	173.8	-127.7	313.6	303.8	9.81	31.976	
2,400.0	2,396.4	2,377.9	2,373.6	5.4	5.7	175.31	179.7	-131.3	327.5	317.2	10.26	31.933	
2,500.0	2,496.2	2,476.9	2,472.4	5.6	5.9	175.46	185.6	-134.9	341.4	330.7	10.70	31.892	
2,600.0	2,595.9	2,575.9	2,571.2	5.9	6.2	175.60	191.5	-138.5	355.3	344.1	11.15	31.853	
2,700.0	2,695.7	2,674.9	2,670.0	6.1	6.4	175.73	197.4	-142.0	369.2	357.6	11.60	31.815	
2,800.0	2,795.5	2,774.0	2,768.7	6.4	6.7	175.84	203.3	-145.6	383.1	371.0	12.05	31.779	
2,900.0	2,895.2	2,873.0	2,867.5	6.7	6.9	175.95	209.2	-149.2	397.0	384.5	12.50	31.745	
3,000.0	2,995.0	2,972.0	2,966.3	6.9	7.2	176.05	215.1	-152.8	410.9	397.9	12.96	31.712	
3,100.0	3,094.7	3,071.0	3,065.1	7.2	7.4	176.15	221.0	-156.4	424.8	411.3	13.41	31.680	
3,200.0	3,194.5	3,170.1	3,163.9	7.4	7.7	176.24	226.9	-160.0	438.7	424.8	13.86	31.651	
3,300.0	3,294.2	3,269.1	3,262.7	7.7	7.9	176.32	232.8	-163.6	452.6	438.2	14.31	31.622	
3,400.0	3,394.0	3,368.1	3,361.5	8.0	8.2	176.40	238.7	-167.2	466.5	451.7	14.76	31.595	
3,500.0	3,493.7	3,467.2	3,460.3	8.2	8.4	176.47	244.6	-170.8	480.4	465.1	15.22	31.569	
3,600.0	3,593.5	3,566.2	3,559.0	8.5	8.7	176.54	250.5	-174.4	494.3	478.6	15.67	31.544	SF

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0906B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-91.03	-1.8	-98.5	98.5				
100.0	100.0	100.0	100.0	0.1	0.1	-91.03	-1.8	-98.5	98.5	98.3	0.19	524.942	
200.0	200.0	200.0	200.0	0.3	0.3	-91.03	-1.8	-98.5	98.5	97.9	0.64	154.613	
300.0	300.0	300.0	300.0	0.5	0.5	-91.03	-1.8	-98.5	98.5	97.4	1.09	90.657	
400.0	400.0	400.0	400.0	0.8	0.8	-91.03	-1.8	-98.5	98.5	97.0	1.54	64.130	
500.0	500.0	500.0	500.0	1.0	1.0	-91.03	-1.8	-98.5	98.5	96.5	1.99	49.613	
600.0	600.0	600.0	600.0	1.2	1.2	-91.03	-1.8	-98.5	98.5	96.1	2.44	40.455	
700.0	700.0	700.0	700.0	1.4	1.4	-91.03	-1.8	-98.5	98.5	95.6	2.88	34.151	CC, ES
800.0	800.0	799.0	798.9	1.7	1.7	-90.09	-0.1	-99.0	99.0	95.7	3.33	29.730	
900.0	900.0	897.5	897.4	1.9	1.9	122.75	4.7	-100.6	101.7	98.0	3.75	27.117	
1,000.0	999.8	996.8	996.4	2.1	2.1	128.41	11.3	-102.8	107.7	103.5	4.16	25.880	
1,100.0	1,099.6	1,095.8	1,095.2	2.2	2.4	134.14	17.8	-105.0	115.8	111.3	4.58	25.276	
1,200.0	1,199.4	1,194.8	1,193.9	2.5	2.6	139.08	24.4	-107.1	125.0	120.0	5.01	24.934	
1,300.0	1,299.1	1,293.9	1,292.7	2.7	2.8	143.33	30.9	-109.3	135.0	129.5	5.45	24.770	
1,400.0	1,398.9	1,392.9	1,391.5	2.9	3.1	146.98	37.5	-111.5	145.6	139.7	5.89	24.727	SF
1,500.0	1,498.6	1,491.9	1,490.3	3.1	3.3	150.13	44.1	-113.6	156.7	150.3	6.33	24.763	
1,600.0	1,598.4	1,591.0	1,589.1	3.4	3.6	152.86	50.6	-115.8	168.2	161.4	6.77	24.849	
1,700.0	1,698.1	1,690.0	1,687.9	3.6	3.8	155.23	57.2	-117.9	180.0	172.8	7.21	24.968	
1,800.0	1,797.9	1,789.0	1,786.7	3.9	4.1	157.32	63.8	-120.1	192.1	184.5	7.65	25.104	
1,900.0	1,897.6	1,888.1	1,885.5	4.1	4.3	159.15	70.3	-122.3	204.5	196.4	8.10	25.251	
2,000.0	1,997.4	1,987.1	1,984.3	4.4	4.6	160.77	76.9	-124.4	217.0	208.5	8.54	25.401	
2,100.0	2,097.2	2,086.2	2,083.1	4.6	4.8	162.22	83.4	-126.6	229.7	220.7	8.99	25.552	
2,200.0	2,196.9	2,185.2	2,181.9	4.9	5.1	163.51	90.0	-128.8	242.5	233.0	9.43	25.700	
2,300.0	2,296.7	2,284.2	2,280.7	5.1	5.3	164.68	96.6	-130.9	255.4	245.5	9.88	25.845	
2,400.0	2,396.4	2,383.3	2,379.5	5.4	5.6	165.73	103.1	-133.1	268.4	258.1	10.33	25.985	
2,500.0	2,496.2	2,482.3	2,478.3	5.6	5.8	166.68	109.7	-135.3	281.5	270.7	10.78	26.119	
2,600.0	2,595.9	2,581.3	2,577.1	5.9	6.1	167.55	116.2	-137.4	294.6	283.4	11.22	26.248	
2,700.0	2,695.7	2,680.4	2,675.9	6.1	6.3	168.35	122.8	-139.6	307.8	296.2	11.67	26.371	
2,800.0	2,795.5	2,779.4	2,774.7	6.4	6.6	169.08	129.4	-141.7	321.1	309.0	12.12	26.489	
2,900.0	2,895.2	2,878.4	2,873.5	6.7	6.8	169.75	135.9	-143.9	334.4	321.9	12.57	26.601	
3,000.0	2,995.0	2,977.5	2,972.3	6.9	7.1	170.37	142.5	-146.1	347.8	334.8	13.02	26.707	
3,100.0	3,094.7	3,076.5	3,071.0	7.2	7.3	170.94	149.0	-148.2	361.2	347.7	13.47	26.809	
3,200.0	3,194.5	3,175.5	3,169.8	7.4	7.6	171.48	155.6	-150.4	374.6	360.7	13.92	26.906	
3,300.0	3,294.2	3,274.6	3,268.6	7.7	7.8	171.97	162.2	-152.6	388.1	373.7	14.37	26.999	
3,400.0	3,394.0	3,373.6	3,367.4	8.0	8.1	172.44	168.7	-154.7	401.6	386.7	14.83	27.087	
3,500.0	3,493.7	3,472.7	3,466.2	8.2	8.3	172.87	175.3	-156.9	415.1	399.8	15.28	27.171	
3,600.0	3,593.5	3,571.7	3,565.0	8.5	8.6	173.28	181.8	-159.1	428.6	412.9	15.73	27.251	
3,700.0	3,693.3	3,670.7	3,663.8	8.7	8.8	173.66	188.4	-161.2	442.2	426.0	16.18	27.328	
3,800.0	3,793.0	3,769.8	3,762.6	9.0	9.1	174.02	195.0	-163.4	455.7	439.1	16.63	27.401	
3,900.0	3,892.8	3,868.8	3,861.4	9.3	9.4	174.35	201.5	-165.5	469.3	452.2	17.08	27.471	
4,000.0	3,992.5	3,967.8	3,960.2	9.5	9.6	174.67	208.1	-167.7	482.9	465.4	17.54	27.538	
4,100.0	4,092.3	4,066.9	4,059.0	9.8	9.9	174.97	214.7	-169.9	496.5	478.6	17.99	27.602	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0907A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-1.05	75.0	-1.4	75.1				
100.0	100.0	100.0	100.0	0.1	0.1	-1.05	75.0	-1.4	75.1	74.9	0.19	399.907	
200.0	200.0	200.0	200.0	0.3	0.3	-1.05	75.0	-1.4	75.1	74.4	0.64	117.786	
300.0	300.0	300.0	300.0	0.5	0.5	-1.05	75.0	-1.4	75.1	74.0	1.09	69.064	
400.0	400.0	400.0	400.0	0.8	0.8	-1.05	75.0	-1.4	75.1	73.5	1.54	48.855	
500.0	500.0	500.0	500.0	1.0	1.0	-1.05	75.0	-1.4	75.1	73.1	1.99	37.795	
600.0	600.0	600.0	600.0	1.2	1.2	-1.05	75.0	-1.4	75.1	72.6	2.44	30.819	
700.0	700.0	700.0	700.0	1.4	1.4	-1.05	75.0	-1.4	75.1	72.2	2.88	26.017	
800.0	800.0	800.0	800.0	1.7	1.7	-1.05	75.0	-1.4	75.1	71.7	3.33	22.509	CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	-152.35	75.0	-1.4	76.6	72.8	3.76	20.380	
1,000.0	999.8	997.1	997.0	2.1	2.1	-154.05	76.7	-1.6	83.0	78.8	4.16	19.940	SF
1,100.0	1,099.6	1,093.4	1,093.2	2.2	2.3	-156.08	81.5	-2.3	94.3	89.8	4.57	20.620	
1,200.0	1,199.4	1,192.2	1,191.8	2.5	2.6	-157.72	88.3	-3.2	107.7	102.7	5.00	21.547	
1,300.0	1,299.1	1,291.3	1,290.7	2.7	2.8	-159.00	95.2	-4.1	121.1	115.7	5.42	22.337	
1,400.0	1,398.9	1,390.3	1,389.5	2.9	3.0	-160.03	102.0	-5.0	134.6	128.8	5.85	23.002	
1,500.0	1,498.6	1,489.4	1,488.3	3.1	3.3	-160.87	108.9	-6.0	148.1	141.8	6.29	23.567	
1,600.0	1,598.4	1,588.5	1,587.1	3.4	3.5	-161.57	115.7	-6.9	161.7	154.9	6.72	24.052	
1,700.0	1,698.1	1,687.5	1,685.9	3.6	3.7	-162.16	122.6	-7.8	175.2	168.1	7.16	24.472	
1,800.0	1,797.9	1,786.6	1,784.8	3.9	4.0	-162.67	129.4	-8.7	188.8	181.2	7.60	24.838	
1,900.0	1,897.6	1,885.7	1,883.6	4.1	4.2	-163.11	136.3	-9.7	202.4	194.4	8.04	25.160	
2,000.0	1,997.4	1,984.7	1,982.4	4.4	4.5	-163.49	143.1	-10.6	216.0	207.5	8.49	25.445	
2,100.0	2,097.2	2,083.8	2,081.2	4.6	4.7	-163.83	150.0	-11.5	229.6	220.7	8.93	25.698	
2,200.0	2,196.9	2,182.8	2,180.0	4.9	5.0	-164.13	156.8	-12.4	243.2	233.8	9.38	25.926	
2,300.0	2,296.7	2,281.9	2,278.9	5.1	5.2	-164.40	163.7	-13.4	256.8	247.0	9.83	26.130	
2,400.0	2,396.4	2,381.0	2,377.7	5.4	5.5	-164.64	170.5	-14.3	270.5	260.2	10.28	26.315	
2,500.0	2,496.2	2,480.0	2,476.5	5.6	5.7	-164.86	177.4	-15.2	284.1	273.4	10.73	26.483	
2,600.0	2,595.9	2,579.1	2,575.3	5.9	6.0	-165.05	184.2	-16.1	297.7	286.6	11.18	26.637	
2,700.0	2,695.7	2,678.1	2,674.1	6.1	6.2	-165.23	191.1	-17.1	311.4	299.8	11.63	26.777	
2,800.0	2,795.5	2,777.2	2,773.0	6.4	6.5	-165.40	197.9	-18.0	325.0	312.9	12.08	26.906	
2,900.0	2,895.2	2,876.3	2,871.8	6.7	6.7	-165.55	204.7	-18.9	338.7	326.1	12.53	27.025	
3,000.0	2,995.0	2,975.3	2,970.6	6.9	7.0	-165.69	211.6	-19.8	352.3	339.3	12.98	27.135	
3,100.0	3,094.7	3,074.4	3,069.4	7.2	7.2	-165.82	218.4	-20.8	366.0	352.5	13.44	27.237	
3,200.0	3,194.5	3,173.4	3,168.2	7.4	7.5	-165.94	225.3	-21.7	379.6	365.7	13.89	27.332	
3,300.0	3,294.2	3,272.5	3,267.1	7.7	7.7	-166.06	232.1	-22.6	393.3	378.9	14.34	27.420	
3,400.0	3,394.0	3,371.6	3,365.9	8.0	8.0	-166.16	239.0	-23.5	406.9	392.1	14.80	27.502	
3,500.0	3,493.7	3,470.6	3,464.7	8.2	8.2	-166.26	245.8	-24.5	420.6	405.3	15.25	27.580	
3,600.0	3,593.5	3,569.7	3,563.5	8.5	8.5	-166.35	252.7	-25.4	434.2	418.5	15.70	27.652	
3,700.0	3,693.3	3,668.8	3,662.3	8.7	8.7	-166.44	259.5	-26.3	447.9	431.7	16.16	27.720	
3,800.0	3,793.0	3,767.8	3,761.2	9.0	9.0	-166.52	266.4	-27.2	461.5	444.9	16.61	27.784	
3,900.0	3,892.8	3,866.9	3,860.0	9.3	9.2	-166.59	273.2	-28.2	475.2	458.1	17.07	27.844	
4,000.0	3,992.5	3,965.9	3,958.8	9.5	9.5	-166.67	280.1	-29.1	488.9	471.3	17.52	27.901	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-0908B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-91.02	-0.6	-33.2	33.2				
100.0	100.0	100.0	100.0	0.1	0.1	-91.02	-0.6	-33.2	33.2	33.0	0.19	176.947	
200.0	200.0	200.0	200.0	0.3	0.3	-91.02	-0.6	-33.2	33.2	32.6	0.64	52.117	
300.0	300.0	300.0	300.0	0.5	0.5	-91.02	-0.6	-33.2	33.2	32.1	1.09	30.559	
400.0	400.0	400.0	400.0	0.8	0.8	-91.02	-0.6	-33.2	33.2	31.7	1.54	21.617	
500.0	500.0	500.0	500.0	1.0	1.0	-91.02	-0.6	-33.2	33.2	31.2	1.99	16.723	
600.0	600.0	600.0	600.0	1.2	1.2	-91.02	-0.6	-33.2	33.2	30.8	2.44	13.636	
700.0	700.0	700.0	700.0	1.4	1.4	-91.02	-0.6	-33.2	33.2	30.3	2.88	11.512	
800.0	800.0	800.0	800.0	1.7	1.7	-91.02	-0.6	-33.2	33.2	29.9	3.33	9.960	CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	120.85	-0.6	-33.2	34.1	30.3	3.76	9.068	
1,000.0	999.8	999.8	999.8	2.1	2.1	127.76	-0.6	-33.2	37.0	32.9	4.16	8.897	SF
1,100.0	1,099.6	1,099.6	1,099.6	2.2	2.3	135.36	-0.6	-33.2	41.7	37.1	4.58	9.102	
1,200.0	1,199.4	1,199.1	1,199.0	2.5	2.6	143.39	1.1	-32.8	47.2	42.2	5.00	9.441	
1,300.0	1,299.1	1,297.9	1,297.8	2.7	2.8	153.06	6.1	-31.7	54.6	49.2	5.42	10.064	
1,400.0	1,398.9	1,397.1	1,396.7	2.9	3.0	161.72	12.8	-30.1	64.0	58.1	5.85	10.934	
1,500.0	1,498.6	1,496.2	1,495.6	3.1	3.2	168.07	19.5	-28.5	74.5	68.2	6.29	11.848	
1,600.0	1,598.4	1,595.4	1,594.5	3.4	3.5	172.81	26.3	-27.0	85.7	79.0	6.73	12.737	
1,700.0	1,698.1	1,694.5	1,693.4	3.6	3.7	176.45	33.0	-25.4	97.3	90.1	7.17	13.574	
1,800.0	1,797.9	1,793.7	1,792.3	3.9	3.9	179.30	39.7	-23.8	109.2	101.6	7.61	14.349	
1,900.0	1,897.6	1,892.8	1,891.2	4.1	4.2	-178.41	46.5	-22.2	121.4	113.3	8.06	15.060	
2,000.0	1,997.4	1,992.0	1,990.1	4.4	4.4	-176.54	53.2	-20.7	133.7	125.2	8.51	15.713	
2,100.0	2,097.2	2,091.1	2,089.1	4.6	4.7	-174.99	60.0	-19.1	146.1	137.2	8.96	16.310	
2,200.0	2,196.9	2,190.3	2,188.0	4.9	4.9	-173.68	66.7	-17.5	158.6	149.2	9.41	16.856	
2,300.0	2,296.7	2,289.5	2,286.9	5.1	5.2	-172.56	73.4	-16.0	171.2	161.4	9.86	17.358	
2,400.0	2,396.4	2,388.6	2,385.8	5.4	5.4	-171.59	80.2	-14.4	183.9	173.5	10.32	17.819	
2,500.0	2,496.2	2,487.8	2,484.7	5.6	5.7	-170.75	86.9	-12.8	196.5	185.8	10.77	18.244	
2,600.0	2,595.9	2,586.9	2,583.6	5.9	5.9	-170.01	93.6	-11.3	209.3	198.0	11.23	18.637	
2,700.0	2,695.7	2,686.1	2,682.5	6.1	6.1	-169.36	100.4	-9.7	222.0	210.3	11.68	19.001	
2,800.0	2,795.5	2,785.2	2,781.4	6.4	6.4	-168.78	107.1	-8.1	234.8	222.6	12.14	19.338	
2,900.0	2,895.2	2,884.4	2,880.4	6.7	6.6	-168.25	113.8	-6.6	247.6	235.0	12.60	19.652	
3,000.0	2,995.0	2,983.5	2,979.3	6.9	6.9	-167.78	120.6	-5.0	260.4	247.3	13.06	19.944	
3,100.0	3,094.7	3,082.7	3,078.2	7.2	7.1	-167.36	127.3	-3.4	273.2	259.7	13.51	20.217	
3,200.0	3,194.5	3,181.8	3,177.1	7.4	7.4	-166.97	134.1	-1.9	286.1	272.1	13.97	20.473	
3,300.0	3,294.2	3,281.0	3,276.0	7.7	7.6	-166.61	140.8	-0.3	298.9	284.5	14.43	20.712	
3,400.0	3,394.0	3,380.1	3,374.9	8.0	7.9	-166.29	147.5	1.3	311.8	296.9	14.89	20.937	
3,500.0	3,493.7	3,479.3	3,473.8	8.2	8.1	-165.99	154.3	2.8	324.6	309.3	15.35	21.149	
3,600.0	3,593.5	3,578.5	3,572.7	8.5	8.4	-165.71	161.0	4.4	337.5	321.7	15.81	21.349	
3,700.0	3,693.3	3,677.6	3,671.7	8.7	8.6	-165.45	167.7	6.0	350.4	334.1	16.27	21.537	
3,800.0	3,793.0	3,776.8	3,770.6	9.0	8.9	-165.21	174.5	7.5	363.3	346.6	16.73	21.715	
3,900.0	3,892.8	3,875.9	3,869.5	9.3	9.1	-164.99	181.2	9.1	376.2	359.0	17.19	21.884	
4,000.0	3,992.5	3,975.1	3,968.4	9.5	9.4	-164.78	188.0	10.7	389.1	371.5	17.65	22.044	
4,100.0	4,092.3	4,074.2	4,067.3	9.8	9.7	-164.59	194.7	12.2	402.0	383.9	18.11	22.196	
4,200.0	4,192.0	4,173.4	4,166.2	10.1	9.9	-164.41	201.4	13.8	414.9	396.4	18.57	22.340	
4,300.0	4,291.8	4,272.5	4,265.1	10.3	10.2	-164.23	208.2	15.4	427.9	408.8	19.04	22.478	
4,400.0	4,391.6	4,371.7	4,364.0	10.6	10.4	-164.07	214.9	16.9	440.8	421.3	19.50	22.609	
4,500.0	4,491.3	4,470.8	4,463.0	10.8	10.7	-163.92	221.6	18.5	453.7	433.8	19.96	22.734	
4,600.0	4,591.1	4,570.0	4,561.9	11.1	10.9	-163.78	228.4	20.1	466.6	446.2	20.42	22.853	
4,700.0	4,690.8	4,669.2	4,660.8	11.4	11.2	-163.64	235.1	21.6	479.6	458.7	20.88	22.967	
4,800.0	4,790.6	4,768.3	4,759.7	11.6	11.4	-163.51	241.8	23.2	492.5	471.2	21.34	23.076	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2805A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-53.74	73.3	-99.9	123.9				
100.0	100.0	100.0	100.0	0.1	0.1	-53.74	73.3	-99.9	123.9	123.7	0.19	660.031	
200.0	200.0	200.0	200.0	0.3	0.3	-53.74	73.3	-99.9	123.9	123.2	0.64	194.401	
300.0	300.0	300.0	300.0	0.5	0.5	-53.74	73.3	-99.9	123.9	122.8	1.09	113.987	
400.0	400.0	400.0	400.0	0.8	0.8	-53.74	73.3	-99.9	123.9	122.3	1.54	80.633	
500.0	500.0	500.0	500.0	1.0	1.0	-53.74	73.3	-99.9	123.9	121.9	1.99	62.380	
600.0	600.0	600.0	600.0	1.2	1.2	-53.74	73.3	-99.9	123.9	121.4	2.44	50.865	
700.0	700.0	700.0	700.0	1.4	1.4	-53.74	73.3	-99.9	123.9	121.0	2.88	42.939	
800.0	800.0	800.0	800.0	1.7	1.7	-53.74	73.3	-99.9	123.9	120.5	3.33	37.150	CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	155.88	73.3	-99.9	125.5	121.7	3.76	33.390	
1,000.0	999.8	999.8	999.8	2.1	2.1	156.78	73.3	-99.9	130.3	126.1	4.16	31.305	
1,100.0	1,099.6	1,099.6	1,099.6	2.2	2.3	157.93	73.3	-99.9	136.7	132.1	4.57	29.886	
1,200.0	1,199.4	1,199.4	1,199.4	2.5	2.6	158.98	73.3	-99.9	143.2	138.2	5.00	28.667	
1,300.0	1,299.1	1,301.5	1,301.5	2.7	2.8	159.35	71.5	-100.3	148.9	143.5	5.40	27.592	
1,400.0	1,398.9	1,403.7	1,403.5	2.9	2.9	158.47	66.2	-101.6	153.1	147.3	5.78	26.465	
1,500.0	1,498.6	1,503.6	1,503.2	3.1	3.1	157.11	59.5	-103.2	156.6	150.4	6.18	25.320	
1,600.0	1,598.4	1,603.4	1,602.8	3.4	3.3	155.81	52.7	-104.8	160.2	153.6	6.60	24.273	
1,700.0	1,698.1	1,703.3	1,702.4	3.6	3.5	154.56	45.9	-106.4	163.8	156.8	7.02	23.320	
1,800.0	1,797.9	1,803.2	1,802.0	3.9	3.7	153.37	39.1	-108.0	167.5	160.1	7.46	22.456	
1,900.0	1,897.6	1,903.1	1,901.7	4.1	4.0	152.24	32.3	-109.6	171.3	163.4	7.91	21.670	
2,000.0	1,997.4	2,002.9	2,001.3	4.4	4.2	151.15	25.6	-111.2	175.2	166.8	8.36	20.957	
2,100.0	2,097.2	2,102.8	2,100.9	4.6	4.4	150.11	18.8	-112.8	179.1	170.3	8.82	20.308	
2,200.0	2,196.9	2,202.7	2,200.5	4.9	4.6	149.12	12.0	-114.4	183.1	173.8	9.29	19.716	
2,300.0	2,296.7	2,302.5	2,300.2	5.1	4.9	148.16	5.2	-116.0	187.1	177.4	9.76	19.176	
2,400.0	2,396.4	2,402.4	2,399.8	5.4	5.1	147.25	-1.6	-117.6	191.2	181.0	10.24	18.683	
2,500.0	2,496.2	2,502.3	2,499.4	5.6	5.4	146.38	-8.3	-119.2	195.4	184.6	10.72	18.230	
2,600.0	2,595.9	2,602.2	2,599.1	5.9	5.6	145.54	-15.1	-120.9	199.5	188.3	11.20	17.814	
2,700.0	2,695.7	2,702.0	2,698.7	6.1	5.9	144.74	-21.9	-122.5	203.7	192.0	11.69	17.432	
2,800.0	2,795.5	2,801.9	2,798.3	6.4	6.1	143.97	-28.7	-124.1	208.0	195.8	12.18	17.078	
2,900.0	2,895.2	2,901.8	2,897.9	6.7	6.3	143.23	-35.4	-125.7	212.3	199.6	12.67	16.752	
3,000.0	2,995.0	3,001.6	2,997.6	6.9	6.6	142.52	-42.2	-127.3	216.6	203.4	13.17	16.450	
3,100.0	3,094.7	3,101.5	3,097.2	7.2	6.8	141.84	-49.0	-128.9	221.0	207.3	13.66	16.169	
3,200.0	3,194.5	3,201.4	3,196.8	7.4	7.1	141.18	-55.8	-130.5	225.3	211.2	14.16	15.908	
3,300.0	3,294.2	3,301.2	3,296.5	7.7	7.4	140.55	-62.6	-132.1	229.7	215.1	14.67	15.665	
3,400.0	3,394.0	3,401.1	3,396.1	8.0	7.6	139.95	-69.3	-133.7	234.2	219.0	15.17	15.438	
3,500.0	3,493.7	3,501.0	3,495.7	8.2	7.9	139.36	-76.1	-135.3	238.6	223.0	15.67	15.226	
3,600.0	3,593.5	3,600.9	3,595.3	8.5	8.1	138.80	-82.9	-136.9	243.1	227.0	16.18	15.028	
3,700.0	3,693.3	3,700.7	3,695.0	8.7	8.4	138.26	-89.7	-138.6	247.6	231.0	16.69	14.841	
3,800.0	3,793.0	3,800.6	3,794.6	9.0	8.6	137.73	-96.5	-140.2	252.2	235.0	17.19	14.666	
3,900.0	3,892.8	3,900.5	3,894.2	9.3	8.9	137.23	-103.2	-141.8	256.7	239.0	17.70	14.502	
4,000.0	3,992.5	4,000.3	3,993.9	9.5	9.1	136.74	-110.0	-143.4	261.3	243.1	18.21	14.347	
4,100.0	4,092.3	4,100.2	4,093.5	9.8	9.4	136.27	-116.8	-145.0	265.9	247.2	18.72	14.200	
4,200.0	4,192.0	4,200.1	4,193.1	10.1	9.7	135.82	-123.6	-146.6	270.5	251.3	19.24	14.062	
4,300.0	4,291.8	4,300.0	4,292.7	10.3	9.9	135.38	-130.3	-148.2	275.1	255.4	19.75	13.932	
4,400.0	4,391.6	4,399.8	4,392.4	10.6	10.2	134.96	-137.1	-149.8	279.8	259.5	20.26	13.808	
4,500.0	4,491.3	4,499.7	4,492.0	10.8	10.4	134.55	-143.9	-151.4	284.4	263.6	20.77	13.691	
4,600.0	4,591.1	4,599.6	4,591.6	11.1	10.7	134.15	-150.7	-153.0	289.1	267.8	21.29	13.579	
4,700.0	4,690.8	4,699.4	4,691.2	11.4	10.9	133.77	-157.5	-154.6	293.8	272.0	21.80	13.473	
4,800.0	4,790.6	4,799.3	4,790.9	11.6	11.2	133.39	-164.2	-156.2	298.5	276.1	22.32	13.373	
4,900.0	4,890.3	4,899.2	4,890.5	11.9	11.5	133.03	-171.0	-157.9	303.2	280.3	22.83	13.277	
5,000.0	4,990.1	4,999.1	4,990.1	12.2	11.7	132.68	-177.8	-159.5	307.9	284.5	23.35	13.186	
5,100.0	5,089.9	5,098.9	5,089.8	12.4	12.0	132.34	-184.6	-161.1	312.6	288.7	23.87	13.099	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2805A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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
5,200.0	5,189.6	5,198.8	5,189.4	12.7	12.2	132.01	-191.4	-162.7	317.3	293.0	24.38	13.015	
5,300.0	5,289.4	5,298.7	5,289.0	12.9	12.5	131.70	-198.1	-164.3	322.1	297.2	24.90	12.936	
5,400.0	5,389.1	5,397.4	5,387.1	13.2	12.8	130.71	-208.6	-166.8	327.0	301.5	25.46	12.841 SF	
5,500.0	5,488.1	5,491.7	5,477.5	13.5	13.2	127.00	-234.1	-172.8	337.1	311.0	26.08	12.923	
5,600.0	5,582.8	5,580.3	5,556.9	14.0	13.7	121.92	-272.2	-181.9	360.7	334.0	26.76	13.479	
5,700.0	5,669.7	5,662.5	5,623.6	14.7	14.4	115.90	-318.8	-192.9	397.0	369.3	27.72	14.322	
5,800.0	5,745.7	5,738.4	5,677.8	15.6	15.0	109.16	-370.4	-205.2	443.8	414.6	29.17	15.211	
5,900.0	5,807.9	5,808.7	5,720.7	16.7	15.8	101.86	-424.5	-218.0	498.5	467.3	31.15	16.002	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2806B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-91.03	-1.2	-65.3	65.3				
100.0	100.0	100.0	100.0	0.1	0.1	-91.03	-1.2	-65.3	65.3	65.1	0.19	347.995	
200.0	200.0	200.0	200.0	0.3	0.3	-91.03	-1.2	-65.3	65.3	64.7	0.64	102.496	
300.0	300.0	300.0	300.0	0.5	0.5	-91.03	-1.2	-65.3	65.3	64.2	1.09	60.099	
400.0	400.0	400.0	400.0	0.8	0.8	-91.03	-1.2	-65.3	65.3	63.8	1.54	42.513	
500.0	500.0	500.0	500.0	1.0	1.0	-91.03	-1.2	-65.3	65.3	63.3	1.99	32.889	
600.0	600.0	600.0	600.0	1.2	1.2	-91.03	-1.2	-65.3	65.3	62.9	2.44	26.818	
700.0	700.0	700.0	700.0	1.4	1.4	-91.03	-1.2	-65.3	65.3	62.4	2.88	22.639	
800.0	800.0	800.0	800.0	1.7	1.7	-91.03	-1.2	-65.3	65.3	62.0	3.33	19.587	CC, ES
900.0	900.0	900.0	900.0	1.9	1.9	119.58	-1.2	-65.3	66.2	62.4	3.76	17.608	
1,000.0	999.8	999.8	999.8	2.1	2.1	123.32	-1.2	-65.3	68.9	64.7	4.16	16.551	
1,100.0	1,099.6	1,100.1	1,100.1	2.2	2.3	126.57	-2.9	-65.2	72.6	68.1	4.55	15.949	
1,200.0	1,199.4	1,200.6	1,200.4	2.5	2.5	126.92	-8.2	-64.8	75.8	70.8	4.93	15.356	
1,300.0	1,299.1	1,300.5	1,300.1	2.7	2.7	126.00	-15.1	-64.4	78.6	73.2	5.34	14.723	
1,400.0	1,398.9	1,400.5	1,399.8	2.9	2.9	125.14	-22.1	-63.9	81.4	75.6	5.76	14.135	
1,500.0	1,498.6	1,500.4	1,499.5	3.1	3.1	124.35	-29.1	-63.4	84.2	78.0	6.20	13.596	
1,600.0	1,598.4	1,600.4	1,599.2	3.4	3.3	123.60	-36.0	-63.0	87.1	80.5	6.65	13.105	
1,700.0	1,698.1	1,700.3	1,699.0	3.6	3.5	122.90	-43.0	-62.5	90.0	82.9	7.11	12.661	
1,800.0	1,797.9	1,800.3	1,798.7	3.9	3.8	122.25	-49.9	-62.0	92.9	85.3	7.58	12.258	
1,900.0	1,897.6	1,900.2	1,898.4	4.1	4.0	121.63	-56.9	-61.6	95.8	87.7	8.05	11.894	
2,000.0	1,997.4	2,000.2	1,998.1	4.4	4.2	121.05	-63.8	-61.1	98.7	90.2	8.53	11.563	
2,100.0	2,097.2	2,100.1	2,097.8	4.6	4.5	120.51	-70.8	-60.6	101.6	92.6	9.02	11.262	
2,200.0	2,196.9	2,200.1	2,197.5	4.9	4.7	119.99	-77.7	-60.1	104.5	95.0	9.51	10.988	
2,300.0	2,296.7	2,300.0	2,297.2	5.1	5.0	119.50	-84.7	-59.7	107.5	97.5	10.01	10.738	
2,400.0	2,396.4	2,400.0	2,396.9	5.4	5.2	119.04	-91.7	-59.2	110.4	99.9	10.51	10.509	
2,500.0	2,496.2	2,500.0	2,496.6	5.6	5.5	118.61	-98.6	-58.7	113.4	102.4	11.01	10.299	
2,600.0	2,595.9	2,599.9	2,596.3	5.9	5.7	118.19	-105.6	-58.3	116.3	104.8	11.51	10.106	
2,700.0	2,695.7	2,699.9	2,696.0	6.1	6.0	117.80	-112.5	-57.8	119.3	107.3	12.02	9.927	
2,800.0	2,795.5	2,799.8	2,795.8	6.4	6.2	117.42	-119.5	-57.3	122.3	109.7	12.52	9.762	
2,900.0	2,895.2	2,899.8	2,895.5	6.7	6.5	117.07	-126.4	-56.9	125.2	112.2	13.03	9.609	
3,000.0	2,995.0	2,999.7	2,995.2	6.9	6.7	116.72	-133.4	-56.4	128.2	114.7	13.54	9.467	
3,100.0	3,094.7	3,099.7	3,094.9	7.2	7.0	116.40	-140.4	-55.9	131.2	117.1	14.06	9.335	
3,200.0	3,194.5	3,199.6	3,194.6	7.4	7.2	116.09	-147.3	-55.5	134.2	119.6	14.57	9.211	
3,300.0	3,294.2	3,299.6	3,294.3	7.7	7.5	115.79	-154.3	-55.0	137.2	122.1	15.08	9.096	
3,400.0	3,394.0	3,399.5	3,394.0	8.0	7.8	115.51	-161.2	-54.5	140.2	124.6	15.60	8.987	
3,500.0	3,493.7	3,499.5	3,493.7	8.2	8.0	115.23	-168.2	-54.1	143.2	127.1	16.11	8.886	
3,600.0	3,593.5	3,599.4	3,593.4	8.5	8.3	114.97	-175.1	-53.6	146.2	129.5	16.63	8.790	
3,700.0	3,693.3	3,699.4	3,693.1	8.7	8.5	114.72	-182.1	-53.1	149.2	132.0	17.15	8.700	
3,800.0	3,793.0	3,799.3	3,792.8	9.0	8.8	114.48	-189.1	-52.7	152.2	134.5	17.66	8.616	
3,900.0	3,892.8	3,899.3	3,892.6	9.3	9.0	114.25	-196.0	-52.2	155.2	137.0	18.18	8.536	
4,000.0	3,992.5	3,999.2	3,992.3	9.5	9.3	114.03	-203.0	-51.7	158.2	139.5	18.70	8.460	
4,100.0	4,092.3	4,099.2	4,092.0	9.8	9.6	113.81	-209.9	-51.3	161.2	142.0	19.22	8.388	
4,200.0	4,192.0	4,199.2	4,191.7	10.1	9.8	113.60	-216.9	-50.8	164.2	144.5	19.74	8.320	
4,300.0	4,291.8	4,299.1	4,291.4	10.3	10.1	113.41	-223.8	-50.3	167.3	147.0	20.26	8.255	
4,400.0	4,391.6	4,399.1	4,391.1	10.6	10.3	113.21	-230.8	-49.8	170.3	149.5	20.78	8.194	
4,500.0	4,491.3	4,499.0	4,490.8	10.8	10.6	113.03	-237.7	-49.4	173.3	152.0	21.30	8.136	
4,600.0	4,591.1	4,599.0	4,590.5	11.1	10.9	112.85	-244.7	-48.9	176.3	154.5	21.82	8.080	
4,700.0	4,690.8	4,698.9	4,690.2	11.4	11.1	112.68	-251.7	-48.4	179.3	157.0	22.34	8.027	
4,800.0	4,790.6	4,798.9	4,789.9	11.6	11.4	112.51	-258.6	-48.0	182.4	159.5	22.87	7.976	
4,900.0	4,890.3	4,898.8	4,889.6	11.9	11.6	112.35	-265.6	-47.5	185.4	162.0	23.39	7.927	
5,000.0	4,990.1	4,998.8	4,989.4	12.2	11.9	112.19	-272.5	-47.0	188.4	164.5	23.91	7.881	
5,100.0	5,089.9	5,098.7	5,089.1	12.4	12.2	112.04	-279.5	-46.6	191.5	167.0	24.43	7.837	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2806B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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
5,200.0	5,189.6	5,198.7	5,188.8	12.7	12.4	111.89	-286.4	-46.1	194.5	169.5	24.95	7.794	
5,300.0	5,289.4	5,298.6	5,288.5	12.9	12.7	111.75	-293.4	-45.6	197.5	172.1	25.48	7.753	
5,400.0	5,389.1	5,398.6	5,388.2	13.2	13.0	111.61	-300.4	-45.2	200.6	174.6	26.00	7.714	SF
5,500.0	5,488.1	5,496.3	5,485.0	13.5	13.3	110.92	-313.0	-44.3	206.3	179.8	26.57	7.766	
5,600.0	5,582.8	5,592.6	5,576.4	14.0	13.7	109.22	-342.5	-42.3	220.0	192.7	27.37	8.039	
5,700.0	5,669.7	5,687.1	5,659.5	14.7	14.3	106.76	-387.3	-39.3	241.3	212.8	28.50	8.467	
5,800.0	5,745.7	5,779.7	5,731.6	15.6	15.1	103.74	-445.0	-35.4	269.2	239.1	30.05	8.957	
5,900.0	5,807.9	5,870.2	5,791.2	16.7	16.0	100.35	-512.9	-30.9	302.7	270.6	32.10	9.428	
6,000.0	5,854.0	5,959.3	5,837.5	18.0	17.0	96.74	-588.7	-25.8	340.5	306.0	34.57	9.852	
6,100.0	5,882.4	6,047.6	5,869.9	19.5	18.2	93.05	-670.5	-20.3	381.4	344.0	37.34	10.215	
6,200.0	5,892.0	6,136.0	5,888.1	21.1	19.4	89.43	-756.7	-14.5	423.9	383.6	40.30	10.519	
6,300.0	5,892.0	6,221.7	5,892.0	22.7	20.7	90.00	-842.1	-8.8	464.6	421.2	43.38	10.710	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2807A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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	-24.92	74.4	-34.6	82.1				
100.0	100.0	100.0	100.0	0.1	0.1	-24.92	74.4	-34.6	82.1	81.9	0.19	437.343	
200.0	200.0	200.0	200.0	0.3	0.3	-24.92	74.4	-34.6	82.1	81.4	0.64	128.812	
300.0	300.0	300.0	300.0	0.5	0.5	-24.92	74.4	-34.6	82.1	81.0	1.09	75.529	
400.0	400.0	400.0	400.0	0.8	0.8	-24.92	74.4	-34.6	82.1	80.5	1.54	53.428	
500.0	500.0	500.0	500.0	1.0	1.0	-24.92	74.4	-34.6	82.1	80.1	1.99	41.334	
600.0	600.0	602.9	602.9	1.2	1.2	-25.07	72.7	-34.0	80.3	77.9	2.42	33.240	
700.0	700.0	705.4	705.2	1.4	1.4	-25.59	67.4	-32.3	75.0	72.1	2.84	26.431	
800.0	800.0	805.1	804.7	1.7	1.6	-26.36	60.8	-30.1	68.1	64.8	3.26	20.868	
900.0	900.0	905.0	904.3	1.9	1.8	-178.07	54.2	-28.0	62.9	59.2	3.66	17.193	
996.7	996.5	1,001.6	1,000.7	2.0	2.1	-179.25	47.8	-25.9	61.3	57.2	4.03	15.193	CC
1,000.0	999.8	1,004.9	1,004.0	2.1	2.1	-179.29	47.6	-25.8	61.3	57.2	4.04	15.145	
1,100.0	1,099.6	1,104.9	1,103.8	2.2	2.3	179.44	40.9	-23.7	61.4	56.9	4.45	13.799	
1,200.0	1,199.4	1,204.9	1,203.5	2.5	2.5	178.18	34.3	-21.5	61.6	56.7	4.86	12.654	
1,300.0	1,299.1	1,304.9	1,303.3	2.7	2.8	176.92	27.7	-19.3	61.7	56.5	5.29	11.676	
1,400.0	1,398.9	1,404.9	1,403.0	2.9	3.0	175.67	21.1	-17.2	62.0	56.2	5.72	10.835	
1,500.0	1,498.6	1,504.9	1,502.8	3.1	3.3	174.43	14.4	-15.0	62.2	56.1	6.16	10.107	
1,600.0	1,598.4	1,604.9	1,602.5	3.4	3.6	173.20	7.8	-12.9	62.5	55.9	6.60	9.471	
1,700.0	1,698.1	1,704.9	1,702.3	3.6	3.8	171.98	1.2	-10.7	62.8	55.8	7.05	8.914	
1,800.0	1,797.9	1,804.9	1,802.0	3.9	4.1	170.77	-5.5	-8.5	63.1	55.6	7.50	8.422	
1,900.0	1,897.6	1,904.9	1,901.8	4.1	4.3	169.58	-12.1	-6.4	63.5	55.6	7.95	7.985	
2,000.0	1,997.4	2,004.9	2,001.5	4.4	4.6	168.40	-18.7	-4.2	63.9	55.5	8.41	7.596	
2,100.0	2,097.2	2,104.8	2,101.3	4.6	4.8	167.24	-25.4	-2.1	64.3	55.4	8.88	7.246	
2,200.0	2,196.9	2,204.8	2,201.0	4.9	5.1	166.09	-32.0	0.1	64.8	55.4	9.34	6.932	
2,300.0	2,296.7	2,304.8	2,300.8	5.1	5.4	164.96	-38.6	2.3	65.2	55.4	9.81	6.648	
2,400.0	2,396.4	2,404.8	2,400.5	5.4	5.6	163.84	-45.3	4.4	65.7	55.4	10.29	6.390	
2,500.0	2,496.2	2,504.8	2,500.2	5.6	5.9	162.74	-51.9	6.6	66.2	55.5	10.76	6.155	
2,600.0	2,595.9	2,604.8	2,600.0	5.9	6.2	161.66	-58.5	8.8	66.8	55.5	11.24	5.941	
2,700.0	2,695.7	2,704.8	2,699.7	6.1	6.4	160.60	-65.2	10.9	67.4	55.6	11.72	5.745	
2,800.0	2,795.5	2,804.8	2,799.5	6.4	6.7	159.56	-71.8	13.1	67.9	55.7	12.21	5.565	
2,900.0	2,895.2	2,904.8	2,899.2	6.7	6.9	158.53	-78.4	15.2	68.6	55.9	12.70	5.400	
3,000.0	2,995.0	3,004.8	2,999.0	6.9	7.2	157.52	-85.1	17.4	69.2	56.0	13.19	5.247	
3,100.0	3,094.7	3,104.7	3,098.7	7.2	7.5	156.53	-91.7	19.6	69.8	56.2	13.68	5.106	
3,200.0	3,194.5	3,204.7	3,198.5	7.4	7.7	155.56	-98.3	21.7	70.5	56.3	14.17	4.975	
3,300.0	3,294.2	3,304.7	3,298.2	7.7	8.0	154.61	-104.9	23.9	71.2	56.5	14.67	4.854	
3,400.0	3,394.0	3,404.7	3,398.0	8.0	8.3	153.67	-111.6	26.0	71.9	56.8	15.17	4.741	
3,500.0	3,493.7	3,504.7	3,497.7	8.2	8.5	152.76	-118.2	28.2	72.7	57.0	15.67	4.636	
3,600.0	3,593.5	3,604.7	3,597.5	8.5	8.8	151.86	-124.8	30.4	73.4	57.2	16.18	4.538	
3,700.0	3,693.3	3,704.7	3,697.2	8.7	9.0	150.98	-131.5	32.5	74.2	57.5	16.68	4.446	
3,800.0	3,793.0	3,804.7	3,797.0	9.0	9.3	150.12	-138.1	34.7	75.0	57.8	17.19	4.361	
3,900.0	3,892.8	3,904.7	3,896.7	9.3	9.6	149.28	-144.7	36.8	75.8	58.1	17.70	4.280	
4,000.0	3,992.5	4,004.7	3,996.5	9.5	9.8	148.46	-151.4	39.0	76.6	58.4	18.21	4.205	
4,100.0	4,092.3	4,104.7	4,096.2	9.8	10.1	147.65	-158.0	41.2	77.4	58.7	18.73	4.134	
4,200.0	4,192.0	4,204.6	4,195.9	10.1	10.4	146.86	-164.6	43.3	78.3	59.0	19.24	4.068	
4,300.0	4,291.8	4,304.6	4,295.7	10.3	10.6	146.09	-171.3	45.5	79.1	59.4	19.76	4.005	
4,400.0	4,391.6	4,404.6	4,395.4	10.6	10.9	145.33	-177.9	47.7	80.0	59.7	20.27	3.946	
4,500.0	4,491.3	4,504.6	4,495.2	10.8	11.2	144.60	-184.5	49.8	80.9	60.1	20.79	3.891	
4,600.0	4,591.1	4,604.6	4,594.9	11.1	11.4	143.87	-191.2	52.0	81.8	60.5	21.31	3.838	
4,700.0	4,690.8	4,704.6	4,694.7	11.4	11.7	143.17	-197.8	54.1	82.7	60.9	21.83	3.789	
4,800.0	4,790.6	4,804.6	4,794.4	11.6	11.9	142.48	-204.4	56.3	83.6	61.3	22.36	3.742	
4,900.0	4,890.3	4,904.6	4,894.2	11.9	12.2	141.80	-211.1	58.5	84.6	61.7	22.88	3.697	
5,000.0	4,990.1	5,004.6	4,993.9	12.2	12.5	141.14	-217.7	60.6	85.5	62.1	23.40	3.655	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2807A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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
5,100.0	5,089.9	5,104.6	5,093.7	12.4	12.7	140.49	-224.3	62.8	86.5	62.6	23.93	3.615	
5,200.0	5,189.6	5,204.6	5,193.4	12.7	13.0	139.86	-231.0	64.9	87.5	63.0	24.45	3.577	
5,300.0	5,289.4	5,304.5	5,293.2	12.9	13.3	139.24	-237.6	67.1	88.5	63.5	24.98	3.541	
5,400.0	5,389.1	5,412.1	5,399.8	13.2	13.6	135.58	-250.1	71.2	86.4	60.7	25.72	3.360	
5,500.0	5,488.1	5,518.4	5,500.5	13.5	14.1	122.90	-281.9	81.5	79.7	52.7	26.98	2.952	
5,541.3	5,528.0	5,561.0	5,538.6	13.7	14.4	116.63	-299.9	87.4	78.9	51.3	27.62	2.857 ES	
5,600.0	5,582.8	5,620.1	5,588.7	14.0	14.8	107.40	-329.8	97.2	80.5	51.9	28.59	2.815	
5,700.0	5,669.7	5,717.6	5,662.4	14.7	15.7	92.85	-390.2	116.8	90.0	59.7	30.33	2.967	
5,800.0	5,745.7	5,811.3	5,721.0	15.6	16.7	81.66	-459.6	139.4	106.3	74.4	31.84	3.338	
5,900.0	5,807.9	5,900.0	5,763.5	16.7	17.9	73.96	-533.5	163.5	126.6	93.4	33.16	3.818	
6,000.0	5,854.0	5,989.5	5,792.5	18.0	19.1	68.65	-613.9	189.7	148.7	114.2	34.57	4.302	
6,100.0	5,882.4	6,075.4	5,806.3	19.5	20.4	65.18	-694.4	216.0	171.2	135.0	36.23	4.725	
6,200.0	5,892.0	6,162.7	5,808.0	21.1	21.8	63.57	-777.5	242.5	192.5	154.0	38.55	4.995	
6,300.0	5,892.0	6,251.7	5,808.0	22.7	23.1	66.18	-863.4	266.0	212.2	170.1	42.09	5.041	
6,400.0	5,892.0	6,340.0	5,808.0	24.2	24.3	68.30	-949.5	285.4	231.6	186.2	45.40	5.102	
6,500.0	5,892.0	6,427.6	5,808.0	25.8	25.6	70.05	-1,035.7	300.6	250.7	202.1	48.63	5.157	
6,600.0	5,892.0	6,514.4	5,808.0	27.4	27.0	71.50	-1,121.8	311.9	269.4	217.7	51.75	5.207	
6,700.0	5,892.0	6,600.0	5,808.0	29.0	28.3	72.72	-1,207.1	319.1	287.6	232.9	54.74	5.254	
6,800.0	5,892.0	6,686.1	5,808.0	30.6	29.6	73.77	-1,293.2	322.5	305.2	247.5	57.62	5.296	
6,900.0	5,892.0	6,779.7	5,808.0	32.2	31.1	74.68	-1,386.7	322.7	321.3	260.8	60.50	5.310	
7,000.0	5,892.0	6,879.0	5,808.0	33.8	32.7	75.31	-1,486.0	322.8	332.7	269.4	63.34	5.253	
7,100.0	5,892.0	6,978.8	5,808.0	35.4	34.4	75.64	-1,585.8	322.8	339.1	273.2	65.97	5.141	
7,200.0	5,892.0	7,078.8	5,808.0	36.9	36.2	75.72	-1,685.8	322.8	340.6	272.0	68.61	4.965	
7,300.0	5,892.0	7,178.8	5,808.0	38.5	37.9	75.72	-1,785.8	322.8	340.6	268.6	72.00	4.731	
7,400.0	5,892.0	7,278.8	5,808.0	40.2	39.7	75.72	-1,885.8	322.8	340.6	265.2	75.42	4.516	
7,500.0	5,892.0	7,378.8	5,808.0	41.8	41.4	75.72	-1,985.8	322.8	340.6	261.7	78.87	4.318	
7,600.0	5,892.0	7,478.8	5,808.0	43.5	43.2	75.72	-2,085.8	322.8	340.6	258.2	82.35	4.136	
7,700.0	5,892.0	7,578.8	5,808.0	45.2	45.0	75.72	-2,185.8	322.8	340.6	254.7	85.85	3.967	
7,800.0	5,892.0	7,678.8	5,808.0	46.9	46.8	75.72	-2,285.8	322.8	340.6	251.2	89.36	3.811	
7,900.0	5,892.0	7,778.8	5,808.0	48.7	48.6	75.72	-2,385.8	322.8	340.6	247.7	92.90	3.666	
8,000.0	5,892.0	7,878.8	5,808.0	50.4	50.5	75.72	-2,485.8	322.8	340.6	244.1	96.45	3.531	
8,100.0	5,892.0	7,978.8	5,808.0	52.2	52.3	75.72	-2,585.8	322.8	340.6	240.5	100.01	3.405	
8,200.0	5,892.0	8,078.8	5,808.0	53.9	54.1	75.72	-2,685.8	322.8	340.5	237.0	103.58	3.288	
8,300.0	5,892.0	8,178.8	5,808.0	55.7	56.0	75.72	-2,785.8	322.8	340.5	233.4	107.17	3.178	
8,400.0	5,892.0	8,278.8	5,808.0	57.5	57.8	75.72	-2,885.8	322.8	340.5	229.8	110.76	3.074	
8,500.0	5,892.0	8,378.8	5,808.0	59.3	59.7	75.72	-2,985.8	322.8	340.5	226.2	114.37	2.977	
8,600.0	5,892.0	8,478.8	5,808.0	61.1	61.5	75.72	-3,085.8	322.8	340.5	222.5	117.98	2.886	
8,700.0	5,892.0	8,578.8	5,808.0	62.9	63.4	75.72	-3,185.8	322.8	340.5	218.9	121.60	2.800	
8,800.0	5,892.0	8,678.8	5,808.0	64.7	65.2	75.71	-3,285.8	322.8	340.5	215.3	125.22	2.719	
8,900.0	5,892.0	8,778.8	5,808.0	66.5	67.1	75.71	-3,385.8	322.8	340.5	211.6	128.86	2.642	
9,000.0	5,892.0	8,878.8	5,808.0	68.3	69.0	75.71	-3,485.8	322.8	340.5	208.0	132.49	2.570	
9,100.0	5,892.0	8,978.8	5,808.0	70.2	70.9	75.71	-3,585.8	322.9	340.5	204.3	136.14	2.501	
9,200.0	5,892.0	9,078.8	5,808.0	72.0	72.7	75.71	-3,685.8	322.9	340.5	200.7	139.79	2.436	
9,300.0	5,892.0	9,178.8	5,808.0	73.9	74.6	75.71	-3,785.8	322.9	340.5	197.0	143.44	2.374	
9,400.0	5,892.0	9,278.8	5,808.0	75.7	76.5	75.71	-3,885.8	322.9	340.5	193.4	147.09	2.315	
9,500.0	5,892.0	9,378.8	5,808.0	77.5	78.4	75.71	-3,985.8	322.9	340.4	189.7	150.75	2.258	
9,600.0	5,892.0	9,478.8	5,808.0	79.4	80.2	75.71	-4,085.8	322.9	340.4	186.0	154.42	2.205	
9,700.0	5,892.0	9,578.8	5,808.0	81.2	82.1	75.71	-4,185.8	322.9	340.4	182.3	158.08	2.153	
9,800.0	5,892.0	9,678.8	5,808.0	83.1	84.0	75.71	-4,285.8	322.9	340.4	178.7	161.75	2.105	
9,900.0	5,892.0	9,778.8	5,808.0	85.0	85.9	75.71	-4,385.8	322.9	340.4	175.0	165.43	2.058	
10,000.0	5,892.0	9,878.8	5,808.0	86.8	87.8	75.71	-4,485.8	322.9	340.4	171.3	169.10	2.013	
10,100.0	5,892.0	9,978.8	5,808.0	88.7	89.7	75.71	-4,585.8	322.9	340.4	167.6	172.78	1.970	

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 #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S21-T10N-R58W - Razor #21C-2807A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA 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
10,200.0	5,892.0	10,078.8	5,808.0	90.6	91.6	75.71	-4,685.8	322.9	340.4	163.9	176.46	1.929	
10,300.0	5,892.0	10,178.8	5,808.0	92.4	93.4	75.71	-4,785.8	322.9	340.4	160.2	180.14	1.890	
10,400.0	5,892.0	10,278.8	5,808.0	94.3	95.3	75.71	-4,885.8	322.9	340.4	156.5	183.83	1.852	
10,500.0	5,892.0	10,378.8	5,808.0	96.2	97.2	75.71	-4,985.8	322.9	340.4	152.9	187.51	1.815	
10,600.0	5,892.0	10,478.8	5,808.0	98.0	99.1	75.71	-5,085.8	322.9	340.4	149.2	191.20	1.780	
10,700.0	5,892.0	10,578.8	5,808.0	99.9	101.0	75.71	-5,185.8	322.9	340.4	145.5	194.89	1.746	
10,800.0	5,892.0	10,678.8	5,808.0	101.8	102.9	75.71	-5,285.8	322.9	340.3	141.8	198.58	1.714	
10,900.0	5,892.0	10,778.8	5,808.0	103.7	104.8	75.71	-5,385.8	322.9	340.3	138.1	202.27	1.683	
11,000.0	5,892.0	10,878.8	5,808.0	105.5	106.7	75.71	-5,485.8	322.9	340.3	134.4	205.97	1.652	
11,100.0	5,892.0	10,978.8	5,808.0	107.4	108.6	75.71	-5,585.8	322.9	340.3	130.7	209.66	1.623	
11,200.0	5,892.0	11,078.8	5,808.0	109.3	110.5	75.71	-5,685.8	323.0	340.3	127.0	213.36	1.595	
11,300.0	5,892.0	11,178.8	5,808.0	111.2	112.4	75.71	-5,785.8	323.0	340.3	123.2	217.06	1.568	
11,400.0	5,892.0	11,278.8	5,808.0	113.1	114.3	75.71	-5,885.8	323.0	340.3	119.5	220.76	1.541	
11,500.0	5,892.0	11,378.8	5,808.0	115.0	116.2	75.71	-5,985.8	323.0	340.3	115.8	224.46	1.516	
11,600.0	5,892.0	11,478.8	5,808.0	116.8	118.1	75.71	-6,085.8	323.0	340.3	112.1	228.16	1.491	Level 3
11,700.0	5,892.0	11,578.8	5,808.0	118.7	120.0	75.71	-6,185.8	323.0	340.3	108.4	231.86	1.468	Level 3
11,800.0	5,892.0	11,678.8	5,808.0	120.6	121.9	75.71	-6,285.8	323.0	340.3	104.7	235.57	1.444	Level 3
11,900.0	5,892.0	11,778.8	5,808.0	122.5	123.8	75.71	-6,385.8	323.0	340.3	101.0	239.27	1.422	Level 3
12,000.0	5,892.0	11,878.8	5,808.0	124.4	125.7	75.71	-6,485.8	323.0	340.2	97.3	242.98	1.400	Level 3
12,100.0	5,892.0	11,978.8	5,808.0	126.3	127.6	75.71	-6,585.8	323.0	340.2	93.6	246.68	1.379	Level 3
12,200.0	5,892.0	12,078.8	5,808.0	128.2	129.5	75.71	-6,685.8	323.0	340.2	89.8	250.39	1.359	Level 3
12,300.0	5,892.0	12,178.8	5,808.0	130.1	131.4	75.71	-6,785.8	323.0	340.2	86.1	254.10	1.339	Level 3
12,400.0	5,892.0	12,278.8	5,808.0	132.0	133.3	75.71	-6,885.8	323.0	340.2	82.4	257.80	1.320	Level 3
12,500.0	5,892.0	12,378.8	5,808.0	133.9	135.2	75.71	-6,985.8	323.0	340.2	78.7	261.51	1.301	Level 3
12,600.0	5,892.0	12,478.8	5,808.0	135.8	137.1	75.70	-7,085.8	323.0	340.2	75.0	265.22	1.283	Level 3
12,700.0	5,892.0	12,578.8	5,808.0	137.7	139.0	75.70	-7,185.8	323.0	340.2	71.3	268.93	1.265	Level 3
12,800.0	5,892.0	12,678.8	5,808.0	139.6	140.9	75.70	-7,285.8	323.0	340.2	67.5	272.64	1.248	Level 2
12,881.4	5,892.0	12,760.1	5,808.0	141.1	142.5	75.70	-7,367.1	323.0	340.2	64.5	275.66	1.234	Level 2, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2808B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Reference Site:	S21-T10N-R58W	**MD Reference:**	WELL @ 4860.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	Grid
Reference Well:	Razor #21C-2808B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4860.5ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °
Coordinates are relative to: Razor #21C-2808B
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.05°