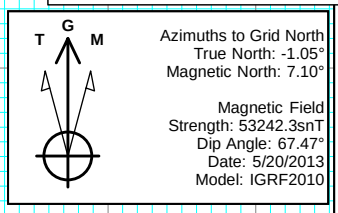
WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S21-T10N-R58W
Well: Razor #21C-2805A
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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0		KOP @ 1200' MD
3	1400.0	4.00	193.35	1399.8	-6.8	-1.6	2.00	193.35	6.8		EOB; 4°
4	5333.7	4.00	193.35	5324.0	-273.8	-65.0	0.00	0.00	275.7		Start 11° Build
5	6115.5	90.00	193.35	5808.5	-779.3	-184.9	11.00	0.00	784.8		LP @ 6115' MD
6	6560.4	90.00	180.00	5808.5	-1220.2	-236.6	3.00	-89.98	1227.1		EOT; 180° Az
7	12799.8	90.00	180.00	5808.0	-7459.6	-236.9	0.00	0.00	7463.4	21C-2805A BHL	PBHL @ 12799' 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-2805A
X: 3450193.54
Y: 1549397.38

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
21C-2805A BHL	5808.0	-7459.6	-236.9	1541937.74	3449956.63

Plan #1
Razor #21C-2805A
WELL @ 4860.5ft (Original Well Elev)
Ground Elevation @ 4844.0
North American Datum 1983
Well Razor #21C-2805A, Grid North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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-2805A

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,549,397.38 ft	**Latitude:**	40° 49' 48.47 N
	+E/-W	0.0 ft	**Easting:**	3,450,193.54 ft	**Longitude:**	103° 52' 23.44 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	181.82

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,400.0	4.00	193.35	1,399.8	-6.8	-1.6	2.00	2.00	0.00	193.35	
5,333.7	4.00	193.35	5,324.0	-273.8	-65.0	0.00	0.00	0.00	0.00	
6,115.5	90.00	193.35	5,808.5	-779.3	-184.9	11.00	11.00	0.00	0.00	
6,560.4	90.00	180.00	5,808.5	-1,220.2	-236.6	3.00	0.00	-3.00	-89.98	
12,799.8	90.00	180.00	5,808.0	-7,459.6	-236.9	0.00	0.00	0.00	0.00	21C-2805A BHL

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1200' MD
1,300.0	2.00	193.35	1,300.0	-1.7	-0.4	1.7	2.00	2.00	
1,400.0	4.00	193.35	1,399.8	-6.8	-1.6	6.8	2.00	2.00	EOB; 4°
1,500.0	4.00	193.35	1,499.6	-13.6	-3.2	13.7	0.00	0.00	
1,600.0	4.00	193.35	1,599.4	-20.4	-4.8	20.5	0.00	0.00	
1,700.0	4.00	193.35	1,699.1	-27.2	-6.4	27.3	0.00	0.00	
1,800.0	4.00	193.35	1,798.9	-33.9	-8.1	34.2	0.00	0.00	
1,900.0	4.00	193.35	1,898.6	-40.7	-9.7	41.0	0.00	0.00	
2,000.0	4.00	193.35	1,998.4	-47.5	-11.3	47.8	0.00	0.00	
2,100.0	4.00	193.35	2,098.1	-54.3	-12.9	54.7	0.00	0.00	
2,200.0	4.00	193.35	2,197.9	-61.1	-14.5	61.5	0.00	0.00	
2,300.0	4.00	193.35	2,297.6	-67.9	-16.1	68.4	0.00	0.00	
2,400.0	4.00	193.35	2,397.4	-74.7	-17.7	75.2	0.00	0.00	
2,500.0	4.00	193.35	2,497.2	-81.4	-19.3	82.0	0.00	0.00	
2,600.0	4.00	193.35	2,596.9	-88.2	-20.9	88.9	0.00	0.00	
2,700.0	4.00	193.35	2,696.7	-95.0	-22.6	95.7	0.00	0.00	
2,800.0	4.00	193.35	2,796.4	-101.8	-24.2	102.5	0.00	0.00	
2,900.0	4.00	193.35	2,896.2	-108.6	-25.8	109.4	0.00	0.00	
3,000.0	4.00	193.35	2,995.9	-115.4	-27.4	116.2	0.00	0.00	
3,100.0	4.00	193.35	3,095.7	-122.2	-29.0	123.0	0.00	0.00	
3,200.0	4.00	193.35	3,195.5	-129.0	-30.6	129.9	0.00	0.00	
3,300.0	4.00	193.35	3,295.2	-135.7	-32.2	136.7	0.00	0.00	
3,400.0	4.00	193.35	3,395.0	-142.5	-33.8	143.5	0.00	0.00	
3,500.0	4.00	193.35	3,494.7	-149.3	-35.4	150.4	0.00	0.00	
3,600.0	4.00	193.35	3,594.5	-156.1	-37.0	157.2	0.00	0.00	
3,700.0	4.00	193.35	3,694.2	-162.9	-38.7	164.0	0.00	0.00	
3,800.0	4.00	193.35	3,794.0	-169.7	-40.3	170.9	0.00	0.00	
3,900.0	4.00	193.35	3,893.7	-176.5	-41.9	177.7	0.00	0.00	
4,000.0	4.00	193.35	3,993.5	-183.3	-43.5	184.5	0.00	0.00	
4,100.0	4.00	193.35	4,093.3	-190.0	-45.1	191.4	0.00	0.00	
4,200.0	4.00	193.35	4,193.0	-196.8	-46.7	198.2	0.00	0.00	
4,300.0	4.00	193.35	4,292.8	-203.6	-48.3	205.0	0.00	0.00	
4,400.0	4.00	193.35	4,392.5	-210.4	-49.9	211.9	0.00	0.00	
4,500.0	4.00	193.35	4,492.3	-217.2	-51.5	218.7	0.00	0.00	
4,600.0	4.00	193.35	4,592.0	-224.0	-53.2	225.6	0.00	0.00	
4,700.0	4.00	193.35	4,691.8	-230.8	-54.8	232.4	0.00	0.00	
4,800.0	4.00	193.35	4,791.6	-237.6	-56.4	239.2	0.00	0.00	
4,900.0	4.00	193.35	4,891.3	-244.3	-58.0	246.1	0.00	0.00	
5,000.0	4.00	193.35	4,991.1	-251.1	-59.6	252.9	0.00	0.00	
5,100.0	4.00	193.35	5,090.8	-257.9	-61.2	259.7	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	193.35	5,190.6	-264.7	-62.8	266.6	0.00	0.00	
5,300.0	4.00	193.35	5,290.3	-271.5	-64.4	273.4	0.00	0.00	
5,333.7	4.00	193.35	5,324.0	-273.8	-65.0	275.7	0.00	0.00	Start 11° Build
5,350.0	5.79	193.35	5,340.2	-275.1	-65.3	277.1	11.00	11.00	
5,400.0	11.29	193.35	5,389.6	-282.4	-67.0	284.3	11.00	11.00	
5,450.0	16.79	193.35	5,438.1	-294.2	-69.8	296.2	11.00	11.00	
5,500.0	22.29	193.35	5,485.2	-310.4	-73.7	312.6	11.00	11.00	
5,550.0	27.79	193.35	5,530.5	-331.0	-78.6	333.3	11.00	11.00	
5,600.0	33.29	193.35	5,573.5	-355.7	-84.4	358.2	11.00	11.00	
5,650.0	38.79	193.35	5,614.0	-384.3	-91.2	387.0	11.00	11.00	
5,700.0	44.29	193.35	5,651.4	-416.6	-98.9	419.5	11.00	11.00	
5,750.0	49.79	193.35	5,685.4	-452.2	-107.3	455.4	11.00	11.00	
5,800.0	55.29	193.35	5,715.8	-490.8	-116.5	494.2	11.00	11.00	
5,850.0	60.79	193.35	5,742.3	-532.0	-126.3	535.8	11.00	11.00	
5,868.5	62.83	193.35	5,751.0	-547.9	-130.0	551.7	11.00	11.00	Top Niobrara
5,900.0	66.29	193.35	5,764.5	-575.6	-136.6	579.6	11.00	11.00	
5,950.0	71.79	193.35	5,782.4	-621.0	-147.4	625.4	11.00	11.00	
6,000.0	77.29	193.35	5,795.7	-667.9	-158.5	672.6	11.00	11.00	
6,050.0	82.79	193.35	5,804.4	-715.8	-169.9	720.8	11.00	11.00	
6,100.0	88.29	193.35	5,808.3	-764.2	-181.4	769.6	11.00	11.00	
6,115.5	90.00	193.35	5,808.5	-779.3	-184.9	784.8	11.00	11.00	LP @ 6115' MD - 7"
6,200.0	90.00	190.82	5,808.5	-861.9	-202.6	867.9	3.00	0.00	
6,300.0	90.00	187.82	5,808.5	-960.6	-218.8	967.1	3.00	0.00	
6,400.0	90.00	184.82	5,808.5	-1,060.0	-229.8	1,066.8	3.00	0.00	
6,500.0	90.00	181.82	5,808.5	-1,159.8	-235.6	1,166.7	3.00	0.00	
6,560.4	90.00	180.00	5,808.5	-1,220.2	-236.6	1,227.1	3.00	0.00	EOT; 180° Az
6,600.0	90.00	180.00	5,808.5	-1,259.8	-236.6	1,266.7	0.00	0.00	
6,700.0	90.00	180.00	5,808.5	-1,359.8	-236.6	1,366.6	0.00	0.00	
6,800.0	90.00	180.00	5,808.5	-1,459.8	-236.6	1,466.6	0.00	0.00	
6,900.0	90.00	180.00	5,808.4	-1,559.8	-236.6	1,566.5	0.00	0.00	
7,000.0	90.00	180.00	5,808.4	-1,659.8	-236.6	1,666.5	0.00	0.00	
7,100.0	90.00	180.00	5,808.4	-1,759.8	-236.6	1,766.4	0.00	0.00	
7,200.0	90.00	180.00	5,808.4	-1,859.8	-236.6	1,866.4	0.00	0.00	
7,300.0	90.00	180.00	5,808.4	-1,959.8	-236.6	1,966.3	0.00	0.00	
7,400.0	90.00	180.00	5,808.4	-2,059.8	-236.6	2,066.3	0.00	0.00	
7,500.0	90.00	180.00	5,808.4	-2,159.8	-236.6	2,166.2	0.00	0.00	
7,600.0	90.00	180.00	5,808.4	-2,259.8	-236.6	2,266.2	0.00	0.00	
7,700.0	90.00	180.00	5,808.4	-2,359.8	-236.6	2,366.1	0.00	0.00	
7,800.0	90.00	180.00	5,808.4	-2,459.8	-236.6	2,466.1	0.00	0.00	
7,900.0	90.00	180.00	5,808.4	-2,559.8	-236.6	2,566.0	0.00	0.00	
8,000.0	90.00	180.00	5,808.4	-2,659.8	-236.6	2,666.0	0.00	0.00	
8,100.0	90.00	180.00	5,808.4	-2,759.8	-236.6	2,765.9	0.00	0.00	
8,200.0	90.00	180.00	5,808.4	-2,859.8	-236.6	2,865.9	0.00	0.00	
8,300.0	90.00	180.00	5,808.3	-2,959.8	-236.7	2,965.8	0.00	0.00	
8,400.0	90.00	180.00	5,808.3	-3,059.8	-236.7	3,065.8	0.00	0.00	
8,500.0	90.00	180.00	5,808.3	-3,159.8	-236.7	3,165.7	0.00	0.00	
8,600.0	90.00	180.00	5,808.3	-3,259.8	-236.7	3,265.7	0.00	0.00	
8,700.0	90.00	180.00	5,808.3	-3,359.8	-236.7	3,365.6	0.00	0.00	
8,800.0	90.00	180.00	5,808.3	-3,459.8	-236.7	3,465.6	0.00	0.00	
8,900.0	90.00	180.00	5,808.3	-3,559.8	-236.7	3,565.5	0.00	0.00	
9,000.0	90.00	180.00	5,808.3	-3,659.8	-236.7	3,665.5	0.00	0.00	
9,100.0	90.00	180.00	5,808.3	-3,759.8	-236.7	3,765.4	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,200.0	90.00	180.00	5,808.3	-3,859.8	-236.7	3,865.4	0.00	0.00	
9,300.0	90.00	180.00	5,808.3	-3,959.8	-236.7	3,965.3	0.00	0.00	
9,400.0	90.00	180.00	5,808.3	-4,059.8	-236.7	4,065.3	0.00	0.00	
9,500.0	90.00	180.00	5,808.3	-4,159.8	-236.7	4,165.2	0.00	0.00	
9,600.0	90.00	180.00	5,808.2	-4,259.8	-236.7	4,265.2	0.00	0.00	
9,700.0	90.00	180.00	5,808.2	-4,359.8	-236.7	4,365.1	0.00	0.00	
9,800.0	90.00	180.00	5,808.2	-4,459.8	-236.7	4,465.1	0.00	0.00	
9,900.0	90.00	180.00	5,808.2	-4,559.8	-236.7	4,565.0	0.00	0.00	
10,000.0	90.00	180.00	5,808.2	-4,659.8	-236.8	4,665.0	0.00	0.00	
10,100.0	90.00	180.00	5,808.2	-4,759.8	-236.8	4,764.9	0.00	0.00	
10,200.0	90.00	180.00	5,808.2	-4,859.8	-236.8	4,864.9	0.00	0.00	
10,300.0	90.00	180.00	5,808.2	-4,959.8	-236.8	4,964.8	0.00	0.00	
10,400.0	90.00	180.00	5,808.2	-5,059.8	-236.8	5,064.8	0.00	0.00	
10,500.0	90.00	180.00	5,808.2	-5,159.8	-236.8	5,164.7	0.00	0.00	
10,600.0	90.00	180.00	5,808.2	-5,259.8	-236.8	5,264.7	0.00	0.00	
10,700.0	90.00	180.00	5,808.2	-5,359.8	-236.8	5,364.6	0.00	0.00	
10,800.0	90.00	180.00	5,808.2	-5,459.8	-236.8	5,464.6	0.00	0.00	
10,900.0	90.00	180.00	5,808.1	-5,559.8	-236.8	5,564.5	0.00	0.00	
11,000.0	90.00	180.00	5,808.1	-5,659.8	-236.8	5,664.5	0.00	0.00	
11,100.0	90.00	180.00	5,808.1	-5,759.8	-236.8	5,764.4	0.00	0.00	
11,200.0	90.00	180.00	5,808.1	-5,859.8	-236.8	5,864.4	0.00	0.00	
11,300.0	90.00	180.00	5,808.1	-5,959.8	-236.8	5,964.3	0.00	0.00	
11,400.0	90.00	180.00	5,808.1	-6,059.8	-236.8	6,064.3	0.00	0.00	
11,500.0	90.00	180.00	5,808.1	-6,159.8	-236.8	6,164.2	0.00	0.00	
11,600.0	90.00	180.00	5,808.1	-6,259.8	-236.8	6,264.2	0.00	0.00	
11,700.0	90.00	180.00	5,808.1	-6,359.8	-236.8	6,364.1	0.00	0.00	
11,800.0	90.00	180.00	5,808.1	-6,459.8	-236.9	6,464.1	0.00	0.00	
11,900.0	90.00	180.00	5,808.1	-6,559.8	-236.9	6,564.0	0.00	0.00	
12,000.0	90.00	180.00	5,808.1	-6,659.8	-236.9	6,664.0	0.00	0.00	
12,100.0	90.00	180.00	5,808.1	-6,759.8	-236.9	6,763.9	0.00	0.00	
12,200.0	90.00	180.00	5,808.0	-6,859.8	-236.9	6,863.9	0.00	0.00	
12,300.0	90.00	180.00	5,808.0	-6,959.8	-236.9	6,963.8	0.00	0.00	
12,400.0	90.00	180.00	5,808.0	-7,059.8	-236.9	7,063.8	0.00	0.00	
12,500.0	90.00	180.00	5,808.0	-7,159.8	-236.9	7,163.7	0.00	0.00	
12,600.0	90.00	180.00	5,808.0	-7,259.8	-236.9	7,263.7	0.00	0.00	
12,700.0	90.00	180.00	5,808.0	-7,359.8	-236.9	7,363.6	0.00	0.00	
12,799.8	90.00	180.00	5,808.0	-7,459.6	-236.9	7,463.4	0.00	0.00	PBHL @ 12799' 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-2805A BHL - plan hits target center - Point	0.00	0.00	5,808.0	-7,459.6	-236.9	1,541,937.74	3,449,956.63	40° 48' 34.82 N	103° 52' 28.30 W

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,115.5	5,808.5	7"	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,868.5	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
1,200.0	1,200.0	0.0	0.0	KOP @ 1200' MD
1,400.0	1,399.8	-6.8	-1.6	EOB; 4°
5,333.7	5,324.0	-273.8	-65.0	Start 11° Build
6,115.5	5,808.5	-779.3	-184.9	LP @ 6115' MD
6,560.4	5,808.5	-1,220.2	-236.6	EOT; 180° Az
12,799.8	5,808.0	-7,459.6	-236.9	PBHL @ 12799' MD

Whiting Petroleum Corporation

Weld County, CO
S21-T10N-R58W
Razor #21C-2805A
HZ
Plan #1

Anticollision Report

28 May, 2013

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	12,799.2	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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						Out of range
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	840.0	840.5	28.7	25.1	8.116	CC, ES
Razor #21C-0905A - HZ - Plan #1	1,100.0	1,099.9	33.9	29.2	7.174	SF
Razor #21C-0906B - HZ - Plan #1	1,608.4	1,609.4	11.4	4.4	1.638	CC, ES, SF
Razor #21C-0907A - HZ - Plan #1	1,163.7	1,164.0	97.9	92.9	19.681	CC
Razor #21C-0907A - HZ - Plan #1	1,200.0	1,200.2	97.9	92.7	19.055	ES
Razor #21C-0907A - HZ - Plan #1	1,500.0	1,498.2	109.1	102.7	17.070	SF
Razor #21C-0908B - HZ - Plan #1	1,655.9	1,656.1	81.8	74.7	11.603	CC, ES
Razor #21C-0908B - HZ - Plan #1	1,900.0	1,897.9	88.6	80.4	10.892	SF
Razor #21C-2806B - HZ - Plan #1	1,000.0	1,000.0	82.1	77.9	19.390	CC
Razor #21C-2806B - HZ - Plan #1	12,799.8	12,760.0	341.2	64.2	1.232	Level 2, ES, SF
Razor #21C-2807A - HZ - Plan #1	500.0	500.0	65.3	63.3	32.889	CC, ES
Razor #21C-2807A - HZ - Plan #1	5,300.0	5,294.1	234.5	209.1	9.212	SF
Razor #21C-2808B - HZ - Plan #1	800.0	800.0	123.9	120.5	37.150	CC, ES
Razor #21C-2808B - HZ - Plan #1	5,500.0	5,464.7	334.6	308.5	12.813	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	12,799.8	12,850.0	340.6	66.3	1.242	Level 2, CC, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	88.97	0.6	33.2	33.2				
100.0	100.0	100.0	100.0	0.1	0.1	88.97	0.6	33.2	33.2	33.0	0.19	176.946	
200.0	200.0	200.0	200.0	0.3	0.3	88.97	0.6	33.2	33.2	32.6	0.64	52.116	
300.0	300.0	300.0	300.0	0.5	0.5	88.97	0.6	33.2	33.2	32.1	1.09	30.558	
400.0	400.0	400.0	400.0	0.8	0.8	88.97	0.6	33.2	33.2	31.7	1.54	21.617	
500.0	500.0	500.0	500.0	1.0	1.0	88.97	0.6	33.2	33.2	31.2	1.99	16.723	
600.0	600.0	600.5	600.5	1.2	1.2	86.27	2.1	32.3	32.4	29.9	2.43	13.292	
700.0	700.0	700.8	700.7	1.4	1.4	77.39	6.6	29.5	30.3	27.4	2.89	10.494	
800.0	800.0	800.6	800.2	1.7	1.7	64.17	12.5	25.9	28.8	25.4	3.35	8.607	
840.0	840.0	840.5	840.0	1.8	1.8	58.62	14.9	24.5	28.7	25.1	3.53	8.116	CC, ES
900.0	900.0	900.4	899.7	1.9	1.9	50.33	18.5	22.3	29.0	25.2	3.81	7.601	
1,000.0	1,000.0	1,000.1	999.2	2.1	2.2	37.39	24.4	18.7	30.8	26.5	4.27	7.199	
1,100.0	1,100.0	1,099.9	1,098.7	2.3	2.4	26.36	30.4	15.0	33.9	29.2	4.73	7.174	SF
1,200.0	1,200.0	1,199.6	1,198.2	2.6	2.7	17.46	36.3	11.4	38.1	32.9	5.18	7.355	
1,300.0	1,300.0	1,299.3	1,297.7	2.8	2.9	177.22	42.2	7.8	44.8	39.1	5.62	7.962	
1,400.0	1,399.8	1,398.6	1,396.8	2.9	3.2	172.63	48.2	4.2	55.3	49.3	6.02	9.197	
1,500.0	1,499.6	1,497.8	1,495.7	3.1	3.4	169.81	54.1	0.6	67.9	61.4	6.43	10.560	
1,600.0	1,599.4	1,597.0	1,594.6	3.3	3.7	167.87	60.0	-3.0	80.5	73.7	6.84	11.765	
1,700.0	1,699.1	1,696.1	1,693.5	3.5	3.9	166.46	65.9	-6.6	93.2	85.9	7.26	12.829	
1,800.0	1,798.9	1,795.3	1,792.5	3.7	4.2	165.38	71.8	-10.2	105.9	98.2	7.69	13.773	
1,900.0	1,898.6	1,894.5	1,891.4	4.0	4.4	164.54	77.7	-13.8	118.7	110.6	8.12	14.613	
2,000.0	1,998.4	1,993.6	1,990.3	4.2	4.7	163.86	83.6	-17.4	131.5	122.9	8.56	15.364	
2,100.0	2,098.1	2,092.8	2,089.3	4.4	4.9	163.30	89.5	-21.0	144.3	135.3	9.00	16.039	
2,200.0	2,197.9	2,192.0	2,188.2	4.6	5.2	162.84	95.4	-24.6	157.1	147.7	9.44	16.646	
2,300.0	2,297.6	2,291.1	2,287.1	4.9	5.4	162.44	101.3	-28.2	169.9	160.1	9.88	17.197	
2,400.0	2,397.4	2,390.3	2,386.0	5.1	5.7	162.10	107.2	-31.8	182.8	172.5	10.33	17.697	
2,500.0	2,497.2	2,489.5	2,485.0	5.4	5.9	161.80	113.1	-35.4	195.6	184.8	10.78	18.153	
2,600.0	2,596.9	2,588.6	2,583.9	5.6	6.2	161.54	119.0	-39.0	208.5	197.2	11.23	18.570	
2,700.0	2,696.7	2,687.8	2,682.8	5.8	6.4	161.31	124.9	-42.6	221.3	209.6	11.68	18.954	
2,800.0	2,796.4	2,787.0	2,781.7	6.1	6.7	161.11	130.8	-46.2	234.2	222.0	12.13	19.307	
2,900.0	2,896.2	2,886.1	2,880.7	6.3	7.0	160.92	136.7	-49.8	247.0	234.4	12.58	19.633	
3,000.0	2,995.9	2,985.3	2,979.6	6.6	7.2	160.76	142.7	-53.4	259.9	246.8	13.04	19.935	
3,100.0	3,095.7	3,084.5	3,078.5	6.8	7.5	160.61	148.6	-57.0	272.7	259.2	13.49	20.216	
3,200.0	3,195.5	3,183.7	3,177.4	7.1	7.7	160.47	154.5	-60.6	285.6	271.6	13.95	20.477	
3,300.0	3,295.2	3,282.8	3,276.4	7.3	8.0	160.35	160.4	-64.2	298.4	284.0	14.40	20.720	
3,400.0	3,395.0	3,382.0	3,375.3	7.6	8.2	160.23	166.3	-67.8	311.3	296.4	14.86	20.948	
3,500.0	3,494.7	3,481.2	3,474.2	7.9	8.5	160.13	172.2	-71.4	324.2	308.8	15.32	21.162	
3,600.0	3,594.5	3,580.3	3,573.1	8.1	8.7	160.03	178.1	-75.1	337.0	321.2	15.78	21.362	
3,700.0	3,694.2	3,679.5	3,672.1	8.4	9.0	159.94	184.0	-78.7	349.9	333.7	16.24	21.551	
3,800.0	3,794.0	3,778.7	3,771.0	8.6	9.2	159.86	189.9	-82.3	362.8	346.1	16.69	21.728	
3,900.0	3,893.7	3,877.8	3,869.9	8.9	9.5	159.78	195.8	-85.9	375.6	358.5	17.15	21.896	
4,000.0	3,993.5	3,977.0	3,968.8	9.1	9.8	159.71	201.7	-89.5	388.5	370.9	17.61	22.054	
4,100.0	4,093.3	4,076.2	4,067.8	9.4	10.0	159.64	207.6	-93.1	401.4	383.3	18.08	22.204	
4,200.0	4,193.0	4,175.3	4,166.7	9.7	10.3	159.57	213.5	-96.7	414.2	395.7	18.54	22.346	
4,300.0	4,292.8	4,274.5	4,265.6	9.9	10.5	159.51	219.4	-100.3	427.1	408.1	19.00	22.481	
4,400.0	4,392.5	4,373.7	4,364.6	10.2	10.8	159.46	225.3	-103.9	440.0	420.5	19.46	22.609	
4,500.0	4,492.3	4,472.8	4,463.5	10.4	11.0	159.41	231.2	-107.5	452.8	432.9	19.92	22.731	
4,600.0	4,592.0	4,572.0	4,562.4	10.7	11.3	159.35	237.1	-111.1	465.7	445.3	20.38	22.847	
4,700.0	4,691.8	4,671.2	4,661.3	10.9	11.5	159.31	243.1	-114.7	478.6	457.7	20.84	22.958	
4,800.0	4,791.6	4,770.3	4,760.3	11.2	11.8	159.26	249.0	-118.3	491.4	470.1	21.31	23.064	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	178.95	-75.0	1.4	75.1				
100.0	100.0	100.0	100.0	0.1	0.1	178.95	-75.0	1.4	75.1	74.9	0.19	399.907	
200.0	200.0	200.0	200.0	0.3	0.3	178.95	-75.0	1.4	75.1	74.4	0.64	117.786	
300.0	300.0	300.0	300.0	0.5	0.5	178.95	-75.0	1.4	75.1	74.0	1.09	69.064	
400.0	400.0	400.0	400.0	0.8	0.8	178.95	-75.0	1.4	75.1	73.5	1.54	48.855	
500.0	500.0	500.0	500.0	1.0	1.0	178.95	-75.0	1.4	75.1	73.1	1.99	37.795	
600.0	600.0	600.0	600.0	1.2	1.2	178.95	-75.0	1.4	75.1	72.6	2.44	30.819	
700.0	700.0	700.0	700.0	1.4	1.4	178.95	-75.0	1.4	75.1	72.2	2.88	26.017	
800.0	800.0	802.5	802.5	1.7	1.7	179.37	-73.3	0.8	73.3	70.0	3.34	21.957	
900.0	900.0	904.7	904.5	1.9	1.9	-179.23	-68.1	-0.9	68.3	64.5	3.80	17.968	
1,000.0	1,000.0	1,004.4	1,004.0	2.1	2.1	-177.12	-61.5	-3.1	61.7	57.5	4.25	14.517	
1,100.0	1,100.0	1,104.2	1,103.5	2.3	2.4	-174.52	-54.9	-5.3	55.3	50.6	4.70	11.754	
1,200.0	1,200.0	1,203.9	1,203.0	2.6	2.6	-171.23	-48.3	-7.4	48.9	43.8	5.15	9.499	
1,300.0	1,300.0	1,303.6	1,302.4	2.8	2.9	-0.36	-41.7	-9.6	41.1	35.5	5.60	7.346	
1,400.0	1,399.8	1,402.9	1,401.5	2.9	3.1	6.47	-35.1	-11.8	30.1	24.1	6.00	5.018	
1,500.0	1,499.6	1,502.0	1,500.4	3.1	3.3	22.43	-28.5	-14.0	18.4	12.0	6.44	2.862	
1,600.0	1,599.4	1,601.1	1,599.2	3.3	3.6	68.56	-22.0	-16.1	11.4	4.5	6.89	1.654	
1,608.4	1,607.7	1,609.4	1,607.5	3.3	3.6	74.16	-21.4	-16.3	11.4	4.4	6.93	1.638	CC, ES, SF
1,700.0	1,699.1	1,700.2	1,698.1	3.5	3.8	121.14	-15.4	-18.3	16.7	9.5	7.24	2.308	
1,800.0	1,798.9	1,799.3	1,796.9	3.7	4.1	140.11	-8.8	-20.5	28.1	20.4	7.64	3.673	
1,900.0	1,898.6	1,898.4	1,895.8	4.0	4.3	147.82	-2.3	-22.6	40.7	32.6	8.06	5.044	
2,000.0	1,998.4	1,997.5	1,994.6	4.2	4.6	151.85	4.3	-24.8	53.7	45.2	8.50	6.317	
2,100.0	2,098.1	2,096.6	2,093.5	4.4	4.8	154.30	10.9	-26.9	66.8	57.9	8.93	7.482	
2,200.0	2,197.9	2,195.7	2,192.4	4.6	5.1	155.94	17.4	-29.1	80.0	70.7	9.37	8.545	
2,300.0	2,297.6	2,294.8	2,291.2	4.9	5.3	157.12	24.0	-31.3	93.3	83.5	9.81	9.515	
2,400.0	2,397.4	2,393.9	2,390.1	5.1	5.6	158.00	30.6	-33.4	106.6	96.4	10.25	10.403	
2,500.0	2,497.2	2,493.0	2,488.9	5.4	5.8	158.69	37.1	-35.6	120.0	109.3	10.69	11.217	
2,600.0	2,596.9	2,592.1	2,587.8	5.6	6.1	159.23	43.7	-37.8	133.3	122.2	11.14	11.966	
2,700.0	2,696.7	2,691.2	2,686.6	5.8	6.3	159.68	50.2	-39.9	146.6	135.1	11.59	12.657	
2,800.0	2,796.4	2,790.3	2,785.5	6.1	6.6	160.06	56.8	-42.1	160.0	148.0	12.03	13.296	
2,900.0	2,896.2	2,889.4	2,884.4	6.3	6.8	160.38	63.4	-44.3	173.4	160.9	12.48	13.888	
3,000.0	2,995.9	2,988.5	2,983.2	6.6	7.1	160.65	69.9	-46.4	186.7	173.8	12.93	14.439	
3,100.0	3,095.7	3,087.6	3,082.1	6.8	7.4	160.88	76.5	-48.6	200.1	186.7	13.38	14.952	
3,200.0	3,195.5	3,186.7	3,180.9	7.1	7.6	161.09	83.1	-50.8	213.5	199.6	13.83	15.431	
3,300.0	3,295.2	3,285.8	3,279.8	7.3	7.9	161.27	89.6	-52.9	226.9	212.6	14.29	15.879	
3,400.0	3,395.0	3,384.9	3,378.6	7.6	8.1	161.43	96.2	-55.1	240.2	225.5	14.74	16.299	
3,500.0	3,494.7	3,484.0	3,477.5	7.9	8.4	161.58	102.8	-57.3	253.6	238.4	15.19	16.694	
3,600.0	3,594.5	3,583.1	3,576.4	8.1	8.6	161.70	109.3	-59.4	267.0	251.4	15.65	17.065	
3,700.0	3,694.2	3,682.2	3,675.2	8.4	8.9	161.82	115.9	-61.6	280.4	264.3	16.10	17.415	
3,800.0	3,794.0	3,781.3	3,774.1	8.6	9.1	161.93	122.5	-63.8	293.8	277.2	16.55	17.745	
3,900.0	3,893.7	3,880.4	3,872.9	8.9	9.4	162.03	129.0	-65.9	307.1	290.1	17.01	18.057	
4,000.0	3,993.5	3,979.5	3,971.8	9.1	9.6	162.12	135.6	-68.1	320.5	303.1	17.46	18.353	
4,100.0	4,093.3	4,078.6	4,070.6	9.4	9.9	162.20	142.2	-70.2	333.9	316.0	17.92	18.634	
4,200.0	4,193.0	4,177.7	4,169.5	9.7	10.1	162.27	148.7	-72.4	347.3	328.9	18.38	18.900	
4,300.0	4,292.8	4,276.8	4,268.4	9.9	10.4	162.34	155.3	-74.6	360.7	341.9	18.83	19.153	
4,400.0	4,392.5	4,375.9	4,367.2	10.2	10.6	162.41	161.9	-76.7	374.1	354.8	19.29	19.394	
4,500.0	4,492.3	4,474.9	4,466.1	10.4	10.9	162.47	168.4	-78.9	387.5	367.7	19.75	19.623	
4,600.0	4,592.0	4,574.0	4,564.9	10.7	11.2	162.53	175.0	-81.1	400.9	380.7	20.20	19.842	
4,700.0	4,691.8	4,673.1	4,663.8	10.9	11.4	162.58	181.5	-83.2	414.2	393.6	20.66	20.051	
4,800.0	4,791.6	4,772.2	4,762.7	11.2	11.7	162.63	188.1	-85.4	427.6	406.5	21.12	20.251	
4,900.0	4,891.3	4,871.3	4,861.5	11.5	11.9	162.68	194.7	-87.6	441.0	419.4	21.57	20.442	
5,000.0	4,991.1	4,970.4	4,960.4	11.7	12.2	162.72	201.2	-89.7	454.4	432.4	22.03	20.625	

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-2805A
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-2805A	**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
5,100.0	5,090.8	5,069.5	5,059.2	12.0	12.4	162.76	207.8	-91.9	467.8	445.3	22.49	20.801	
5,200.0	5,190.6	5,168.6	5,158.1	12.2	12.7	162.80	214.4	-94.1	481.2	458.2	22.95	20.969	
5,300.0	5,290.3	5,267.7	5,256.9	12.5	12.9	162.84	220.9	-96.2	494.6	471.2	23.41	21.131	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	88.97	1.8	98.5	98.5				
100.0	100.0	100.0	100.0	0.1	0.1	88.97	1.8	98.5	98.5	98.3	0.19	524.941	
200.0	200.0	200.0	200.0	0.3	0.3	88.97	1.8	98.5	98.5	97.9	0.64	154.612	
300.0	300.0	300.0	300.0	0.5	0.5	88.97	1.8	98.5	98.5	97.4	1.09	90.657	
400.0	400.0	400.0	400.0	0.8	0.8	88.97	1.8	98.5	98.5	97.0	1.54	64.130	
500.0	500.0	500.0	500.0	1.0	1.0	88.97	1.8	98.5	98.5	96.5	1.99	49.612	
600.0	600.0	600.0	600.0	1.2	1.2	88.97	1.8	98.5	98.5	96.1	2.44	40.455	
700.0	700.0	700.0	700.0	1.4	1.4	88.97	1.8	98.5	98.5	95.6	2.88	34.151	
800.0	800.0	800.0	800.0	1.7	1.7	88.97	1.8	98.5	98.5	95.2	3.33	29.547	
900.0	900.0	900.0	900.0	1.9	1.9	88.97	1.8	98.5	98.5	94.7	3.78	26.037	
1,000.0	1,000.0	1,000.4	1,000.3	2.1	2.1	87.95	3.5	98.3	98.3	94.1	4.23	23.228	
1,100.0	1,100.0	1,100.5	1,100.3	2.3	2.3	84.89	8.7	97.6	98.0	93.3	4.68	20.917	
1,163.7	1,163.7	1,164.0	1,163.7	2.5	2.5	82.30	13.1	97.0	97.9	92.9	4.97	19.681	CC
1,200.0	1,200.0	1,200.2	1,199.8	2.6	2.6	80.82	15.6	96.6	97.9	92.7	5.14	19.055	ES
1,300.0	1,300.0	1,299.9	1,299.2	2.8	2.8	-117.46	22.5	95.7	99.1	93.5	5.57	17.805	
1,400.0	1,399.8	1,399.1	1,398.2	2.9	3.0	-123.80	29.4	94.8	103.0	97.0	5.97	17.236	
1,500.0	1,499.6	1,498.2	1,497.1	3.1	3.3	-130.36	36.2	93.8	109.1	102.7	6.39	17.070	SF
1,600.0	1,599.4	1,597.2	1,595.9	3.3	3.5	-136.17	43.1	92.9	116.6	109.8	6.82	17.097	
1,700.0	1,699.1	1,696.3	1,694.7	3.5	3.8	-141.25	49.9	92.0	125.1	117.8	7.25	17.257	
1,800.0	1,798.9	1,795.4	1,793.5	3.7	4.0	-145.65	56.8	91.1	134.5	126.8	7.68	17.505	
1,900.0	1,898.6	1,894.4	1,892.3	4.0	4.2	-149.47	63.6	90.1	144.5	136.4	8.12	17.808	
2,000.0	1,998.4	1,993.5	1,991.1	4.2	4.5	-152.78	70.5	89.2	155.1	146.6	8.55	18.143	
2,100.0	2,098.1	2,092.5	2,090.0	4.4	4.7	-155.66	77.3	88.3	166.2	157.2	8.99	18.494	
2,200.0	2,197.9	2,191.6	2,188.8	4.6	5.0	-158.18	84.1	87.4	177.6	168.2	9.42	18.849	
2,300.0	2,297.6	2,290.7	2,287.6	4.9	5.2	-160.39	91.0	86.4	189.4	179.5	9.86	19.200	
2,400.0	2,397.4	2,389.7	2,386.4	5.1	5.5	-162.35	97.8	85.5	201.3	191.0	10.30	19.544	
2,500.0	2,497.2	2,488.8	2,485.2	5.4	5.7	-164.08	104.7	84.6	213.5	202.8	10.74	19.877	
2,600.0	2,596.9	2,587.8	2,584.1	5.6	6.0	-165.62	111.5	83.7	225.9	214.7	11.18	20.197	
2,700.0	2,696.7	2,686.9	2,682.9	5.8	6.2	-167.01	118.4	82.7	238.4	226.7	11.63	20.504	
2,800.0	2,796.4	2,786.0	2,781.7	6.1	6.5	-168.25	125.2	81.8	251.0	238.9	12.07	20.797	
2,900.0	2,896.2	2,885.0	2,880.5	6.3	6.7	-169.38	132.1	80.9	263.7	251.2	12.51	21.077	
3,000.0	2,995.9	2,984.1	2,979.3	6.6	7.0	-170.40	138.9	80.0	276.5	263.6	12.96	21.343	
3,100.0	3,095.7	3,083.1	3,078.1	6.8	7.2	-171.34	145.8	79.0	289.4	276.0	13.40	21.596	
3,200.0	3,195.5	3,182.2	3,177.0	7.1	7.5	-172.19	152.6	78.1	302.4	288.6	13.85	21.837	
3,300.0	3,295.2	3,281.3	3,275.8	7.3	7.7	-172.97	159.5	77.2	315.4	301.1	14.30	22.066	
3,400.0	3,395.0	3,380.3	3,374.6	7.6	8.0	-173.69	166.3	76.3	328.5	313.8	14.74	22.283	
3,500.0	3,494.7	3,479.4	3,473.4	7.9	8.2	-174.36	173.2	75.3	341.6	326.5	15.19	22.490	
3,600.0	3,594.5	3,578.4	3,572.2	8.1	8.5	-174.97	180.0	74.4	354.8	339.2	15.64	22.687	
3,700.0	3,694.2	3,677.5	3,671.0	8.4	8.7	-175.54	186.9	73.5	368.0	351.9	16.09	22.875	
3,800.0	3,794.0	3,776.5	3,769.9	8.6	9.0	-176.08	193.7	72.6	381.3	364.7	16.54	23.054	
3,900.0	3,893.7	3,875.6	3,868.7	8.9	9.3	-176.57	200.6	71.6	394.5	377.6	16.99	23.225	
4,000.0	3,993.5	3,974.7	3,967.5	9.1	9.5	-177.04	207.4	70.7	407.8	390.4	17.44	23.388	
4,100.0	4,093.3	4,073.7	4,066.3	9.4	9.8	-177.47	214.3	69.8	421.2	403.3	17.89	23.543	
4,200.0	4,193.0	4,172.8	4,165.1	9.7	10.0	-177.88	221.1	68.9	434.5	416.2	18.34	23.692	
4,300.0	4,292.8	4,271.8	4,264.0	9.9	10.3	-178.26	227.9	67.9	447.9	429.1	18.79	23.834	
4,400.0	4,392.5	4,370.9	4,362.8	10.2	10.5	-178.62	234.8	67.0	461.3	442.0	19.24	23.970	
4,500.0	4,492.3	4,470.0	4,461.6	10.4	10.8	-178.97	241.6	66.1	474.7	455.0	19.70	24.100	
4,600.0	4,592.0	4,569.0	4,560.4	10.7	11.0	-179.29	248.5	65.1	488.1	467.9	20.15	24.225	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	137.93	-73.9	66.7	99.5				
100.0	100.0	100.0	100.0	0.1	0.1	137.93	-73.9	66.7	99.5	99.3	0.19	530.198	
200.0	200.0	200.0	200.0	0.3	0.3	137.93	-73.9	66.7	99.5	98.9	0.64	156.161	
300.0	300.0	300.0	300.0	0.5	0.5	137.93	-73.9	66.7	99.5	98.4	1.09	91.565	
400.0	400.0	400.0	400.0	0.8	0.8	137.93	-73.9	66.7	99.5	98.0	1.54	64.772	
500.0	500.0	500.0	500.0	1.0	1.0	137.93	-73.9	66.7	99.5	97.5	1.99	50.109	
600.0	600.0	600.0	600.0	1.2	1.2	137.93	-73.9	66.7	99.5	97.1	2.44	40.860	
700.0	700.0	700.0	700.0	1.4	1.4	137.93	-73.9	66.7	99.5	96.6	2.88	34.493	
800.0	800.0	800.0	800.0	1.7	1.7	137.93	-73.9	66.7	99.5	96.2	3.33	29.843	
900.0	900.0	900.0	900.0	1.9	1.9	137.93	-73.9	66.7	99.5	95.7	3.78	26.297	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	137.93	-73.9	66.7	99.5	95.3	4.23	23.505	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	137.93	-73.9	66.7	99.5	94.8	4.68	21.249	
1,200.0	1,200.0	1,202.0	1,202.0	2.6	2.6	137.06	-72.1	67.1	98.5	93.4	5.14	19.179	
1,300.0	1,300.0	1,303.5	1,303.3	2.8	2.8	-59.96	-66.8	68.3	94.7	89.2	5.56	17.033	
1,400.0	1,399.8	1,402.7	1,402.3	2.9	3.0	-66.80	-60.1	69.9	89.2	83.2	5.96	14.961	
1,500.0	1,499.6	1,501.8	1,501.1	3.1	3.3	-75.41	-53.4	71.4	84.6	78.2	6.38	13.269	
1,600.0	1,599.4	1,600.8	1,599.9	3.3	3.5	-84.75	-46.6	73.0	82.2	75.4	6.80	12.074	
1,655.9	1,655.1	1,656.1	1,655.1	3.4	3.6	-90.13	-42.9	73.9	81.8	74.7	7.05	11.603	CC, ES
1,700.0	1,699.1	1,699.8	1,698.7	3.5	3.7	-94.38	-39.9	74.6	82.0	74.8	7.24	11.325	
1,800.0	1,798.9	1,798.9	1,797.5	3.7	4.0	-103.77	-33.2	76.1	84.2	76.5	7.69	10.955	
1,900.0	1,898.6	1,897.9	1,896.3	4.0	4.2	-112.48	-26.4	77.7	88.6	80.4	8.13	10.892	SF
2,000.0	1,998.4	1,996.9	1,995.0	4.2	4.4	-120.23	-19.7	79.3	94.8	86.2	8.57	11.057	
2,100.0	2,098.1	2,095.9	2,093.8	4.4	4.7	-126.93	-13.0	80.8	102.5	93.5	9.01	11.379	
2,200.0	2,197.9	2,195.0	2,192.6	4.6	4.9	-132.64	-6.3	82.4	111.5	102.0	9.45	11.801	
2,300.0	2,297.6	2,294.0	2,291.4	4.9	5.2	-137.47	0.5	84.0	121.4	111.5	9.88	12.283	
2,400.0	2,397.4	2,393.0	2,390.2	5.1	5.4	-141.55	7.2	85.5	132.0	121.7	10.31	12.796	
2,500.0	2,497.2	2,492.0	2,489.0	5.4	5.7	-145.01	13.9	87.1	143.1	132.4	10.75	13.319	
2,600.0	2,596.9	2,591.1	2,587.8	5.6	5.9	-147.97	20.7	88.7	154.8	143.6	11.18	13.840	
2,700.0	2,696.7	2,690.1	2,686.5	5.8	6.2	-150.51	27.4	90.2	166.7	155.1	11.62	14.352	
2,800.0	2,796.4	2,789.1	2,785.3	6.1	6.4	-152.71	34.1	91.8	179.0	167.0	12.06	14.848	
2,900.0	2,896.2	2,888.1	2,884.1	6.3	6.7	-154.62	40.8	93.4	191.5	179.0	12.49	15.326	
3,000.0	2,995.9	2,987.2	2,982.9	6.6	6.9	-156.30	47.6	94.9	204.2	191.2	12.93	15.785	
3,100.0	3,095.7	3,086.2	3,081.7	6.8	7.2	-157.78	54.3	96.5	217.0	203.6	13.37	16.224	
3,200.0	3,195.5	3,185.2	3,180.5	7.1	7.4	-159.10	61.0	98.1	229.9	216.1	13.82	16.643	
3,300.0	3,295.2	3,284.3	3,279.3	7.3	7.7	-160.28	67.7	99.6	243.0	228.7	14.26	17.042	
3,400.0	3,395.0	3,383.3	3,378.0	7.6	7.9	-161.33	74.5	101.2	256.1	241.4	14.70	17.422	
3,500.0	3,494.7	3,482.3	3,476.8	7.9	8.2	-162.29	81.2	102.8	269.4	254.2	15.15	17.785	
3,600.0	3,594.5	3,581.3	3,575.6	8.1	8.4	-163.15	87.9	104.3	282.7	267.1	15.59	18.130	
3,700.0	3,694.2	3,680.4	3,674.4	8.4	8.7	-163.94	94.7	105.9	296.0	280.0	16.04	18.459	
3,800.0	3,794.0	3,779.4	3,773.2	8.6	8.9	-164.65	101.4	107.5	309.4	292.9	16.48	18.772	
3,900.0	3,893.7	3,878.4	3,872.0	8.9	9.2	-165.31	108.1	109.0	322.9	305.9	16.93	19.071	
4,000.0	3,993.5	3,977.4	3,970.8	9.1	9.4	-165.92	114.8	110.6	336.3	319.0	17.38	19.356	
4,100.0	4,093.3	4,076.5	4,069.5	9.4	9.7	-166.48	121.6	112.2	349.8	332.0	17.82	19.628	
4,200.0	4,193.0	4,175.5	4,168.3	9.7	9.9	-166.99	128.3	113.7	363.4	345.1	18.27	19.888	
4,300.0	4,292.8	4,274.5	4,267.1	9.9	10.2	-167.47	135.0	115.3	377.0	358.2	18.72	20.137	
4,400.0	4,392.5	4,373.6	4,365.9	10.2	10.4	-167.92	141.8	116.9	390.6	371.4	19.17	20.374	
4,500.0	4,492.3	4,472.6	4,464.7	10.4	10.7	-168.34	148.5	118.4	404.2	384.6	19.62	20.602	
4,600.0	4,592.0	4,571.6	4,563.5	10.7	10.9	-168.73	155.2	120.0	417.8	397.8	20.07	20.820	
4,700.0	4,691.8	4,670.6	4,662.3	10.9	11.2	-169.09	161.9	121.6	431.5	411.0	20.52	21.029	
4,800.0	4,791.6	4,769.7	4,761.0	11.2	11.4	-169.44	168.7	123.1	445.2	424.2	20.97	21.230	
4,900.0	4,891.3	4,868.7	4,859.8	11.5	11.7	-169.76	175.4	124.7	458.8	437.4	21.42	21.423	
5,000.0	4,991.1	4,967.7	4,958.6	11.7	11.9	-170.06	182.1	126.2	472.5	450.7	21.87	21.608	

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-2805A
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-2805A	**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
5,100.0	5,090.8	5,066.7	5,057.4	12.0	12.2	-170.35	188.9	127.8	486.3	463.9	22.32	21.786	
5,200.0	5,190.6	5,165.8	5,156.2	12.2	12.4	-170.62	195.6	129.4	500.0	477.2	22.77	21.957	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	155.09	-74.4	34.6	82.1				
100.0	100.0	100.0	100.0	0.1	0.1	155.09	-74.4	34.6	82.1	81.9	0.19	437.382	
200.0	200.0	200.0	200.0	0.3	0.3	155.09	-74.4	34.6	82.1	81.5	0.64	128.823	
300.0	300.0	300.0	300.0	0.5	0.5	155.09	-74.4	34.6	82.1	81.0	1.09	75.536	
400.0	400.0	400.0	400.0	0.8	0.8	155.09	-74.4	34.6	82.1	80.6	1.54	53.433	
500.0	500.0	500.0	500.0	1.0	1.0	155.09	-74.4	34.6	82.1	80.1	1.99	41.337	
600.0	600.0	600.0	600.0	1.2	1.2	155.09	-74.4	34.6	82.1	79.7	2.44	33.707	
700.0	700.0	700.0	700.0	1.4	1.4	155.09	-74.4	34.6	82.1	79.2	2.88	28.455	
800.0	800.0	800.0	800.0	1.7	1.7	155.09	-74.4	34.6	82.1	78.8	3.33	24.618	
900.0	900.0	900.0	900.0	1.9	1.9	155.09	-74.4	34.6	82.1	78.3	3.78	21.694	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	155.09	-74.4	34.6	82.1	77.9	4.23	19.390	CC
1,100.0	1,100.0	1,097.4	1,097.3	2.3	2.3	155.49	-76.1	34.7	83.7	79.0	4.65	17.995	
1,200.0	1,200.0	1,194.5	1,194.3	2.6	2.5	156.63	-81.0	35.0	88.5	83.4	5.05	17.522	
1,300.0	1,300.0	1,294.2	1,293.8	2.8	2.7	-35.88	-88.0	35.5	93.6	88.2	5.42	17.262	
1,400.0	1,399.8	1,394.1	1,393.5	2.9	2.9	-36.35	-94.9	36.0	96.0	90.2	5.78	16.600	
1,500.0	1,499.6	1,494.1	1,493.2	3.1	3.1	-37.44	-101.9	36.4	97.0	90.8	6.16	15.735	
1,600.0	1,599.4	1,594.1	1,593.0	3.3	3.3	-38.51	-108.8	36.9	98.0	91.5	6.56	14.946	
1,700.0	1,699.1	1,694.1	1,692.7	3.5	3.5	-39.55	-115.8	37.4	99.1	92.1	6.96	14.227	
1,800.0	1,798.9	1,794.1	1,792.5	3.7	3.7	-40.57	-122.8	37.8	100.2	92.8	7.38	13.572	
1,900.0	1,898.6	1,894.0	1,892.2	4.0	4.0	-41.57	-129.7	38.3	101.3	93.5	7.81	12.977	
2,000.0	1,998.4	1,994.0	1,991.9	4.2	4.2	-42.55	-136.7	38.8	102.4	94.2	8.24	12.435	
2,100.0	2,098.1	2,094.0	2,091.7	4.4	4.5	-43.51	-143.6	39.2	103.6	95.0	8.68	11.941	
2,200.0	2,197.9	2,194.0	2,191.4	4.6	4.7	-44.44	-150.6	39.7	104.8	95.7	9.12	11.489	
2,300.0	2,297.6	2,294.0	2,291.1	4.9	5.0	-45.36	-157.5	40.2	106.1	96.5	9.58	11.076	
2,400.0	2,397.4	2,393.9	2,390.9	5.1	5.2	-46.25	-164.5	40.6	107.3	97.3	10.03	10.697	
2,500.0	2,497.2	2,493.9	2,490.6	5.4	5.4	-47.12	-171.5	41.1	108.6	98.1	10.50	10.349	
2,600.0	2,596.9	2,593.9	2,590.3	5.6	5.7	-47.97	-178.4	41.6	109.9	99.0	10.96	10.028	
2,700.0	2,696.7	2,693.9	2,690.1	5.8	5.9	-48.80	-185.4	42.0	111.3	99.8	11.43	9.732	
2,800.0	2,796.4	2,793.8	2,789.8	6.1	6.2	-49.61	-192.3	42.5	112.6	100.7	11.91	9.459	
2,900.0	2,896.2	2,893.8	2,889.5	6.3	6.5	-50.40	-199.3	43.0	114.0	101.6	12.38	9.206	
3,000.0	2,995.9	2,993.8	2,989.3	6.6	6.7	-51.17	-206.3	43.5	115.4	102.5	12.87	8.971	
3,100.0	3,095.7	3,093.8	3,089.0	6.8	7.0	-51.93	-213.2	43.9	116.8	103.5	13.35	8.752	
3,200.0	3,195.5	3,193.8	3,188.7	7.1	7.2	-52.66	-220.2	44.4	118.3	104.4	13.84	8.548	
3,300.0	3,295.2	3,293.7	3,288.5	7.3	7.5	-53.38	-227.1	44.9	119.7	105.4	14.33	8.358	
3,400.0	3,395.0	3,393.7	3,388.2	7.6	7.7	-54.08	-234.1	45.3	121.2	106.4	14.82	8.181	
3,500.0	3,494.7	3,493.7	3,487.9	7.9	8.0	-54.76	-241.0	45.8	122.7	107.4	15.31	8.015	
3,600.0	3,594.5	3,593.7	3,587.7	8.1	8.3	-55.43	-248.0	46.3	124.2	108.4	15.81	7.859	
3,700.0	3,694.2	3,693.6	3,687.4	8.4	8.5	-56.08	-255.0	46.7	125.8	109.5	16.30	7.713	
3,800.0	3,794.0	3,793.6	3,787.1	8.6	8.8	-56.71	-261.9	47.2	127.3	110.5	16.80	7.576	
3,900.0	3,893.7	3,893.6	3,886.9	8.9	9.0	-57.33	-268.9	47.7	128.9	111.6	17.31	7.446	
4,000.0	3,993.5	3,993.6	3,986.6	9.1	9.3	-57.93	-275.8	48.1	130.4	112.6	17.81	7.324	
4,100.0	4,093.3	4,093.6	4,086.3	9.4	9.5	-58.52	-282.8	48.6	132.0	113.7	18.31	7.209	
4,200.0	4,193.0	4,193.5	4,186.1	9.7	9.8	-59.10	-289.8	49.1	133.6	114.8	18.82	7.100	
4,300.0	4,292.8	4,293.5	4,285.8	9.9	10.1	-59.66	-296.7	49.5	135.2	115.9	19.33	6.998	
4,400.0	4,392.5	4,393.5	4,385.6	10.2	10.3	-60.21	-303.7	50.0	136.9	117.0	19.84	6.900	
4,500.0	4,492.3	4,493.5	4,485.3	10.4	10.6	-60.74	-310.6	50.5	138.5	118.2	20.35	6.808	
4,600.0	4,592.0	4,593.5	4,585.0	10.7	10.9	-61.27	-317.6	50.9	140.2	119.3	20.86	6.720	
4,700.0	4,691.8	4,693.4	4,684.8	10.9	11.1	-61.78	-324.6	51.4	141.8	120.5	21.37	6.637	
4,800.0	4,791.6	4,793.4	4,784.5	11.2	11.4	-62.28	-331.5	51.9	143.5	121.6	21.88	6.558	
4,900.0	4,891.3	4,893.4	4,884.2	11.5	11.6	-62.76	-338.5	52.3	145.2	122.8	22.40	6.483	
5,000.0	4,991.1	4,993.4	4,984.0	11.7	11.9	-63.24	-345.4	52.8	146.9	124.0	22.91	6.411	
5,100.0	5,090.8	5,093.3	5,083.7	12.0	12.2	-63.71	-352.4	53.3	148.6	125.2	23.43	6.343	

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-2805A
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-2805A	**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

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
5,200.0	5,190.6	5,193.3	5,183.4	12.2	12.4	-64.16	-359.3	53.8	150.3	126.4	23.95	6.278	
5,300.0	5,290.3	5,293.3	5,283.2	12.5	12.7	-64.61	-366.3	54.2	152.0	127.6	24.46	6.215	
5,400.0	5,389.6	5,393.1	5,382.7	12.8	12.9	-66.53	-373.2	54.7	152.0	127.0	25.05	6.071	
5,500.0	5,485.2	5,480.6	5,469.6	13.3	13.2	-72.90	-383.1	55.4	148.9	123.0	25.89	5.750	
5,511.4	5,495.7	5,490.2	5,479.0	13.3	13.2	-73.70	-385.0	55.5	148.8	122.8	26.02	5.721	
5,600.0	5,573.5	5,565.8	5,551.6	13.9	13.6	-80.26	-405.9	56.9	151.5	124.5	27.09	5.594	
5,700.0	5,651.4	5,652.9	5,630.4	14.7	14.1	-87.61	-442.6	59.4	161.7	133.1	28.59	5.657	
5,800.0	5,715.8	5,742.2	5,703.7	15.7	14.8	-93.96	-493.4	62.8	179.7	149.4	30.28	5.934	
5,900.0	5,764.5	5,834.4	5,769.0	16.8	15.6	-98.75	-558.1	67.1	204.5	172.4	32.09	6.373	
6,000.0	5,795.7	5,930.2	5,823.8	18.2	16.7	-101.91	-636.3	72.4	234.7	200.6	34.12	6.880	
6,100.0	5,808.3	6,030.7	5,864.8	19.6	17.9	-103.65	-727.7	78.5	268.5	232.0	36.46	7.364	
6,200.0	5,808.5	6,139.2	5,888.5	21.0	19.5	-106.07	-833.2	85.6	300.5	261.5	39.03	7.701	
6,300.0	5,808.5	6,255.1	5,892.0	22.4	21.2	-105.22	-948.7	92.6	322.6	280.4	42.29	7.629	
6,400.0	5,808.5	6,366.4	5,892.0	23.8	22.7	-104.51	-1,060.0	94.0	334.4	289.0	45.44	7.359	
6,500.0	5,808.5	6,466.2	5,892.0	25.3	24.3	-104.23	-1,159.8	94.0	340.0	291.5	48.48	7.013	
6,600.0	5,808.5	6,566.2	5,892.0	26.8	26.0	-104.18	-1,259.8	94.0	340.9	289.4	51.56	6.612	
6,700.0	5,808.5	6,666.2	5,892.0	28.5	27.7	-104.18	-1,359.8	94.0	340.9	286.1	54.84	6.217	
6,800.0	5,808.5	6,766.2	5,892.0	30.1	29.4	-104.18	-1,459.8	94.0	340.9	282.8	58.17	5.861	
6,900.0	5,808.4	6,866.2	5,892.0	31.8	31.1	-104.18	-1,559.8	94.0	341.0	279.4	61.55	5.539	
7,000.0	5,808.4	6,966.2	5,892.0	33.6	32.9	-104.19	-1,659.8	94.0	341.0	276.0	64.97	5.248	
7,100.0	5,808.4	7,066.2	5,892.0	35.3	34.7	-104.19	-1,759.8	94.0	341.0	272.5	68.43	4.983	
7,200.0	5,808.4	7,166.2	5,892.0	37.1	36.4	-104.19	-1,859.8	94.0	341.0	269.1	71.91	4.742	
7,300.0	5,808.4	7,266.2	5,892.0	38.9	38.3	-104.19	-1,959.8	94.0	341.0	265.6	75.41	4.521	
7,400.0	5,808.4	7,366.2	5,892.0	40.7	40.1	-104.19	-2,059.8	94.0	341.0	262.0	78.94	4.320	
7,500.0	5,808.4	7,466.2	5,892.0	42.5	41.9	-104.19	-2,159.8	94.0	341.0	258.5	82.48	4.134	
7,600.0	5,808.4	7,566.2	5,892.0	44.3	43.7	-104.19	-2,259.8	94.0	341.0	254.9	86.04	3.963	
7,700.0	5,808.4	7,666.2	5,892.0	46.1	45.6	-104.19	-2,359.8	94.0	341.0	251.4	89.62	3.805	
7,800.0	5,808.4	7,766.2	5,892.0	47.9	47.4	-104.20	-2,459.8	93.9	341.0	247.8	93.20	3.659	
7,900.0	5,808.4	7,866.2	5,892.0	49.8	49.3	-104.20	-2,559.8	93.9	341.0	244.2	96.80	3.523	
8,000.0	5,808.4	7,966.2	5,892.0	51.6	51.1	-104.20	-2,659.8	93.9	341.0	240.6	100.41	3.396	
8,100.0	5,808.4	8,066.2	5,892.0	53.5	53.0	-104.20	-2,759.8	93.9	341.0	237.0	104.03	3.278	
8,200.0	5,808.4	8,166.2	5,892.0	55.3	54.8	-104.20	-2,859.8	93.9	341.0	233.3	107.65	3.168	
8,300.0	5,808.3	8,266.2	5,892.0	57.2	56.7	-104.20	-2,959.8	93.9	341.0	229.7	111.29	3.064	
8,400.0	5,808.3	8,366.2	5,892.0	59.0	58.6	-104.20	-3,059.8	93.9	341.0	226.1	114.92	2.967	
8,500.0	5,808.3	8,466.2	5,892.0	60.9	60.4	-104.20	-3,159.8	93.9	341.0	222.4	118.57	2.876	
8,600.0	5,808.3	8,566.2	5,892.0	62.8	62.3	-104.20	-3,259.8	93.9	341.0	218.8	122.22	2.790	
8,700.0	5,808.3	8,666.2	5,892.0	64.6	64.2	-104.21	-3,359.8	93.9	341.0	215.1	125.87	2.709	
8,800.0	5,808.3	8,766.2	5,892.0	66.5	66.1	-104.21	-3,459.8	93.9	341.0	211.5	129.53	2.633	
8,900.0	5,808.3	8,866.2	5,892.0	68.4	68.0	-104.21	-3,559.8	93.9	341.0	207.8	133.20	2.560	
9,000.0	5,808.3	8,966.2	5,892.0	70.3	69.8	-104.21	-3,659.8	93.9	341.0	204.2	136.86	2.492	
9,100.0	5,808.3	9,066.2	5,892.0	72.2	71.7	-104.21	-3,759.8	93.9	341.0	200.5	140.54	2.427	
9,200.0	5,808.3	9,166.2	5,892.0	74.0	73.6	-104.21	-3,859.8	93.9	341.0	196.8	144.21	2.365	
9,300.0	5,808.3	9,266.2	5,892.0	75.9	75.5	-104.21	-3,959.8	93.9	341.0	193.2	147.89	2.306	
9,400.0	5,808.3	9,366.2	5,892.0	77.8	77.4	-104.21	-4,059.8	93.9	341.0	189.5	151.57	2.250	
9,500.0	5,808.3	9,466.2	5,892.0	79.7	79.3	-104.22	-4,159.8	93.9	341.0	185.8	155.25	2.197	
9,600.0	5,808.2	9,566.2	5,892.0	81.6	81.2	-104.22	-4,259.8	93.9	341.1	182.1	158.93	2.146	
9,700.0	5,808.2	9,666.2	5,892.0	83.5	83.1	-104.22	-4,359.8	93.9	341.1	178.4	162.62	2.097	
9,800.0	5,808.2	9,766.2	5,892.0	85.4	85.0	-104.22	-4,459.8	93.9	341.1	174.8	166.31	2.051	
9,900.0	5,808.2	9,866.2	5,892.0	87.2	86.9	-104.22	-4,559.8	93.9	341.1	171.1	170.00	2.006	
10,000.0	5,808.2	9,966.2	5,892.0	89.1	88.8	-104.22	-4,659.8	93.9	341.1	167.4	173.69	1.964	
10,100.0	5,808.2	10,066.2	5,892.0	91.0	90.7	-104.22	-4,759.8	93.9	341.1	163.7	177.39	1.923	
10,200.0	5,808.2	10,166.2	5,892.0	92.9	92.6	-104.22	-4,859.8	93.9	341.1	160.0	181.08	1.884	

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-2805A
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-2805A	**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
10,300.0	5,808.2	10,266.2	5,892.0	94.8	94.5	-104.22	-4,959.8	93.9	341.1	156.3	184.78	1.846	
10,400.0	5,808.2	10,366.2	5,892.0	96.7	96.4	-104.23	-5,059.8	93.9	341.1	152.6	188.48	1.810	
10,500.0	5,808.2	10,466.2	5,892.0	98.6	98.3	-104.23	-5,159.8	93.8	341.1	148.9	192.18	1.775	
10,600.0	5,808.2	10,566.2	5,892.0	100.5	100.2	-104.23	-5,259.8	93.8	341.1	145.2	195.88	1.741	
10,700.0	5,808.2	10,666.2	5,892.0	102.4	102.1	-104.23	-5,359.8	93.8	341.1	141.5	199.58	1.709	
10,800.0	5,808.2	10,766.2	5,892.0	104.3	104.0	-104.23	-5,459.8	93.8	341.1	137.8	203.28	1.678	
10,900.0	5,808.1	10,866.2	5,892.0	106.2	105.9	-104.23	-5,559.8	93.8	341.1	134.1	206.99	1.648	
11,000.0	5,808.1	10,966.2	5,892.0	108.1	107.8	-104.23	-5,659.8	93.8	341.1	130.4	210.69	1.619	
11,100.0	5,808.1	11,066.2	5,892.0	110.0	109.7	-104.23	-5,759.8	93.8	341.1	126.7	214.40	1.591	
11,200.0	5,808.1	11,166.2	5,892.0	111.9	111.6	-104.23	-5,859.8	93.8	341.1	123.0	218.11	1.564	
11,300.0	5,808.1	11,266.2	5,892.0	113.8	113.5	-104.24	-5,959.8	93.8	341.1	119.3	221.81	1.538	
11,400.0	5,808.1	11,366.2	5,892.0	115.7	115.4	-104.24	-6,059.8	93.8	341.1	115.6	225.52	1.513	
11,500.0	5,808.1	11,466.2	5,892.0	117.6	117.3	-104.24	-6,159.8	93.8	341.1	111.9	229.23	1.488	Level 3
11,600.0	5,808.1	11,566.2	5,892.0	119.5	119.2	-104.24	-6,259.8	93.8	341.1	108.2	232.94	1.464	Level 3
11,700.0	5,808.1	11,666.2	5,892.0	121.4	121.1	-104.24	-6,359.8	93.8	341.1	104.5	236.65	1.441	Level 3
11,800.0	5,808.1	11,766.2	5,892.0	123.3	123.0	-104.24	-6,459.8	93.8	341.1	100.8	240.37	1.419	Level 3
11,900.0	5,808.1	11,866.2	5,892.0	125.2	124.9	-104.24	-6,559.8	93.8	341.1	97.1	244.08	1.398	Level 3
12,000.0	5,808.1	11,966.2	5,892.0	127.2	126.8	-104.24	-6,659.8	93.8	341.1	93.4	247.79	1.377	Level 3
12,100.0	5,808.1	12,066.2	5,892.0	129.1	128.7	-104.25	-6,759.8	93.8	341.1	89.6	251.50	1.356	Level 3
12,200.0	5,808.0	12,166.2	5,892.0	131.0	130.7	-104.25	-6,859.8	93.8	341.2	85.9	255.22	1.337	Level 3
12,300.0	5,808.0	12,266.2	5,892.0	132.9	132.6	-104.25	-6,959.8	93.8	341.2	82.2	258.93	1.318	Level 3
12,400.0	5,808.0	12,366.2	5,892.0	134.8	134.5	-104.25	-7,059.8	93.8	341.2	78.5	262.65	1.299	Level 3
12,500.0	5,808.0	12,466.2	5,892.0	136.7	136.4	-104.25	-7,159.8	93.8	341.2	74.8	266.36	1.281	Level 3
12,600.0	5,808.0	12,566.2	5,892.0	138.6	138.3	-104.25	-7,259.8	93.8	341.2	71.1	270.08	1.263	Level 3
12,700.0	5,808.0	12,666.2	5,892.0	140.5	140.2	-104.25	-7,359.8	93.8	341.2	67.4	273.79	1.246	Level 2
12,758.7	5,808.0	12,725.0	5,892.0	141.4	141.3	-104.25	-7,418.6	93.8	341.2	65.4	275.75	1.237	Level 2
12,799.8	5,808.0	12,760.0	5,892.0	142.1	142.0	-104.25	-7,453.6	93.8	341.2	64.2	277.04	1.232	Level 2, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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	88.97	1.2	65.3	65.3				
100.0	100.0	100.0	100.0	0.1	0.1	88.97	1.2	65.3	65.3	65.1	0.19	347.994	
200.0	200.0	200.0	200.0	0.3	0.3	88.97	1.2	65.3	65.3	64.7	0.64	102.496	
300.0	300.0	300.0	300.0	0.5	0.5	88.97	1.2	65.3	65.3	64.2	1.09	60.098	
400.0	400.0	400.0	400.0	0.8	0.8	88.97	1.2	65.3	65.3	63.8	1.54	42.513	
500.0	500.0	500.0	500.0	1.0	1.0	88.97	1.2	65.3	65.3	63.3	1.99	32.889	CC, ES
600.0	600.0	599.3	599.3	1.2	1.2	90.41	-0.5	65.8	65.8	63.4	2.41	27.353	
700.0	700.0	698.4	698.2	1.4	1.4	94.54	-5.4	67.4	67.7	64.8	2.82	24.013	
800.0	800.0	798.1	797.7	1.7	1.6	99.76	-12.0	69.6	70.6	67.4	3.25	21.733	
900.0	900.0	897.9	897.2	1.9	1.8	104.53	-18.6	71.7	74.2	70.5	3.70	20.067	
1,000.0	1,000.0	997.6	996.7	2.1	2.0	108.83	-25.2	73.9	78.1	74.0	4.15	18.839	
1,100.0	1,100.0	1,097.4	1,096.2	2.3	2.3	112.70	-31.8	76.1	82.5	77.9	4.60	17.924	
1,200.0	1,200.0	1,197.1	1,195.8	2.6	2.5	116.17	-38.4	78.2	87.2	82.2	5.06	17.234	
1,300.0	1,300.0	1,297.0	1,295.3	2.8	2.8	-75.03	-45.1	80.4	91.8	86.3	5.46	16.804	
1,400.0	1,399.8	1,396.9	1,395.0	2.9	3.0	-75.11	-51.7	82.5	95.5	89.6	5.87	16.260	
1,500.0	1,499.6	1,496.8	1,494.7	3.1	3.3	-76.22	-58.3	84.7	98.8	92.5	6.30	15.675	
1,600.0	1,599.4	1,596.7	1,594.4	3.3	3.5	-77.26	-64.9	86.8	102.1	95.3	6.74	15.140	
1,700.0	1,699.1	1,696.7	1,694.1	3.5	3.8	-78.24	-71.6	89.0	105.4	98.2	7.19	14.654	
1,800.0	1,798.9	1,796.6	1,793.8	3.7	4.0	-79.15	-78.2	91.2	108.8	101.1	7.65	14.211	
1,900.0	1,898.6	1,896.5	1,893.5	4.0	4.3	-80.01	-84.8	93.3	112.2	104.0	8.12	13.809	
2,000.0	1,998.4	1,996.5	1,993.1	4.2	4.6	-80.82	-91.5	95.5	115.6	107.0	8.60	13.443	
2,100.0	2,098.1	2,096.4	2,092.8	4.4	4.8	-81.59	-98.1	97.6	119.0	109.9	9.08	13.109	
2,200.0	2,197.9	2,196.3	2,192.5	4.6	5.1	-82.31	-104.7	99.8	122.5	112.9	9.56	12.805	
2,300.0	2,297.6	2,296.2	2,292.2	4.9	5.3	-82.99	-111.3	102.0	125.9	115.9	10.05	12.527	
2,400.0	2,397.4	2,396.2	2,391.9	5.1	5.6	-83.63	-118.0	104.1	129.4	118.9	10.55	12.272	
2,500.0	2,497.2	2,496.1	2,491.6	5.4	5.9	-84.24	-124.6	106.3	132.9	121.9	11.04	12.037	
2,600.0	2,596.9	2,596.0	2,591.3	5.6	6.1	-84.82	-131.2	108.4	136.5	124.9	11.54	11.821	
2,700.0	2,696.7	2,696.0	2,690.9	5.8	6.4	-85.37	-137.8	110.6	140.0	127.9	12.04	11.622	
2,800.0	2,796.4	2,795.9	2,790.6	6.1	6.7	-85.89	-144.5	112.8	143.5	131.0	12.55	11.438	
2,900.0	2,896.2	2,895.8	2,890.3	6.3	6.9	-86.39	-151.1	114.9	147.1	134.0	13.05	11.267	
3,000.0	2,995.9	2,995.7	2,990.0	6.6	7.2	-86.86	-157.7	117.1	150.7	137.1	13.56	11.109	
3,100.0	3,095.7	3,095.7	3,089.7	6.8	7.4	-87.32	-164.4	119.2	154.2	140.2	14.07	10.961	
3,200.0	3,195.5	3,195.6	3,189.4	7.1	7.7	-87.75	-171.0	121.4	157.8	143.2	14.58	10.824	
3,300.0	3,295.2	3,295.5	3,289.1	7.3	8.0	-88.16	-177.6	123.6	161.4	146.3	15.09	10.695	
3,400.0	3,395.0	3,395.5	3,388.7	7.6	8.2	-88.55	-184.2	125.7	165.0	149.4	15.61	10.575	
3,500.0	3,494.7	3,495.4	3,488.4	7.9	8.5	-88.93	-190.9	127.9	168.6	152.5	16.12	10.462	
3,600.0	3,594.5	3,595.3	3,588.1	8.1	8.8	-89.29	-197.5	130.0	172.3	155.6	16.63	10.356	
3,700.0	3,694.2	3,695.3	3,687.8	8.4	9.0	-89.64	-204.1	132.2	175.9	158.7	17.15	10.256	
3,800.0	3,794.0	3,795.2	3,787.5	8.6	9.3	-89.97	-210.7	134.4	179.5	161.8	17.66	10.162	
3,900.0	3,893.7	3,895.1	3,887.2	8.9	9.5	-90.29	-217.4	136.5	183.1	165.0	18.18	10.073	
4,000.0	3,993.5	3,995.0	3,986.8	9.1	9.8	-90.60	-224.0	138.7	186.8	168.1	18.70	9.989	
4,100.0	4,093.3	4,095.0	4,086.5	9.4	10.1	-90.89	-230.6	140.8	190.4	171.2	19.22	9.910	
4,200.0	4,193.0	4,194.9	4,186.2	9.7	10.3	-91.18	-237.3	143.0	194.1	174.4	19.73	9.835	
4,300.0	4,292.8	4,294.8	4,285.9	9.9	10.6	-91.45	-243.9	145.2	197.7	177.5	20.25	9.764	
4,400.0	4,392.5	4,394.8	4,385.6	10.2	10.9	-91.71	-250.5	147.3	201.4	180.6	20.77	9.696	
4,500.0	4,492.3	4,494.7	4,485.3	10.4	11.1	-91.97	-257.1	149.5	205.1	183.8	21.29	9.632	
4,600.0	4,592.0	4,594.6	4,585.0	10.7	11.4	-92.21	-263.8	151.6	208.7	186.9	21.81	9.570	
4,700.0	4,691.8	4,694.5	4,684.6	10.9	11.7	-92.45	-270.4	153.8	212.4	190.1	22.33	9.512	
4,800.0	4,791.6	4,794.5	4,784.3	11.2	11.9	-92.68	-277.0	156.0	216.1	193.2	22.85	9.456	
4,900.0	4,891.3	4,894.4	4,884.0	11.5	12.2	-92.90	-283.7	158.1	219.8	196.4	23.37	9.403	
5,000.0	4,991.1	4,994.3	4,983.7	11.7	12.4	-93.11	-290.3	160.3	223.5	199.6	23.89	9.352	
5,100.0	5,090.8	5,094.3	5,083.4	12.0	12.7	-93.32	-296.9	162.4	227.1	202.7	24.42	9.303	

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-2805A
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-2805A	**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
5,200.0	5,190.6	5,194.2	5,183.1	12.2	13.0	-93.52	-303.5	164.6	230.8	205.9	24.94	9.257	
5,300.0	5,290.3	5,294.1	5,282.8	12.5	13.2	-93.72	-310.2	166.8	234.5	209.1	25.46	9.212	SF
5,400.0	5,389.6	5,383.7	5,371.9	12.8	13.5	-93.79	-318.3	169.4	239.8	213.8	26.00	9.221	
5,500.0	5,485.2	5,465.5	5,451.2	13.3	13.9	-93.80	-336.9	175.5	252.8	226.1	26.76	9.448	
5,600.0	5,573.5	5,550.0	5,528.9	13.9	14.3	-93.76	-368.3	185.7	274.1	246.3	27.79	9.862	
5,700.0	5,651.4	5,624.7	5,592.4	14.7	14.9	-93.10	-405.6	197.9	302.7	273.7	29.04	10.423	
5,800.0	5,715.8	5,700.0	5,650.0	15.7	15.5	-92.00	-451.6	212.9	338.1	307.5	30.62	11.042	
5,900.0	5,764.5	5,777.4	5,701.3	16.8	16.4	-90.53	-506.6	230.8	379.1	346.5	32.55	11.646	
6,000.0	5,795.7	5,850.0	5,741.2	18.2	17.2	-88.42	-564.2	249.6	424.5	389.8	34.68	12.240	
6,100.0	5,808.3	5,927.1	5,773.8	19.6	18.2	-86.17	-630.6	271.2	473.1	436.0	37.09	12.757	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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-2808B - 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	126.26	-73.3	99.9	123.9				
100.0	100.0	100.0	100.0	0.1	0.1	126.26	-73.3	99.9	123.9	123.7	0.19	660.031	
200.0	200.0	200.0	200.0	0.3	0.3	126.26	-73.3	99.9	123.9	123.2	0.64	194.401	
300.0	300.0	300.0	300.0	0.5	0.5	126.26	-73.3	99.9	123.9	122.8	1.09	113.987	
400.0	400.0	400.0	400.0	0.8	0.8	126.26	-73.3	99.9	123.9	122.3	1.54	80.633	
500.0	500.0	500.0	500.0	1.0	1.0	126.26	-73.3	99.9	123.9	121.9	1.99	62.380	
600.0	600.0	600.0	600.0	1.2	1.2	126.26	-73.3	99.9	123.9	121.4	2.44	50.865	
700.0	700.0	700.0	700.0	1.4	1.4	126.26	-73.3	99.9	123.9	121.0	2.88	42.939	
800.0	800.0	800.0	800.0	1.7	1.7	126.26	-73.3	99.9	123.9	120.5	3.33	37.150	CC, ES
900.0	900.0	896.2	896.2	1.9	1.9	126.57	-74.7	100.7	125.4	121.7	3.75	33.439	
1,000.0	1,000.0	992.1	992.0	2.1	2.0	127.44	-78.9	103.0	130.0	125.9	4.15	31.317	
1,100.0	1,100.0	1,091.6	1,091.2	2.3	2.2	128.59	-84.9	106.4	136.4	131.9	4.57	29.867	
1,200.0	1,200.0	1,191.3	1,190.7	2.6	2.4	129.64	-91.0	109.8	142.9	137.9	4.99	28.629	
1,300.0	1,300.0	1,291.1	1,290.3	2.8	2.7	-63.24	-97.1	113.2	148.7	143.3	5.38	27.614	
1,400.0	1,399.8	1,391.0	1,389.9	2.9	2.9	-64.00	-103.1	116.6	152.9	147.1	5.76	26.517	
1,500.0	1,499.6	1,490.9	1,489.5	3.1	3.1	-65.36	-109.2	120.1	156.4	150.2	6.16	25.365	
1,600.0	1,599.4	1,590.8	1,589.2	3.3	3.4	-66.67	-115.3	123.5	159.9	153.3	6.58	24.315	
1,700.0	1,699.1	1,690.6	1,688.8	3.5	3.6	-67.91	-121.4	126.9	163.6	156.6	7.00	23.359	
1,800.0	1,798.9	1,790.5	1,788.4	3.7	3.8	-69.11	-127.4	130.3	167.3	159.9	7.44	22.490	
1,900.0	1,898.6	1,890.4	1,888.1	4.0	4.1	-70.25	-133.5	133.7	171.1	163.2	7.88	21.702	
2,000.0	1,998.4	1,990.3	1,987.7	4.2	4.3	-71.34	-139.6	137.1	175.0	166.6	8.34	20.985	
2,100.0	2,098.1	2,090.1	2,087.3	4.4	4.6	-72.38	-145.7	140.5	178.9	170.1	8.80	20.334	
2,200.0	2,197.9	2,190.0	2,186.9	4.6	4.8	-73.38	-151.7	143.9	182.9	173.6	9.26	19.740	
2,300.0	2,297.6	2,289.9	2,286.6	4.9	5.1	-74.33	-157.8	147.3	186.9	177.1	9.73	19.198	
2,400.0	2,397.4	2,389.7	2,386.2	5.1	5.4	-75.25	-163.9	150.7	191.0	180.8	10.21	18.703	
2,500.0	2,497.2	2,489.6	2,485.8	5.4	5.6	-76.12	-170.0	154.1	195.1	184.4	10.69	18.248	
2,600.0	2,596.9	2,589.5	2,585.5	5.6	5.9	-76.96	-176.0	157.6	199.3	188.1	11.17	17.831	
2,700.0	2,696.7	2,689.4	2,685.1	5.8	6.1	-77.77	-182.1	161.0	203.5	191.8	11.66	17.447	
2,800.0	2,796.4	2,789.2	2,784.7	6.1	6.4	-78.54	-188.2	164.4	207.7	195.6	12.15	17.093	
2,900.0	2,896.2	2,889.1	2,884.3	6.3	6.6	-79.28	-194.3	167.8	212.0	199.4	12.65	16.765	
3,000.0	2,995.9	2,989.0	2,984.0	6.6	6.9	-79.99	-200.3	171.2	216.3	203.2	13.14	16.462	
3,100.0	3,095.7	3,088.8	3,083.6	6.8	7.2	-80.67	-206.4	174.6	220.7	207.0	13.64	16.181	
3,200.0	3,195.5	3,188.7	3,183.2	7.1	7.4	-81.33	-212.5	178.0	225.1	210.9	14.14	15.919	
3,300.0	3,295.2	3,288.6	3,282.8	7.3	7.7	-81.96	-218.6	181.4	229.5	214.8	14.64	15.675	
3,400.0	3,395.0	3,388.5	3,382.5	7.6	7.9	-82.57	-224.7	184.8	233.9	218.8	15.14	15.448	
3,500.0	3,494.7	3,488.3	3,482.1	7.9	8.2	-83.16	-230.7	188.2	238.4	222.7	15.65	15.235	
3,600.0	3,594.5	3,588.2	3,581.7	8.1	8.5	-83.72	-236.8	191.7	242.9	226.7	16.15	15.036	
3,700.0	3,694.2	3,688.1	3,681.4	8.4	8.7	-84.26	-242.9	195.1	247.4	230.7	16.66	14.849	
3,800.0	3,794.0	3,787.9	3,781.0	8.6	9.0	-84.79	-249.0	198.5	251.9	234.7	17.17	14.674	
3,900.0	3,893.7	3,887.8	3,880.6	8.9	9.2	-85.29	-255.0	201.9	256.4	238.8	17.68	14.509	
4,000.0	3,993.5	3,987.7	3,980.2	9.1	9.5	-85.78	-261.1	205.3	261.0	242.8	18.19	14.353	
4,100.0	4,093.3	4,087.6	4,079.9	9.4	9.8	-86.25	-267.2	208.7	265.6	246.9	18.70	14.206	
4,200.0	4,193.0	4,187.4	4,179.5	9.7	10.0	-86.71	-273.3	212.1	270.2	251.0	19.21	14.068	
4,300.0	4,292.8	4,287.3	4,279.1	9.9	10.3	-87.15	-279.3	215.5	274.8	255.1	19.72	13.937	
4,400.0	4,392.5	4,387.2	4,378.8	10.2	10.5	-87.57	-285.4	218.9	279.5	259.2	20.23	13.813	
4,500.0	4,492.3	4,487.0	4,478.4	10.4	10.8	-87.98	-291.5	222.3	284.1	263.4	20.75	13.695	
4,600.0	4,592.0	4,586.9	4,578.0	10.7	11.1	-88.38	-297.6	225.7	288.8	267.5	21.26	13.584	
4,700.0	4,691.8	4,686.8	4,677.6	10.9	11.3	-88.77	-303.6	229.2	293.5	271.7	21.77	13.478	
4,800.0	4,791.6	4,786.7	4,777.3	11.2	11.6	-89.14	-309.7	232.6	298.2	275.9	22.29	13.377	
4,900.0	4,891.3	4,886.5	4,876.9	11.5	11.9	-89.50	-315.8	236.0	302.9	280.1	22.80	13.281	
5,000.0	4,991.1	4,986.4	4,976.5	11.7	12.1	-89.85	-321.9	239.4	307.6	284.3	23.32	13.189	
5,100.0	5,090.8	5,086.3	5,076.2	12.0	12.4	-90.19	-327.9	242.8	312.3	288.5	23.84	13.102	

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-2805A
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-2805A	**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-2808B - 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	5,190.6	5,186.1	5,175.8	12.2	12.6	-90.52	-334.0	246.2	317.0	292.7	24.35	13.019	
5,300.0	5,290.3	5,286.0	5,275.4	12.5	12.9	-90.84	-340.1	249.6	321.8	296.9	24.87	12.939	
5,400.0	5,389.6	5,385.6	5,374.8	12.8	13.2	-91.53	-346.1	253.0	326.7	301.2	25.43	12.847	
5,500.0	5,485.2	5,464.7	5,453.4	13.3	13.4	-93.53	-352.7	256.7	334.6	308.5	26.11	12.813	SF
5,600.0	5,573.5	5,533.0	5,520.0	13.9	13.7	-94.94	-366.0	264.1	352.8	325.8	26.96	13.086	
5,700.0	5,651.4	5,600.0	5,582.8	14.7	14.0	-95.62	-386.2	275.5	381.8	353.8	28.00	13.634	
5,800.0	5,715.8	5,662.7	5,638.4	15.7	14.4	-95.12	-411.4	289.6	421.0	391.7	29.27	14.379	
5,900.0	5,764.5	5,723.0	5,688.3	16.8	14.9	-93.43	-441.0	306.2	469.1	438.2	30.82	15.221	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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 #21D-2804B - 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
6,400.0	5,808.5	6,579.3	5,892.0	23.8	27.0	101.57	-1,198.6	-658.9	458.9	412.1	46.83	9.798	
6,500.0	5,808.5	6,655.9	5,892.0	25.3	28.3	102.09	-1,271.9	-636.8	425.2	375.5	49.67	8.561	
6,600.0	5,808.5	6,735.6	5,892.0	26.8	29.5	102.62	-1,349.2	-617.0	399.9	347.5	52.48	7.620	
6,700.0	5,808.5	6,817.2	5,892.0	28.5	30.9	103.19	-1,428.9	-600.0	379.7	324.4	55.28	6.868	
6,800.0	5,808.5	6,900.0	5,892.0	30.1	32.2	103.69	-1,510.6	-586.3	363.5	305.4	58.15	6.252	
6,900.0	5,808.4	6,984.1	5,892.0	31.8	33.5	104.09	-1,594.1	-576.0	351.7	290.6	61.08	5.757	
7,000.0	5,808.4	7,068.8	5,892.0	33.6	34.9	104.36	-1,678.5	-569.4	344.1	280.0	64.08	5.369	
7,100.0	5,808.4	7,154.0	5,892.0	35.3	36.2	104.48	-1,763.6	-566.5	340.8	273.6	67.13	5.076	
7,145.2	5,808.4	7,195.3	5,892.0	36.1	36.9	104.48	-1,805.0	-566.4	340.6	272.0	68.58	4.967	
7,200.0	5,808.4	7,250.1	5,892.0	37.1	37.7	104.48	-1,859.8	-566.4	340.6	270.2	70.44	4.835	
7,300.0	5,808.4	7,350.1	5,892.0	38.9	39.4	104.49	-1,959.8	-566.4	340.6	266.8	73.86	4.612	
7,400.0	5,808.4	7,450.1	5,892.0	40.7	41.0	104.49	-2,059.8	-566.4	340.6	263.3	77.31	4.406	
7,500.0	5,808.4	7,550.1	5,892.0	42.5	42.7	104.49	-2,159.8	-566.4	340.6	259.8	80.78	4.217	
7,600.0	5,808.4	7,650.1	5,892.0	44.3	44.4	104.49	-2,259.8	-566.4	340.6	256.3	84.27	4.042	
7,700.0	5,808.4	7,750.1	5,892.0	46.1	46.1	104.49	-2,359.8	-566.4	340.6	252.8	87.79	3.880	
7,800.0	5,808.4	7,850.1	5,892.0	47.9	47.8	104.49	-2,459.8	-566.4	340.6	249.3	91.32	3.730	
7,900.0	5,808.4	7,950.1	5,892.0	49.8	49.5	104.49	-2,559.8	-566.4	340.6	245.7	94.86	3.590	
8,000.0	5,808.4	8,050.1	5,892.0	51.6	51.3	104.50	-2,659.8	-566.4	340.6	242.2	98.42	3.461	
8,100.0	5,808.4	8,150.1	5,892.0	53.5	53.0	104.50	-2,759.8	-566.4	340.6	238.6	102.00	3.339	
8,200.0	5,808.4	8,250.1	5,892.0	55.3	54.8	104.50	-2,859.8	-566.4	340.6	235.0	105.58	3.226	
8,300.0	5,808.3	8,350.1	5,892.0	57.2	56.6	104.50	-2,959.8	-566.4	340.6	231.4	109.17	3.120	
8,400.0	5,808.3	8,450.1	5,892.0	59.0	58.4	104.50	-3,059.8	-566.4	340.6	227.8	112.77	3.020	
8,500.0	5,808.3	8,550.1	5,892.0	60.9	60.2	104.50	-3,159.8	-566.4	340.6	224.2	116.38	2.927	
8,600.0	5,808.3	8,650.1	5,892.0	62.8	62.0	104.50	-3,259.8	-566.4	340.6	220.6	120.00	2.838	
8,700.0	5,808.3	8,750.1	5,892.0	64.6	63.8	104.50	-3,359.8	-566.4	340.6	217.0	123.63	2.755	
8,800.0	5,808.3	8,850.1	5,892.0	66.5	65.6	104.51	-3,459.8	-566.4	340.6	213.3	127.26	2.676	
8,900.0	5,808.3	8,950.1	5,892.0	68.4	67.4	104.51	-3,559.8	-566.4	340.6	209.7	130.89	2.602	
9,000.0	5,808.3	9,050.1	5,892.0	70.3	69.3	104.51	-3,659.8	-566.4	340.6	206.1	134.53	2.532	
9,100.0	5,808.3	9,150.1	5,892.0	72.2	71.1	104.51	-3,759.8	-566.4	340.6	202.4	138.18	2.465	
9,200.0	5,808.3	9,250.1	5,892.0	74.0	72.9	104.51	-3,859.8	-566.4	340.6	198.8	141.83	2.401	
9,300.0	5,808.3	9,350.1	5,892.0	75.9	74.8	104.51	-3,959.8	-566.4	340.6	195.1	145.48	2.341	
9,400.0	5,808.3	9,450.1	5,892.0	77.8	76.6	104.51	-4,059.8	-566.4	340.6	191.5	149.14	2.284	
9,500.0	5,808.3	9,550.1	5,892.0	79.7	78.5	104.51	-4,159.8	-566.4	340.6	187.8	152.80	2.229	
9,600.0	5,808.2	9,650.1	5,892.0	81.6	80.3	104.52	-4,259.8	-566.4	340.6	184.1	156.47	2.177	
9,700.0	5,808.2	9,750.1	5,892.0	83.5	82.2	104.52	-4,359.8	-566.4	340.6	180.5	160.13	2.127	
9,800.0	5,808.2	9,850.1	5,892.0	85.4	84.0	104.52	-4,459.8	-566.5	340.6	176.8	163.80	2.079	
9,900.0	5,808.2	9,950.1	5,892.0	87.2	85.9	104.52	-4,559.8	-566.5	340.6	173.1	167.48	2.034	
10,000.0	5,808.2	10,050.1	5,892.0	89.1	87.8	104.52	-4,659.8	-566.5	340.6	169.4	171.15	1.990	
10,100.0	5,808.2	10,150.1	5,892.0	91.0	89.6	104.52	-4,759.8	-566.5	340.6	165.8	174.83	1.948	
10,200.0	5,808.2	10,250.1	5,892.0	92.9	91.5	104.52	-4,859.8	-566.5	340.6	162.1	178.51	1.908	
10,300.0	5,808.2	10,350.1	5,892.0	94.8	93.4	104.52	-4,959.8	-566.5	340.6	158.4	182.19	1.869	
10,400.0	5,808.2	10,450.1	5,892.0	96.7	95.2	104.53	-5,059.8	-566.5	340.6	154.7	185.87	1.832	
10,500.0	5,808.2	10,550.1	5,892.0	98.6	97.1	104.53	-5,159.8	-566.5	340.6	151.0	189.56	1.797	
10,600.0	5,808.2	10,650.1	5,892.0	100.5	99.0	104.53	-5,259.8	-566.5	340.6	147.3	193.25	1.762	
10,700.0	5,808.2	10,750.1	5,892.0	102.4	100.9	104.53	-5,359.8	-566.5	340.6	143.6	196.94	1.729	
10,800.0	5,808.2	10,850.1	5,892.0	104.3	102.7	104.53	-5,459.8	-566.5	340.6	140.0	200.63	1.698	
10,900.0	5,808.1	10,950.1	5,892.0	106.2	104.6	104.53	-5,559.8	-566.5	340.6	136.3	204.32	1.667	
11,000.0	5,808.1	11,050.1	5,892.0	108.1	106.5	104.53	-5,659.8	-566.5	340.6	132.6	208.01	1.637	
11,100.0	5,808.1	11,150.1	5,892.0	110.0	108.4	104.54	-5,759.8	-566.5	340.6	128.9	211.70	1.609	
11,200.0	5,808.1	11,250.1	5,892.0	111.9	110.3	104.54	-5,859.8	-566.5	340.6	125.2	215.40	1.581	
11,300.0	5,808.1	11,350.1	5,892.0	113.8	112.1	104.54	-5,959.8	-566.5	340.6	121.5	219.10	1.554	
11,400.0	5,808.1	11,450.1	5,892.0	115.7	114.0	104.54	-6,059.8	-566.5	340.6	117.8	222.79	1.529	

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-2805A
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-2805A	**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 #21D-2804B - 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
11,500.0	5,808.1	11,550.1	5,892.0	117.6	115.9	104.54	-6,159.8	-566.5	340.6	114.1	226.49	1.504	
11,600.0	5,808.1	11,650.1	5,892.0	119.5	117.8	104.54	-6,259.8	-566.5	340.6	110.4	230.19	1.480	Level 3
11,700.0	5,808.1	11,750.1	5,892.0	121.4	119.7	104.54	-6,359.8	-566.5	340.6	106.7	233.89	1.456	Level 3
11,800.0	5,808.1	11,850.1	5,892.0	123.3	121.6	104.54	-6,459.8	-566.5	340.6	103.0	237.59	1.433	Level 3
11,900.0	5,808.1	11,950.1	5,892.0	125.2	123.5	104.55	-6,559.8	-566.5	340.6	99.3	241.29	1.411	Level 3
12,000.0	5,808.1	12,050.1	5,892.0	127.2	125.4	104.55	-6,659.8	-566.5	340.6	95.6	245.00	1.390	Level 3
12,100.0	5,808.1	12,150.1	5,892.0	129.1	127.2	104.55	-6,759.8	-566.5	340.6	91.9	248.70	1.369	Level 3
12,200.0	5,808.0	12,250.1	5,892.0	131.0	129.1	104.55	-6,859.8	-566.5	340.6	88.2	252.40	1.349	Level 3
12,300.0	5,808.0	12,350.1	5,892.0	132.9	131.0	104.55	-6,959.8	-566.5	340.6	84.5	256.11	1.330	Level 3
12,400.0	5,808.0	12,450.1	5,892.0	134.8	132.9	104.55	-7,059.8	-566.5	340.6	80.7	259.81	1.311	Level 3
12,500.0	5,808.0	12,550.1	5,892.0	136.7	134.8	104.55	-7,159.8	-566.5	340.6	77.0	263.52	1.292	Level 3
12,600.0	5,808.0	12,650.1	5,892.0	138.6	136.7	104.55	-7,259.8	-566.5	340.6	73.3	267.23	1.274	Level 3
12,700.0	5,808.0	12,750.1	5,892.0	140.5	138.6	104.56	-7,359.8	-566.5	340.6	69.6	270.94	1.257	Level 3
12,799.8	5,808.0	12,850.0	5,892.0	142.1	140.5	104.56	-7,459.6	-566.5	340.6	66.3	274.29	1.242	Level 2, CC, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #21C-2805A
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-2805A	**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-2805A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.05°