WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor #12F-0102B
Wellbore: HZ
Design: Plan #3

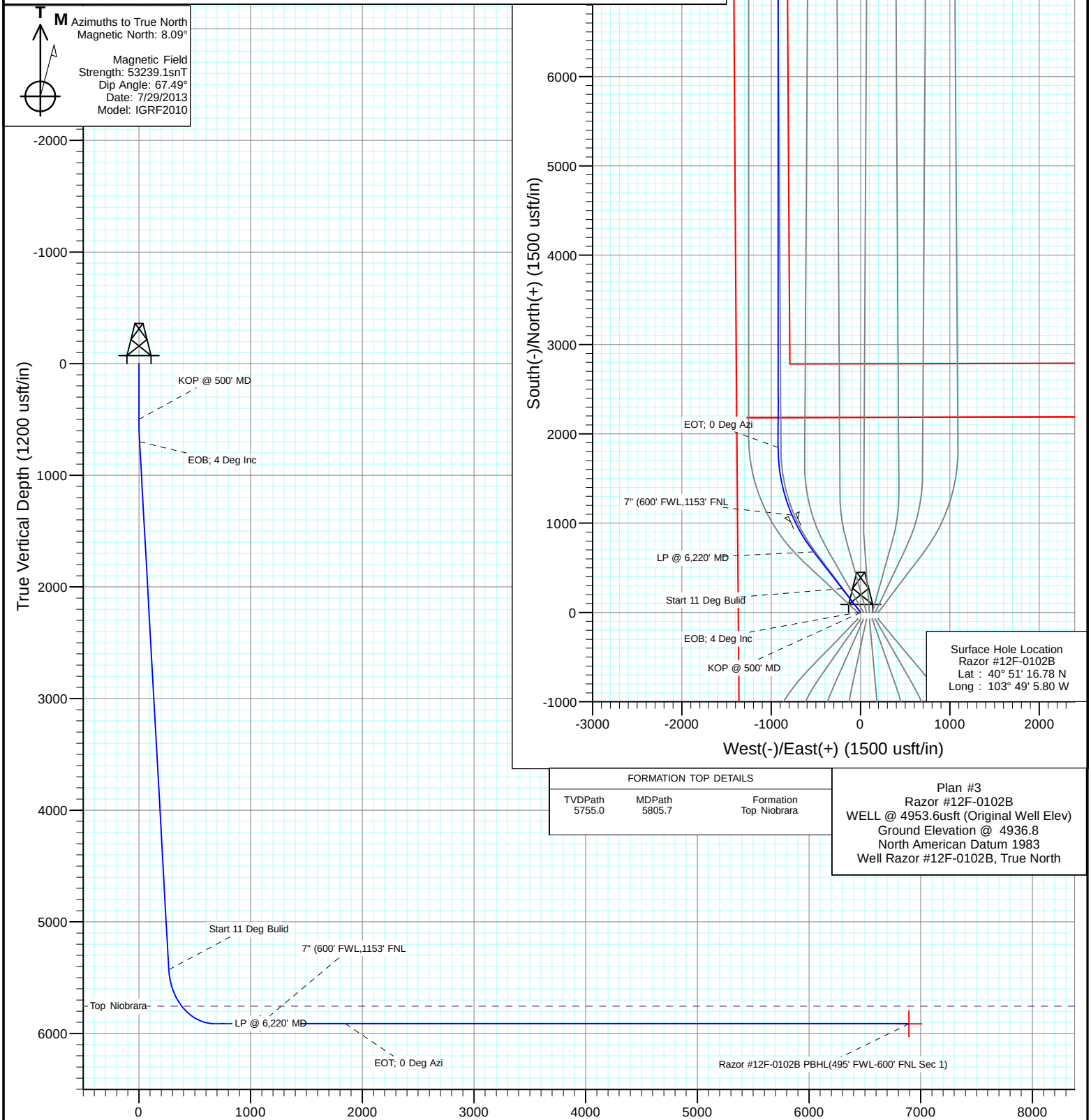
CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP @ 500' MD
3	700.0	4.00	322.28	699.8	5.5	-4.3	2.00	322.28	5.5	EOB; 4 Deg Inc
4	5439.0	4.00	322.28	5427.3	267.0	-206.5	0.00	0.00	267.0	Start 11 Deg Bulid
5	6220.8	90.00	322.28	5911.8	678.0	-524.4	11.00	0.00	678.0	LP @ 6,220' MD
6	7478.2	90.00	0.00	5911.8	1846.5	-923.6	3.00	90.00	1846.5	EOT; 0 Deg Azi
7	12524.9	90.00	0.00	5912.0	6893.2	-923.4	0.00	0.00	6893.2	Razor #12F-0102B PBHL(495' FWL-600' FNL Sec 1) - PBHL @ 12524.9' MD

T M Azimuths to True North
Magnetic North: 8.09°

Magnetic Field
Strength: 53239.1snT
Dip Angle: 67.49°
Date: 7/29/2013
Model: IGRF2010



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5755.0	5805.7	Top Niobrara

Plan #3
Razor #12F-0102B
WELL @ 4953.6usft (Original Well Elev)
Ground Elevation @ 4936.8
North American Datum 1983
Well Razor #12F-0102B, True North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Project Weld County, CO

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

Site S12-T10N-R58W

Site Position:		**Northing:**	1,558,537.97 usft	**Latitude:**	40° 51' 16.04 N
From:	Lat/Long	**Easting:**	3,465,176.15 usft	**Longitude:**	103° 49' 6.23 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	1.09 °

Well Razor #12F-0102B

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,558,613.47 usft	**Latitude:**	40° 51' 16.78 N
	+E/-W	0.0 usft	**Easting:**	3,465,207.77 usft	**Longitude:**	103° 49' 5.80 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	4,936.8 usft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/29/2013	8.09	67.49	53,239

Design Plan #3

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	0.00

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	4.00	322.28	699.8	5.5	-4.3	2.00	2.00	0.00	322.28	
5,439.0	4.00	322.28	5,427.3	267.0	-206.5	0.00	0.00	0.00	0.00	
6,220.8	90.00	322.28	5,911.8	678.0	-524.4	11.00	11.00	0.00	0.00	
7,478.2	90.00	0.00	5,911.8	1,846.5	-923.6	3.00	0.00	3.00	90.00	
12,524.9	90.00	0.00	5,912.0	6,893.2	-923.4	0.00	0.00	0.00	0.00	Razor #12F-0102B PI

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Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500' MD
600.0	2.00	322.28	600.0	1.4	-1.1	1.4	2.00	2.00	
700.0	4.00	322.28	699.8	5.5	-4.3	5.5	2.00	2.00	EOB; 4 Deg Inc
800.0	4.00	322.28	799.6	11.0	-8.5	11.0	0.00	0.00	
900.0	4.00	322.28	899.4	16.6	-12.8	16.6	0.00	0.00	
1,000.0	4.00	322.28	999.1	22.1	-17.1	22.1	0.00	0.00	
1,100.0	4.00	322.28	1,098.9	27.6	-21.3	27.6	0.00	0.00	
1,200.0	4.00	322.28	1,198.6	33.1	-25.6	33.1	0.00	0.00	
1,300.0	4.00	322.28	1,298.4	38.6	-29.9	38.6	0.00	0.00	
1,400.0	4.00	322.28	1,398.1	44.1	-34.1	44.1	0.00	0.00	
1,500.0	4.00	322.28	1,497.9	49.7	-38.4	49.7	0.00	0.00	
1,600.0	4.00	322.28	1,597.6	55.2	-42.7	55.2	0.00	0.00	
1,700.0	4.00	322.28	1,697.4	60.7	-46.9	60.7	0.00	0.00	
1,800.0	4.00	322.28	1,797.2	66.2	-51.2	66.2	0.00	0.00	
1,900.0	4.00	322.28	1,896.9	71.7	-55.5	71.7	0.00	0.00	
2,000.0	4.00	322.28	1,996.7	77.3	-59.7	77.3	0.00	0.00	
2,100.0	4.00	322.28	2,096.4	82.8	-64.0	82.8	0.00	0.00	
2,200.0	4.00	322.28	2,196.2	88.3	-68.3	88.3	0.00	0.00	
2,300.0	4.00	322.28	2,295.9	93.8	-72.6	93.8	0.00	0.00	
2,400.0	4.00	322.28	2,395.7	99.3	-76.8	99.3	0.00	0.00	
2,500.0	4.00	322.28	2,495.5	104.8	-81.1	104.8	0.00	0.00	
2,600.0	4.00	322.28	2,595.2	110.4	-85.4	110.4	0.00	0.00	
2,700.0	4.00	322.28	2,695.0	115.9	-89.6	115.9	0.00	0.00	
2,800.0	4.00	322.28	2,794.7	121.4	-93.9	121.4	0.00	0.00	
2,900.0	4.00	322.28	2,894.5	126.9	-98.2	126.9	0.00	0.00	
3,000.0	4.00	322.28	2,994.2	132.4	-102.4	132.4	0.00	0.00	
3,100.0	4.00	322.28	3,094.0	137.9	-106.7	137.9	0.00	0.00	
3,200.0	4.00	322.28	3,193.7	143.5	-111.0	143.5	0.00	0.00	
3,300.0	4.00	322.28	3,293.5	149.0	-115.2	149.0	0.00	0.00	
3,400.0	4.00	322.28	3,393.3	154.5	-119.5	154.5	0.00	0.00	
3,500.0	4.00	322.28	3,493.0	160.0	-123.8	160.0	0.00	0.00	
3,600.0	4.00	322.28	3,592.8	165.5	-128.0	165.5	0.00	0.00	
3,700.0	4.00	322.28	3,692.5	171.1	-132.3	171.1	0.00	0.00	
3,800.0	4.00	322.28	3,792.3	176.6	-136.6	176.6	0.00	0.00	
3,900.0	4.00	322.28	3,892.0	182.1	-140.8	182.1	0.00	0.00	
4,000.0	4.00	322.28	3,991.8	187.6	-145.1	187.6	0.00	0.00	
4,100.0	4.00	322.28	4,091.6	193.1	-149.4	193.1	0.00	0.00	
4,200.0	4.00	322.28	4,191.3	198.6	-153.6	198.6	0.00	0.00	
4,300.0	4.00	322.28	4,291.1	204.2	-157.9	204.2	0.00	0.00	
4,400.0	4.00	322.28	4,390.8	209.7	-162.2	209.7	0.00	0.00	
4,500.0	4.00	322.28	4,490.6	215.2	-166.4	215.2	0.00	0.00	
4,600.0	4.00	322.28	4,590.3	220.7	-170.7	220.7	0.00	0.00	
4,700.0	4.00	322.28	4,690.1	226.2	-175.0	226.2	0.00	0.00	
4,800.0	4.00	322.28	4,789.9	231.8	-179.2	231.8	0.00	0.00	
4,900.0	4.00	322.28	4,889.6	237.3	-183.5	237.3	0.00	0.00	
5,000.0	4.00	322.28	4,989.4	242.8	-187.8	242.8	0.00	0.00	
5,100.0	4.00	322.28	5,089.1	248.3	-192.0	248.3	0.00	0.00	

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Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
5,200.0	4.00	322.28	5,188.9	253.8	-196.3	253.8	0.00	0.00	
5,300.0	4.00	322.28	5,288.6	259.3	-200.6	259.3	0.00	0.00	
5,400.0	4.00	322.28	5,388.4	264.9	-204.9	264.9	0.00	0.00	
5,439.0	4.00	322.28	5,427.3	267.0	-206.5	267.0	0.00	0.00	Start 11 Deg Bulid
5,450.0	5.21	322.28	5,438.3	267.7	-207.1	267.7	11.00	11.00	
5,500.0	10.71	322.28	5,487.8	273.2	-211.3	273.2	11.00	11.00	
5,550.0	16.21	322.28	5,536.4	282.4	-218.4	282.4	11.00	11.00	
5,600.0	21.71	322.28	5,583.6	295.2	-228.3	295.2	11.00	11.00	
5,650.0	27.21	322.28	5,629.1	311.6	-241.0	311.6	11.00	11.00	
5,700.0	32.71	322.28	5,672.4	331.3	-256.3	331.3	11.00	11.00	
5,750.0	38.21	322.28	5,713.1	354.3	-274.0	354.3	11.00	11.00	
5,800.0	43.71	322.28	5,750.9	380.2	-294.1	380.2	11.00	11.00	
5,805.7	44.34	322.28	5,755.0	383.3	-296.5	383.3	11.00	11.00	Top Niobrara
5,850.0	49.21	322.28	5,785.3	408.9	-316.2	408.9	11.00	11.00	
5,900.0	54.71	322.28	5,816.1	440.0	-340.3	440.0	11.00	11.00	
5,950.0	60.21	322.28	5,843.0	473.3	-366.1	473.3	11.00	11.00	
6,000.0	65.71	322.28	5,865.7	508.5	-393.3	508.5	11.00	11.00	
6,050.0	71.21	322.28	5,884.1	545.3	-421.8	545.3	11.00	11.00	
6,100.0	76.71	322.28	5,897.9	583.3	-451.2	583.3	11.00	11.00	
6,150.0	82.21	322.28	5,907.0	622.2	-481.2	622.2	11.00	11.00	
6,200.0	87.71	322.28	5,911.4	661.6	-511.7	661.6	11.00	11.00	
6,220.8	90.00	322.28	5,911.8	678.0	-524.4	678.0	11.00	11.00	LP @ 6,220' MD
6,300.0	90.00	324.66	5,911.8	741.6	-571.5	741.6	3.00	0.00	
6,400.0	90.00	327.66	5,911.8	824.7	-627.2	824.7	3.00	0.00	
6,500.0	90.00	330.66	5,911.8	910.5	-678.5	910.5	3.00	0.00	
6,600.0	90.00	333.66	5,911.8	998.9	-725.2	998.9	3.00	0.00	
6,700.0	90.00	336.66	5,911.8	1,089.7	-767.2	1,089.7	3.00	0.00	7" (600' FWL,1153' FNL
6,800.0	90.00	339.66	5,911.8	1,182.5	-804.4	1,182.5	3.00	0.00	
6,900.0	90.00	342.66	5,911.8	1,277.1	-836.7	1,277.1	3.00	0.00	
7,000.0	90.00	345.66	5,911.8	1,373.3	-864.0	1,373.3	3.00	0.00	
7,100.0	90.00	348.66	5,911.8	1,470.8	-886.2	1,470.8	3.00	0.00	
7,200.0	90.00	351.66	5,911.8	1,569.3	-903.3	1,569.3	3.00	0.00	
7,300.0	90.00	354.66	5,911.8	1,668.6	-915.2	1,668.6	3.00	0.00	
7,400.0	90.00	357.66	5,911.8	1,768.3	-922.0	1,768.3	3.00	0.00	
7,478.2	90.00	0.00	5,911.8	1,846.5	-923.6	1,846.5	3.00	0.00	EOT; 0 Deg Azi
7,500.0	90.00	0.00	5,911.9	1,868.3	-923.6	1,868.3	0.00	0.00	
7,600.0	90.00	0.00	5,911.9	1,968.3	-923.5	1,968.3	0.00	0.00	
7,700.0	90.00	0.00	5,911.9	2,068.3	-923.5	2,068.3	0.00	0.00	
7,800.0	90.00	0.00	5,911.9	2,168.3	-923.5	2,168.3	0.00	0.00	
7,900.0	90.00	0.00	5,911.9	2,268.3	-923.5	2,268.3	0.00	0.00	
8,000.0	90.00	0.00	5,911.9	2,368.3	-923.5	2,368.3	0.00	0.00	
8,100.0	90.00	0.00	5,911.9	2,468.3	-923.5	2,468.3	0.00	0.00	
8,200.0	90.00	0.00	5,911.9	2,568.3	-923.5	2,568.3	0.00	0.00	
8,300.0	90.00	0.00	5,911.9	2,668.3	-923.5	2,668.3	0.00	0.00	
8,400.0	90.00	0.00	5,911.9	2,768.3	-923.5	2,768.3	0.00	0.00	
8,500.0	90.00	0.00	5,911.9	2,868.3	-923.5	2,868.3	0.00	0.00	
8,600.0	90.00	0.00	5,911.9	2,968.3	-923.5	2,968.3	0.00	0.00	
8,700.0	90.00	0.00	5,911.9	3,068.3	-923.5	3,068.3	0.00	0.00	
8,800.0	90.00	0.00	5,911.9	3,168.3	-923.5	3,168.3	0.00	0.00	
8,900.0	90.00	0.00	5,911.9	3,268.3	-923.5	3,268.3	0.00	0.00	
9,000.0	90.00	0.00	5,911.9	3,368.3	-923.5	3,368.3	0.00	0.00	
9,100.0	90.00	0.00	5,911.9	3,468.3	-923.5	3,468.3	0.00	0.00	

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Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
9,200.0	90.00	0.00	5,911.9	3,568.3	-923.5	3,568.3	0.00	0.00	
9,300.0	90.00	0.00	5,911.9	3,668.3	-923.5	3,668.3	0.00	0.00	
9,400.0	90.00	0.00	5,911.9	3,768.3	-923.5	3,768.3	0.00	0.00	
9,500.0	90.00	0.00	5,911.9	3,868.3	-923.5	3,868.3	0.00	0.00	
9,600.0	90.00	0.00	5,911.9	3,968.3	-923.5	3,968.3	0.00	0.00	
9,700.0	90.00	0.00	5,911.9	4,068.3	-923.5	4,068.3	0.00	0.00	
9,800.0	90.00	0.00	5,911.9	4,168.3	-923.5	4,168.3	0.00	0.00	
9,900.0	90.00	0.00	5,911.9	4,268.3	-923.5	4,268.3	0.00	0.00	
10,000.0	90.00	0.00	5,911.9	4,368.3	-923.5	4,368.3	0.00	0.00	
10,100.0	90.00	0.00	5,911.9	4,468.3	-923.5	4,468.3	0.00	0.00	
10,200.0	90.00	0.00	5,911.9	4,568.3	-923.5	4,568.3	0.00	0.00	
10,300.0	90.00	0.00	5,911.9	4,668.3	-923.5	4,668.3	0.00	0.00	
10,400.0	90.00	0.00	5,911.9	4,768.3	-923.5	4,768.3	0.00	0.00	
10,500.0	90.00	0.00	5,911.9	4,868.3	-923.5	4,868.3	0.00	0.00	
10,600.0	90.00	0.00	5,911.9	4,968.3	-923.5	4,968.3	0.00	0.00	
10,700.0	90.00	0.00	5,911.9	5,068.3	-923.5	5,068.3	0.00	0.00	
10,800.0	90.00	0.00	5,911.9	5,168.3	-923.5	5,168.3	0.00	0.00	
10,900.0	90.00	0.00	5,912.0	5,268.3	-923.5	5,268.3	0.00	0.00	
11,000.0	90.00	0.00	5,912.0	5,368.3	-923.5	5,368.3	0.00	0.00	
11,100.0	90.00	0.00	5,912.0	5,468.3	-923.5	5,468.3	0.00	0.00	
11,200.0	90.00	0.00	5,912.0	5,568.3	-923.5	5,568.3	0.00	0.00	
11,300.0	90.00	0.00	5,912.0	5,668.3	-923.5	5,668.3	0.00	0.00	
11,400.0	90.00	0.00	5,912.0	5,768.3	-923.4	5,768.3	0.00	0.00	
11,500.0	90.00	0.00	5,912.0	5,868.3	-923.4	5,868.3	0.00	0.00	
11,600.0	90.00	0.00	5,912.0	5,968.3	-923.4	5,968.3	0.00	0.00	
11,700.0	90.00	0.00	5,912.0	6,068.3	-923.4	6,068.3	0.00	0.00	
11,800.0	90.00	0.00	5,912.0	6,168.3	-923.4	6,168.3	0.00	0.00	
11,900.0	90.00	0.00	5,912.0	6,268.3	-923.4	6,268.3	0.00	0.00	
12,000.0	90.00	0.00	5,912.0	6,368.3	-923.4	6,368.3	0.00	0.00	
12,100.0	90.00	0.00	5,912.0	6,468.3	-923.4	6,468.3	0.00	0.00	
12,200.0	90.00	0.00	5,912.0	6,568.3	-923.4	6,568.3	0.00	0.00	
12,300.0	90.00	0.00	5,912.0	6,668.3	-923.4	6,668.3	0.00	0.00	
12,400.0	90.00	0.00	5,912.0	6,768.3	-923.4	6,768.3	0.00	0.00	
12,500.0	90.00	0.00	5,912.0	6,868.3	-923.4	6,868.3	0.00	0.00	
12,524.9	90.00	0.00	5,912.0	6,893.2	-923.4	6,893.2	0.00	0.00	PBHL @ 12,524.9' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Razor #12F-0102B PBH - plan hits target center - Point	0.00	0.00	5,912.0	6,893.2	-923.4	1,565,487.97	3,464,153.79	40° 52' 24.89 N	103° 49' 17.82 W

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,700.0	5,911.8	7" (600' FWL,1153' FNL	0	0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,805.7	5,755.0	Top Niobrara		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	KOP @ 500' MD
700.0	699.8	5.5	-4.3	EOB; 4 Deg Inc
5,439.0	5,427.3	267.0	-206.5	Start 11 Deg Bulid
6,220.8	5,911.8	678.0	-524.4	LP @ 6,220' MD
7,478.2	5,911.8	1,846.5	-923.6	EOT; 0 Deg Azi
12,524.9	5,912.0	6,893.2	-923.4	PBHL @ 12,524.9' MD

Whiting Petroleum Corporation

Weld County, CO
S12-T10N-R58W
Razor #12F-0102B
HZ
Plan #3

Anticollision Report

08 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Plan #3

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 750.0usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 11/8/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,524.6	Plan #3 (HZ)	ISCWSA MWD	MWD - ISCWSA

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
S12-T10N-R58W						
Razor #12F-0101A - HZ - Plan #3	500.0	500.0	33.0	31.1	16.645	CC
Razor #12F-0101A - HZ - Plan #3	600.0	599.2	33.2	30.8	13.703	ES
Razor #12F-0101A - HZ - Plan #3	12,524.9	12,596.5	344.7	91.0	1.359	Level 3, SF
Razor #12F-0102B - HZ - Plan #2	500.0	500.0	0.0	-2.0	0.000	Level 1, CC, SF
Razor #12F-0102B - HZ - Plan #2	12,524.9	12,508.7	0.0	-262.8	0.000	Level 1, ES
Razor #12F-0103A - HZ - Plan #2	500.0	500.0	66.1	64.1	33.291	CC, ES
Razor #12F-0103A - HZ - Plan #2	12,524.9	12,349.5	345.4	93.1	1.369	Level 3, SF
Razor #12F-0104B - HZ - Plan #2	500.0	500.0	81.9	79.9	41.239	CC, ES
Razor #12F-0104B - HZ - Plan #2	12,524.9	12,389.3	659.9	395.8	2.499	SF
Razor #12F-0105A - HZ - Plan #2	500.0	500.0	131.4	129.4	66.195	CC, ES
Razor #12F-0105A - HZ - Plan #2	5,500.0	5,492.4	322.8	296.0	12.070	SF
Razor #12F-0106B - HZ - Plan #2	500.0	500.0	124.3	122.3	62.590	CC, ES
Razor #12F-0106B - HZ - Plan #2	5,400.0	5,394.3	391.4	365.5	15.069	SF
Razor #12F-0107A - HZ - Plan #2	500.0	500.0	197.5	195.5	99.485	CC, ES
Razor #12F-0107A - HZ - Plan #2	5,400.0	5,369.1	525.4	499.8	20.518	SF
Razor #12F-0108B - HZ - Plan #2	500.0	500.0	180.7	178.7	91.033	CC, ES
Razor #12F-0108B - HZ - Plan #2	5,400.0	5,380.7	565.6	540.0	22.125	SF
Razor Federal #12F-1301A - HZ - Plan #3	500.0	500.0	81.9	79.9	41.236	CC, ES
Razor Federal #12F-1301A - HZ - Plan #3	1,200.0	1,192.7	113.5	108.3	22.178	SF
Razor Federal #12F-1302B - HZ - Plan #2	500.0	500.0	74.9	72.9	37.729	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	1,300.0	1,295.8	118.5	112.9	21.238	SF
Razor Federal #12F-1303A - HZ - Plan #3	500.0	500.0	81.9	79.9	41.236	CC, ES
Razor Federal #12F-1303A - HZ - Plan #3	5,300.0	5,262.4	640.8	616.5	26.290	SF
Razor Federal #12F-1304B - HZ - Plan #2	500.0	500.0	99.9	97.9	50.321	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	5,400.0	5,358.9	659.1	634.9	27.207	SF
Razor Federal #12F-1305A - HZ - Plan #3	500.0	500.0	124.2	122.3	62.586	CC, ES
Razor Federal #12F-1305A - HZ - Plan #3	5,300.0	5,253.0	710.9	687.3	30.137	SF
Razor Federal #12F-1306B - HZ - Plan #2	500.0	500.0	151.3	149.3	76.197	CC, ES
Razor Federal #12F-1306B - HZ - Plan #2	5,300.0	5,248.7	744.7	721.3	31.835	SF
Razor Federal #12F-1307A - HZ - Plan #3	400.0	400.0	180.7	179.2	117.674	CC, ES
Razor Federal #12F-1307A - HZ - Plan #3	4,800.0	4,748.8	749.4	728.0	35.073	SF
Razor Federal#12F-1308B - HZ - Plan #2	500.0	500.0	211.2	209.2	106.404	CC, ES
Razor Federal#12F-1308B - HZ - Plan #2	4,800.0	4,747.3	745.9	724.7	35.341	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.02	0.0	-33.0	33.0				
100.0	100.0	100.0	100.0	0.1	0.1	-90.02	0.0	-33.0	33.0	32.9	0.19	176.697	
200.0	200.0	200.0	200.0	0.3	0.3	-90.02	0.0	-33.0	33.0	32.4	0.64	51.911	
300.0	300.0	300.0	300.0	0.5	0.5	-90.02	0.0	-33.0	33.0	32.0	1.09	30.425	
400.0	400.0	400.0	400.0	0.8	0.8	-90.02	0.0	-33.0	33.0	31.5	1.54	21.518	
500.0	500.0	500.0	500.0	1.0	1.0	-90.02	0.0	-33.0	33.0	31.1	1.99	16.645	CC
600.0	600.0	599.2	599.1	1.2	1.2	-52.63	1.2	-34.3	33.2	30.8	2.43	13.703	ES
700.0	699.8	698.3	698.2	1.4	1.4	-53.59	4.7	-38.0	33.8	31.0	2.87	11.805	
800.0	799.6	798.3	797.9	1.7	1.7	-54.78	9.5	-43.1	34.7	31.3	3.32	10.440	
900.0	899.4	898.3	897.7	1.9	1.9	-55.91	14.3	-48.2	35.5	31.7	3.78	9.383	
1,000.0	999.1	998.3	997.4	2.2	2.2	-56.99	19.0	-53.3	36.4	32.1	4.26	8.545	
1,100.0	1,098.9	1,098.3	1,097.2	2.4	2.4	-58.02	23.8	-58.4	37.2	32.5	4.73	7.867	
1,200.0	1,198.6	1,198.3	1,196.9	2.7	2.7	-59.00	28.6	-63.4	38.1	32.9	5.22	7.309	
1,300.0	1,298.4	1,298.3	1,296.7	2.9	2.9	-59.93	33.4	-68.5	39.0	33.3	5.70	6.843	
1,400.0	1,398.1	1,398.3	1,396.4	3.2	3.2	-60.83	38.2	-73.6	39.9	33.7	6.19	6.449	
1,500.0	1,497.9	1,498.3	1,496.2	3.4	3.4	-61.68	42.9	-78.7	40.9	34.2	6.69	6.111	
1,600.0	1,597.6	1,598.3	1,595.9	3.7	3.7	-62.49	47.7	-83.8	41.8	34.6	7.18	5.818	
1,700.0	1,697.4	1,698.3	1,695.7	3.9	3.9	-63.27	52.5	-88.8	42.7	35.0	7.68	5.563	
1,800.0	1,797.2	1,798.2	1,795.4	4.2	4.2	-64.02	57.3	-93.9	43.7	35.5	8.18	5.339	
1,900.0	1,896.9	1,898.2	1,895.2	4.4	4.4	-64.73	62.1	-99.0	44.6	35.9	8.68	5.140	
2,000.0	1,996.7	1,998.2	1,994.9	4.7	4.7	-65.42	66.8	-104.1	45.6	36.4	9.18	4.963	
2,100.0	2,096.4	2,098.2	2,094.7	4.9	4.9	-66.08	71.6	-109.2	46.5	36.8	9.68	4.805	
2,200.0	2,196.2	2,198.2	2,194.4	5.2	5.2	-66.71	76.4	-114.2	47.5	37.3	10.19	4.662	
2,300.0	2,295.9	2,298.2	2,294.2	5.5	5.5	-67.31	81.2	-119.3	48.5	37.8	10.69	4.533	
2,400.0	2,395.7	2,398.2	2,393.9	5.7	5.7	-67.89	86.0	-124.4	49.4	38.2	11.20	4.415	
2,500.0	2,495.5	2,498.2	2,493.7	6.0	6.0	-68.45	90.7	-129.5	50.4	38.7	11.71	4.308	
2,600.0	2,595.2	2,598.2	2,593.4	6.2	6.2	-68.99	95.5	-134.6	51.4	39.2	12.22	4.209	
2,700.0	2,695.0	2,698.2	2,693.2	6.5	6.5	-69.50	100.3	-139.6	52.4	39.7	12.72	4.119	
2,800.0	2,794.7	2,798.2	2,792.9	6.7	6.7	-70.00	105.1	-144.7	53.4	40.2	13.23	4.036	
2,900.0	2,894.5	2,898.2	2,892.7	7.0	7.0	-70.48	109.9	-149.8	54.4	40.7	13.74	3.959	
3,000.0	2,994.2	2,998.2	2,992.4	7.3	7.3	-70.94	114.6	-154.9	55.4	41.2	14.25	3.888	
3,100.0	3,094.0	3,098.2	3,092.2	7.5	7.5	-71.39	119.4	-160.0	56.4	41.7	14.76	3.821	
3,200.0	3,193.7	3,198.2	3,191.9	7.8	7.8	-71.82	124.2	-165.0	57.4	42.2	15.28	3.760	
3,300.0	3,293.5	3,298.2	3,291.7	8.0	8.0	-72.23	129.0	-170.1	58.4	42.7	15.79	3.702	
3,400.0	3,393.3	3,398.2	3,391.4	8.3	8.3	-72.63	133.8	-175.2	59.5	43.2	16.30	3.648	
3,500.0	3,493.0	3,498.1	3,491.2	8.5	8.5	-73.02	138.5	-180.3	60.5	43.7	16.81	3.597	
3,600.0	3,592.8	3,598.1	3,590.9	8.8	8.8	-73.39	143.3	-185.4	61.5	44.2	17.32	3.550	
3,700.0	3,692.5	3,698.1	3,690.7	9.1	9.1	-73.75	148.1	-190.4	62.5	44.7	17.84	3.505	
3,800.0	3,792.3	3,798.1	3,790.4	9.3	9.3	-74.10	152.9	-195.5	63.6	45.2	18.35	3.463	
3,900.0	3,892.0	3,898.1	3,890.2	9.6	9.6	-74.44	157.7	-200.6	64.6	45.7	18.86	3.423	
4,000.0	3,991.8	3,998.1	3,989.9	9.8	9.8	-74.77	162.4	-205.7	65.6	46.2	19.38	3.386	
4,100.0	4,091.6	4,098.1	4,089.7	10.1	10.1	-75.09	167.2	-210.8	66.6	46.8	19.89	3.350	
4,200.0	4,191.3	4,198.1	4,189.4	10.3	10.3	-75.40	172.0	-215.8	67.7	47.3	20.41	3.317	
4,300.0	4,291.1	4,298.1	4,289.2	10.6	10.6	-75.70	176.8	-220.9	68.7	47.8	20.92	3.285	
4,400.0	4,390.8	4,398.1	4,388.9	10.9	10.9	-75.99	181.6	-226.0	69.8	48.3	21.44	3.254	
4,500.0	4,490.6	4,498.1	4,488.7	11.1	11.1	-76.27	186.3	-231.1	70.8	48.9	21.95	3.226	
4,600.0	4,590.3	4,598.1	4,588.4	11.4	11.4	-76.54	191.1	-236.1	71.8	49.4	22.47	3.198	
4,700.0	4,690.1	4,698.1	4,688.2	11.6	11.6	-76.81	195.9	-241.2	72.9	49.9	22.98	3.172	
4,800.0	4,789.9	4,798.1	4,787.9	11.9	11.9	-77.07	200.7	-246.3	73.9	50.4	23.50	3.147	
4,900.0	4,889.6	4,898.1	4,887.7	12.1	12.2	-77.32	205.5	-251.4	75.0	51.0	24.01	3.123	
5,000.0	4,989.4	4,998.1	4,987.4	12.4	12.4	-77.56	210.2	-256.5	76.0	51.5	24.53	3.100	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,089.1	5,098.1	5,087.2	12.7	12.7	-77.80	215.0	-261.5	77.1	52.0	25.04	3.078	
5,200.0	5,188.9	5,198.0	5,186.9	12.9	12.9	-78.03	219.8	-266.6	78.1	52.6	25.56	3.057	
5,300.0	5,288.6	5,298.0	5,286.7	13.2	13.2	-78.26	224.6	-271.7	79.2	53.1	26.07	3.037	
5,400.0	5,388.4	5,394.7	5,382.8	13.4	13.5	-76.43	231.3	-278.9	81.4	54.9	26.55	3.068	
5,500.0	5,487.8	5,486.5	5,471.2	13.7	13.9	-67.32	247.9	-296.5	90.4	63.5	26.85	3.366	
5,600.0	5,583.6	5,575.5	5,551.6	14.2	14.4	-60.34	273.9	-324.1	103.2	76.0	27.15	3.801	
5,700.0	5,672.4	5,662.5	5,622.8	14.8	15.1	-56.16	307.9	-360.3	117.6	90.2	27.41	4.290	
5,800.0	5,750.9	5,750.0	5,685.2	15.6	15.9	-54.01	349.9	-404.9	132.4	104.6	27.77	4.767	
5,900.0	5,816.1	5,831.6	5,733.3	16.6	16.8	-53.31	395.0	-452.8	146.8	118.3	28.46	5.158	
6,000.0	5,865.7	5,914.6	5,771.1	17.9	18.0	-53.65	445.6	-506.6	160.4	130.6	29.80	5.383	
6,100.0	5,897.9	6,000.0	5,797.3	19.4	19.3	-54.86	501.3	-565.7	173.1	141.1	32.05	5.402	
6,200.0	5,911.4	6,079.4	5,809.4	21.0	20.7	-56.52	555.0	-622.8	184.7	149.7	35.01	5.276	
6,300.0	5,911.8	6,175.0	5,811.0	22.7	22.3	-59.01	621.0	-691.8	198.0	159.2	38.78	5.105	
6,400.0	5,911.8	6,283.8	5,811.0	24.4	24.3	-61.34	700.0	-766.6	212.5	169.8	42.65	4.982	
6,500.0	5,911.8	6,393.7	5,811.0	26.1	26.3	-63.31	783.9	-837.5	226.9	180.4	46.47	4.882	
6,600.0	5,911.8	6,504.7	5,811.0	27.8	28.3	-65.00	872.8	-904.1	241.0	190.8	50.20	4.801	
6,700.0	5,911.8	6,616.9	5,811.0	29.6	30.4	-66.45	966.3	-966.0	254.8	201.0	53.81	4.735	
6,800.0	5,911.8	6,730.1	5,811.0	31.3	32.5	-67.70	1,064.2	-1,022.8	268.1	210.8	57.26	4.682	
6,900.0	5,911.8	6,844.5	5,811.0	33.0	34.6	-68.78	1,166.4	-1,074.2	280.8	220.3	60.54	4.638	
7,000.0	5,911.8	6,959.9	5,811.0	34.8	36.7	-69.71	1,272.4	-1,119.8	292.9	229.3	63.63	4.603	
7,100.0	5,911.8	7,076.3	5,811.0	36.4	38.8	-70.52	1,381.9	-1,159.2	304.3	237.8	66.51	4.575	
7,200.0	5,911.8	7,193.6	5,811.0	38.1	40.8	-71.22	1,494.5	-1,192.1	314.9	245.7	69.17	4.553	
7,300.0	5,911.8	7,311.9	5,811.0	39.7	42.7	-71.82	1,609.8	-1,218.2	324.7	253.1	71.59	4.535	
7,400.0	5,911.8	7,431.0	5,811.0	41.3	44.7	-72.33	1,727.4	-1,237.2	333.5	259.8	73.77	4.522	
7,500.0	5,911.9	7,550.9	5,811.0	42.8	46.5	-72.78	1,846.7	-1,248.9	341.3	265.2	76.12	4.485	
7,600.0	5,911.9	7,671.5	5,811.0	44.3	48.3	-72.98	1,967.3	-1,253.1	344.7	264.9	79.77	4.321	
7,700.0	5,911.9	7,772.6	5,811.0	45.9	49.7	-72.98	2,068.3	-1,253.1	344.7	261.7	82.99	4.153	
7,800.0	5,911.9	7,872.6	5,811.0	47.4	51.2	-72.98	2,168.3	-1,253.1	344.7	258.5	86.22	3.998	
7,900.0	5,911.9	7,972.6	5,811.0	49.0	52.6	-72.98	2,268.3	-1,253.1	344.7	255.2	89.48	3.852	
8,000.0	5,911.9	8,072.6	5,811.0	50.7	54.1	-72.98	2,368.3	-1,253.1	344.7	251.9	92.77	3.715	
8,100.0	5,911.9	8,172.6	5,811.0	52.3	55.7	-72.98	2,468.3	-1,253.1	344.7	248.6	96.09	3.587	
8,200.0	5,911.9	8,272.6	5,811.0	53.9	57.2	-72.98	2,568.3	-1,253.1	344.7	245.2	99.44	3.466	
8,300.0	5,911.9	8,372.6	5,811.0	55.6	58.8	-72.98	2,668.3	-1,253.1	344.7	241.9	102.82	3.352	
8,400.0	5,911.9	8,472.6	5,811.0	57.3	60.4	-72.98	2,768.3	-1,253.1	344.7	238.5	106.21	3.245	
8,500.0	5,911.9	8,572.6	5,811.0	59.0	62.0	-72.98	2,868.3	-1,253.1	344.7	235.1	109.63	3.144	
8,600.0	5,911.9	8,672.6	5,811.0	60.7	63.6	-72.98	2,968.3	-1,253.1	344.7	231.6	113.06	3.049	
8,700.0	5,911.9	8,772.6	5,811.0	62.4	65.2	-72.98	3,068.3	-1,253.1	344.7	228.2	116.51	2.958	
8,800.0	5,911.9	8,872.6	5,811.0	64.2	66.9	-72.98	3,168.3	-1,253.1	344.7	224.7	119.97	2.873	
8,900.0	5,911.9	8,972.6	5,811.0	65.9	68.5	-72.98	3,268.3	-1,253.1	344.7	221.2	123.45	2.792	
9,000.0	5,911.9	9,072.6	5,811.0	67.7	70.2	-72.98	3,368.3	-1,253.1	344.7	217.7	126.94	2.715	
9,100.0	5,911.9	9,172.6	5,811.0	69.4	71.9	-72.98	3,468.3	-1,253.1	344.7	214.2	130.44	2.642	
9,200.0	5,911.9	9,272.6	5,811.0	71.2	73.6	-72.98	3,568.3	-1,253.1	344.7	210.7	133.96	2.573	
9,300.0	5,911.9	9,372.6	5,811.0	73.0	75.3	-72.98	3,668.3	-1,253.1	344.7	207.2	137.48	2.507	
9,400.0	5,911.9	9,472.6	5,811.0	74.8	77.0	-72.98	3,768.3	-1,253.1	344.7	203.7	141.01	2.444	
9,500.0	5,911.9	9,572.6	5,811.0	76.6	78.8	-72.97	3,868.3	-1,253.1	344.7	200.1	144.55	2.385	
9,600.0	5,911.9	9,672.6	5,811.0	78.4	80.5	-72.97	3,968.3	-1,253.1	344.7	196.6	148.10	2.327	
9,700.0	5,911.9	9,772.6	5,811.0	80.2	82.2	-72.97	4,068.3	-1,253.1	344.7	193.0	151.65	2.273	
9,800.0	5,911.9	9,872.6	5,811.0	82.0	84.0	-72.97	4,168.3	-1,253.1	344.7	189.5	155.21	2.221	
9,900.0	5,911.9	9,972.6	5,811.0	83.8	85.8	-72.97	4,268.3	-1,253.1	344.7	185.9	158.78	2.171	
10,000.0	5,911.9	10,072.6	5,811.0	85.6	87.5	-72.97	4,368.3	-1,253.1	344.7	182.3	162.35	2.123	
10,100.0	5,911.9	10,172.6	5,811.0	87.5	89.3	-72.97	4,468.3	-1,253.1	344.7	178.8	165.93	2.077	
10,200.0	5,911.9	10,272.6	5,811.0	89.3	91.1	-72.97	4,568.3	-1,253.1	344.7	175.2	169.52	2.033	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,911.9	10,372.6	5,811.0	91.1	92.9	-72.97	4,668.3	-1,253.1	344.7	171.6	173.10	1.991	
10,400.0	5,911.9	10,472.6	5,811.0	93.0	94.7	-72.97	4,768.3	-1,253.1	344.7	168.0	176.70	1.951	
10,500.0	5,911.9	10,572.6	5,811.0	94.8	96.5	-72.97	4,868.3	-1,253.1	344.7	164.4	180.30	1.912	
10,600.0	5,911.9	10,672.6	5,811.0	96.6	98.3	-72.97	4,968.3	-1,253.1	344.7	160.8	183.90	1.874	
10,700.0	5,911.9	10,772.6	5,811.0	98.5	100.1	-72.97	5,068.3	-1,253.0	344.7	157.2	187.50	1.838	
10,800.0	5,911.9	10,872.6	5,811.0	100.3	101.9	-72.97	5,168.3	-1,253.0	344.7	153.6	191.11	1.804	
10,900.0	5,912.0	10,972.6	5,811.0	102.2	103.7	-72.97	5,268.3	-1,253.0	344.7	150.0	194.72	1.770	
11,000.0	5,912.0	11,072.6	5,811.0	104.0	105.5	-72.97	5,368.3	-1,253.0	344.7	146.4	198.34	1.738	
11,100.0	5,912.0	11,172.6	5,811.0	105.9	107.3	-72.97	5,468.3	-1,253.0	344.7	142.7	201.96	1.707	
11,200.0	5,912.0	11,272.6	5,811.0	107.8	109.2	-72.97	5,568.3	-1,253.0	344.7	139.1	205.58	1.677	
11,300.0	5,912.0	11,372.6	5,811.0	109.6	111.0	-72.97	5,668.3	-1,253.0	344.7	135.5	209.20	1.648	
11,400.0	5,912.0	11,472.6	5,811.0	111.5	112.8	-72.97	5,768.3	-1,253.0	344.7	131.9	212.83	1.620	
11,500.0	5,912.0	11,572.6	5,811.0	113.3	114.7	-72.97	5,868.3	-1,253.0	344.7	128.2	216.46	1.592	
11,600.0	5,912.0	11,672.6	5,811.0	115.2	116.5	-72.97	5,968.3	-1,253.0	344.7	124.6	220.09	1.566	
11,700.0	5,912.0	11,772.6	5,811.0	117.1	118.4	-72.97	6,068.3	-1,253.0	344.7	121.0	223.72	1.541	
11,800.0	5,912.0	11,872.6	5,811.0	119.0	120.2	-72.97	6,168.3	-1,253.0	344.7	117.3	227.36	1.516	
11,900.0	5,912.0	11,972.6	5,811.0	120.8	122.0	-72.96	6,268.3	-1,253.0	344.7	113.7	231.00	1.492	Level 3
12,000.0	5,912.0	12,072.6	5,811.0	122.7	123.9	-72.96	6,368.3	-1,253.0	344.7	110.1	234.64	1.469	Level 3
12,100.0	5,912.0	12,172.6	5,811.0	124.6	125.7	-72.96	6,468.3	-1,253.0	344.7	106.4	238.28	1.447	Level 3
12,200.0	5,912.0	12,272.6	5,811.0	126.4	127.6	-72.96	6,568.3	-1,253.0	344.7	102.8	241.92	1.425	Level 3
12,300.0	5,912.0	12,372.6	5,811.0	128.3	129.5	-72.96	6,668.3	-1,253.0	344.7	99.1	245.57	1.404	Level 3
12,400.0	5,912.0	12,472.6	5,811.0	130.2	131.3	-72.96	6,768.3	-1,253.0	344.7	95.5	249.21	1.383	Level 3
12,500.0	5,912.0	12,572.6	5,811.0	132.1	133.2	-72.96	6,868.3	-1,253.0	344.7	91.8	252.86	1.363	Level 3
12,510.7	5,912.0	12,583.3	5,811.0	132.3	133.4	-72.96	6,879.0	-1,253.0	344.7	91.5	253.21	1.361	Level 3
12,524.9	5,912.0	12,596.5	5,811.0	132.5	133.6	-72.96	6,892.2	-1,253.0	344.7	91.0	253.67	1.359	Level 3, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0	0.0	0.0				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	0.0	0.0	0.0	-0.2	0.19	0.000	Level 1
200.0	200.0	200.0	200.0	0.3	0.3	0.00	0.0	0.0	0.0	-0.6	0.64	0.000	Level 1
300.0	300.0	300.0	300.0	0.5	0.5	0.00	0.0	0.0	0.0	-1.1	1.09	0.000	Level 1
400.0	400.0	400.0	400.0	0.8	0.8	0.00	0.0	0.0	0.0	-1.5	1.54	0.000	Level 1
500.0	500.0	500.0	500.0	1.0	1.0	0.00	0.0	0.0	0.0	-2.0	1.99	0.000	Level 1, CC, SF
554.4	554.4	554.4	554.4	1.1	1.1	90.51	0.4	-0.3	0.0	-2.2	2.23	0.004	Level 1
600.0	600.0	600.0	600.0	1.2	1.2	90.51	1.4	-1.0	0.0	-2.4	2.43	0.013	Level 1
700.0	699.8	700.0	699.8	1.4	1.4	90.51	5.6	-4.2	0.1	-2.8	2.88	0.044	Level 1
800.0	799.6	800.0	799.6	1.7	1.7	90.51	11.2	-8.3	0.3	-3.1	3.35	0.075	Level 1
900.0	899.4	900.0	899.4	1.9	1.9	90.51	16.8	-12.5	0.4	-3.5	3.83	0.098	Level 1
1,000.0	999.1	1,000.0	999.1	2.2	2.2	90.51	22.4	-16.7	0.5	-3.8	4.32	0.116	Level 1
1,100.0	1,098.9	1,100.0	1,098.9	2.4	2.4	90.51	28.0	-20.8	0.6	-4.2	4.81	0.130	Level 1
1,200.0	1,198.6	1,200.0	1,198.6	2.7	2.7	90.51	33.6	-25.0	0.8	-4.6	5.31	0.142	Level 1
1,300.0	1,298.4	1,300.0	1,298.4	2.9	2.9	90.51	39.2	-29.2	0.9	-4.9	5.81	0.151	Level 1
1,400.0	1,398.1	1,400.0	1,398.1	3.2	3.2	90.51	44.8	-33.3	1.0	-5.3	6.32	0.159	Level 1
1,500.0	1,497.9	1,500.0	1,497.9	3.4	3.4	90.51	50.3	-37.5	1.1	-5.7	6.82	0.165	Level 1
1,600.0	1,597.6	1,600.0	1,597.6	3.7	3.7	90.51	55.9	-41.7	1.3	-6.1	7.33	0.171	Level 1
1,700.0	1,697.4	1,700.0	1,697.4	3.9	3.9	90.51	61.5	-45.8	1.4	-6.5	7.84	0.176	Level 1
1,800.0	1,797.2	1,800.0	1,797.2	4.2	4.2	90.51	67.1	-50.0	1.5	-6.8	8.35	0.180	Level 1
1,900.0	1,896.9	1,900.0	1,896.9	4.4	4.4	90.51	72.7	-54.2	1.6	-7.2	8.86	0.184	Level 1
2,000.0	1,996.7	2,000.0	1,996.7	4.7	4.7	90.51	78.3	-58.4	1.8	-7.6	9.37	0.187	Level 1
2,100.0	2,096.4	2,100.0	2,096.4	4.9	4.9	90.51	83.9	-62.5	1.9	-8.0	9.88	0.190	Level 1
2,200.0	2,196.2	2,200.0	2,196.2	5.2	5.2	90.51	89.5	-66.7	2.0	-8.4	10.39	0.193	Level 1
2,300.0	2,295.9	2,300.0	2,295.9	5.5	5.5	90.51	95.1	-70.9	2.1	-8.8	10.91	0.195	Level 1
2,400.0	2,395.7	2,400.0	2,395.7	5.7	5.7	90.51	100.7	-75.0	2.3	-9.2	11.42	0.198	Level 1
2,500.0	2,495.5	2,500.0	2,495.5	6.0	6.0	90.51	106.3	-79.2	2.4	-9.5	11.93	0.200	Level 1
2,600.0	2,595.2	2,600.0	2,595.2	6.2	6.2	90.51	111.9	-83.4	2.5	-9.9	12.45	0.202	Level 1
2,700.0	2,695.0	2,700.0	2,695.0	6.5	6.5	90.51	117.5	-87.5	2.6	-10.3	12.96	0.203	Level 1
2,800.0	2,794.7	2,800.0	2,794.7	6.7	6.7	90.51	123.1	-91.7	2.8	-10.7	13.47	0.205	Level 1
2,900.0	2,894.5	2,900.0	2,894.5	7.0	7.0	90.51	128.7	-95.9	2.9	-11.1	13.99	0.206	Level 1
3,000.0	2,994.2	3,000.0	2,994.2	7.3	7.3	90.51	134.2	-100.0	3.0	-11.5	14.50	0.208	Level 1
3,100.0	3,094.0	3,100.0	3,094.0	7.5	7.5	90.51	139.8	-104.2	3.1	-11.9	15.01	0.209	Level 1
3,200.0	3,193.7	3,200.0	3,193.7	7.8	7.8	90.51	145.4	-108.4	3.3	-12.3	15.53	0.210	Level 1
3,300.0	3,293.5	3,300.0	3,293.5	8.0	8.0	90.51	151.0	-112.5	3.4	-12.7	16.04	0.211	Level 1
3,400.0	3,393.3	3,400.0	3,393.3	8.3	8.3	90.51	156.6	-116.7	3.5	-13.0	16.56	0.212	Level 1
3,500.0	3,493.0	3,500.0	3,493.0	8.5	8.5	90.51	162.2	-120.9	3.6	-13.4	17.07	0.213	Level 1
3,600.0	3,592.8	3,600.0	3,592.8	8.8	8.8	90.51	167.8	-125.0	3.8	-13.8	17.59	0.214	Level 1
3,700.0	3,692.5	3,700.0	3,692.5	9.1	9.1	90.51	173.4	-129.2	3.9	-14.2	18.10	0.215	Level 1
3,800.0	3,792.3	3,800.0	3,792.3	9.3	9.3	90.51	179.0	-133.4	4.0	-14.6	18.62	0.216	Level 1
3,900.0	3,892.0	3,900.0	3,892.0	9.6	9.6	90.51	184.6	-137.5	4.1	-15.0	19.13	0.216	Level 1
4,000.0	3,991.8	4,000.0	3,991.8	9.8	9.8	90.51	190.2	-141.7	4.3	-15.4	19.65	0.217	Level 1
4,100.0	4,091.6	4,100.0	4,091.6	10.1	10.1	90.51	195.8	-145.9	4.4	-15.8	20.16	0.218	Level 1
4,200.0	4,191.3	4,200.0	4,191.3	10.3	10.3	90.51	201.4	-150.0	4.5	-16.2	20.68	0.218	Level 1
4,300.0	4,291.1	4,300.0	4,291.1	10.6	10.6	90.51	207.0	-154.2	4.6	-16.6	21.19	0.219	Level 1
4,400.0	4,390.8	4,400.0	4,390.8	10.9	10.9	90.51	212.6	-158.4	4.8	-16.9	21.71	0.220	Level 1
4,500.0	4,490.6	4,500.0	4,490.6	11.1	11.1	90.51	218.2	-162.5	4.9	-17.3	22.22	0.220	Level 1
4,600.0	4,590.3	4,600.0	4,590.3	11.4	11.4	90.51	223.7	-166.7	5.0	-17.7	22.74	0.221	Level 1
4,700.0	4,690.1	4,700.0	4,690.1	11.6	11.6	90.51	229.3	-170.9	5.1	-18.1	23.25	0.221	Level 1
4,800.0	4,789.9	4,800.0	4,789.8	11.9	11.9	90.51	234.9	-175.1	5.3	-18.5	23.77	0.222	Level 1
4,900.0	4,889.6	4,900.0	4,889.6	12.1	12.1	90.51	240.5	-179.2	5.4	-18.9	24.28	0.222	Level 1
5,000.0	4,989.4	5,000.0	4,989.4	12.4	12.4	90.51	246.1	-183.4	5.5	-19.3	24.80	0.222	Level 1

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,089.1	5,100.0	5,089.1	12.7	12.7	90.51	251.7	-187.6	5.6	-19.7	25.31	0.223	Level 1
5,200.0	5,188.9	5,200.0	5,188.9	12.9	12.9	90.51	257.3	-191.7	5.8	-20.1	25.83	0.223	Level 1
5,300.0	5,288.6	5,300.0	5,288.6	13.2	13.2	90.51	262.9	-195.9	5.9	-20.5	26.35	0.224	Level 1
5,400.0	5,388.4	5,400.0	5,388.4	13.4	13.4	90.51	268.5	-200.1	6.0	-20.8	26.86	0.224	Level 1
5,500.0	5,487.8	5,500.0	5,487.7	13.7	13.7	90.51	276.9	-206.3	6.2	-21.2	27.44	0.226	Level 1
5,600.0	5,583.6	5,600.0	5,583.6	14.2	14.2	90.48	299.3	-223.0	6.7	-21.6	28.32	0.237	Level 1
5,700.0	5,672.4	5,700.0	5,672.4	14.8	14.8	90.43	335.9	-250.3	7.5	-22.0	29.55	0.255	Level 1
5,800.0	5,750.9	5,799.9	5,750.8	15.6	15.6	90.37	385.4	-287.2	8.6	-22.5	31.18	0.277	Level 1
5,900.0	5,816.1	5,899.9	5,816.1	16.6	16.6	90.30	446.0	-332.3	10.0	-23.3	33.25	0.301	Level 1
6,000.0	5,865.7	5,999.9	5,865.7	17.9	17.9	90.21	515.5	-384.1	11.6	-24.2	35.79	0.323	Level 1
6,100.0	5,897.9	6,099.9	5,897.9	19.4	19.4	90.12	591.2	-440.5	13.3	-25.5	38.75	0.342	Level 1
6,200.0	5,911.4	6,199.9	5,911.4	21.0	21.0	90.02	670.5	-499.6	15.0	-27.0	42.03	0.358	Level 1
6,300.0	5,911.8	6,299.2	5,911.8	22.7	22.7	90.00	751.1	-557.7	16.8	-28.5	45.33	0.371	Level 1
6,400.0	5,911.8	6,398.3	5,911.8	24.4	24.3	90.00	834.3	-611.4	18.5	-30.0	48.53	0.382	Level 1
6,500.0	5,911.8	6,497.2	5,911.8	26.1	26.0	90.00	920.1	-660.7	20.2	-31.5	51.75	0.391	Level 1
6,600.0	5,911.8	6,596.1	5,911.8	27.8	27.7	90.00	1,008.3	-705.5	21.8	-33.1	54.94	0.398	Level 1
6,700.0	5,911.8	6,695.0	5,911.8	29.6	29.4	90.00	1,098.6	-745.6	23.4	-34.6	58.05	0.403	Level 1
6,800.0	5,911.8	6,793.7	5,911.8	31.3	31.1	90.00	1,190.8	-780.9	24.9	-36.1	61.06	0.408	Level 1
6,900.0	5,911.8	6,892.4	5,911.8	33.0	32.8	90.00	1,284.6	-811.5	26.3	-37.6	63.93	0.412	Level 1
7,000.0	5,911.8	6,991.0	5,911.8	34.8	34.5	90.00	1,379.8	-837.1	27.7	-38.9	66.65	0.416	Level 1
7,100.0	5,911.8	7,089.5	5,911.8	36.4	36.1	90.00	1,476.1	-857.7	29.0	-40.2	69.18	0.419	Level 1
7,200.0	5,911.8	7,187.9	5,911.8	38.1	37.8	90.00	1,573.3	-873.4	30.2	-41.3	71.53	0.422	Level 1
7,300.0	5,911.8	7,286.4	5,911.8	39.7	39.3	90.00	1,671.2	-884.0	31.3	-42.3	73.67	0.425	Level 1
7,400.0	5,911.8	7,384.7	5,911.8	41.3	40.9	90.00	1,769.3	-889.6	32.4	-43.2	75.60	0.428	Level 1
7,500.0	5,911.9	7,483.9	5,911.9	42.8	42.4	90.00	1,868.5	-890.8	32.7	-45.0	77.69	0.421	Level 1
7,600.0	5,911.9	7,583.9	5,911.9	44.3	44.0	90.00	1,968.5	-891.5	32.1	-48.9	81.02	0.396	Level 1
7,700.0	5,911.9	7,683.9	5,911.9	45.9	45.5	90.00	2,068.5	-892.1	31.4	-53.0	84.39	0.372	Level 1
7,800.0	5,911.9	7,783.9	5,911.9	47.4	47.1	90.00	2,168.5	-892.8	30.8	-57.0	87.80	0.351	Level 1
7,900.0	5,911.9	7,883.9	5,911.9	49.0	48.7	90.00	2,268.5	-893.4	30.1	-61.1	91.24	0.330	Level 1
8,000.0	5,911.9	7,983.9	5,911.9	50.7	50.4	90.00	2,368.5	-894.1	29.5	-65.2	94.71	0.311	Level 1
8,100.0	5,911.9	8,083.9	5,911.9	52.3	52.0	90.00	2,468.5	-894.7	28.8	-69.4	98.21	0.293	Level 1
8,200.0	5,911.9	8,183.9	5,911.9	53.9	53.7	90.00	2,568.5	-895.4	28.2	-73.6	101.73	0.277	Level 1
8,300.0	5,911.9	8,283.9	5,911.9	55.6	55.4	90.00	2,668.5	-896.0	27.5	-77.8	105.28	0.261	Level 1
8,400.0	5,911.9	8,383.9	5,911.9	57.3	57.1	90.00	2,768.5	-896.7	26.9	-82.0	108.85	0.247	Level 1
8,500.0	5,911.9	8,483.9	5,911.9	59.0	58.8	90.00	2,868.5	-897.3	26.2	-86.2	112.43	0.233	Level 1
8,600.0	5,911.9	8,583.9	5,911.9	60.7	60.5	90.00	2,968.5	-898.0	25.6	-90.5	116.04	0.220	Level 1
8,700.0	5,911.9	8,683.9	5,911.9	62.4	62.3	90.00	3,068.5	-898.6	24.9	-94.7	119.65	0.208	Level 1
8,800.0	5,911.9	8,783.9	5,911.9	64.2	64.0	90.00	3,168.5	-899.3	24.3	-99.0	123.29	0.197	Level 1
8,900.0	5,911.9	8,883.9	5,911.9	65.9	65.8	90.00	3,268.5	-899.9	23.6	-103.3	126.93	0.186	Level 1
9,000.0	5,911.9	8,983.9	5,911.9	67.7	67.5	90.00	3,368.5	-900.6	23.0	-107.6	130.59	0.176	Level 1
9,100.0	5,911.9	9,083.9	5,911.9	69.4	69.3	90.00	3,468.5	-901.2	22.3	-111.9	134.25	0.166	Level 1
9,200.0	5,911.9	9,183.9	5,911.9	71.2	71.1	90.00	3,568.5	-901.9	21.7	-116.3	137.93	0.157	Level 1
9,300.0	5,911.9	9,283.9	5,911.9	73.0	72.9	90.00	3,668.5	-902.5	21.0	-120.6	141.61	0.148	Level 1
9,400.0	5,911.9	9,383.9	5,911.9	74.8	74.7	90.00	3,768.5	-903.1	20.4	-125.0	145.30	0.140	Level 1
9,500.0	5,911.9	9,483.9	5,911.9	76.6	76.5	90.00	3,868.5	-903.8	19.7	-129.3	149.01	0.132	Level 1
9,600.0	5,911.9	9,583.9	5,911.9	78.4	78.3	90.00	3,968.4	-904.4	19.0	-133.7	152.71	0.125	Level 1
9,700.0	5,911.9	9,683.9	5,911.9	80.2	80.1	90.00	4,068.4	-905.1	18.4	-138.0	156.43	0.118	Level 1
9,800.0	5,911.9	9,783.9	5,911.9	82.0	81.9	90.00	4,168.4	-905.7	17.7	-142.4	160.15	0.111	Level 1
9,900.0	5,911.9	9,883.9	5,911.9	83.8	83.8	90.00	4,268.4	-906.4	17.1	-146.8	163.87	0.104	Level 1
10,000.0	5,911.9	9,983.9	5,911.9	85.6	85.6	90.00	4,368.4	-907.0	16.4	-151.2	167.61	0.098	Level 1
10,100.0	5,911.9	10,083.9	5,911.9	87.5	87.4	90.00	4,468.4	-907.7	15.8	-155.6	171.34	0.092	Level 1
10,200.0	5,911.9	10,183.9	5,911.9	89.3	89.3	90.00	4,568.4	-908.3	15.1	-159.9	175.08	0.086	Level 1

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0102B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,911.9	10,283.8	5,911.9	91.1	91.1	90.00	4,668.4	-909.0	14.5	-164.3	178.83	0.081	Level 1
10,400.0	5,911.9	10,383.8	5,911.9	93.0	92.9	90.00	4,768.4	-909.6	13.8	-168.7	182.58	0.076	Level 1
10,500.0	5,911.9	10,483.8	5,911.9	94.8	94.8	90.00	4,868.4	-910.3	13.2	-173.1	186.33	0.071	Level 1
10,600.0	5,911.9	10,583.8	5,911.9	96.6	96.6	90.00	4,968.4	-910.9	12.5	-177.6	190.09	0.066	Level 1
10,700.0	5,911.9	10,683.8	5,911.9	98.5	98.5	90.00	5,068.4	-911.6	11.9	-182.0	193.86	0.061	Level 1
10,800.0	5,911.9	10,783.8	5,911.9	100.3	100.3	90.00	5,168.4	-912.2	11.2	-186.4	197.63	0.057	Level 1
10,900.0	5,912.0	10,883.8	5,912.0	102.2	102.2	90.00	5,268.4	-912.9	10.6	-190.8	201.40	0.053	Level 1
11,000.0	5,912.0	10,983.8	5,912.0	104.0	104.1	90.00	5,368.4	-913.5	9.9	-195.2	205.17	0.048	Level 1
11,100.0	5,912.0	11,083.8	5,912.0	105.9	105.9	90.00	5,468.4	-914.2	9.3	-199.7	208.95	0.044	Level 1
11,200.0	5,912.0	11,183.8	5,912.0	107.8	107.8	90.00	5,568.4	-914.8	8.6	-204.1	212.73	0.041	Level 1
11,300.0	5,912.0	11,283.8	5,912.0	109.6	109.7	90.00	5,668.4	-915.5	8.0	-208.5	216.51	0.037	Level 1
11,400.0	5,912.0	11,383.8	5,912.0	111.5	111.5	90.00	5,768.4	-916.1	7.3	-213.0	220.29	0.033	Level 1
11,500.0	5,912.0	11,483.8	5,912.0	113.3	113.4	90.00	5,868.4	-916.8	6.7	-217.4	224.08	0.030	Level 1
11,600.0	5,912.0	11,583.8	5,912.0	115.2	115.3	90.00	5,968.4	-917.4	6.0	-221.9	227.87	0.026	Level 1
11,700.0	5,912.0	11,683.8	5,912.0	117.1	117.1	90.00	6,068.4	-918.1	5.4	-226.3	231.66	0.023	Level 1
11,800.0	5,912.0	11,783.8	5,912.0	119.0	119.0	90.00	6,168.4	-918.7	4.7	-230.7	235.45	0.020	Level 1
11,900.0	5,912.0	11,883.8	5,912.0	120.8	120.9	90.00	6,268.4	-919.4	4.1	-235.2	239.25	0.017	Level 1
12,000.0	5,912.0	11,983.8	5,912.0	122.7	122.8	90.00	6,368.3	-920.0	3.4	-239.6	243.04	0.014	Level 1
12,100.0	5,912.0	12,083.8	5,912.0	124.6	124.6	90.00	6,468.3	-920.7	2.8	-244.1	246.84	0.011	Level 1
12,200.0	5,912.0	12,183.8	5,912.0	126.4	126.5	90.00	6,568.3	-921.3	2.1	-248.5	250.64	0.008	Level 1
12,300.0	5,912.0	12,283.8	5,912.0	128.3	128.4	90.00	6,668.3	-922.0	1.5	-253.0	254.44	0.006	Level 1
12,400.0	5,912.0	12,383.8	5,912.0	130.2	130.3	90.00	6,768.3	-922.6	0.8	-257.4	258.24	0.003	Level 1
12,500.0	5,912.0	12,483.8	5,912.0	132.1	132.2	90.00	6,868.3	-923.3	0.2	-261.9	262.05	0.001	Level 1
12,516.7	5,912.0	12,500.5	5,912.0	132.3	132.5	90.00	6,885.1	-923.4	0.0	-262.6	262.62	0.000	Level 1
12,524.9	5,912.0	12,508.7	5,912.0	132.5	132.7	-90.00	6,893.2	-923.4	0.0	-262.8	262.83	0.000	Level 1, ES

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	66.1	66.1				
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	66.1	66.1	65.9	0.19	353.394	
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	66.1	66.1	65.5	0.64	103.822	
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	66.1	66.1	65.0	1.09	60.849	
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	66.1	66.1	64.6	1.54	43.036	
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	66.1	66.1	64.1	1.99	33.291	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	128.89	0.0	66.1	67.2	64.7	2.43	27.615	
700.0	699.8	699.8	699.8	1.4	1.4	132.14	0.0	66.1	70.6	67.7	2.88	24.505	
800.0	799.6	799.6	799.6	1.7	1.7	136.07	0.0	66.1	75.4	72.1	3.33	22.655	
900.0	899.4	899.4	899.4	1.9	1.9	139.51	0.0	66.1	80.6	76.8	3.78	21.315	
1,000.0	999.1	999.1	999.1	2.2	2.1	142.52	0.0	66.1	86.0	81.8	4.23	20.317	
1,100.0	1,098.9	1,101.2	1,101.2	2.4	2.3	144.47	1.5	65.2	90.4	85.7	4.69	19.274	
1,200.0	1,198.6	1,203.5	1,203.3	2.7	2.6	144.72	6.3	62.5	92.2	87.1	5.15	17.915	
1,300.0	1,298.4	1,303.5	1,303.1	2.9	2.8	144.27	12.3	59.0	92.8	87.2	5.61	16.560	
1,400.0	1,398.1	1,403.5	1,402.8	3.2	3.0	143.81	18.4	55.5	93.4	87.4	6.07	15.400	
1,500.0	1,497.9	1,503.5	1,502.6	3.4	3.3	143.37	24.4	52.1	94.1	87.5	6.53	14.397	
1,600.0	1,597.6	1,603.5	1,602.3	3.7	3.5	142.93	30.5	48.6	94.7	87.7	7.00	13.523	
1,700.0	1,697.4	1,703.5	1,702.1	3.9	3.8	142.49	36.5	45.1	95.3	87.8	7.47	12.756	
1,800.0	1,797.2	1,803.5	1,801.8	4.2	4.0	142.06	42.6	41.7	96.0	88.0	7.95	12.076	
1,900.0	1,896.9	1,903.5	1,901.6	4.4	4.2	141.64	48.6	38.2	96.6	88.2	8.42	11.471	
2,000.0	1,996.7	2,003.4	2,001.3	4.7	4.5	141.22	54.7	34.7	97.2	88.3	8.90	10.929	
2,100.0	2,096.4	2,103.4	2,101.1	4.9	4.7	140.81	60.7	31.2	97.9	88.5	9.38	10.441	
2,200.0	2,196.2	2,203.4	2,200.8	5.2	5.0	140.41	66.8	27.8	98.6	88.7	9.86	9.999	
2,300.0	2,295.9	2,303.4	2,300.6	5.5	5.2	140.01	72.8	24.3	99.2	88.9	10.34	9.598	
2,400.0	2,395.7	2,403.4	2,400.3	5.7	5.5	139.61	78.9	20.8	99.9	89.1	10.82	9.232	
2,500.0	2,495.5	2,503.4	2,500.1	6.0	5.7	139.22	84.9	17.4	100.6	89.2	11.30	8.896	
2,600.0	2,595.2	2,603.4	2,599.8	6.2	6.0	138.83	91.0	13.9	101.2	89.4	11.79	8.587	
2,700.0	2,695.0	2,703.4	2,699.6	6.5	6.2	138.45	97.0	10.4	101.9	89.6	12.27	8.303	
2,800.0	2,794.7	2,803.4	2,799.3	6.7	6.5	138.08	103.1	6.9	102.6	89.8	12.76	8.040	
2,900.0	2,894.5	2,903.4	2,899.1	7.0	6.7	137.71	109.1	3.5	103.3	90.0	13.25	7.796	
3,000.0	2,994.2	3,003.4	2,998.8	7.3	7.0	137.34	115.2	0.0	104.0	90.2	13.74	7.569	
3,100.0	3,094.0	3,103.4	3,098.6	7.5	7.3	136.98	121.2	-3.5	104.7	90.4	14.23	7.358	
3,200.0	3,193.7	3,203.4	3,198.4	7.8	7.5	136.63	127.3	-6.9	105.4	90.7	14.72	7.160	
3,300.0	3,293.5	3,303.4	3,298.1	8.0	7.8	136.28	133.3	-10.4	106.1	90.9	15.21	6.975	
3,400.0	3,393.3	3,403.4	3,397.9	8.3	8.0	135.93	139.4	-13.9	106.8	91.1	15.70	6.802	
3,500.0	3,493.0	3,503.4	3,497.6	8.5	8.3	135.59	145.4	-17.4	107.5	91.3	16.19	6.639	
3,600.0	3,592.8	3,603.4	3,597.4	8.8	8.5	135.25	151.5	-20.8	108.2	91.5	16.69	6.486	
3,700.0	3,692.5	3,703.4	3,697.1	9.1	8.8	134.92	157.5	-24.3	108.9	91.8	17.18	6.341	
3,800.0	3,792.3	3,803.4	3,796.9	9.3	9.0	134.59	163.6	-27.8	109.7	92.0	17.67	6.205	
3,900.0	3,892.0	3,903.4	3,896.6	9.6	9.3	134.27	169.6	-31.2	110.4	92.2	18.17	6.076	
4,000.0	3,991.8	4,003.4	3,996.4	9.8	9.6	133.95	175.7	-34.7	111.1	92.5	18.67	5.953	
4,100.0	4,091.6	4,103.4	4,096.1	10.1	9.8	133.63	181.7	-38.2	111.9	92.7	19.16	5.837	
4,200.0	4,191.3	4,203.3	4,195.9	10.3	10.1	133.32	187.8	-41.7	112.6	92.9	19.66	5.727	
4,300.0	4,291.1	4,303.3	4,295.6	10.6	10.3	133.02	193.8	-45.1	113.3	93.2	20.16	5.623	
4,400.0	4,390.8	4,403.3	4,395.4	10.9	10.6	132.71	199.9	-48.6	114.1	93.4	20.66	5.523	
4,500.0	4,490.6	4,503.3	4,495.1	11.1	10.8	132.41	205.9	-52.1	114.8	93.7	21.15	5.428	
4,600.0	4,590.3	4,603.3	4,594.9	11.4	11.1	132.12	212.0	-55.6	115.6	93.9	21.65	5.338	
4,700.0	4,690.1	4,703.3	4,694.6	11.6	11.3	131.83	218.0	-59.0	116.3	94.2	22.15	5.251	
4,800.0	4,789.9	4,803.3	4,794.4	11.9	11.6	131.54	224.1	-62.5	117.1	94.4	22.65	5.169	
4,900.0	4,889.6	4,903.3	4,894.1	12.1	11.9	131.25	230.1	-66.0	117.9	94.7	23.15	5.090	
5,000.0	4,989.4	5,003.3	4,993.9	12.4	12.1	130.97	236.2	-69.4	118.6	95.0	23.66	5.014	
5,100.0	5,089.1	5,103.3	5,093.6	12.7	12.4	130.70	242.2	-72.9	119.4	95.2	24.16	4.942	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,203.3	5,193.4	12.9	12.6	130.42	248.3	-76.4	120.1	95.5	24.66	4.872	
5,300.0	5,288.6	5,303.3	5,293.1	13.2	12.9	130.15	254.3	-79.9	120.9	95.8	25.16	4.806	
5,400.0	5,388.4	5,412.1	5,401.1	13.4	13.2	127.66	265.6	-86.3	119.2	93.4	25.80	4.620	
5,500.0	5,487.8	5,520.2	5,503.5	13.7	13.7	117.39	294.8	-103.1	111.5	84.6	26.86	4.150	
5,577.2	5,562.3	5,599.6	5,573.2	14.1	14.2	107.79	327.6	-121.9	109.2	81.3	27.91	3.913	
5,600.0	5,583.6	5,622.5	5,592.2	14.2	14.3	104.84	338.8	-128.3	109.4	81.1	28.27	3.870	
5,700.0	5,672.4	5,719.9	5,665.9	14.8	15.1	92.21	393.9	-160.0	115.0	85.1	29.96	3.840	
5,800.0	5,750.9	5,813.2	5,724.2	15.6	16.1	81.32	456.9	-196.1	127.2	95.7	31.50	4.039	
5,900.0	5,816.1	5,902.9	5,767.2	16.6	17.2	72.86	525.1	-235.3	143.8	111.1	32.72	4.394	
6,000.0	5,865.7	5,989.9	5,795.4	17.9	18.4	66.67	596.3	-276.1	162.4	128.6	33.81	4.804	
6,100.0	5,897.9	6,074.5	5,809.4	19.4	19.7	62.31	668.6	-317.6	181.5	146.5	35.04	5.180	
6,200.0	5,911.4	6,161.2	5,811.3	21.0	21.1	59.82	744.0	-360.3	199.3	162.5	36.78	5.420	
6,300.0	5,911.8	6,251.3	5,811.3	22.7	22.5	61.66	824.1	-401.5	214.0	173.9	40.10	5.337	
6,400.0	5,911.8	6,340.7	5,811.3	24.4	24.0	63.60	905.5	-438.7	228.4	185.0	43.48	5.253	
6,500.0	5,911.8	6,429.6	5,811.3	26.1	25.4	65.25	987.9	-471.8	242.6	195.7	46.82	5.181	
6,600.0	5,911.8	6,517.9	5,811.3	27.8	26.9	66.68	1,071.3	-500.8	256.3	206.2	50.08	5.118	
6,700.0	5,911.8	6,600.0	5,811.3	29.6	28.2	67.84	1,149.9	-524.3	269.7	216.6	53.13	5.076	
6,800.0	5,911.8	6,693.0	5,811.3	31.3	29.8	68.97	1,240.2	-546.9	282.4	226.2	56.28	5.018	
6,900.0	5,911.8	6,779.8	5,811.3	33.0	31.2	69.90	1,325.3	-563.9	294.7	235.5	59.17	4.981	
7,000.0	5,911.8	6,866.2	5,811.3	34.8	32.6	70.71	1,410.7	-577.0	306.4	244.5	61.90	4.950	
7,100.0	5,911.8	6,952.3	5,811.3	36.4	34.0	71.42	1,496.2	-586.2	317.5	253.0	64.44	4.926	
7,200.0	5,911.8	7,037.9	5,811.3	38.1	35.4	72.04	1,581.7	-591.5	327.9	261.1	66.80	4.908	
7,300.0	5,911.8	7,124.8	5,811.3	39.7	36.8	72.59	1,668.6	-593.0	337.6	268.6	68.99	4.893	
7,400.0	5,911.8	7,224.6	5,811.3	41.3	38.4	72.98	1,768.3	-593.0	344.0	272.8	71.16	4.834	
7,500.0	5,911.9	7,324.5	5,811.3	42.8	40.0	73.07	1,868.3	-593.0	345.5	272.1	73.36	4.709	
7,600.0	5,911.9	7,424.5	5,811.3	44.3	41.6	73.07	1,968.3	-593.0	345.5	268.9	76.61	4.510	
7,700.0	5,911.9	7,524.5	5,811.2	45.9	43.2	73.07	2,068.3	-593.0	345.5	265.6	79.89	4.324	
7,800.0	5,911.9	7,624.5	5,811.2	47.4	44.9	73.07	2,168.3	-593.0	345.5	262.3	83.21	4.152	
7,900.0	5,911.9	7,724.5	5,811.2	49.0	46.6	73.07	2,268.3	-593.0	345.5	258.9	86.56	3.991	
8,000.0	5,911.9	7,824.5	5,811.2	50.7	48.3	73.07	2,368.3	-593.0	345.5	255.5	89.94	3.841	
8,100.0	5,911.9	7,924.5	5,811.2	52.3	50.0	73.06	2,468.3	-593.0	345.5	252.1	93.34	3.701	
8,200.0	5,911.9	8,024.5	5,811.2	53.9	51.8	73.06	2,568.3	-593.0	345.5	248.7	96.76	3.570	
8,300.0	5,911.9	8,124.5	5,811.2	55.6	53.5	73.06	2,668.3	-593.0	345.5	245.3	100.21	3.448	
8,400.0	5,911.9	8,224.5	5,811.2	57.3	55.3	73.06	2,768.3	-593.0	345.5	241.8	103.67	3.333	
8,500.0	5,911.9	8,324.5	5,811.2	59.0	57.1	73.06	2,868.3	-593.0	345.5	238.3	107.15	3.224	
8,600.0	5,911.9	8,424.5	5,811.2	60.7	58.8	73.06	2,968.3	-593.0	345.5	234.8	110.64	3.123	
8,700.0	5,911.9	8,524.5	5,811.2	62.4	60.6	73.06	3,068.3	-593.0	345.5	231.3	114.14	3.027	
8,800.0	5,911.9	8,624.5	5,811.2	64.2	62.4	73.05	3,168.3	-593.0	345.5	227.8	117.66	2.936	
8,900.0	5,911.9	8,724.5	5,811.2	65.9	64.2	73.05	3,268.3	-593.0	345.5	224.3	121.19	2.851	
9,000.0	5,911.9	8,824.5	5,811.2	67.7	66.0	73.05	3,368.3	-593.0	345.5	220.7	124.73	2.770	
9,100.0	5,911.9	8,924.5	5,811.2	69.4	67.9	73.05	3,468.3	-593.0	345.5	217.2	128.27	2.693	
9,200.0	5,911.9	9,024.5	5,811.2	71.2	69.7	73.05	3,568.3	-593.0	345.5	213.6	131.83	2.621	
9,300.0	5,911.9	9,124.5	5,811.2	73.0	71.5	73.05	3,668.3	-593.0	345.5	210.1	135.39	2.552	
9,400.0	5,911.9	9,224.5	5,811.2	74.8	73.3	73.05	3,768.3	-593.0	345.5	206.5	138.96	2.486	
9,500.0	5,911.9	9,324.5	5,811.2	76.6	75.2	73.04	3,868.3	-593.0	345.5	202.9	142.54	2.424	
9,600.0	5,911.9	9,424.5	5,811.2	78.4	77.0	73.04	3,968.3	-593.0	345.5	199.3	146.12	2.364	
9,700.0	5,911.9	9,524.5	5,811.1	80.2	78.9	73.04	4,068.3	-593.1	345.5	195.8	149.71	2.308	
9,800.0	5,911.9	9,624.5	5,811.1	82.0	80.7	73.04	4,168.3	-593.1	345.5	192.2	153.30	2.253	
9,900.0	5,911.9	9,724.5	5,811.1	83.8	82.6	73.04	4,268.3	-593.1	345.5	188.6	156.90	2.202	
10,000.0	5,911.9	9,824.5	5,811.1	85.6	84.4	73.04	4,368.3	-593.1	345.5	185.0	160.51	2.152	
10,100.0	5,911.9	9,924.5	5,811.1	87.5	86.3	73.03	4,468.3	-593.1	345.5	181.3	164.12	2.105	
10,200.0	5,911.9	10,024.5	5,811.1	89.3	88.1	73.03	4,568.3	-593.1	345.5	177.7	167.73	2.060	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0103A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,911.9	10,124.5	5,811.1	91.1	90.0	73.03	4,668.3	-593.1	345.5	174.1	171.34	2.016	
10,400.0	5,911.9	10,224.5	5,811.1	93.0	91.9	73.03	4,768.3	-593.1	345.5	170.5	174.96	1.974	
10,500.0	5,911.9	10,324.5	5,811.1	94.8	93.7	73.03	4,868.3	-593.1	345.5	166.9	178.58	1.934	
10,600.0	5,911.9	10,424.5	5,811.1	96.6	95.6	73.03	4,968.3	-593.1	345.5	163.2	182.21	1.896	
10,700.0	5,911.9	10,524.5	5,811.1	98.5	97.5	73.03	5,068.3	-593.1	345.5	159.6	185.84	1.859	
10,800.0	5,911.9	10,624.5	5,811.1	100.3	99.4	73.02	5,168.3	-593.1	345.5	156.0	189.47	1.823	
10,900.0	5,912.0	10,724.5	5,811.1	102.2	101.2	73.02	5,268.3	-593.1	345.5	152.4	193.10	1.789	
11,000.0	5,912.0	10,824.5	5,811.1	104.0	103.1	73.02	5,368.3	-593.1	345.5	148.7	196.74	1.756	
11,100.0	5,912.0	10,924.5	5,811.1	105.9	105.0	73.02	5,468.3	-593.1	345.5	145.1	200.38	1.724	
11,200.0	5,912.0	11,024.5	5,811.1	107.8	106.9	73.02	5,568.3	-593.1	345.5	141.4	204.02	1.693	
11,300.0	5,912.0	11,124.5	5,811.1	109.6	108.7	73.02	5,668.3	-593.1	345.4	137.8	207.66	1.664	
11,400.0	5,912.0	11,224.5	5,811.1	111.5	110.6	73.02	5,768.3	-593.1	345.4	134.1	211.30	1.635	
11,500.0	5,912.0	11,324.5	5,811.1	113.3	112.5	73.01	5,868.3	-593.1	345.4	130.5	214.95	1.607	
11,600.0	5,912.0	11,424.5	5,811.0	115.2	114.4	73.01	5,968.3	-593.1	345.4	126.8	218.60	1.580	
11,700.0	5,912.0	11,524.5	5,811.0	117.1	116.3	73.01	6,068.3	-593.1	345.4	123.2	222.25	1.554	
11,800.0	5,912.0	11,624.5	5,811.0	119.0	118.2	73.01	6,168.3	-593.1	345.4	119.5	225.90	1.529	
11,900.0	5,912.0	11,724.5	5,811.0	120.8	120.1	73.01	6,268.3	-593.1	345.4	115.9	229.55	1.505	
12,000.0	5,912.0	11,824.5	5,811.0	122.7	122.0	73.01	6,368.3	-593.1	345.4	112.2	233.21	1.481	Level 3
12,100.0	5,912.0	11,924.5	5,811.0	124.6	123.8	73.01	6,468.3	-593.1	345.4	108.6	236.86	1.458	Level 3
12,200.0	5,912.0	12,024.5	5,811.0	126.4	125.7	73.00	6,568.3	-593.1	345.4	104.9	240.52	1.436	Level 3
12,300.0	5,912.0	12,124.5	5,811.0	128.3	127.6	73.00	6,668.3	-593.1	345.4	101.3	244.18	1.415	Level 3
12,400.0	5,912.0	12,224.5	5,811.0	130.2	129.5	73.00	6,768.3	-593.1	345.4	97.6	247.84	1.394	Level 3
12,500.0	5,912.0	12,324.5	5,811.0	132.1	131.4	73.00	6,868.3	-593.1	345.4	93.9	251.50	1.374	Level 3
12,524.9	5,912.0	12,349.5	5,811.0	132.5	131.9	73.00	6,893.2	-593.1	345.4	93.1	252.33	1.369	Level 3, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	156.19	-74.9	33.0	81.9				
100.0	100.0	100.0	100.0	0.1	0.1	156.19	-74.9	33.0	81.9	81.7	0.19	437.772	
200.0	200.0	200.0	200.0	0.3	0.3	156.19	-74.9	33.0	81.9	81.2	0.64	128.611	
300.0	300.0	300.0	300.0	0.5	0.5	156.19	-74.9	33.0	81.9	80.8	1.09	75.378	
400.0	400.0	400.0	400.0	0.8	0.8	156.19	-74.9	33.0	81.9	80.3	1.54	53.312	
500.0	500.0	500.0	500.0	1.0	1.0	156.19	-74.9	33.0	81.9	79.9	1.99	41.239	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	-166.37	-74.9	33.0	83.6	81.1	2.43	34.323	
700.0	699.8	699.8	699.8	1.4	1.4	-167.14	-74.9	33.0	88.7	85.8	2.88	30.736	
800.0	799.6	799.6	799.6	1.7	1.7	-168.07	-74.9	33.0	95.5	92.1	3.33	28.659	
900.0	899.4	902.9	902.9	1.9	1.9	-169.11	-73.1	32.5	100.6	96.8	3.78	26.567	
1,000.0	999.1	1,006.2	1,006.1	2.2	2.1	-170.47	-67.8	31.0	102.1	97.9	4.24	24.088	
1,100.0	1,098.9	1,106.2	1,105.8	2.4	2.4	-171.97	-61.0	29.2	102.2	97.6	4.69	21.793	
1,200.0	1,198.6	1,206.2	1,205.5	2.7	2.6	-173.46	-54.3	27.3	102.4	97.3	5.14	19.908	
1,300.0	1,298.4	1,306.1	1,305.2	2.9	2.8	-174.94	-47.6	25.4	102.7	97.1	5.60	18.337	
1,400.0	1,398.1	1,406.1	1,404.9	3.2	3.1	-176.42	-40.9	23.5	103.0	96.9	6.05	17.009	
1,500.0	1,497.9	1,506.1	1,504.7	3.4	3.3	-177.88	-34.2	21.6	103.4	96.8	6.51	15.874	
1,600.0	1,597.6	1,606.0	1,604.4	3.7	3.6	-179.34	-27.5	19.7	103.8	96.8	6.97	14.896	
1,700.0	1,697.4	1,706.0	1,704.1	3.9	3.8	179.22	-20.8	17.9	104.3	96.9	7.43	14.044	
1,800.0	1,797.2	1,806.0	1,803.8	4.2	4.1	177.79	-14.1	16.0	104.9	97.0	7.89	13.297	
1,900.0	1,896.9	1,905.9	1,903.6	4.4	4.3	176.38	-7.3	14.1	105.5	97.2	8.35	12.638	
2,000.0	1,996.7	2,005.9	2,003.3	4.7	4.6	174.99	-0.6	12.2	106.2	97.4	8.81	12.054	
2,100.0	2,096.4	2,105.9	2,103.0	4.9	4.8	173.62	6.1	10.3	107.0	97.7	9.28	11.532	
2,200.0	2,196.2	2,205.8	2,202.7	5.2	5.1	172.27	12.8	8.4	107.8	98.1	9.75	11.064	
2,300.0	2,295.9	2,305.8	2,302.4	5.5	5.3	170.93	19.5	6.6	108.7	98.5	10.21	10.643	
2,400.0	2,395.7	2,405.7	2,402.2	5.7	5.6	169.63	26.2	4.7	109.7	99.0	10.69	10.262	
2,500.0	2,495.5	2,505.7	2,501.9	6.0	5.8	168.34	32.9	2.8	110.7	99.5	11.16	9.917	
2,600.0	2,595.2	2,605.7	2,601.6	6.2	6.1	167.08	39.7	0.9	111.7	100.1	11.63	9.603	
2,700.0	2,695.0	2,705.6	2,701.3	6.5	6.3	165.84	46.4	-1.0	112.8	100.7	12.11	9.317	
2,800.0	2,794.7	2,805.6	2,801.0	6.7	6.6	164.63	53.1	-2.9	114.0	101.4	12.59	9.055	
2,900.0	2,894.5	2,905.6	2,900.8	7.0	6.8	163.44	59.8	-4.7	115.2	102.1	13.07	8.814	
3,000.0	2,994.2	3,005.5	3,000.5	7.3	7.1	162.27	66.5	-6.6	116.5	102.9	13.55	8.594	
3,100.0	3,094.0	3,105.5	3,100.2	7.5	7.3	161.14	73.2	-8.5	117.8	103.7	14.04	8.390	
3,200.0	3,193.7	3,205.5	3,199.9	7.8	7.6	160.02	79.9	-10.4	119.1	104.6	14.52	8.202	
3,300.0	3,293.5	3,305.4	3,299.6	8.0	7.9	158.94	86.7	-12.3	120.5	105.5	15.01	8.029	
3,400.0	3,393.3	3,405.4	3,399.4	8.3	8.1	157.87	93.4	-14.2	121.9	106.4	15.50	7.868	
3,500.0	3,493.0	3,505.4	3,499.1	8.5	8.4	156.84	100.1	-16.0	123.4	107.4	15.99	7.718	
3,600.0	3,592.8	3,605.3	3,598.8	8.8	8.6	155.82	106.8	-17.9	124.9	108.5	16.48	7.580	
3,700.0	3,692.5	3,705.3	3,698.5	9.1	8.9	154.84	113.5	-19.8	126.5	109.5	16.98	7.450	
3,800.0	3,792.3	3,805.2	3,798.2	9.3	9.1	153.87	120.2	-21.7	128.1	110.6	17.47	7.330	
3,900.0	3,892.0	3,905.2	3,898.0	9.6	9.4	152.93	126.9	-23.6	129.7	111.7	17.97	7.218	
4,000.0	3,991.8	4,005.2	3,997.7	9.8	9.6	152.02	133.7	-25.5	131.4	112.9	18.47	7.113	
4,100.0	4,091.6	4,105.1	4,097.4	10.1	9.9	151.13	140.4	-27.3	133.1	114.1	18.97	7.015	
4,200.0	4,191.3	4,205.1	4,197.1	10.3	10.2	150.26	147.1	-29.2	134.8	115.3	19.47	6.923	
4,300.0	4,291.1	4,305.1	4,296.9	10.6	10.4	149.41	153.8	-31.1	136.6	116.6	19.97	6.837	
4,400.0	4,390.8	4,405.0	4,396.6	10.9	10.7	148.58	160.5	-33.0	138.3	117.9	20.48	6.756	
4,500.0	4,490.6	4,505.0	4,496.3	11.1	10.9	147.78	167.2	-34.9	140.2	119.2	20.98	6.680	
4,600.0	4,590.3	4,605.0	4,596.0	11.4	11.2	146.99	173.9	-36.8	142.0	120.5	21.49	6.608	
4,700.0	4,690.1	4,704.9	4,695.7	11.6	11.4	146.23	180.7	-38.6	143.9	121.9	21.99	6.541	
4,800.0	4,789.9	4,804.9	4,795.5	11.9	11.7	145.48	187.4	-40.5	145.8	123.2	22.50	6.477	
4,900.0	4,889.6	4,904.9	4,895.2	12.1	11.9	144.76	194.1	-42.4	147.7	124.7	23.01	6.418	
5,000.0	4,989.4	5,004.8	4,994.9	12.4	12.2	144.05	200.8	-44.3	149.6	126.1	23.52	6.361	
5,100.0	5,089.1	5,104.8	5,094.6	12.7	12.5	143.36	207.5	-46.2	151.6	127.5	24.03	6.308	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,204.7	5,194.3	12.9	12.7	142.69	214.2	-48.1	153.5	129.0	24.54	6.258	
5,300.0	5,288.6	5,304.7	5,294.1	13.2	13.0	142.04	220.9	-49.9	155.6	130.5	25.05	6.210	
5,400.0	5,388.4	5,404.7	5,393.8	13.4	13.2	141.40	227.7	-51.8	157.6	132.0	25.56	6.165	
5,500.0	5,487.8	5,516.0	5,504.1	13.7	13.6	139.71	240.7	-55.5	160.0	133.9	26.07	6.137	
5,600.0	5,583.6	5,631.1	5,612.8	14.2	14.1	134.93	276.6	-65.6	166.4	139.8	26.59	6.259	
5,700.0	5,672.4	5,742.8	5,707.9	14.8	14.8	127.97	332.4	-81.2	178.6	151.1	27.52	6.491	
5,800.0	5,750.9	5,850.0	5,785.7	15.6	15.7	119.98	403.3	-101.1	197.4	168.2	29.22	6.756	
5,900.0	5,816.1	5,952.7	5,844.6	16.6	16.8	111.87	484.1	-123.8	222.8	191.1	31.73	7.023	
6,000.0	5,865.7	6,051.3	5,884.6	17.9	18.1	104.18	570.8	-148.1	253.7	219.0	34.74	7.303	
6,100.0	5,897.9	6,146.7	5,906.4	19.4	19.4	97.15	660.0	-173.1	288.6	250.6	37.93	7.607	
6,200.0	5,911.4	6,237.0	5,911.6	21.0	20.8	90.98	746.7	-197.4	325.7	284.6	41.01	7.941	
6,300.0	5,911.8	6,315.0	5,911.6	22.7	21.9	89.95	822.5	-216.2	364.4	320.5	43.87	8.306	
6,400.0	5,911.8	6,400.0	5,911.6	24.4	23.1	89.96	905.7	-233.2	402.3	355.5	46.80	8.595	
6,500.0	5,911.8	6,468.4	5,911.6	26.1	24.2	89.96	973.2	-244.2	438.8	389.2	49.56	8.854	
6,600.0	5,911.8	6,543.9	5,911.6	27.8	25.3	89.97	1,048.1	-253.5	474.3	421.8	52.42	9.047	
6,700.0	5,911.8	6,618.6	5,911.6	29.6	26.4	89.97	1,122.6	-259.8	508.5	453.2	55.24	9.205	
6,800.0	5,911.8	6,700.0	5,911.6	31.3	27.7	89.97	1,203.9	-263.3	541.5	483.4	58.10	9.320	
6,900.0	5,911.8	6,773.2	5,911.6	33.0	28.8	89.97	1,277.1	-263.8	572.9	512.1	60.78	9.427	
7,000.0	5,911.8	6,869.4	5,911.6	34.8	30.4	89.98	1,373.3	-263.8	600.2	536.5	63.77	9.413	
7,100.0	5,911.8	6,966.9	5,911.6	36.4	32.0	89.98	1,470.8	-263.8	622.5	555.8	66.70	9.333	
7,200.0	5,911.8	7,065.4	5,911.6	38.1	33.7	89.98	1,569.3	-263.8	639.6	570.0	69.53	9.198	
7,300.0	5,911.8	7,164.7	5,911.6	39.7	35.4	89.98	1,668.6	-263.8	651.5	579.2	72.24	9.018	
7,400.0	5,911.8	7,264.4	5,911.6	41.3	37.2	89.98	1,768.3	-263.8	658.2	583.4	74.81	8.799	
7,500.0	5,911.9	7,364.4	5,911.6	42.8	38.9	89.98	1,868.3	-263.8	659.8	582.4	77.44	8.520	
7,600.0	5,911.9	7,464.4	5,911.6	44.3	40.7	89.98	1,968.3	-263.7	659.8	578.9	80.89	8.157	
7,700.0	5,911.9	7,564.4	5,911.6	45.9	42.5	89.98	2,068.3	-263.7	659.8	575.4	84.37	7.821	
7,800.0	5,911.9	7,664.4	5,911.7	47.4	44.3	89.98	2,168.3	-263.7	659.8	571.9	87.88	7.508	
7,900.0	5,911.9	7,764.4	5,911.7	49.0	46.1	89.98	2,268.3	-263.7	659.8	568.4	91.41	7.218	
8,000.0	5,911.9	7,864.4	5,911.7	50.7	47.9	89.98	2,368.3	-263.7	659.8	564.8	94.97	6.947	
8,100.0	5,911.9	7,964.4	5,911.7	52.3	49.7	89.98	2,468.3	-263.7	659.8	561.3	98.55	6.695	
8,200.0	5,911.9	8,064.4	5,911.7	53.9	51.5	89.98	2,568.3	-263.7	659.8	557.7	102.15	6.459	
8,300.0	5,911.9	8,164.4	5,911.7	55.6	53.4	89.98	2,668.3	-263.7	659.8	554.0	105.77	6.238	
8,400.0	5,911.9	8,264.4	5,911.7	57.3	55.2	89.98	2,768.3	-263.7	659.8	550.4	109.40	6.031	
8,500.0	5,911.9	8,364.4	5,911.7	59.0	57.1	89.98	2,868.3	-263.7	659.8	546.8	113.05	5.837	
8,600.0	5,911.9	8,464.4	5,911.7	60.7	58.9	89.98	2,968.3	-263.7	659.8	543.1	116.71	5.654	
8,700.0	5,911.9	8,564.4	5,911.7	62.4	60.8	89.99	3,068.3	-263.7	659.8	539.4	120.38	5.481	
8,800.0	5,911.9	8,664.4	5,911.7	64.2	62.6	89.99	3,168.3	-263.7	659.8	535.8	124.06	5.319	
8,900.0	5,911.9	8,764.4	5,911.7	65.9	64.5	89.99	3,268.3	-263.7	659.8	532.1	127.75	5.165	
9,000.0	5,911.9	8,864.4	5,911.7	67.7	66.4	89.99	3,368.3	-263.7	659.8	528.4	131.45	5.020	
9,100.0	5,911.9	8,964.4	5,911.7	69.4	68.2	89.99	3,468.3	-263.7	659.8	524.7	135.15	4.882	
9,200.0	5,911.9	9,064.4	5,911.8	71.2	70.1	89.99	3,568.3	-263.7	659.8	521.0	138.87	4.752	
9,300.0	5,911.9	9,164.4	5,911.8	73.0	72.0	89.99	3,668.3	-263.7	659.8	517.2	142.59	4.628	
9,400.0	5,911.9	9,264.4	5,911.8	74.8	73.9	89.99	3,768.3	-263.7	659.8	513.5	146.32	4.510	
9,500.0	5,911.9	9,364.4	5,911.8	76.6	75.7	89.99	3,868.3	-263.7	659.8	509.8	150.05	4.397	
9,600.0	5,911.9	9,464.4	5,911.8	78.4	77.6	89.99	3,968.3	-263.6	659.8	506.1	153.79	4.291	
9,700.0	5,911.9	9,564.4	5,911.8	80.2	79.5	89.99	4,068.3	-263.6	659.8	502.3	157.53	4.189	
9,800.0	5,911.9	9,664.4	5,911.8	82.0	81.4	89.99	4,168.3	-263.6	659.9	498.6	161.28	4.091	
9,900.0	5,911.9	9,764.4	5,911.8	83.8	83.3	89.99	4,268.3	-263.6	659.9	494.8	165.04	3.998	
10,000.0	5,911.9	9,864.4	5,911.8	85.6	85.2	89.99	4,368.3	-263.6	659.9	491.1	168.79	3.909	
10,100.0	5,911.9	9,964.4	5,911.8	87.5	87.1	89.99	4,468.3	-263.6	659.9	487.3	172.55	3.824	
10,200.0	5,911.9	10,064.4	5,911.8	89.3	89.0	89.99	4,568.3	-263.6	659.9	483.5	176.32	3.742	
10,300.0	5,911.9	10,164.4	5,911.8	91.1	90.9	89.99	4,668.3	-263.6	659.9	479.8	180.09	3.664	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0104B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	5,911.9	10,264.4	5,911.8	93.0	92.7	89.99	4,768.3	-263.6	659.9	476.0	183.86	3.589	
10,500.0	5,911.9	10,364.4	5,911.9	94.8	94.6	89.99	4,868.3	-263.6	659.9	472.2	187.63	3.517	
10,600.0	5,911.9	10,464.4	5,911.9	96.6	96.5	89.99	4,968.3	-263.6	659.9	468.5	191.41	3.447	
10,700.0	5,911.9	10,564.4	5,911.9	98.5	98.4	89.99	5,068.3	-263.6	659.9	464.7	195.19	3.381	
10,800.0	5,911.9	10,664.4	5,911.9	100.3	100.3	89.99	5,168.3	-263.6	659.9	460.9	198.97	3.316	
10,900.0	5,912.0	10,764.4	5,911.9	102.2	102.2	89.99	5,268.3	-263.6	659.9	457.1	202.75	3.255	
11,000.0	5,912.0	10,864.4	5,911.9	104.0	104.1	89.99	5,368.3	-263.6	659.9	453.3	206.54	3.195	
11,100.0	5,912.0	10,964.4	5,911.9	105.9	106.0	89.99	5,468.3	-263.6	659.9	449.6	210.33	3.137	
11,200.0	5,912.0	11,064.4	5,911.9	107.8	107.9	89.99	5,568.3	-263.6	659.9	445.8	214.12	3.082	
11,300.0	5,912.0	11,164.4	5,911.9	109.6	109.8	90.00	5,668.3	-263.6	659.9	442.0	217.91	3.028	
11,400.0	5,912.0	11,264.4	5,911.9	111.5	111.7	90.00	5,768.3	-263.6	659.9	438.2	221.70	2.976	
11,500.0	5,912.0	11,364.4	5,911.9	113.3	113.6	90.00	5,868.3	-263.6	659.9	434.4	225.50	2.926	
11,600.0	5,912.0	11,464.4	5,911.9	115.2	115.5	90.00	5,968.3	-263.6	659.9	430.6	229.30	2.878	
11,700.0	5,912.0	11,564.4	5,911.9	117.1	117.5	90.00	6,068.3	-263.5	659.9	426.8	233.10	2.831	
11,800.0	5,912.0	11,664.4	5,911.9	119.0	119.4	90.00	6,168.3	-263.5	659.9	423.0	236.90	2.786	
11,900.0	5,912.0	11,764.4	5,912.0	120.8	121.3	90.00	6,268.3	-263.5	659.9	419.2	240.70	2.742	
12,000.0	5,912.0	11,864.4	5,912.0	122.7	123.2	90.00	6,368.3	-263.5	659.9	415.4	244.50	2.699	
12,100.0	5,912.0	11,964.4	5,912.0	124.6	125.1	90.00	6,468.3	-263.5	659.9	411.6	248.30	2.658	
12,200.0	5,912.0	12,064.4	5,912.0	126.4	127.0	90.00	6,568.3	-263.5	659.9	407.8	252.11	2.618	
12,300.0	5,912.0	12,164.4	5,912.0	128.3	128.9	90.00	6,668.3	-263.5	659.9	404.0	255.92	2.579	
12,400.0	5,912.0	12,264.4	5,912.0	130.2	130.8	90.00	6,768.3	-263.5	659.9	400.2	259.72	2.541	
12,500.0	5,912.0	12,364.4	5,912.0	132.1	132.5	90.00	6,868.3	-263.5	659.9	396.6	263.31	2.506	
12,524.9	5,912.0	12,389.3	5,912.0	132.5	132.9	90.00	6,893.2	-263.5	659.9	395.8	264.09	2.499	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	131.4	131.4				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	131.4	131.4	131.2	0.19	702.680	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	131.4	131.4	130.8	0.64	206.437	
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	131.4	131.4	130.3	1.09	120.991	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	131.4	131.4	129.9	1.54	85.572	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	131.4	131.4	129.4	1.99	66.195	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	128.30	0.0	131.4	132.5	130.0	2.43	54.466	
700.0	699.8	699.8	699.8	1.4	1.4	129.98	0.0	131.4	135.8	132.9	2.88	47.150	
800.0	799.6	799.6	799.6	1.7	1.7	132.16	0.0	131.4	140.4	137.0	3.33	42.149	
900.0	899.4	899.4	899.4	1.9	1.9	134.20	0.0	131.4	145.2	141.4	3.78	38.356	
1,000.0	999.1	999.1	999.1	2.2	2.1	136.11	0.0	131.4	150.1	145.9	4.24	35.403	
1,100.0	1,098.9	1,098.9	1,098.9	2.4	2.3	137.89	0.0	131.4	155.2	150.5	4.70	33.051	
1,200.0	1,198.6	1,200.1	1,200.1	2.7	2.6	138.98	1.7	131.3	160.0	154.8	5.16	31.033	
1,300.0	1,298.4	1,301.6	1,301.4	2.9	2.8	138.81	7.1	130.9	163.9	158.2	5.62	29.166	
1,400.0	1,398.1	1,401.5	1,401.1	3.2	3.0	138.08	14.0	130.4	167.3	161.2	6.08	27.497	
1,500.0	1,497.9	1,501.4	1,500.8	3.4	3.3	137.37	21.0	129.9	170.7	164.2	6.55	26.046	
1,600.0	1,597.6	1,601.3	1,600.4	3.7	3.5	136.70	27.9	129.3	174.2	167.2	7.03	24.778	
1,700.0	1,697.4	1,701.2	1,700.1	3.9	3.7	136.05	34.9	128.8	177.7	170.2	7.51	23.662	
1,800.0	1,797.2	1,801.2	1,799.8	4.2	4.0	135.43	41.8	128.3	181.2	173.2	7.99	22.675	
1,900.0	1,896.9	1,901.1	1,899.5	4.4	4.2	134.83	48.8	127.8	184.7	176.3	8.48	21.795	
2,000.0	1,996.7	2,001.0	1,999.1	4.7	4.5	134.25	55.7	127.3	188.3	179.3	8.96	21.007	
2,100.0	2,096.4	2,100.9	2,098.8	4.9	4.7	133.70	62.7	126.8	191.9	182.4	9.45	20.297	
2,200.0	2,196.2	2,200.8	2,198.5	5.2	4.9	133.16	69.6	126.3	195.5	185.5	9.94	19.656	
2,300.0	2,295.9	2,300.8	2,298.2	5.5	5.2	132.65	76.6	125.8	199.1	188.6	10.44	19.074	
2,400.0	2,395.7	2,400.7	2,397.8	5.7	5.4	132.15	83.5	125.2	202.7	191.8	10.93	18.544	
2,500.0	2,495.5	2,500.6	2,497.5	6.0	5.7	131.67	90.5	124.7	206.3	194.9	11.43	18.058	
2,600.0	2,595.2	2,600.5	2,597.2	6.2	5.9	131.21	97.4	124.2	210.0	198.1	11.92	17.613	
2,700.0	2,695.0	2,700.4	2,696.9	6.5	6.2	130.76	104.4	123.7	213.6	201.2	12.42	17.203	
2,800.0	2,794.7	2,800.4	2,796.5	6.7	6.4	130.33	111.3	123.2	217.3	204.4	12.92	16.824	
2,900.0	2,894.5	2,900.3	2,896.2	7.0	6.7	129.91	118.3	122.7	221.0	207.6	13.42	16.473	
3,000.0	2,994.2	3,000.2	2,995.9	7.3	6.9	129.51	125.2	122.2	224.7	210.8	13.92	16.147	
3,100.0	3,094.0	3,100.1	3,095.6	7.5	7.2	129.12	132.2	121.7	228.4	214.0	14.42	15.844	
3,200.0	3,193.7	3,200.0	3,195.2	7.8	7.4	128.74	139.1	121.1	232.1	217.2	14.92	15.561	
3,300.0	3,293.5	3,300.0	3,294.9	8.0	7.7	128.38	146.1	120.6	235.9	220.5	15.42	15.297	
3,400.0	3,393.3	3,399.9	3,394.6	8.3	7.9	128.02	153.0	120.1	239.6	223.7	15.92	15.049	
3,500.0	3,493.0	3,499.8	3,494.3	8.5	8.2	127.68	160.0	119.6	243.4	226.9	16.42	14.817	
3,600.0	3,592.8	3,599.7	3,593.9	8.8	8.5	127.34	166.9	119.1	247.1	230.2	16.93	14.599	
3,700.0	3,692.5	3,699.6	3,693.6	9.1	8.7	127.02	173.9	118.6	250.9	233.5	17.43	14.393	
3,800.0	3,792.3	3,799.6	3,793.3	9.3	9.0	126.71	180.8	118.1	254.7	236.7	17.94	14.199	
3,900.0	3,892.0	3,899.5	3,893.0	9.6	9.2	126.40	187.8	117.5	258.4	240.0	18.44	14.016	
4,000.0	3,991.8	3,999.4	3,992.7	9.8	9.5	126.11	194.7	117.0	262.2	243.3	18.94	13.842	
4,100.0	4,091.6	4,099.3	4,092.3	10.1	9.7	125.82	201.7	116.5	266.0	246.6	19.45	13.678	
4,200.0	4,191.3	4,199.2	4,192.0	10.3	10.0	125.54	208.6	116.0	269.8	249.9	19.95	13.522	
4,300.0	4,291.1	4,299.1	4,291.7	10.6	10.2	125.27	215.6	115.5	273.6	253.2	20.46	13.374	
4,400.0	4,390.8	4,399.1	4,391.4	10.9	10.5	125.00	222.5	115.0	277.5	256.5	20.97	13.234	
4,500.0	4,490.6	4,499.0	4,491.0	11.1	10.7	124.75	229.5	114.5	281.3	259.8	21.47	13.100	
4,600.0	4,590.3	4,598.9	4,590.7	11.4	11.0	124.50	236.4	114.0	285.1	263.1	21.98	12.972	
4,700.0	4,690.1	4,698.8	4,690.4	11.6	11.2	124.25	243.4	113.4	288.9	266.4	22.48	12.850	
4,800.0	4,789.9	4,798.7	4,790.1	11.9	11.5	124.01	250.4	112.9	292.8	269.8	22.99	12.734	
4,900.0	4,889.6	4,898.7	4,889.7	12.1	11.8	123.78	257.3	112.4	296.6	273.1	23.50	12.623	
5,000.0	4,989.4	4,998.6	4,989.4	12.4	12.0	123.56	264.3	111.9	300.5	276.5	24.00	12.517	
5,100.0	5,089.1	5,098.5	5,089.1	12.7	12.3	123.34	271.2	111.4	304.3	279.8	24.51	12.415	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0105A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,198.4	5,188.8	12.9	12.5	123.13	278.2	110.9	308.2	283.1	25.02	12.317	
5,300.0	5,288.6	5,298.3	5,288.4	13.2	12.8	122.92	285.1	110.4	312.0	286.5	25.53	12.224	
5,400.0	5,388.4	5,397.5	5,387.0	13.4	13.1	122.06	295.6	109.6	315.9	289.9	26.07	12.118	
5,500.0	5,487.8	5,492.4	5,478.1	13.7	13.4	118.37	321.6	107.7	322.8	296.0	26.74	12.070	SF
5,600.0	5,583.6	5,582.4	5,558.8	14.2	13.9	113.43	361.1	104.8	340.5	312.9	27.54	12.364	
5,700.0	5,672.4	5,667.3	5,627.5	14.8	14.5	107.90	410.6	101.1	368.8	340.2	28.62	12.887	
5,800.0	5,750.9	5,750.0	5,686.0	15.6	15.2	102.01	468.8	96.8	406.0	375.9	30.08	13.500	
5,900.0	5,816.1	5,822.9	5,729.3	16.6	16.0	96.09	527.3	92.5	450.0	418.2	31.81	14.146	
6,000.0	5,865.7	5,895.2	5,763.7	17.9	16.8	90.18	590.6	87.8	498.6	464.9	33.75	14.773	
6,100.0	5,897.9	5,965.2	5,788.3	19.4	17.7	84.53	655.9	83.0	550.1	514.3	35.76	15.383	
6,200.0	5,911.4	6,033.9	5,803.8	21.0	18.6	79.32	722.6	78.1	602.6	564.8	37.76	15.960	
6,300.0	5,911.8	6,103.8	5,810.4	22.7	19.6	79.64	791.9	73.0	654.4	614.0	40.39	16.203	
6,400.0	5,911.8	6,169.2	5,810.5	24.4	20.5	80.50	857.2	68.8	704.2	661.1	43.03	16.364	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	127.08	-74.9	99.1	124.3				
100.0	100.0	100.0	100.0	0.1	0.1	127.08	-74.9	99.1	124.3	124.1	0.19	664.420	
200.0	200.0	200.0	200.0	0.3	0.3	127.08	-74.9	99.1	124.3	123.6	0.64	195.197	
300.0	300.0	300.0	300.0	0.5	0.5	127.08	-74.9	99.1	124.3	123.2	1.09	114.404	
400.0	400.0	400.0	400.0	0.8	0.8	127.08	-74.9	99.1	124.3	122.7	1.54	80.913	
500.0	500.0	500.0	500.0	1.0	1.0	127.08	-74.9	99.1	124.3	122.3	1.99	62.590	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	165.00	-74.9	99.1	125.9	123.5	2.43	51.741	
700.0	699.8	699.8	699.8	1.4	1.4	165.56	-74.9	99.1	131.0	128.1	2.88	45.450	
800.0	799.6	801.5	801.4	1.7	1.7	165.61	-73.2	99.6	137.1	133.8	3.33	41.175	
900.0	899.4	903.1	902.9	1.9	1.9	164.30	-68.0	101.1	141.9	138.1	3.78	37.529	
1,000.0	999.1	1,002.9	1,002.5	2.2	2.1	162.49	-61.3	102.9	146.2	141.9	4.24	34.503	
1,100.0	1,098.9	1,102.7	1,102.0	2.4	2.4	160.78	-54.6	104.8	150.6	145.9	4.70	32.044	
1,200.0	1,198.6	1,202.5	1,201.6	2.7	2.6	159.17	-47.9	106.7	155.1	150.0	5.17	30.020	
1,300.0	1,298.4	1,302.3	1,301.1	2.9	2.8	157.65	-41.2	108.6	159.8	154.2	5.64	28.331	
1,400.0	1,398.1	1,402.1	1,400.7	3.2	3.1	156.23	-34.5	110.4	164.6	158.5	6.12	26.905	
1,500.0	1,497.9	1,501.9	1,500.3	3.4	3.3	154.88	-27.7	112.3	169.4	162.8	6.60	25.688	
1,600.0	1,597.6	1,601.7	1,599.8	3.7	3.6	153.60	-21.0	114.2	174.4	167.3	7.08	24.640	
1,700.0	1,697.4	1,701.5	1,699.4	3.9	3.8	152.40	-14.3	116.0	179.4	171.9	7.56	23.728	
1,800.0	1,797.2	1,801.3	1,799.0	4.2	4.1	151.27	-7.6	117.9	184.6	176.5	8.05	22.930	
1,900.0	1,896.9	1,901.1	1,898.5	4.4	4.3	150.19	-0.9	119.8	189.7	181.2	8.54	22.227	
2,000.0	1,996.7	2,000.9	1,998.1	4.7	4.6	149.18	5.8	121.7	195.0	186.0	9.03	21.603	
2,100.0	2,096.4	2,100.7	2,097.6	4.9	4.8	148.21	12.5	123.5	200.3	190.8	9.52	21.047	
2,200.0	2,196.2	2,200.5	2,197.2	5.2	5.1	147.30	19.2	125.4	205.6	195.6	10.01	20.548	
2,300.0	2,295.9	2,300.3	2,296.8	5.5	5.3	146.43	25.9	127.3	211.1	200.6	10.50	20.098	
2,400.0	2,395.7	2,400.1	2,396.3	5.7	5.6	145.61	32.6	129.1	216.5	205.5	10.99	19.692	
2,500.0	2,495.5	2,499.9	2,495.9	6.0	5.8	144.83	39.3	131.0	222.0	210.5	11.49	19.322	
2,600.0	2,595.2	2,599.7	2,595.4	6.2	6.1	144.08	46.0	132.9	227.5	215.6	11.98	18.986	
2,700.0	2,695.0	2,699.5	2,695.0	6.5	6.4	143.37	52.7	134.8	233.1	220.6	12.48	18.678	
2,800.0	2,794.7	2,799.4	2,794.6	6.7	6.6	142.70	59.4	136.6	238.7	225.7	12.98	18.395	
2,900.0	2,894.5	2,899.2	2,894.1	7.0	6.9	142.05	66.1	138.5	244.3	230.9	13.47	18.135	
3,000.0	2,994.2	2,999.0	2,993.7	7.3	7.1	141.44	72.8	140.4	250.0	236.0	13.97	17.895	
3,100.0	3,094.0	3,098.8	3,093.2	7.5	7.4	140.85	79.5	142.3	255.7	241.2	14.47	17.672	
3,200.0	3,193.7	3,198.6	3,192.8	7.8	7.6	140.28	86.2	144.1	261.4	246.5	14.97	17.466	
3,300.0	3,293.5	3,298.4	3,292.4	8.0	7.9	139.75	93.0	146.0	267.2	251.7	15.47	17.275	
3,400.0	3,393.3	3,398.2	3,391.9	8.3	8.1	139.23	99.7	147.9	272.9	257.0	15.97	17.096	
3,500.0	3,493.0	3,498.0	3,491.5	8.5	8.4	138.74	106.4	149.7	278.7	262.3	16.46	16.929	
3,600.0	3,592.8	3,597.8	3,591.0	8.8	8.6	138.26	113.1	151.6	284.5	267.6	16.96	16.773	
3,700.0	3,692.5	3,697.6	3,690.6	9.1	8.9	137.81	119.8	153.5	290.4	272.9	17.46	16.627	
3,800.0	3,792.3	3,797.4	3,790.2	9.3	9.1	137.37	126.5	155.4	296.2	278.2	17.96	16.490	
3,900.0	3,892.0	3,897.2	3,889.7	9.6	9.4	136.95	133.2	157.2	302.1	283.6	18.46	16.360	
4,000.0	3,991.8	3,997.0	3,989.3	9.8	9.7	136.54	139.9	159.1	307.9	289.0	18.96	16.239	
4,100.0	4,091.6	4,096.8	4,088.9	10.1	9.9	136.15	146.6	161.0	313.8	294.4	19.46	16.124	
4,200.0	4,191.3	4,196.6	4,188.4	10.3	10.2	135.78	153.3	162.8	319.7	299.8	19.96	16.016	
4,300.0	4,291.1	4,296.4	4,288.0	10.6	10.4	135.42	160.0	164.7	325.6	305.2	20.46	15.913	
4,400.0	4,390.8	4,396.2	4,387.5	10.9	10.7	135.07	166.7	166.6	331.6	310.6	20.97	15.816	
4,500.0	4,490.6	4,496.0	4,487.1	11.1	10.9	134.73	173.4	168.5	337.5	316.1	21.47	15.724	
4,600.0	4,590.3	4,595.8	4,586.7	11.4	11.2	134.41	180.1	170.3	343.5	321.5	21.97	15.636	
4,700.0	4,690.1	4,695.6	4,686.2	11.6	11.4	134.09	186.8	172.2	349.4	327.0	22.47	15.553	
4,800.0	4,789.9	4,795.4	4,785.8	11.9	11.7	133.79	193.5	174.1	355.4	332.4	22.97	15.474	
4,900.0	4,889.6	4,895.2	4,885.3	12.1	12.0	133.50	200.2	176.0	361.4	337.9	23.47	15.398	
5,000.0	4,989.4	4,995.0	4,984.9	12.4	12.2	133.21	206.9	177.8	367.4	343.4	23.97	15.326	
5,100.0	5,089.1	5,094.8	5,084.5	12.7	12.5	132.94	213.7	179.7	373.4	348.9	24.47	15.258	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0106B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,194.6	5,184.0	12.9	12.7	132.67	220.4	181.6	379.4	354.4	24.97	15.192	
5,300.0	5,288.6	5,294.5	5,283.6	13.2	13.0	132.42	227.1	183.4	385.4	359.9	25.47	15.129	
5,400.0	5,388.4	5,394.3	5,383.1	13.4	13.2	132.17	233.8	185.3	391.4	365.5	25.98	15.069	SF
5,500.0	5,487.8	5,486.7	5,475.2	13.7	13.5	131.43	242.1	187.6	400.3	374.0	26.37	15.179	
5,600.0	5,583.6	5,570.7	5,556.6	14.2	13.8	129.13	261.4	193.0	423.6	397.0	26.62	15.912	
5,700.0	5,672.4	5,650.0	5,629.6	14.8	14.2	125.34	291.1	201.3	461.3	434.4	26.96	17.114	
5,800.0	5,750.9	5,722.1	5,691.3	15.6	14.7	120.08	327.0	211.3	511.7	484.0	27.71	18.466	
5,900.0	5,816.1	5,787.9	5,742.5	16.6	15.2	113.30	366.6	222.4	572.2	543.1	29.15	19.628	
6,000.0	5,865.7	5,850.0	5,785.8	17.9	15.8	105.07	409.5	234.4	640.5	609.2	31.30	20.459	
6,100.0	5,897.9	5,900.0	5,816.6	19.4	16.3	95.32	447.4	245.0	713.9	680.2	33.72	21.174	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	197.5	197.5				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	197.5	197.5	197.3	0.19	1,056.074	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	197.5	197.5	196.9	0.64	310.260	
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	197.5	197.5	196.4	1.09	181.841	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	197.5	197.5	196.0	1.54	128.609	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	197.5	197.5	195.5	1.99	99.485	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	128.10	0.0	197.5	198.6	196.1	2.43	81.635	
700.0	699.8	699.8	699.8	1.4	1.4	129.22	0.0	197.5	201.8	199.0	2.88	70.085	
800.0	799.6	799.6	799.6	1.7	1.7	130.72	0.0	197.5	206.3	203.0	3.33	61.944	
900.0	899.4	899.4	899.4	1.9	1.9	132.15	0.0	197.5	210.9	207.2	3.79	55.725	
1,000.0	999.1	999.1	999.1	2.2	2.1	133.52	0.0	197.5	215.7	211.5	4.24	50.845	
1,100.0	1,098.9	1,098.9	1,098.9	2.4	2.3	134.84	0.0	197.5	220.6	215.9	4.70	46.928	
1,200.0	1,198.6	1,198.6	1,198.6	2.7	2.6	136.09	0.0	197.5	225.5	220.4	5.16	43.723	
1,300.0	1,298.4	1,296.2	1,296.2	2.9	2.8	136.88	1.5	198.2	231.1	225.5	5.61	41.181	
1,400.0	1,398.1	1,393.8	1,393.7	3.2	3.0	136.86	5.9	200.3	237.6	231.5	6.07	39.170	
1,500.0	1,497.9	1,493.4	1,493.0	3.4	3.2	136.41	12.2	203.3	244.6	238.1	6.53	37.468	
1,600.0	1,597.6	1,593.1	1,592.5	3.7	3.5	135.98	18.5	206.3	251.7	244.7	7.00	35.971	
1,700.0	1,697.4	1,692.9	1,692.0	3.9	3.7	135.58	24.8	209.2	258.8	251.3	7.47	34.645	
1,800.0	1,797.2	1,792.6	1,791.5	4.2	3.9	135.19	31.0	212.2	265.8	257.9	7.94	33.465	
1,900.0	1,896.9	1,892.3	1,891.0	4.4	4.2	134.83	37.3	215.2	272.9	264.5	8.42	32.409	
2,000.0	1,996.7	1,992.1	1,990.5	4.7	4.4	134.49	43.6	218.2	280.0	271.1	8.90	31.460	
2,100.0	2,096.4	2,091.8	2,089.9	4.9	4.6	134.16	49.9	221.2	287.2	277.8	9.38	30.603	
2,200.0	2,196.2	2,191.5	2,189.4	5.2	4.9	133.85	56.2	224.2	294.3	284.4	9.87	29.825	
2,300.0	2,295.9	2,291.3	2,288.9	5.5	5.1	133.55	62.5	227.2	301.4	291.1	10.35	29.117	
2,400.0	2,395.7	2,391.0	2,388.4	5.7	5.4	133.27	68.8	230.1	308.6	297.7	10.84	28.470	
2,500.0	2,495.5	2,490.7	2,487.9	6.0	5.6	133.00	75.0	233.1	315.7	304.4	11.33	27.877	
2,600.0	2,595.2	2,590.5	2,587.4	6.2	5.9	132.74	81.3	236.1	322.9	311.1	11.81	27.331	
2,700.0	2,695.0	2,690.2	2,686.9	6.5	6.1	132.49	87.6	239.1	330.0	317.7	12.30	26.827	
2,800.0	2,794.7	2,789.9	2,786.4	6.7	6.4	132.26	93.9	242.1	337.2	324.4	12.79	26.360	
2,900.0	2,894.5	2,889.7	2,885.9	7.0	6.6	132.03	100.2	245.1	344.4	331.1	13.28	25.927	
3,000.0	2,994.2	2,989.4	2,985.4	7.3	6.9	131.81	106.5	248.0	351.5	337.8	13.77	25.525	
3,100.0	3,094.0	3,089.1	3,084.9	7.5	7.1	131.60	112.7	251.0	358.7	344.5	14.26	25.149	
3,200.0	3,193.7	3,188.9	3,184.3	7.8	7.4	131.40	119.0	254.0	365.9	351.2	14.76	24.798	
3,300.0	3,293.5	3,288.6	3,283.8	8.0	7.6	131.21	125.3	257.0	373.1	357.9	15.25	24.470	
3,400.0	3,393.3	3,388.3	3,383.3	8.3	7.9	131.03	131.6	260.0	380.3	364.6	15.74	24.161	
3,500.0	3,493.0	3,488.1	3,482.8	8.5	8.1	130.85	137.9	263.0	387.5	371.3	16.23	23.871	
3,600.0	3,592.8	3,587.8	3,582.3	8.8	8.4	130.68	144.2	265.9	394.7	378.0	16.73	23.598	
3,700.0	3,692.5	3,687.5	3,681.8	9.1	8.6	130.51	150.5	268.9	401.9	384.7	17.22	23.341	
3,800.0	3,792.3	3,787.3	3,781.3	9.3	8.9	130.35	156.7	271.9	409.1	391.4	17.71	23.097	
3,900.0	3,892.0	3,887.0	3,880.8	9.6	9.1	130.19	163.0	274.9	416.3	398.1	18.21	22.867	
4,000.0	3,991.8	3,986.7	3,980.3	9.8	9.4	130.05	169.3	277.9	423.5	404.8	18.70	22.649	
4,100.0	4,091.6	4,086.5	4,079.8	10.1	9.6	129.90	175.6	280.9	430.8	411.6	19.19	22.442	
4,200.0	4,191.3	4,186.2	4,179.2	10.3	9.9	129.76	181.9	283.8	438.0	418.3	19.69	22.245	
4,300.0	4,291.1	4,285.9	4,278.7	10.6	10.1	129.63	188.2	286.8	445.2	425.0	20.18	22.058	
4,400.0	4,390.8	4,385.7	4,378.2	10.9	10.4	129.50	194.4	289.8	452.4	431.7	20.68	21.880	
4,500.0	4,490.6	4,485.4	4,477.7	11.1	10.6	129.37	200.7	292.8	459.7	438.5	21.17	21.710	
4,600.0	4,590.3	4,585.1	4,577.2	11.4	10.9	129.25	207.0	295.8	466.9	445.2	21.67	21.547	
4,700.0	4,690.1	4,684.9	4,676.7	11.6	11.2	129.13	213.3	298.8	474.1	452.0	22.16	21.392	
4,800.0	4,789.9	4,784.6	4,776.2	11.9	11.4	129.01	219.6	301.8	481.3	458.7	22.66	21.244	
4,900.0	4,889.6	4,884.3	4,875.7	12.1	11.7	128.90	225.9	304.7	488.6	465.4	23.15	21.102	
5,000.0	4,989.4	4,984.1	4,975.2	12.4	11.9	128.79	232.2	307.7	495.8	472.2	23.65	20.966	
5,100.0	5,089.1	5,083.8	5,074.7	12.7	12.2	128.69	238.4	310.7	503.1	478.9	24.14	20.836	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0107A - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,183.5	5,174.2	12.9	12.4	128.58	244.7	313.7	510.3	485.7	24.64	20.711	
5,300.0	5,288.6	5,283.3	5,273.6	13.2	12.7	128.48	251.0	316.7	517.5	492.4	25.13	20.591	
5,400.0	5,388.4	5,369.1	5,359.1	13.4	12.9	128.30	257.4	319.7	525.4	499.8	25.61	20.518	SF
5,500.0	5,487.8	5,437.5	5,426.2	13.7	13.1	126.63	269.6	325.5	540.3	514.3	26.00	20.782	
5,600.0	5,583.6	5,500.0	5,485.4	14.2	13.4	123.28	287.6	334.0	571.0	544.7	26.29	21.715	
5,700.0	5,672.4	5,561.2	5,540.7	14.8	13.8	118.51	311.3	345.3	616.2	589.4	26.77	23.021	
5,800.0	5,750.9	5,614.1	5,585.6	15.6	14.1	112.16	336.3	357.2	673.3	645.7	27.68	24.325	
5,900.0	5,816.1	5,660.3	5,622.5	16.6	14.4	104.06	361.6	369.2	739.6	710.4	29.21	25.324	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	114.49	-74.9	164.4	180.7				
100.0	100.0	100.0	100.0	0.1	0.1	114.49	-74.9	164.4	180.7	180.5	0.19	966.348	
200.0	200.0	200.0	200.0	0.3	0.3	114.49	-74.9	164.4	180.7	180.1	0.64	283.899	
300.0	300.0	300.0	300.0	0.5	0.5	114.49	-74.9	164.4	180.7	179.6	1.09	166.391	
400.0	400.0	400.0	400.0	0.8	0.8	114.49	-74.9	164.4	180.7	179.2	1.54	117.682	
500.0	500.0	500.0	500.0	1.0	1.0	114.49	-74.9	164.4	180.7	178.7	1.99	91.033	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	152.46	-74.9	164.4	182.3	179.8	2.43	74.898	
700.0	699.8	699.8	699.8	1.4	1.4	153.16	-74.9	164.4	186.9	184.0	2.88	64.875	
800.0	799.6	799.6	799.6	1.7	1.7	154.09	-74.9	164.4	193.2	189.8	3.33	58.052	
900.0	899.4	898.1	898.1	1.9	1.9	154.48	-73.6	165.5	199.8	196.0	3.77	52.972	
1,000.0	999.1	996.6	996.4	2.2	2.1	153.92	-69.5	168.5	207.0	202.8	4.22	49.086	
1,100.0	1,098.9	1,096.2	1,095.8	2.4	2.3	152.91	-64.0	172.7	214.6	209.9	4.67	45.927	
1,200.0	1,198.6	1,195.8	1,195.2	2.7	2.6	151.97	-58.5	176.9	222.3	217.2	5.13	43.290	
1,300.0	1,298.4	1,295.5	1,294.6	2.9	2.8	151.09	-52.9	181.1	230.0	224.4	5.60	41.062	
1,400.0	1,398.1	1,395.1	1,394.0	3.2	3.0	150.27	-47.4	185.3	237.8	231.7	6.07	39.160	
1,500.0	1,497.9	1,494.7	1,493.4	3.4	3.3	149.50	-41.8	189.5	245.6	239.1	6.55	37.521	
1,600.0	1,597.6	1,594.4	1,592.8	3.7	3.5	148.78	-36.3	193.7	253.5	246.5	7.02	36.096	
1,700.0	1,697.4	1,694.0	1,692.2	3.9	3.8	148.10	-30.8	197.9	261.4	253.9	7.50	34.848	
1,800.0	1,797.2	1,793.7	1,791.6	4.2	4.0	147.46	-25.2	202.1	269.4	261.4	7.98	33.748	
1,900.0	1,896.9	1,893.3	1,891.0	4.4	4.3	146.86	-19.7	206.3	277.3	268.9	8.46	32.770	
2,000.0	1,996.7	1,992.9	1,990.4	4.7	4.5	146.29	-14.1	210.5	285.3	276.4	8.95	31.897	
2,100.0	2,096.4	2,092.6	2,089.8	4.9	4.8	145.76	-8.6	214.7	293.4	283.9	9.43	31.113	
2,200.0	2,196.2	2,192.2	2,189.2	5.2	5.0	145.25	-3.1	218.9	301.4	291.5	9.91	30.405	
2,300.0	2,295.9	2,291.9	2,288.6	5.5	5.3	144.77	2.5	223.1	309.5	299.1	10.40	29.763	
2,400.0	2,395.7	2,391.5	2,388.0	5.7	5.5	144.31	8.0	227.3	317.6	306.7	10.88	29.179	
2,500.0	2,495.5	2,491.1	2,487.3	6.0	5.8	143.87	13.6	231.4	325.7	314.3	11.37	28.645	
2,600.0	2,595.2	2,590.8	2,586.7	6.2	6.0	143.46	19.1	235.6	333.8	322.0	11.86	28.155	
2,700.0	2,695.0	2,690.4	2,686.1	6.5	6.3	143.07	24.7	239.8	342.0	329.6	12.34	27.704	
2,800.0	2,794.7	2,790.1	2,785.5	6.7	6.5	142.69	30.2	244.0	350.1	337.3	12.83	27.288	
2,900.0	2,894.5	2,889.7	2,884.9	7.0	6.8	142.33	35.7	248.2	358.3	345.0	13.32	26.903	
3,000.0	2,994.2	2,989.3	2,984.3	7.3	7.0	141.99	41.3	252.4	366.5	352.7	13.81	26.545	
3,100.0	3,094.0	3,089.0	3,083.7	7.5	7.3	141.66	46.8	256.6	374.7	360.4	14.30	26.212	
3,200.0	3,193.7	3,188.6	3,183.1	7.8	7.5	141.35	52.4	260.8	382.9	368.1	14.78	25.901	
3,300.0	3,293.5	3,288.3	3,282.5	8.0	7.8	141.05	57.9	265.0	391.2	375.9	15.27	25.611	
3,400.0	3,393.3	3,387.9	3,381.9	8.3	8.1	140.76	63.4	269.2	399.4	383.6	15.76	25.339	
3,500.0	3,493.0	3,487.5	3,481.3	8.5	8.3	140.49	69.0	273.4	407.6	391.4	16.25	25.084	
3,600.0	3,592.8	3,587.2	3,580.7	8.8	8.6	140.22	74.5	277.6	415.9	399.2	16.74	24.844	
3,700.0	3,692.5	3,686.8	3,680.1	9.1	8.8	139.97	80.1	281.8	424.2	406.9	17.23	24.618	
3,800.0	3,792.3	3,786.5	3,779.5	9.3	9.1	139.72	85.6	286.0	432.4	414.7	17.72	24.404	
3,900.0	3,892.0	3,886.1	3,878.9	9.6	9.3	139.49	91.2	290.2	440.7	422.5	18.21	24.203	
4,000.0	3,991.8	3,985.8	3,978.3	9.8	9.6	139.26	96.7	294.4	449.0	430.3	18.70	24.012	
4,100.0	4,091.6	4,085.4	4,077.7	10.1	9.8	139.04	102.2	298.6	457.3	438.1	19.19	23.831	
4,200.0	4,191.3	4,185.0	4,177.1	10.3	10.1	138.83	107.8	302.8	465.6	445.9	19.68	23.660	
4,300.0	4,291.1	4,284.7	4,276.5	10.6	10.3	138.63	113.3	307.0	473.9	453.7	20.17	23.496	
4,400.0	4,390.8	4,384.3	4,375.9	10.9	10.6	138.43	118.9	311.2	482.2	461.5	20.66	23.341	
4,500.0	4,490.6	4,484.0	4,475.3	11.1	10.9	138.24	124.4	315.4	490.5	469.4	21.15	23.194	
4,600.0	4,590.3	4,583.6	4,574.7	11.4	11.1	138.06	129.9	319.6	498.8	477.2	21.64	23.053	
4,700.0	4,690.1	4,683.2	4,674.1	11.6	11.4	137.88	135.5	323.7	507.2	485.0	22.13	22.918	
4,800.0	4,789.9	4,782.9	4,773.5	11.9	11.6	137.71	141.0	327.9	515.5	492.9	22.62	22.790	
4,900.0	4,889.6	4,882.5	4,872.9	12.1	11.9	137.54	146.6	332.1	523.8	500.7	23.11	22.667	
5,000.0	4,989.4	4,982.2	4,972.3	12.4	12.1	137.38	152.1	336.3	532.2	508.6	23.60	22.549	
5,100.0	5,089.1	5,081.8	5,071.7	12.7	12.4	137.22	157.6	340.5	540.5	516.4	24.09	22.436	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0108B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,181.4	5,171.1	12.9	12.6	137.07	163.2	344.7	548.9	524.3	24.58	22.328	
5,300.0	5,288.6	5,281.1	5,270.5	13.2	12.9	136.92	168.7	348.9	557.2	532.1	25.07	22.224	
5,400.0	5,388.4	5,380.7	5,369.9	13.4	13.2	136.78	174.3	353.1	565.6	540.0	25.56	22.125 SF	
5,500.0	5,487.8	5,465.7	5,454.6	13.7	13.4	136.14	179.6	357.1	577.0	551.2	25.88	22.300	
5,600.0	5,583.6	5,528.2	5,516.0	14.2	13.6	134.04	188.7	364.0	605.6	579.8	25.85	23.434	
5,700.0	5,672.4	5,585.2	5,570.5	14.8	13.9	130.28	202.0	374.1	651.5	625.7	25.79	25.259	
5,800.0	5,750.9	5,634.8	5,616.2	15.6	14.1	124.46	217.4	385.7	711.9	685.7	26.19	27.177	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-156.19	-74.9	-33.0	81.9				
100.0	100.0	100.0	100.0	0.1	0.1	-156.19	-74.9	-33.0	81.9	81.7	0.19	437.729	
200.0	200.0	200.0	200.0	0.3	0.3	-156.19	-74.9	-33.0	81.9	81.2	0.64	128.602	
300.0	300.0	300.0	300.0	0.5	0.5	-156.19	-74.9	-33.0	81.9	80.8	1.09	75.372	
400.0	400.0	400.0	400.0	0.8	0.8	-156.19	-74.9	-33.0	81.9	80.3	1.54	53.308	
500.0	500.0	500.0	500.0	1.0	1.0	-156.19	-74.9	-33.0	81.9	79.9	1.99	41.236	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	-119.52	-74.9	-33.0	82.7	80.3	2.43	33.990	
700.0	699.8	699.8	699.8	1.4	1.4	-122.53	-74.9	-33.0	85.4	82.5	2.88	29.607	
800.0	799.6	799.6	799.6	1.7	1.7	-126.30	-74.9	-33.0	89.4	86.0	3.34	26.740	
900.0	899.4	899.3	899.3	1.9	1.9	-129.73	-74.9	-33.0	93.7	89.9	3.80	24.639	
1,000.0	999.1	999.1	999.1	2.2	2.1	-132.86	-74.9	-33.0	98.3	94.0	4.26	23.061	
1,100.0	1,098.9	1,096.1	1,096.1	2.4	2.3	-135.08	-76.1	-34.2	104.5	99.8	4.69	22.255	
1,200.0	1,198.6	1,192.7	1,192.6	2.7	2.5	-136.01	-79.6	-37.6	113.5	108.3	5.12	22.178	SF
1,300.0	1,298.4	1,292.0	1,291.6	2.9	2.7	-136.27	-84.5	-42.4	124.0	118.4	5.55	22.338	
1,400.0	1,398.1	1,391.4	1,390.8	3.2	2.9	-136.49	-89.5	-47.2	134.5	128.5	5.99	22.456	
1,500.0	1,497.9	1,490.8	1,490.0	3.4	3.1	-136.67	-94.5	-52.0	145.0	138.6	6.43	22.537	
1,600.0	1,597.6	1,590.3	1,589.2	3.7	3.3	-136.83	-99.5	-56.8	155.5	148.6	6.89	22.589	
1,700.0	1,697.4	1,689.7	1,688.4	3.9	3.6	-136.97	-104.5	-61.7	166.1	158.7	7.34	22.622	
1,800.0	1,797.2	1,789.2	1,787.6	4.2	3.8	-137.10	-109.4	-66.5	176.6	168.8	7.80	22.640	
1,900.0	1,896.9	1,888.6	1,886.8	4.4	4.0	-137.21	-114.4	-71.3	187.1	178.8	8.26	22.647	
2,000.0	1,996.7	1,988.1	1,986.0	4.7	4.3	-137.30	-119.4	-76.1	197.6	188.9	8.73	22.648	
2,100.0	2,096.4	2,087.5	2,085.2	4.9	4.5	-137.39	-124.4	-80.9	208.2	199.0	9.19	22.643	
2,200.0	2,196.2	2,187.0	2,184.4	5.2	4.8	-137.47	-129.4	-85.8	218.7	209.0	9.66	22.634	
2,300.0	2,295.9	2,286.4	2,283.6	5.5	5.0	-137.54	-134.4	-90.6	229.2	219.1	10.13	22.622	
2,400.0	2,395.7	2,385.8	2,382.8	5.7	5.2	-137.61	-139.4	-95.4	239.7	229.1	10.60	22.608	
2,500.0	2,495.5	2,485.3	2,482.0	6.0	5.5	-137.67	-144.3	-100.2	250.3	239.2	11.08	22.594	
2,600.0	2,595.2	2,584.7	2,581.2	6.2	5.7	-137.72	-149.3	-105.1	260.8	249.3	11.55	22.578	
2,700.0	2,695.0	2,684.2	2,680.4	6.5	6.0	-137.78	-154.3	-109.9	271.3	259.3	12.03	22.561	
2,800.0	2,794.7	2,783.6	2,779.6	6.7	6.2	-137.82	-159.3	-114.7	281.9	269.4	12.50	22.545	
2,900.0	2,894.5	2,883.1	2,878.8	7.0	6.5	-137.87	-164.3	-119.5	292.4	279.4	12.98	22.528	
3,000.0	2,994.2	2,982.5	2,978.0	7.3	6.8	-137.91	-169.3	-124.4	302.9	289.5	13.46	22.512	
3,100.0	3,094.0	3,081.9	3,077.2	7.5	7.0	-137.95	-174.2	-129.2	313.5	299.5	13.93	22.495	
3,200.0	3,193.7	3,181.4	3,176.4	7.8	7.3	-137.98	-179.2	-134.0	324.0	309.6	14.41	22.479	
3,300.0	3,293.5	3,280.8	3,275.6	8.0	7.5	-138.01	-184.2	-138.8	334.5	319.6	14.89	22.463	
3,400.0	3,393.3	3,380.3	3,374.8	8.3	7.8	-138.05	-189.2	-143.7	345.0	329.7	15.37	22.448	
3,500.0	3,493.0	3,479.7	3,474.0	8.5	8.0	-138.08	-194.2	-148.5	355.6	339.7	15.85	22.433	
3,600.0	3,592.8	3,579.2	3,573.2	8.8	8.3	-138.10	-199.2	-153.3	366.1	349.8	16.33	22.418	
3,700.0	3,692.5	3,678.6	3,672.4	9.1	8.6	-138.13	-204.2	-158.1	376.6	359.8	16.81	22.404	
3,800.0	3,792.3	3,778.1	3,771.6	9.3	8.8	-138.15	-209.1	-163.0	387.2	369.9	17.29	22.390	
3,900.0	3,892.0	3,877.5	3,870.8	9.6	9.1	-138.18	-214.1	-167.8	397.7	379.9	17.77	22.376	
4,000.0	3,991.8	3,976.9	3,970.0	9.8	9.3	-138.20	-219.1	-172.6	408.2	390.0	18.25	22.363	
4,100.0	4,091.6	4,076.4	4,069.2	10.1	9.6	-138.22	-224.1	-177.4	418.8	400.0	18.74	22.351	
4,200.0	4,191.3	4,175.8	4,168.4	10.3	9.8	-138.24	-229.1	-182.3	429.3	410.1	19.22	22.338	
4,300.0	4,291.1	4,275.3	4,267.6	10.6	10.1	-138.26	-234.1	-187.1	439.8	420.1	19.70	22.326	
4,400.0	4,390.8	4,374.7	4,366.8	10.9	10.4	-138.28	-239.0	-191.9	450.4	430.2	20.18	22.315	
4,500.0	4,490.6	4,474.2	4,466.0	11.1	10.6	-138.30	-244.0	-196.7	460.9	440.2	20.66	22.304	
4,600.0	4,590.3	4,573.6	4,565.2	11.4	10.9	-138.31	-249.0	-201.5	471.4	450.3	21.15	22.293	
4,700.0	4,690.1	4,673.0	4,664.4	11.6	11.1	-138.33	-254.0	-206.4	481.9	460.3	21.63	22.282	
4,800.0	4,789.9	4,772.5	4,763.6	11.9	11.4	-138.34	-259.0	-211.2	492.5	470.4	22.11	22.272	
4,900.0	4,889.6	4,871.9	4,862.8	12.1	11.7	-138.36	-264.0	-216.0	503.0	480.4	22.59	22.262	
5,000.0	4,989.4	4,971.4	4,962.0	12.4	11.9	-138.37	-269.0	-220.8	513.5	490.5	23.08	22.252	
5,100.0	5,089.1	5,070.8	5,061.2	12.7	12.2	-138.39	-273.9	-225.7	524.1	500.5	23.56	22.243	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,170.3	5,160.4	12.9	12.4	-138.40	-278.9	-230.5	534.6	510.6	24.04	22.234	
5,300.0	5,288.6	5,269.7	5,259.6	13.2	12.7	-138.41	-283.9	-235.3	545.1	520.6	24.53	22.225	
5,400.0	5,388.4	5,350.0	5,339.7	13.4	12.9	-138.41	-288.1	-239.3	556.1	531.2	24.97	22.275	
5,500.0	5,487.8	5,400.0	5,389.2	13.7	13.1	-137.18	-293.2	-244.3	575.8	550.6	25.18	22.864	
5,600.0	5,583.6	5,450.0	5,437.8	14.2	13.3	-133.99	-301.7	-252.5	614.9	589.8	25.11	24.485	
5,700.0	5,672.4	5,500.0	5,485.0	14.8	13.5	-128.96	-313.5	-263.9	671.5	646.4	25.12	26.737	
5,800.0	5,750.9	5,533.4	5,515.6	15.6	13.7	-121.01	-323.1	-273.3	742.0	716.2	25.77	28.795	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-74.9	0.0	74.9				
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-74.9	0.0	74.9	74.7	0.19	400.506	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-74.9	0.0	74.9	74.3	0.64	117.663	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-74.9	0.0	74.9	73.8	1.09	68.961	
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-74.9	0.0	74.9	73.4	1.54	48.774	
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-74.9	0.0	74.9	72.9	1.99	37.729	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	-143.07	-74.9	0.0	76.3	73.9	2.43	31.340	
700.0	699.8	699.8	699.8	1.4	1.4	-145.25	-74.9	0.0	80.5	77.6	2.88	27.914	
800.0	799.6	799.6	799.6	1.7	1.7	-147.89	-74.9	0.0	86.4	83.0	3.34	25.886	
900.0	899.4	899.4	899.4	1.9	1.9	-150.19	-74.9	0.0	92.3	88.6	3.79	24.371	
1,000.0	999.1	999.1	999.1	2.2	2.1	-152.21	-74.9	0.0	98.5	94.2	4.24	23.206	
1,100.0	1,098.9	1,098.9	1,098.9	2.4	2.3	-153.99	-74.9	0.0	104.7	100.0	4.70	22.287	
1,200.0	1,198.6	1,198.6	1,198.6	2.7	2.6	-155.57	-74.9	0.0	111.0	105.8	5.15	21.548	
1,300.0	1,298.4	1,295.8	1,295.8	2.9	2.8	-156.35	-76.2	-0.9	118.5	112.9	5.58	21.238	SF
1,400.0	1,398.1	1,392.6	1,392.4	3.2	2.9	-155.91	-80.2	-3.7	128.1	122.2	5.99	21.392	
1,500.0	1,497.9	1,491.7	1,491.4	3.4	3.1	-154.93	-85.9	-7.7	139.1	132.7	6.42	21.687	
1,600.0	1,597.6	1,591.1	1,590.5	3.7	3.3	-154.09	-91.5	-11.6	150.1	143.3	6.85	21.930	
1,700.0	1,697.4	1,690.5	1,689.6	3.9	3.5	-153.36	-97.2	-15.6	161.2	153.9	7.28	22.129	
1,800.0	1,797.2	1,789.8	1,788.7	4.2	3.7	-152.73	-102.9	-19.6	172.3	164.5	7.73	22.292	
1,900.0	1,896.9	1,889.2	1,887.9	4.4	4.0	-152.17	-108.6	-23.5	183.4	175.2	8.18	22.428	
2,000.0	1,996.7	1,988.6	1,987.0	4.7	4.2	-151.68	-114.3	-27.5	194.5	185.8	8.63	22.541	
2,100.0	2,096.4	2,087.9	2,086.1	4.9	4.4	-151.24	-120.0	-31.5	205.6	196.5	9.08	22.636	
2,200.0	2,196.2	2,187.3	2,185.2	5.2	4.6	-150.85	-125.6	-35.5	216.7	207.2	9.54	22.717	
2,300.0	2,295.9	2,286.7	2,284.4	5.5	4.9	-150.49	-131.3	-39.4	227.8	217.8	10.00	22.786	
2,400.0	2,395.7	2,386.1	2,383.5	5.7	5.1	-150.17	-137.0	-43.4	239.0	228.5	10.46	22.845	
2,500.0	2,495.5	2,485.4	2,482.6	6.0	5.4	-149.87	-142.7	-47.4	250.1	239.2	10.92	22.896	
2,600.0	2,595.2	2,584.8	2,581.7	6.2	5.6	-149.60	-148.4	-51.3	261.3	249.9	11.39	22.941	
2,700.0	2,695.0	2,684.2	2,680.9	6.5	5.9	-149.36	-154.0	-55.3	272.5	260.6	11.86	22.980	
2,800.0	2,794.7	2,783.5	2,780.0	6.7	6.1	-149.13	-159.7	-59.3	283.6	271.3	12.32	23.014	
2,900.0	2,894.5	2,882.9	2,879.1	7.0	6.3	-148.92	-165.4	-63.3	294.8	282.0	12.79	23.044	
3,000.0	2,994.2	2,982.3	2,978.2	7.3	6.6	-148.72	-171.1	-67.2	306.0	292.7	13.26	23.071	
3,100.0	3,094.0	3,081.6	3,077.4	7.5	6.8	-148.54	-176.8	-71.2	317.1	303.4	13.73	23.094	
3,200.0	3,193.7	3,181.0	3,176.5	7.8	7.1	-148.37	-182.4	-75.2	328.3	314.1	14.20	23.115	
3,300.0	3,293.5	3,280.4	3,275.6	8.0	7.3	-148.22	-188.1	-79.1	339.5	324.8	14.68	23.134	
3,400.0	3,393.3	3,379.7	3,374.8	8.3	7.6	-148.07	-193.8	-83.1	350.7	335.5	15.15	23.151	
3,500.0	3,493.0	3,479.1	3,473.9	8.5	7.9	-147.93	-199.5	-87.1	361.9	346.3	15.62	23.166	
3,600.0	3,592.8	3,578.5	3,573.0	8.8	8.1	-147.80	-205.2	-91.1	373.1	357.0	16.09	23.180	
3,700.0	3,692.5	3,677.8	3,672.1	9.1	8.4	-147.68	-210.9	-95.0	384.3	367.7	16.57	23.193	
3,800.0	3,792.3	3,777.2	3,771.3	9.3	8.6	-147.56	-216.5	-99.0	395.5	378.4	17.04	23.204	
3,900.0	3,892.0	3,876.6	3,870.4	9.6	8.9	-147.45	-222.2	-103.0	406.7	389.1	17.52	23.214	
4,000.0	3,991.8	3,976.0	3,969.5	9.8	9.1	-147.35	-227.9	-106.9	417.9	399.9	17.99	23.223	
4,100.0	4,091.6	4,075.3	4,068.6	10.1	9.4	-147.25	-233.6	-110.9	429.0	410.6	18.47	23.232	
4,200.0	4,191.3	4,174.7	4,167.8	10.3	9.6	-147.16	-239.3	-114.9	440.2	421.3	18.94	23.240	
4,300.0	4,291.1	4,274.1	4,266.9	10.6	9.9	-147.07	-244.9	-118.8	451.4	432.0	19.42	23.247	
4,400.0	4,390.8	4,373.4	4,366.0	10.9	10.2	-146.99	-250.6	-122.8	462.6	442.8	19.90	23.253	
4,500.0	4,490.6	4,472.8	4,465.1	11.1	10.4	-146.91	-256.3	-126.8	473.9	453.5	20.37	23.260	
4,600.0	4,590.3	4,572.2	4,564.3	11.4	10.7	-146.83	-262.0	-130.8	485.1	464.2	20.85	23.265	
4,700.0	4,690.1	4,671.5	4,663.4	11.6	10.9	-146.76	-267.7	-134.7	496.3	474.9	21.33	23.270	
4,800.0	4,789.9	4,770.9	4,762.5	11.9	11.2	-146.69	-273.4	-138.7	507.5	485.7	21.80	23.275	
4,900.0	4,889.6	4,870.3	4,861.7	12.1	11.4	-146.62	-279.0	-142.7	518.7	496.4	22.28	23.279	
5,000.0	4,989.4	4,969.6	4,960.8	12.4	11.7	-146.56	-284.7	-146.6	529.9	507.1	22.76	23.284	
5,100.0	5,089.1	5,069.0	5,059.9	12.7	12.0	-146.49	-290.4	-150.6	541.1	517.8	23.23	23.287	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1302B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,168.4	5,159.0	12.9	12.2	-146.44	-296.1	-154.6	552.3	528.6	23.71	23.291	
5,300.0	5,288.6	5,267.7	5,258.2	13.2	12.5	-146.38	-301.8	-158.6	563.5	539.3	24.19	23.294	
5,400.0	5,388.4	5,367.1	5,357.3	13.4	12.7	-146.33	-307.4	-162.5	574.7	550.0	24.67	23.297	
5,500.0	5,487.8	5,450.0	5,440.0	13.7	13.0	-145.75	-312.3	-165.9	589.2	564.3	24.90	23.662	
5,600.0	5,583.6	5,500.0	5,489.4	14.2	13.1	-143.77	-318.0	-169.9	623.2	598.6	24.59	25.348	
5,700.0	5,672.4	5,550.0	5,538.0	14.8	13.3	-140.11	-327.7	-176.7	677.3	653.1	24.12	28.083	
5,800.0	5,750.9	5,579.2	5,565.8	15.6	13.5	-133.48	-335.0	-181.8	747.3	723.1	24.12	30.983	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	156.19	-74.9	33.0	81.9				
100.0	100.0	100.0	100.0	0.1	0.1	156.19	-74.9	33.0	81.9	81.7	0.19	437.729	
200.0	200.0	200.0	200.0	0.3	0.3	156.19	-74.9	33.0	81.9	81.2	0.64	128.602	
300.0	300.0	300.0	300.0	0.5	0.5	156.19	-74.9	33.0	81.9	80.8	1.09	75.372	
400.0	400.0	400.0	400.0	0.8	0.8	156.19	-74.9	33.0	81.9	80.3	1.54	53.308	
500.0	500.0	500.0	500.0	1.0	1.0	156.19	-74.9	33.0	81.9	79.9	1.99	41.236	CC, ES
600.0	600.0	598.0	598.0	1.2	1.2	-165.51	-76.4	32.4	84.7	82.3	2.41	35.190	
700.0	699.8	695.5	695.4	1.4	1.4	-164.00	-81.0	30.3	93.3	90.5	2.83	33.008	
800.0	799.6	794.7	794.3	1.7	1.6	-162.32	-87.3	27.5	104.9	101.6	3.25	32.235	
900.0	899.4	894.0	893.4	1.9	1.8	-160.98	-93.6	24.7	116.6	112.9	3.69	31.590	
1,000.0	999.1	993.3	992.4	2.2	2.0	-159.88	-100.0	21.9	128.3	124.2	4.13	31.029	
1,100.0	1,098.9	1,092.6	1,091.4	2.4	2.3	-158.97	-106.3	19.1	140.1	135.5	4.59	30.545	
1,200.0	1,198.6	1,191.8	1,190.5	2.7	2.5	-158.20	-112.6	16.3	151.9	146.8	5.04	30.126	
1,300.0	1,298.4	1,291.1	1,289.5	2.9	2.8	-157.54	-119.0	13.5	163.7	158.2	5.50	29.762	
1,400.0	1,398.1	1,390.4	1,388.6	3.2	3.0	-156.97	-125.3	10.7	175.5	169.6	5.96	29.445	
1,500.0	1,497.9	1,489.7	1,487.6	3.4	3.3	-156.47	-131.6	7.9	187.4	181.0	6.43	29.166	
1,600.0	1,597.6	1,589.0	1,586.6	3.7	3.5	-156.03	-138.0	5.1	199.3	192.4	6.89	28.920	
1,700.0	1,697.4	1,688.3	1,685.7	3.9	3.8	-155.64	-144.3	2.3	211.2	203.8	7.36	28.701	
1,800.0	1,797.2	1,787.5	1,784.7	4.2	4.0	-155.29	-150.6	-0.5	223.0	215.2	7.82	28.506	
1,900.0	1,896.9	1,886.8	1,883.8	4.4	4.3	-154.98	-157.0	-3.3	234.9	226.6	8.29	28.330	
2,000.0	1,996.7	1,986.1	1,982.8	4.7	4.5	-154.70	-163.3	-6.1	246.8	238.1	8.76	28.172	
2,100.0	2,096.4	2,085.4	2,081.8	4.9	4.8	-154.44	-169.6	-8.9	258.7	249.5	9.23	28.029	
2,200.0	2,196.2	2,184.7	2,180.9	5.2	5.1	-154.20	-176.0	-11.7	270.7	261.0	9.70	27.898	
2,300.0	2,295.9	2,283.9	2,279.9	5.5	5.3	-153.99	-182.3	-14.5	282.6	272.4	10.17	27.778	
2,400.0	2,395.7	2,383.2	2,379.0	5.7	5.6	-153.79	-188.6	-17.4	294.5	283.9	10.64	27.669	
2,500.0	2,495.5	2,482.5	2,478.0	6.0	5.8	-153.61	-195.0	-20.2	306.4	295.3	11.12	27.568	
2,600.0	2,595.2	2,581.8	2,577.0	6.2	6.1	-153.44	-201.3	-23.0	318.3	306.8	11.59	27.475	
2,700.0	2,695.0	2,681.1	2,676.1	6.5	6.4	-153.29	-207.6	-25.8	330.3	318.2	12.06	27.388	
2,800.0	2,794.7	2,780.4	2,775.1	6.7	6.6	-153.14	-213.9	-28.6	342.2	329.7	12.53	27.308	
2,900.0	2,894.5	2,879.6	2,874.2	7.0	6.9	-153.01	-220.3	-31.4	354.1	341.1	13.00	27.233	
3,000.0	2,994.2	2,978.9	2,973.2	7.3	7.1	-152.88	-226.6	-34.2	366.1	352.6	13.48	27.164	
3,100.0	3,094.0	3,078.2	3,072.2	7.5	7.4	-152.76	-232.9	-37.0	378.0	364.1	13.95	27.099	
3,200.0	3,193.7	3,177.5	3,171.3	7.8	7.7	-152.65	-239.3	-39.8	389.9	375.5	14.42	27.038	
3,300.0	3,293.5	3,276.8	3,270.3	8.0	7.9	-152.54	-245.6	-42.6	401.9	387.0	14.90	26.980	
3,400.0	3,393.3	3,376.0	3,369.4	8.3	8.2	-152.45	-251.9	-45.4	413.8	398.5	15.37	26.926	
3,500.0	3,493.0	3,475.3	3,468.4	8.5	8.4	-152.35	-258.3	-48.2	425.8	409.9	15.84	26.875	
3,600.0	3,592.8	3,574.6	3,567.4	8.8	8.7	-152.27	-264.6	-51.0	437.7	421.4	16.32	26.827	
3,700.0	3,692.5	3,673.9	3,666.5	9.1	9.0	-152.18	-270.9	-53.8	449.7	432.9	16.79	26.782	
3,800.0	3,792.3	3,773.2	3,765.5	9.3	9.2	-152.10	-277.3	-56.6	461.6	444.3	17.26	26.739	
3,900.0	3,892.0	3,872.5	3,864.6	9.6	9.5	-152.03	-283.6	-59.4	473.5	455.8	17.74	26.698	
4,000.0	3,991.8	3,971.7	3,963.6	9.8	9.8	-151.96	-289.9	-62.2	485.5	467.3	18.21	26.660	
4,100.0	4,091.6	4,071.0	4,062.6	10.1	10.0	-151.89	-296.3	-65.1	497.4	478.8	18.68	26.623	
4,200.0	4,191.3	4,170.3	4,161.7	10.3	10.3	-151.82	-302.6	-67.9	509.4	490.2	19.16	26.588	
4,300.0	4,291.1	4,269.6	4,260.7	10.6	10.5	-151.76	-308.9	-70.7	521.3	501.7	19.63	26.554	
4,400.0	4,390.8	4,368.9	4,359.8	10.9	10.8	-151.70	-315.3	-73.5	533.3	513.2	20.11	26.522	
4,500.0	4,490.6	4,468.1	4,458.8	11.1	11.1	-151.65	-321.6	-76.3	545.2	524.6	20.58	26.492	
4,600.0	4,590.3	4,567.4	4,557.8	11.4	11.3	-151.59	-327.9	-79.1	557.2	536.1	21.06	26.463	
4,700.0	4,690.1	4,666.7	4,656.9	11.6	11.6	-151.54	-334.3	-81.9	569.1	547.6	21.53	26.435	
4,800.0	4,789.9	4,766.0	4,755.9	11.9	11.9	-151.49	-340.6	-84.7	581.1	559.1	22.00	26.408	
4,900.0	4,889.6	4,865.3	4,855.0	12.1	12.1	-151.44	-346.9	-87.5	593.0	570.6	22.48	26.383	
5,000.0	4,989.4	4,964.6	4,954.0	12.4	12.4	-151.40	-353.2	-90.3	605.0	582.0	22.95	26.358	
5,100.0	5,089.1	5,063.8	5,053.1	12.7	12.6	-151.35	-359.6	-93.1	616.9	593.5	23.43	26.334	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,163.1	5,152.1	12.9	12.9	-151.31	-365.9	-95.9	628.9	605.0	23.90	26.312	
5,300.0	5,288.6	5,262.4	5,251.1	13.2	13.2	-151.27	-372.2	-98.7	640.8	616.5	24.38	26.290	SF
5,400.0	5,388.4	5,350.0	5,338.5	13.4	13.4	-151.23	-378.0	-101.3	653.0	628.2	24.82	26.306	
5,500.0	5,487.8	5,400.0	5,388.0	13.7	13.6	-150.31	-384.4	-104.1	673.7	648.7	24.95	27.005	
5,600.0	5,583.6	5,450.0	5,436.6	14.2	13.8	-147.81	-395.1	-108.9	715.8	691.3	24.52	29.197	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	138.58	-74.9	66.1	99.9				
100.0	100.0	100.0	100.0	0.1	0.1	138.58	-74.9	66.1	99.9	99.7	0.19	534.176	
200.0	200.0	200.0	200.0	0.3	0.3	138.58	-74.9	66.1	99.9	99.3	0.64	156.933	
300.0	300.0	300.0	300.0	0.5	0.5	138.58	-74.9	66.1	99.9	98.8	1.09	91.977	
400.0	400.0	400.0	400.0	0.8	0.8	138.58	-74.9	66.1	99.9	98.4	1.54	65.052	
500.0	500.0	500.0	500.0	1.0	1.0	138.58	-74.9	66.1	99.9	97.9	1.99	50.321	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	176.36	-74.9	66.1	101.6	99.2	2.43	41.751	
700.0	699.8	699.8	699.8	1.4	1.4	176.53	-74.9	66.1	106.9	104.0	2.88	37.063	
800.0	799.6	799.6	799.6	1.7	1.7	176.75	-74.9	66.1	113.8	110.5	3.33	34.197	
900.0	899.4	899.4	899.4	1.9	1.9	176.93	-74.9	66.1	120.8	117.0	3.78	31.990	
1,000.0	999.1	999.1	999.1	2.2	2.1	177.10	-74.9	66.1	127.8	123.5	4.22	30.241	
1,100.0	1,098.9	1,098.9	1,098.9	2.4	2.3	177.25	-74.9	66.1	134.7	130.0	4.67	28.822	
1,200.0	1,198.6	1,195.7	1,195.7	2.7	2.5	177.89	-76.5	65.8	142.7	137.6	5.09	28.021	
1,300.0	1,298.4	1,292.0	1,291.8	2.9	2.7	179.42	-81.2	64.7	152.8	147.3	5.49	27.817	
1,400.0	1,398.1	1,390.9	1,390.5	3.2	2.9	-178.69	-87.9	63.3	164.3	158.4	5.91	27.817	
1,500.0	1,497.9	1,490.1	1,489.5	3.4	3.1	-177.04	-94.7	61.8	176.0	169.6	6.33	27.810	
1,600.0	1,597.6	1,589.3	1,588.4	3.7	3.3	-175.60	-101.5	60.4	187.7	181.0	6.75	27.793	
1,700.0	1,697.4	1,688.5	1,687.4	3.9	3.5	-174.33	-108.2	58.9	199.6	192.4	7.19	27.771	
1,800.0	1,797.2	1,787.7	1,786.4	4.2	3.7	-173.20	-115.0	57.5	211.6	204.0	7.63	27.744	
1,900.0	1,896.9	1,886.9	1,885.3	4.4	3.9	-172.19	-121.8	56.0	223.6	215.6	8.07	27.717	
2,000.0	1,996.7	1,986.1	1,984.3	4.7	4.2	-171.29	-128.5	54.6	235.7	227.2	8.51	27.688	
2,100.0	2,096.4	2,085.3	2,083.2	4.9	4.4	-170.47	-135.3	53.1	247.9	238.9	8.96	27.660	
2,200.0	2,196.2	2,184.5	2,182.2	5.2	4.6	-169.73	-142.1	51.7	260.1	250.7	9.41	27.633	
2,300.0	2,295.9	2,283.7	2,281.2	5.5	4.9	-169.06	-148.8	50.2	272.3	262.5	9.86	27.607	
2,400.0	2,395.7	2,382.9	2,380.1	5.7	5.1	-168.44	-155.6	48.8	284.6	274.3	10.32	27.582	
2,500.0	2,495.5	2,482.1	2,479.1	6.0	5.4	-167.88	-162.4	47.3	296.9	286.1	10.77	27.558	
2,600.0	2,595.2	2,581.3	2,578.0	6.2	5.6	-167.36	-169.1	45.9	309.2	298.0	11.23	27.535	
2,700.0	2,695.0	2,680.5	2,677.0	6.5	5.9	-166.88	-175.9	44.4	321.6	309.9	11.69	27.514	
2,800.0	2,794.7	2,779.7	2,775.9	6.7	6.1	-166.43	-182.7	43.0	334.0	321.8	12.15	27.493	
2,900.0	2,894.5	2,878.9	2,874.9	7.0	6.4	-166.02	-189.4	41.5	346.4	333.8	12.61	27.474	
3,000.0	2,994.2	2,978.1	2,973.9	7.3	6.6	-165.64	-196.2	40.1	358.8	345.7	13.07	27.456	
3,100.0	3,094.0	3,077.3	3,072.8	7.5	6.9	-165.28	-203.0	38.6	371.2	357.7	13.53	27.439	
3,200.0	3,193.7	3,176.5	3,171.8	7.8	7.1	-164.94	-209.7	37.2	383.6	369.6	13.99	27.422	
3,300.0	3,293.5	3,275.7	3,270.7	8.0	7.4	-164.63	-216.5	35.7	396.1	381.6	14.45	27.407	
3,400.0	3,393.3	3,374.9	3,369.7	8.3	7.6	-164.33	-223.3	34.3	408.5	393.6	14.91	27.392	
3,500.0	3,493.0	3,474.1	3,468.6	8.5	7.9	-164.05	-230.0	32.8	421.0	405.6	15.38	27.378	
3,600.0	3,592.8	3,573.3	3,567.6	8.8	8.1	-163.79	-236.8	31.4	433.5	417.6	15.84	27.365	
3,700.0	3,692.5	3,672.5	3,666.6	9.1	8.4	-163.55	-243.6	29.9	446.0	429.7	16.30	27.353	
3,800.0	3,792.3	3,771.7	3,765.5	9.3	8.6	-163.31	-250.3	28.5	458.5	441.7	16.77	27.341	
3,900.0	3,892.0	3,870.9	3,864.5	9.6	8.9	-163.09	-257.1	27.0	471.0	453.7	17.23	27.329	
4,000.0	3,991.8	3,970.1	3,963.4	9.8	9.1	-162.88	-263.9	25.6	483.5	465.8	17.70	27.318	
4,100.0	4,091.6	4,069.3	4,062.4	10.1	9.4	-162.68	-270.6	24.1	496.0	477.8	18.16	27.308	
4,200.0	4,191.3	4,168.5	4,161.3	10.3	9.7	-162.49	-277.4	22.7	508.5	489.9	18.63	27.298	
4,300.0	4,291.1	4,267.7	4,260.3	10.6	9.9	-162.31	-284.1	21.2	521.0	501.9	19.09	27.289	
4,400.0	4,390.8	4,366.9	4,359.3	10.9	10.2	-162.14	-290.9	19.8	533.6	514.0	19.56	27.280	
4,500.0	4,490.6	4,466.1	4,458.2	11.1	10.4	-161.98	-297.7	18.3	546.1	526.1	20.03	27.271	
4,600.0	4,590.3	4,565.3	4,557.2	11.4	10.7	-161.82	-304.4	16.9	558.6	538.2	20.49	27.263	
4,700.0	4,690.1	4,664.5	4,656.1	11.6	10.9	-161.67	-311.2	15.4	571.2	550.2	20.96	27.255	
4,800.0	4,789.9	4,763.7	4,755.1	11.9	11.2	-161.53	-318.0	14.0	583.7	562.3	21.42	27.247	
4,900.0	4,889.6	4,862.9	4,854.1	12.1	11.5	-161.39	-324.7	12.5	596.3	574.4	21.89	27.240	
5,000.0	4,989.4	4,962.1	4,953.0	12.4	11.7	-161.26	-331.5	11.1	608.8	586.5	22.36	27.233	
5,100.0	5,089.1	5,061.3	5,052.0	12.7	12.0	-161.13	-338.3	9.6	621.4	598.6	22.82	27.226	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1304B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,160.5	5,150.9	12.9	12.2	-161.01	-345.0	8.2	634.0	610.7	23.29	27.220	
5,300.0	5,288.6	5,259.7	5,249.9	13.2	12.5	-160.90	-351.8	6.7	646.5	622.8	23.76	27.213	
5,400.0	5,388.4	5,358.9	5,348.8	13.4	12.8	-160.78	-358.6	5.3	659.1	634.9	24.22	27.207	SF
5,500.0	5,487.8	5,450.0	5,439.7	13.7	13.0	-160.34	-364.9	3.9	675.1	650.7	24.40	27.674	
5,600.0	5,583.6	5,500.0	5,489.2	14.2	13.2	-158.96	-371.8	2.4	712.1	688.3	23.77	29.962	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	127.07	-74.9	99.1	124.2				
100.0	100.0	100.0	100.0	0.1	0.1	127.07	-74.9	99.1	124.2	124.1	0.19	664.363	
200.0	200.0	200.0	200.0	0.3	0.3	127.07	-74.9	99.1	124.2	123.6	0.64	195.186	
300.0	300.0	300.0	300.0	0.5	0.5	127.07	-74.9	99.1	124.2	123.2	1.09	114.396	
400.0	400.0	400.0	400.0	0.8	0.8	127.07	-74.9	99.1	124.2	122.7	1.54	80.908	
500.0	500.0	500.0	500.0	1.0	1.0	127.07	-74.9	99.1	124.2	122.3	1.99	62.586	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	164.99	-74.9	99.1	125.9	123.5	2.43	51.737	
700.0	699.8	699.8	699.8	1.4	1.4	165.56	-74.9	99.1	131.0	128.1	2.88	45.447	
800.0	799.6	799.6	799.6	1.7	1.7	166.28	-74.9	99.1	137.8	134.4	3.33	41.399	
900.0	899.4	899.3	899.3	1.9	1.9	166.94	-74.9	99.1	144.5	140.8	3.77	38.290	
1,000.0	999.1	995.5	995.5	2.2	2.1	167.94	-76.5	99.3	152.5	148.3	4.19	36.396	
1,100.0	1,098.9	1,091.0	1,090.9	2.4	2.3	169.61	-81.2	99.7	163.0	158.4	4.59	35.501	
1,200.0	1,198.6	1,189.7	1,189.4	2.7	2.4	171.56	-88.1	100.3	175.0	170.0	5.00	34.980	
1,300.0	1,298.4	1,288.8	1,288.2	2.9	2.6	173.27	-95.0	101.0	187.3	181.8	5.42	34.532	
1,400.0	1,398.1	1,388.0	1,387.1	3.2	2.8	174.77	-101.8	101.6	199.7	193.8	5.85	34.132	
1,500.0	1,497.9	1,487.1	1,485.9	3.4	3.1	176.09	-108.7	102.2	212.2	205.9	6.28	33.775	
1,600.0	1,597.6	1,586.2	1,584.8	3.7	3.3	177.26	-115.6	102.9	224.8	218.0	6.72	33.457	
1,700.0	1,697.4	1,685.3	1,683.7	3.9	3.5	178.31	-122.5	103.5	237.5	230.3	7.16	33.172	
1,800.0	1,797.2	1,784.4	1,782.5	4.2	3.8	179.26	-129.4	104.1	250.2	242.6	7.60	32.917	
1,900.0	1,896.9	1,883.5	1,881.4	4.4	4.0	-179.89	-136.3	104.8	263.0	255.0	8.05	32.689	
2,000.0	1,996.7	1,982.6	1,980.3	4.7	4.2	-179.12	-143.1	105.4	275.9	267.4	8.49	32.484	
2,100.0	2,096.4	2,081.7	2,079.1	4.9	4.5	-178.42	-150.0	106.0	288.8	279.9	8.94	32.298	
2,200.0	2,196.2	2,180.8	2,178.0	5.2	4.7	-177.77	-156.9	106.7	301.8	292.4	9.39	32.129	
2,300.0	2,295.9	2,279.9	2,276.8	5.5	5.0	-177.18	-163.8	107.3	314.8	304.9	9.84	31.975	
2,400.0	2,395.7	2,379.0	2,375.7	5.7	5.2	-176.64	-170.7	107.9	327.8	317.5	10.30	31.835	
2,500.0	2,495.5	2,478.1	2,474.6	6.0	5.5	-176.14	-177.6	108.6	340.8	330.1	10.75	31.706	
2,600.0	2,595.2	2,577.2	2,573.4	6.2	5.7	-175.67	-184.5	109.2	353.9	342.7	11.20	31.587	
2,700.0	2,695.0	2,676.3	2,672.3	6.5	6.0	-175.24	-191.3	109.8	367.0	355.3	11.66	31.478	
2,800.0	2,794.7	2,775.4	2,771.1	6.7	6.2	-174.84	-198.2	110.5	380.1	368.0	12.11	31.377	
2,900.0	2,894.5	2,874.5	2,870.0	7.0	6.5	-174.46	-205.1	111.1	393.2	380.6	12.57	31.284	
3,000.0	2,994.2	2,973.6	2,968.9	7.3	6.7	-174.11	-212.0	111.7	406.4	393.3	13.03	31.197	
3,100.0	3,094.0	3,072.7	3,067.7	7.5	7.0	-173.78	-218.9	112.4	419.5	406.0	13.48	31.116	
3,200.0	3,193.7	3,171.8	3,166.6	7.8	7.2	-173.48	-225.8	113.0	432.7	418.7	13.94	31.040	
3,300.0	3,293.5	3,270.9	3,265.5	8.0	7.5	-173.18	-232.6	113.6	445.9	431.5	14.40	30.969	
3,400.0	3,393.3	3,370.0	3,364.3	8.3	7.8	-172.91	-239.5	114.3	459.1	444.2	14.86	30.903	
3,500.0	3,493.0	3,469.1	3,463.2	8.5	8.0	-172.65	-246.4	114.9	472.3	456.9	15.31	30.840	
3,600.0	3,592.8	3,568.2	3,562.0	8.8	8.3	-172.41	-253.3	115.5	485.5	469.7	15.77	30.781	
3,700.0	3,692.5	3,667.3	3,660.9	9.1	8.5	-172.18	-260.2	116.2	498.7	482.5	16.23	30.726	
3,800.0	3,792.3	3,766.4	3,759.8	9.3	8.8	-171.96	-267.1	116.8	511.9	495.2	16.69	30.674	
3,900.0	3,892.0	3,865.5	3,858.6	9.6	9.0	-171.75	-273.9	117.4	525.1	508.0	17.15	30.624	
4,000.0	3,991.8	3,964.6	3,957.5	9.8	9.3	-171.55	-280.8	118.1	538.4	520.8	17.61	30.578	
4,100.0	4,091.6	4,063.7	4,056.3	10.1	9.6	-171.36	-287.7	118.7	551.6	533.6	18.07	30.533	
4,200.0	4,191.3	4,162.8	4,155.2	10.3	9.8	-171.18	-294.6	119.3	564.9	546.4	18.53	30.491	
4,300.0	4,291.1	4,261.9	4,254.1	10.6	10.1	-171.01	-301.5	120.0	578.1	559.2	18.99	30.451	
4,400.0	4,390.8	4,361.0	4,352.9	10.9	10.3	-170.84	-308.4	120.6	591.4	572.0	19.45	30.413	
4,500.0	4,490.6	4,460.1	4,451.8	11.1	10.6	-170.69	-315.3	121.2	604.7	584.8	19.91	30.376	
4,600.0	4,590.3	4,559.2	4,550.7	11.4	10.9	-170.54	-322.1	121.8	617.9	597.6	20.37	30.342	
4,700.0	4,690.1	4,658.3	4,649.5	11.6	11.1	-170.39	-329.0	122.5	631.2	610.4	20.83	30.309	
4,800.0	4,789.9	4,757.4	4,748.4	11.9	11.4	-170.26	-335.9	123.1	644.5	623.2	21.29	30.277	
4,900.0	4,889.6	4,856.6	4,847.2	12.1	11.6	-170.12	-342.8	123.7	657.8	636.0	21.75	30.247	
5,000.0	4,989.4	4,955.7	4,946.1	12.4	11.9	-170.00	-349.7	124.4	671.1	648.9	22.21	30.218	
5,100.0	5,089.1	5,054.8	5,045.0	12.7	12.2	-169.87	-356.6	125.0	684.3	661.7	22.67	30.190	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,153.9	5,143.8	12.9	12.4	-169.76	-363.4	125.6	697.6	674.5	23.13	30.163	
5,300.0	5,288.6	5,253.0	5,242.7	13.2	12.7	-169.64	-370.3	126.3	710.9	687.3	23.59	30.137	SF
5,400.0	5,388.4	5,343.6	5,333.1	13.4	12.9	-169.54	-376.7	126.9	724.3	700.3	24.03	30.140	
5,500.0	5,487.8	5,400.0	5,388.9	13.7	13.1	-169.09	-384.3	127.6	746.2	722.1	24.10	30.965	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	119.69	-74.9	131.4	151.3				
100.0	100.0	100.0	100.0	0.1	0.1	119.69	-74.9	131.4	151.3	151.1	0.19	808.857	
200.0	200.0	200.0	200.0	0.3	0.3	119.69	-74.9	131.4	151.3	150.6	0.64	237.631	
300.0	300.0	300.0	300.0	0.5	0.5	119.69	-74.9	131.4	151.3	150.2	1.09	139.274	
400.0	400.0	400.0	400.0	0.8	0.8	119.69	-74.9	131.4	151.3	149.7	1.54	98.503	
500.0	500.0	500.0	500.0	1.0	1.0	119.69	-74.9	131.4	151.3	149.3	1.99	76.197	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	157.65	-74.9	131.4	152.9	150.4	2.43	62.817	
700.0	699.8	699.8	699.8	1.4	1.4	158.33	-74.9	131.4	157.7	154.8	2.88	54.736	
800.0	799.6	799.6	799.6	1.7	1.7	159.23	-74.9	131.4	164.2	160.9	3.33	49.359	
900.0	899.4	899.4	899.4	1.9	1.9	160.06	-74.9	131.4	170.8	167.0	3.78	45.233	
1,000.0	999.1	999.1	999.1	2.2	2.1	160.83	-74.9	131.4	177.3	173.1	4.23	41.975	
1,100.0	1,098.9	1,094.0	1,094.0	2.4	2.3	161.80	-76.4	131.9	185.3	180.6	4.64	39.921	
1,200.0	1,198.6	1,188.2	1,188.1	2.7	2.5	163.21	-80.7	133.5	195.9	190.9	5.04	38.871	
1,300.0	1,298.4	1,286.6	1,286.2	2.9	2.7	164.85	-87.2	135.7	208.3	202.9	5.45	38.221	
1,400.0	1,398.1	1,385.7	1,385.0	3.2	2.9	166.32	-93.7	138.0	220.9	215.1	5.87	37.656	
1,500.0	1,497.9	1,484.7	1,483.9	3.4	3.1	167.62	-100.2	140.3	233.7	227.4	6.29	37.151	
1,600.0	1,597.6	1,583.8	1,582.7	3.7	3.3	168.80	-106.7	142.6	246.5	239.8	6.72	36.697	
1,700.0	1,697.4	1,682.8	1,681.5	3.9	3.5	169.85	-113.3	144.9	259.5	252.3	7.15	36.290	
1,800.0	1,797.2	1,781.9	1,780.3	4.2	3.7	170.81	-119.8	147.2	272.5	264.9	7.59	35.924	
1,900.0	1,896.9	1,880.9	1,879.1	4.4	4.0	171.68	-126.3	149.5	285.6	277.6	8.02	35.592	
2,000.0	1,996.7	1,980.0	1,977.9	4.7	4.2	172.47	-132.8	151.8	298.7	290.3	8.46	35.295	
2,100.0	2,096.4	2,079.0	2,076.7	4.9	4.4	173.19	-139.3	154.1	311.9	303.0	8.91	35.024	
2,200.0	2,196.2	2,178.1	2,175.5	5.2	4.7	173.86	-145.9	156.4	325.2	315.8	9.35	34.778	
2,300.0	2,295.9	2,277.1	2,274.3	5.5	4.9	174.47	-152.4	158.7	338.4	328.6	9.79	34.553	
2,400.0	2,395.7	2,376.2	2,373.1	5.7	5.2	175.04	-158.9	161.0	351.7	341.5	10.24	34.347	
2,500.0	2,495.5	2,475.2	2,472.0	6.0	5.4	175.57	-165.4	163.3	365.1	354.4	10.69	34.158	
2,600.0	2,595.2	2,574.3	2,570.8	6.2	5.7	176.06	-171.9	165.6	378.5	367.3	11.14	33.984	
2,700.0	2,695.0	2,673.3	2,669.6	6.5	5.9	176.51	-178.4	167.9	391.9	380.3	11.59	33.823	
2,800.0	2,794.7	2,772.4	2,768.4	6.7	6.2	176.94	-185.0	170.2	405.3	393.3	12.04	33.674	
2,900.0	2,894.5	2,871.4	2,867.2	7.0	6.4	177.34	-191.5	172.5	418.7	406.3	12.49	33.536	
3,000.0	2,994.2	2,970.5	2,966.0	7.3	6.7	177.71	-198.0	174.7	432.2	419.3	12.94	33.408	
3,100.0	3,094.0	3,069.5	3,064.8	7.5	6.9	178.06	-204.5	177.0	445.7	432.3	13.39	33.288	
3,200.0	3,193.7	3,168.6	3,163.6	7.8	7.2	178.39	-211.0	179.3	459.2	445.3	13.84	33.176	
3,300.0	3,293.5	3,267.6	3,262.4	8.0	7.4	178.71	-217.5	181.6	472.7	458.4	14.29	33.071	
3,400.0	3,393.3	3,366.7	3,361.2	8.3	7.7	179.00	-224.1	183.9	486.2	471.5	14.75	32.972	
3,500.0	3,493.0	3,465.7	3,460.1	8.5	7.9	179.28	-230.6	186.2	499.7	484.5	15.20	32.880	
3,600.0	3,592.8	3,564.8	3,558.9	8.8	8.2	179.54	-237.1	188.5	513.3	497.6	15.65	32.793	
3,700.0	3,692.5	3,663.8	3,657.7	9.1	8.5	179.79	-243.6	190.8	526.8	510.7	16.11	32.711	
3,800.0	3,792.3	3,762.9	3,756.5	9.3	8.7	-179.97	-250.1	193.1	540.4	523.8	16.56	32.633	
3,900.0	3,892.0	3,861.9	3,855.3	9.6	9.0	-179.74	-256.6	195.4	554.0	537.0	17.01	32.560	
4,000.0	3,991.8	3,961.0	3,954.1	9.8	9.2	-179.53	-263.2	197.7	567.6	550.1	17.47	32.490	
4,100.0	4,091.6	4,060.0	4,052.9	10.1	9.5	-179.32	-269.7	200.0	581.2	563.2	17.92	32.424	
4,200.0	4,191.3	4,159.1	4,151.7	10.3	9.7	-179.13	-276.2	202.3	594.7	576.4	18.38	32.361	
4,300.0	4,291.1	4,258.1	4,250.5	10.6	10.0	-178.94	-282.7	204.6	608.3	589.5	18.83	32.302	
4,400.0	4,390.8	4,357.2	4,349.3	10.9	10.3	-178.76	-289.2	206.9	622.0	602.7	19.29	32.245	
4,500.0	4,490.6	4,456.3	4,448.2	11.1	10.5	-178.59	-295.7	209.2	635.6	615.8	19.74	32.191	
4,600.0	4,590.3	4,555.3	4,547.0	11.4	10.8	-178.43	-302.3	211.5	649.2	629.0	20.20	32.139	
4,700.0	4,690.1	4,654.4	4,645.8	11.6	11.0	-178.27	-308.8	213.8	662.8	642.2	20.65	32.090	
4,800.0	4,789.9	4,753.4	4,744.6	11.9	11.3	-178.12	-315.3	216.1	676.4	655.3	21.11	32.043	
4,900.0	4,889.6	4,852.5	4,843.4	12.1	11.5	-177.97	-321.8	218.4	690.1	668.5	21.57	31.998	
5,000.0	4,989.4	4,951.5	4,942.2	12.4	11.8	-177.83	-328.3	220.6	703.7	681.7	22.02	31.954	
5,100.0	5,089.1	5,050.6	5,041.0	12.7	12.1	-177.70	-334.8	222.9	717.4	694.9	22.48	31.913	

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 #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1306B - HZ - Plan #2

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,188.9	5,149.6	5,139.8	12.9	12.3	-177.57	-341.4	225.2	731.0	708.1	22.93	31.873	
5,300.0	5,288.6	5,248.7	5,238.6	13.2	12.6	-177.45	-347.9	227.5	744.7	721.3	23.39	31.835	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #3

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	114.49	-74.9	164.4	180.7				
100.0	100.0	100.0	100.0	0.1	0.1	114.49	-74.9	164.4	180.7	180.5	0.19	966.270	
200.0	200.0	200.0	200.0	0.3	0.3	114.49	-74.9	164.4	180.7	180.1	0.64	283.884	
300.0	300.0	300.0	300.0	0.5	0.5	114.49	-74.9	164.4	180.7	179.6	1.09	166.381	
400.0	400.0	400.0	400.0	0.8	0.8	114.49	-74.9	164.4	180.7	179.2	1.54	117.674	CC, ES
500.0	500.0	495.1	495.1	1.0	1.0	114.78	-76.3	165.2	182.0	180.1	1.95	93.260	
600.0	600.0	589.8	589.7	1.2	1.1	153.51	-80.3	167.6	187.7	185.3	2.37	79.338	
700.0	699.8	688.5	688.2	1.4	1.4	155.22	-86.3	171.0	198.2	195.4	2.80	70.747	
800.0	799.6	787.6	787.0	1.7	1.6	157.04	-92.3	174.4	210.5	207.3	3.23	65.131	
900.0	899.4	886.6	885.7	1.9	1.8	158.65	-98.3	177.9	223.0	219.3	3.67	60.758	
1,000.0	999.1	985.6	984.5	2.2	2.1	160.09	-104.3	181.3	235.6	231.5	4.11	57.285	
1,100.0	1,098.9	1,084.7	1,083.3	2.4	2.3	161.38	-110.3	184.7	248.4	243.9	4.56	54.479	
1,200.0	1,198.6	1,183.7	1,182.1	2.7	2.6	162.55	-116.3	188.2	261.3	256.3	5.01	52.174	
1,300.0	1,298.4	1,282.7	1,280.9	2.9	2.8	163.61	-122.3	191.6	274.3	268.8	5.46	50.252	
1,400.0	1,398.1	1,381.8	1,379.7	3.2	3.1	164.57	-128.3	195.0	287.4	281.5	5.91	48.628	
1,500.0	1,497.9	1,480.8	1,478.5	3.4	3.3	165.45	-134.3	198.5	300.5	294.2	6.36	47.241	
1,600.0	1,597.6	1,579.8	1,577.3	3.7	3.6	166.26	-140.3	201.9	313.7	306.9	6.81	46.044	
1,700.0	1,697.4	1,678.9	1,676.1	3.9	3.8	167.00	-146.3	205.3	327.0	319.7	7.27	45.001	
1,800.0	1,797.2	1,777.9	1,774.9	4.2	4.1	167.68	-152.2	208.8	340.3	332.6	7.72	44.085	
1,900.0	1,896.9	1,876.9	1,873.6	4.4	4.4	168.31	-158.2	212.2	353.7	345.5	8.17	43.274	
2,000.0	1,996.7	1,976.0	1,972.4	4.7	4.6	168.89	-164.2	215.6	367.1	358.4	8.63	42.552	
2,100.0	2,096.4	2,075.0	2,071.2	4.9	4.9	169.44	-170.2	219.1	380.5	371.4	9.08	41.905	
2,200.0	2,196.2	2,174.0	2,170.0	5.2	5.1	169.94	-176.2	222.5	394.0	384.4	9.53	41.321	
2,300.0	2,295.9	2,273.0	2,268.8	5.5	5.4	170.42	-182.2	225.9	407.4	397.5	9.99	40.794	
2,400.0	2,395.7	2,372.1	2,367.6	5.7	5.7	170.86	-188.2	229.4	421.0	410.5	10.44	40.314	
2,500.0	2,495.5	2,471.1	2,466.4	6.0	5.9	171.27	-194.2	232.8	434.5	423.6	10.90	39.875	
2,600.0	2,595.2	2,570.1	2,565.2	6.2	6.2	171.66	-200.2	236.2	448.1	436.7	11.35	39.473	
2,700.0	2,695.0	2,669.2	2,664.0	6.5	6.4	172.03	-206.2	239.7	461.6	449.8	11.81	39.104	
2,800.0	2,794.7	2,768.2	2,762.8	6.7	6.7	172.38	-212.2	243.1	475.2	463.0	12.26	38.763	
2,900.0	2,894.5	2,867.2	2,861.5	7.0	7.0	172.70	-218.2	246.5	488.9	476.1	12.72	38.447	
3,000.0	2,994.2	2,966.3	2,960.3	7.3	7.2	173.01	-224.2	249.9	502.5	489.3	13.17	38.154	
3,100.0	3,094.0	3,065.3	3,059.1	7.5	7.5	173.31	-230.2	253.4	516.1	502.5	13.62	37.881	
3,200.0	3,193.7	3,164.3	3,157.9	7.8	7.7	173.58	-236.2	256.8	529.8	515.7	14.08	37.627	
3,300.0	3,293.5	3,263.4	3,256.7	8.0	8.0	173.85	-242.2	260.2	543.4	528.9	14.53	37.389	
3,400.0	3,393.3	3,362.4	3,355.5	8.3	8.3	174.10	-248.2	263.7	557.1	542.1	14.99	37.167	
3,500.0	3,493.0	3,461.4	3,454.3	8.5	8.5	174.34	-254.2	267.1	570.8	555.4	15.45	36.957	
3,600.0	3,592.8	3,560.5	3,553.1	8.8	8.8	174.56	-260.2	270.5	584.5	568.6	15.90	36.761	
3,700.0	3,692.5	3,659.5	3,651.9	9.1	9.0	174.78	-266.1	274.0	598.2	581.9	16.36	36.575	
3,800.0	3,792.3	3,758.5	3,750.7	9.3	9.3	174.99	-272.1	277.4	611.9	595.1	16.81	36.400	
3,900.0	3,892.0	3,857.5	3,849.5	9.6	9.6	175.19	-278.1	280.8	625.6	608.4	17.27	36.235	
4,000.0	3,991.8	3,956.6	3,948.2	9.8	9.8	175.38	-284.1	284.3	639.4	621.7	17.72	36.078	
4,100.0	4,091.6	4,055.6	4,047.0	10.1	10.1	175.56	-290.1	287.7	653.1	634.9	18.18	35.930	
4,200.0	4,191.3	4,154.6	4,145.8	10.3	10.3	175.73	-296.1	291.1	666.9	648.2	18.63	35.789	
4,300.0	4,291.1	4,253.7	4,244.6	10.6	10.6	175.90	-302.1	294.6	680.6	661.5	19.09	35.655	
4,400.0	4,390.8	4,352.7	4,343.4	10.9	10.9	176.06	-308.1	298.0	694.4	674.8	19.54	35.527	
4,500.0	4,490.6	4,451.7	4,442.2	11.1	11.1	176.22	-314.1	301.4	708.1	688.1	20.00	35.406	
4,600.0	4,590.3	4,550.8	4,541.0	11.4	11.4	176.37	-320.1	304.9	721.9	701.4	20.46	35.290	
4,700.0	4,690.1	4,649.8	4,639.8	11.6	11.7	176.51	-326.1	308.3	735.6	714.7	20.91	35.179	
4,800.0	4,789.9	4,748.8	4,738.6	11.9	11.9	176.65	-332.1	311.7	749.4	728.0	21.37	35.073	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #2

Offset Site Error: 0.0 usft

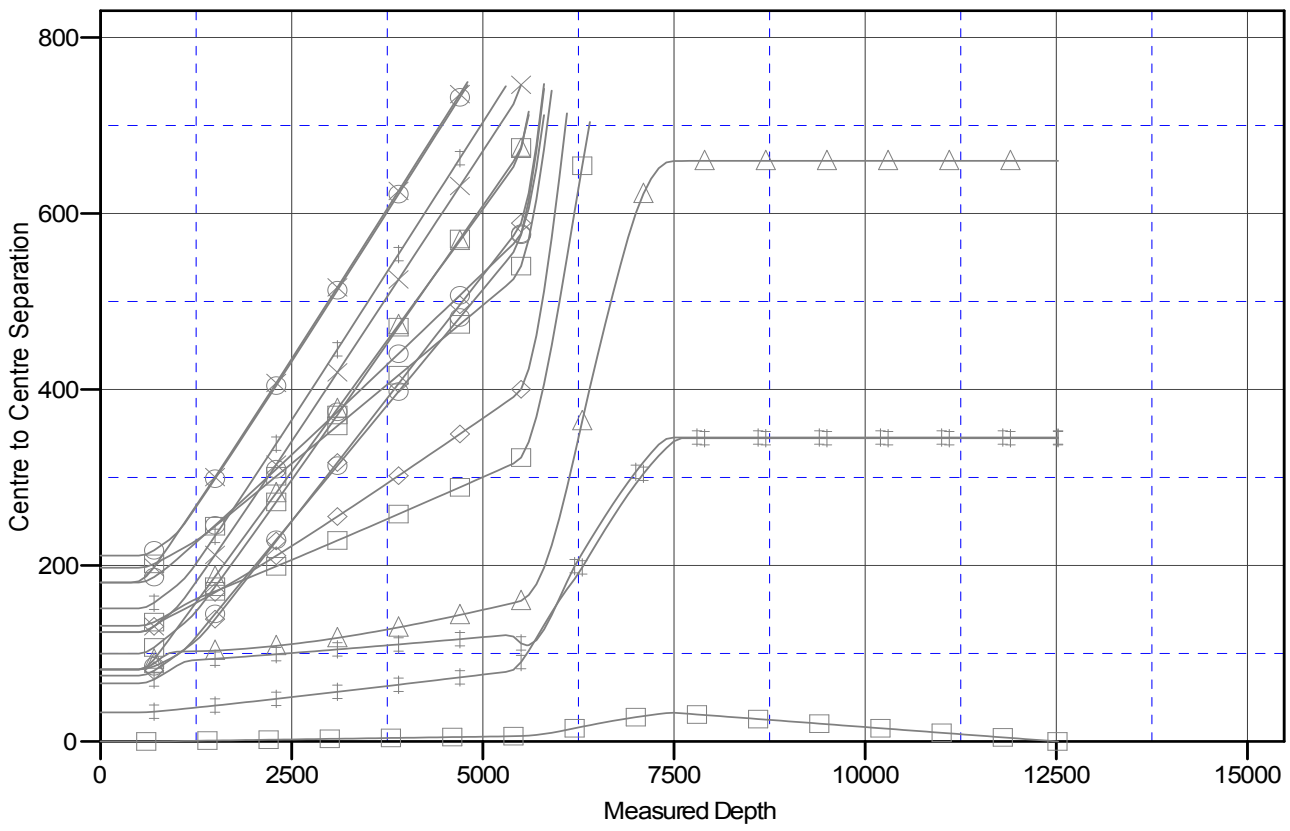
Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	110.78	-74.9	197.5	211.2				
100.0	100.0	100.0	100.0	0.1	0.1	110.78	-74.9	197.5	211.2	211.0	0.19	1,129.522	
200.0	200.0	200.0	200.0	0.3	0.3	110.78	-74.9	197.5	211.2	210.6	0.64	331.837	
300.0	300.0	300.0	300.0	0.5	0.5	110.78	-74.9	197.5	211.2	210.1	1.09	194.488	
400.0	400.0	400.0	400.0	0.8	0.8	110.78	-74.9	197.5	211.2	209.7	1.54	137.553	
500.0	500.0	500.0	500.0	1.0	1.0	110.78	-74.9	197.5	211.2	209.2	1.99	106.404	CC, ES
600.0	600.0	600.0	600.0	1.2	1.2	148.73	-74.9	197.5	212.7	210.3	2.43	87.421	
700.0	699.8	699.8	699.8	1.4	1.4	149.40	-74.9	197.5	217.2	214.3	2.88	75.397	
800.0	799.6	799.6	799.6	1.7	1.7	150.31	-74.9	197.5	223.2	219.9	3.33	67.085	
900.0	899.4	899.4	899.4	1.9	1.9	151.17	-74.9	197.5	229.3	225.6	3.78	60.711	
1,000.0	999.1	992.2	992.2	2.2	2.1	152.09	-76.1	198.4	236.9	232.7	4.19	56.506	
1,100.0	1,098.9	1,084.5	1,084.4	2.4	2.3	153.24	-79.5	201.3	247.5	242.9	4.60	53.849	
1,200.0	1,198.6	1,182.3	1,181.9	2.7	2.4	154.55	-84.7	205.6	260.1	255.1	5.01	51.881	
1,300.0	1,298.4	1,281.3	1,280.7	2.9	2.6	155.75	-90.0	210.1	272.8	267.4	5.43	50.207	
1,400.0	1,398.1	1,380.3	1,379.5	3.2	2.9	156.85	-95.3	214.5	285.7	279.8	5.86	48.748	
1,500.0	1,497.9	1,479.4	1,478.3	3.4	3.1	157.85	-100.6	218.9	298.6	292.3	6.29	47.467	
1,600.0	1,597.6	1,578.4	1,577.1	3.7	3.3	158.77	-105.9	223.4	311.7	305.0	6.73	46.339	
1,700.0	1,697.4	1,677.4	1,675.9	3.9	3.5	159.61	-111.2	227.8	324.8	317.6	7.16	45.342	
1,800.0	1,797.2	1,776.5	1,774.6	4.2	3.8	160.39	-116.5	232.2	338.0	330.4	7.60	44.451	
1,900.0	1,896.9	1,875.5	1,873.4	4.4	4.0	161.11	-121.8	236.7	351.2	343.2	8.04	43.658	
2,000.0	1,996.7	1,974.5	1,972.2	4.7	4.3	161.78	-127.1	241.1	364.5	356.0	8.49	42.944	
2,100.0	2,096.4	2,073.5	2,071.0	4.9	4.5	162.40	-132.4	245.5	377.8	368.9	8.93	42.301	
2,200.0	2,196.2	2,172.6	2,169.8	5.2	4.8	162.98	-137.7	249.9	391.2	381.8	9.38	41.718	
2,300.0	2,295.9	2,271.6	2,268.6	5.5	5.0	163.52	-143.0	254.4	404.6	394.8	9.82	41.188	
2,400.0	2,395.7	2,370.6	2,367.4	5.7	5.3	164.03	-148.3	258.8	418.0	407.8	10.27	40.704	
2,500.0	2,495.5	2,469.6	2,466.1	6.0	5.5	164.50	-153.6	263.2	431.5	420.8	10.72	40.260	
2,600.0	2,595.2	2,568.7	2,564.9	6.2	5.8	164.95	-158.9	267.7	445.0	433.8	11.17	39.853	
2,700.0	2,695.0	2,667.7	2,663.7	6.5	6.0	165.37	-164.2	272.1	458.5	446.9	11.62	39.477	
2,800.0	2,794.7	2,766.7	2,762.5	6.7	6.3	165.76	-169.5	276.5	472.1	460.0	12.06	39.129	
2,900.0	2,894.5	2,865.8	2,861.3	7.0	6.5	166.14	-174.8	280.9	485.6	473.1	12.51	38.807	
3,000.0	2,994.2	2,964.8	2,960.1	7.3	6.8	166.49	-180.1	285.4	499.2	486.3	12.96	38.508	
3,100.0	3,094.0	3,063.8	3,058.9	7.5	7.0	166.82	-185.4	289.8	512.8	499.4	13.41	38.229	
3,200.0	3,193.7	3,162.8	3,157.6	7.8	7.3	167.14	-190.7	294.2	526.5	512.6	13.87	37.968	
3,300.0	3,293.5	3,261.9	3,256.4	8.0	7.5	167.44	-196.0	298.7	540.1	525.8	14.32	37.724	
3,400.0	3,393.3	3,360.9	3,355.2	8.3	7.8	167.73	-201.3	303.1	553.7	539.0	14.77	37.496	
3,500.0	3,493.0	3,459.9	3,454.0	8.5	8.1	168.00	-206.6	307.5	567.4	552.2	15.22	37.281	
3,600.0	3,592.8	3,558.9	3,552.8	8.8	8.3	168.26	-211.9	311.9	581.1	565.4	15.67	37.079	
3,700.0	3,692.5	3,658.0	3,651.6	9.1	8.6	168.51	-217.2	316.4	594.8	578.6	16.12	36.888	
3,800.0	3,792.3	3,757.0	3,750.4	9.3	8.8	168.75	-222.5	320.8	608.5	591.9	16.58	36.708	
3,900.0	3,892.0	3,856.0	3,849.2	9.6	9.1	168.97	-227.8	325.2	622.2	605.1	17.03	36.538	
4,000.0	3,991.8	3,955.1	3,947.9	9.8	9.3	169.19	-233.1	329.7	635.9	618.4	17.48	36.377	
4,100.0	4,091.6	4,054.1	4,046.7	10.1	9.6	169.40	-238.4	334.1	649.6	631.7	17.93	36.224	
4,200.0	4,191.3	4,153.1	4,145.5	10.3	9.9	169.59	-243.7	338.5	663.3	644.9	18.39	36.078	
4,300.0	4,291.1	4,252.1	4,244.3	10.6	10.1	169.79	-249.0	343.0	677.1	658.2	18.84	35.940	
4,400.0	4,390.8	4,351.2	4,343.1	10.9	10.4	169.97	-254.3	347.4	690.8	671.5	19.29	35.809	
4,500.0	4,490.6	4,450.2	4,441.9	11.1	10.6	170.14	-259.6	351.8	704.6	684.8	19.74	35.684	
4,600.0	4,590.3	4,549.2	4,540.7	11.4	10.9	170.31	-264.9	356.2	718.3	698.1	20.20	35.564	
4,700.0	4,690.1	4,648.2	4,639.4	11.6	11.1	170.48	-270.2	360.7	732.1	711.4	20.65	35.450	
4,800.0	4,789.9	4,747.3	4,738.2	11.9	11.4	170.63	-275.5	365.1	745.9	724.7	21.10	35.341	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #12F-0102B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #12F-0102B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4953.6usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °
Coordinates are relative to: Razor #12F-0102B
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.09°



LEGEND

- Razor #12F-0101A, HZ, Plan #3 V0
- Razor #12F-0102B, HZ, Plan #2 V0
- Razor #12F-0103A, HZ, Plan #2 V0
- Razor #12F-0104B, HZ, Plan #2 V0
- Razor #12F-0105A, HZ, Plan #2 V0
- Razor #12F-0106B, HZ, Plan #2 V0
- Razor #12F-0107A, HZ, Plan #2 V0
- Razor #12F-0108B, HZ, Plan #2 V0
- Razor Federal #12F-1301A, HZ, Plan #3 V0
- Razor Federal #12F-1302B, HZ, Plan #2 V0
- Razor Federal #12F-1303A, HZ, Plan #3 V0
- Razor Federal #12F-1304B, HZ, Plan #2 V0
- Razor Federal #12F-1305A, HZ, Plan #3 V0
- Razor Federal #12F-1306B, HZ, Plan #2 V0
- Razor Federal #12F-1307A, HZ, Plan #3 V0
- Razor Federal#12F-1308B, HZ, Plan #2 V0