WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S12-T10N-R58W
Well: Razor Federal #12F-1306B
Wellbore: HZ
Design: Plan #2

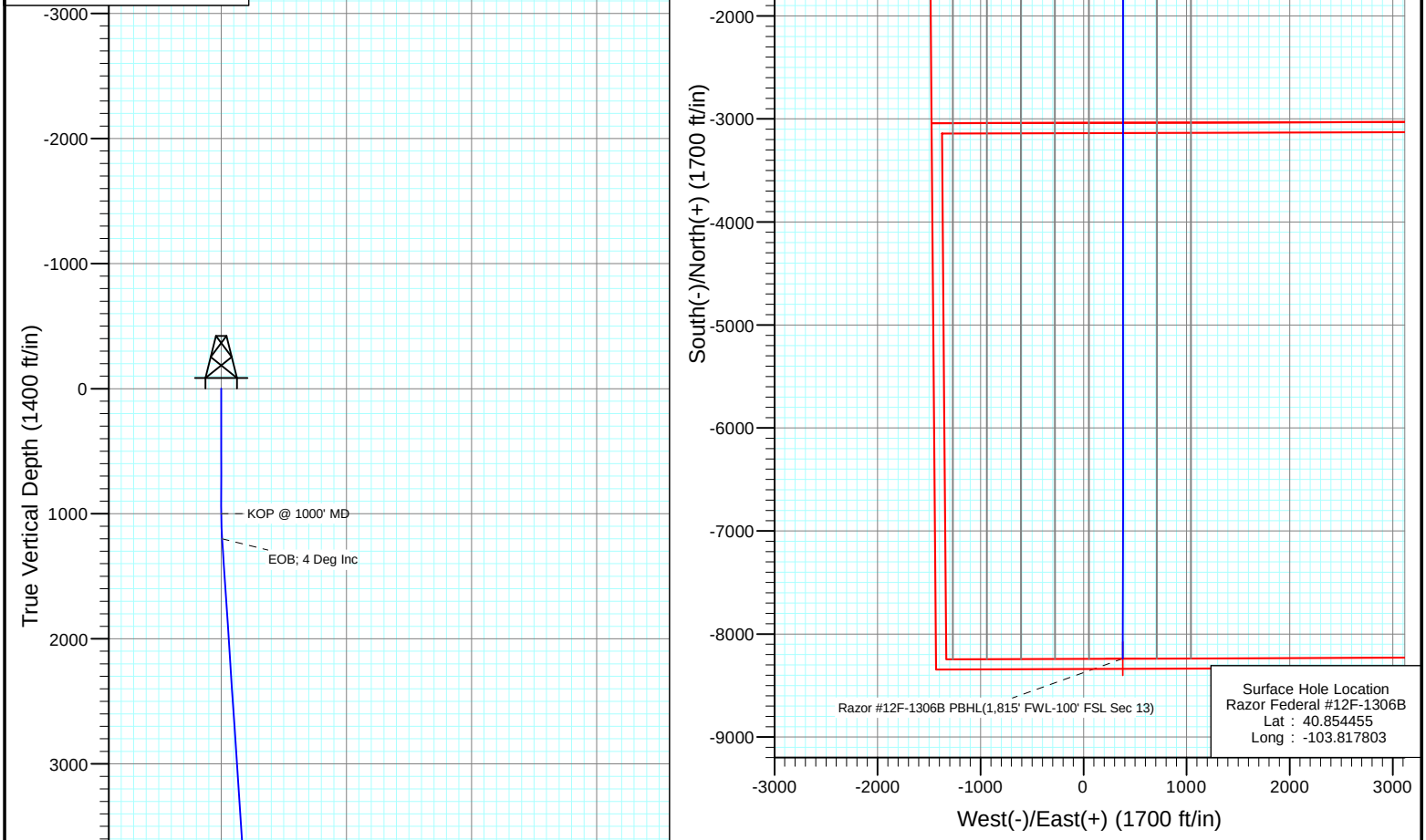
CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	KOP @ 1000' MD
3	1200.0	4.00	160.60	1199.8	-6.6	2.3	2.00	160.60	6.6	EOB; 4 Deg Inc
4	5438.0	4.00	160.60	5427.5	-285.4	100.5	0.00	0.00	285.4	Start 11 Deg Bulid
5	6219.8	90.00	160.60	5912.1	-775.5	273.1	11.00	0.00	775.5	LP @ 6,219' MD
6	6866.6	90.00	180.00	5912.1	-1410.0	381.5	3.00	90.00	1410.0	EOT; 180 Deg Azi
7	13695.8	90.00	180.00	5912.0	-8239.2	381.3	0.00	0.00	8239.2	PBHL @ 13,695' 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



Surface Hole Location
Razor Federal #12F-1306B
Lat : 40.854455
Long : -103.817803

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5755.0	5804.4	Top Niobrara

Plan #2
Razor Federal #12F-1306B
WELL @ 4953.6ft (Original Well Elev)
Ground Elevation @ 4936.8
North American Datum 1983
Well Razor Federal #12F-1306B, True North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Project Weld County, CO

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

Site S12-T10N-R58W

Site Position:		**Northing:**	1,558,541.09 ft	**Latitude:**	40.854456
From:	Lat/Long	**Easting:**	3,465,183.08 ft	**Longitude:**	-103.818397
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	1.09 °

Well Razor Federal #12F-1306B

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,558,544.18 ft	**Latitude:**	40.854455
	+E/-W	0.0 ft	**Easting:**	3,465,347.50 ft	**Longitude:**	-103.817803
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,936.8 ft

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 #2

Audit Notes:

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

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.00

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	4.00	160.60	1,199.8	-6.6	2.3	2.00	2.00	0.00	160.60	
5,438.0	4.00	160.60	5,427.5	-285.4	100.5	0.00	0.00	0.00	0.00	
6,219.8	90.00	160.60	5,912.1	-775.5	273.1	11.00	11.00	0.00	0.00	
6,866.6	90.00	180.00	5,912.1	-1,410.0	381.5	3.00	0.00	3.00	90.00	
13,695.8	90.00	180.00	5,912.0	-8,239.2	381.3	0.00	0.00	0.00	0.00	Razor #12F-1306B PI

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Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1000' MD
1,100.0	2.00	160.60	1,100.0	-1.6	0.6	1.6	2.00	2.00	
1,200.0	4.00	160.60	1,199.8	-6.6	2.3	6.6	2.00	2.00	EOB; 4 Deg Inc
1,300.0	4.00	160.60	1,299.6	-13.2	4.6	13.2	0.00	0.00	
1,400.0	4.00	160.60	1,399.4	-19.7	7.0	19.7	0.00	0.00	
1,500.0	4.00	160.60	1,499.1	-26.3	9.3	26.3	0.00	0.00	
1,600.0	4.00	160.60	1,598.9	-32.9	11.6	32.9	0.00	0.00	
1,700.0	4.00	160.60	1,698.6	-39.5	13.9	39.5	0.00	0.00	
1,800.0	4.00	160.60	1,798.4	-46.1	16.2	46.1	0.00	0.00	
1,900.0	4.00	160.60	1,898.1	-52.6	18.5	52.6	0.00	0.00	
2,000.0	4.00	160.60	1,997.9	-59.2	20.9	59.2	0.00	0.00	
2,100.0	4.00	160.60	2,097.6	-65.8	23.2	65.8	0.00	0.00	
2,200.0	4.00	160.60	2,197.4	-72.4	25.5	72.4	0.00	0.00	
2,300.0	4.00	160.60	2,297.2	-79.0	27.8	79.0	0.00	0.00	
2,400.0	4.00	160.60	2,396.9	-85.5	30.1	85.5	0.00	0.00	
2,500.0	4.00	160.60	2,496.7	-92.1	32.4	92.1	0.00	0.00	
2,600.0	4.00	160.60	2,596.4	-98.7	34.8	98.7	0.00	0.00	
2,700.0	4.00	160.60	2,696.2	-105.3	37.1	105.3	0.00	0.00	
2,800.0	4.00	160.60	2,795.9	-111.9	39.4	111.9	0.00	0.00	
2,900.0	4.00	160.60	2,895.7	-118.4	41.7	118.4	0.00	0.00	
3,000.0	4.00	160.60	2,995.5	-125.0	44.0	125.0	0.00	0.00	
3,100.0	4.00	160.60	3,095.2	-131.6	46.3	131.6	0.00	0.00	
3,200.0	4.00	160.60	3,195.0	-138.2	48.7	138.2	0.00	0.00	
3,300.0	4.00	160.60	3,294.7	-144.8	51.0	144.8	0.00	0.00	
3,400.0	4.00	160.60	3,394.5	-151.3	53.3	151.3	0.00	0.00	
3,500.0	4.00	160.60	3,494.2	-157.9	55.6	157.9	0.00	0.00	
3,600.0	4.00	160.60	3,594.0	-164.5	57.9	164.5	0.00	0.00	
3,700.0	4.00	160.60	3,693.7	-171.1	60.2	171.1	0.00	0.00	
3,800.0	4.00	160.60	3,793.5	-177.7	62.6	177.7	0.00	0.00	
3,900.0	4.00	160.60	3,893.3	-184.2	64.9	184.2	0.00	0.00	
4,000.0	4.00	160.60	3,993.0	-190.8	67.2	190.8	0.00	0.00	
4,100.0	4.00	160.60	4,092.8	-197.4	69.5	197.4	0.00	0.00	
4,200.0	4.00	160.60	4,192.5	-204.0	71.8	204.0	0.00	0.00	
4,300.0	4.00	160.60	4,292.3	-210.5	74.1	210.5	0.00	0.00	
4,400.0	4.00	160.60	4,392.0	-217.1	76.5	217.1	0.00	0.00	
4,500.0	4.00	160.60	4,491.8	-223.7	78.8	223.7	0.00	0.00	
4,600.0	4.00	160.60	4,591.6	-230.3	81.1	230.3	0.00	0.00	
4,700.0	4.00	160.60	4,691.3	-236.9	83.4	236.9	0.00	0.00	
4,800.0	4.00	160.60	4,791.1	-243.4	85.7	243.4	0.00	0.00	
4,900.0	4.00	160.60	4,890.8	-250.0	88.0	250.0	0.00	0.00	
5,000.0	4.00	160.60	4,990.6	-256.6	90.4	256.6	0.00	0.00	
5,100.0	4.00	160.60	5,090.3	-263.2	92.7	263.2	0.00	0.00	

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Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,200.0	4.00	160.60	5,190.1	-269.8	95.0	269.8	0.00	0.00	
5,300.0	4.00	160.60	5,289.9	-276.3	97.3	276.3	0.00	0.00	
5,400.0	4.00	160.60	5,389.6	-282.9	99.6	282.9	0.00	0.00	
5,438.0	4.00	160.60	5,427.5	-285.4	100.5	285.4	0.00	0.00	Start 11 Deg Bulid
5,450.0	5.32	160.60	5,439.5	-286.3	100.8	286.3	11.00	11.00	
5,500.0	10.82	160.60	5,489.0	-293.0	103.2	293.0	11.00	11.00	
5,550.0	16.32	160.60	5,537.5	-304.0	107.1	304.0	11.00	11.00	
5,600.0	21.82	160.60	5,584.8	-319.4	112.5	319.4	11.00	11.00	
5,650.0	27.32	160.60	5,630.2	-339.0	119.4	339.0	11.00	11.00	
5,700.0	32.82	160.60	5,673.5	-362.6	127.7	362.6	11.00	11.00	
5,750.0	38.32	160.60	5,714.1	-390.1	137.4	390.1	11.00	11.00	
5,800.0	43.82	160.60	5,751.8	-421.0	148.3	421.0	11.00	11.00	
5,804.4	44.31	160.60	5,755.0	-423.9	149.3	423.9	11.00	11.00	Top Niobrara
5,850.0	49.32	160.60	5,786.2	-455.3	160.3	455.3	11.00	11.00	
5,900.0	54.82	160.60	5,816.9	-492.5	173.4	492.5	11.00	11.00	
5,950.0	60.32	160.60	5,843.7	-532.2	187.4	532.2	11.00	11.00	
6,000.0	65.82	160.60	5,866.4	-574.3	202.2	574.3	11.00	11.00	
6,050.0	71.32	160.60	5,884.6	-618.2	217.7	618.2	11.00	11.00	
6,100.0	76.82	160.60	5,898.3	-663.5	233.7	663.5	11.00	11.00	
6,150.0	82.32	160.60	5,907.4	-709.9	250.0	709.9	11.00	11.00	
6,200.0	87.82	160.60	5,911.7	-756.8	266.5	756.8	11.00	11.00	
6,219.8	90.00	160.60	5,912.1	-775.5	273.1	775.5	11.00	11.00	LP @ 6,219' MD
6,300.0	90.00	163.01	5,912.1	-851.7	298.1	851.7	3.00	0.00	7" (1791' FWL, 2187' FSL)
6,400.0	90.00	166.01	5,912.1	-948.0	324.9	948.0	3.00	0.00	
6,500.0	90.00	169.01	5,912.1	-1,045.7	346.5	1,045.7	3.00	0.00	
6,600.0	90.00	172.01	5,912.1	-1,144.3	363.0	1,144.3	3.00	0.00	
6,700.0	90.00	175.01	5,912.1	-1,243.6	374.3	1,243.6	3.00	0.00	
6,800.0	90.00	178.01	5,912.1	-1,343.4	380.4	1,343.4	3.00	0.00	
6,866.6	90.00	180.00	5,912.1	-1,410.0	381.5	1,410.0	3.00	0.00	EOT; 180 Deg Azi
6,900.0	90.00	180.00	5,912.1	-1,443.4	381.5	1,443.4	0.00	0.00	
7,000.0	90.00	180.00	5,912.1	-1,543.4	381.5	1,543.4	0.00	0.00	
7,100.0	90.00	180.00	5,912.1	-1,643.4	381.5	1,643.4	0.00	0.00	
7,200.0	90.00	180.00	5,912.1	-1,743.4	381.5	1,743.4	0.00	0.00	
7,300.0	90.00	180.00	5,912.1	-1,843.4	381.5	1,843.4	0.00	0.00	
7,400.0	90.00	180.00	5,912.1	-1,943.4	381.5	1,943.4	0.00	0.00	
7,500.0	90.00	180.00	5,912.1	-2,043.4	381.5	2,043.4	0.00	0.00	
7,600.0	90.00	180.00	5,912.1	-2,143.4	381.5	2,143.4	0.00	0.00	
7,700.0	90.00	180.00	5,912.1	-2,243.4	381.5	2,243.4	0.00	0.00	
7,800.0	90.00	180.00	5,912.1	-2,343.4	381.5	2,343.4	0.00	0.00	
7,900.0	90.00	180.00	5,912.1	-2,443.4	381.5	2,443.4	0.00	0.00	
8,000.0	90.00	180.00	5,912.1	-2,543.4	381.5	2,543.4	0.00	0.00	
8,100.0	90.00	180.00	5,912.1	-2,643.4	381.5	2,643.4	0.00	0.00	
8,200.0	90.00	180.00	5,912.1	-2,743.4	381.5	2,743.4	0.00	0.00	
8,300.0	90.00	180.00	5,912.1	-2,843.4	381.5	2,843.4	0.00	0.00	
8,400.0	90.00	180.00	5,912.0	-2,943.4	381.5	2,943.4	0.00	0.00	
8,500.0	90.00	180.00	5,912.0	-3,043.4	381.5	3,043.4	0.00	0.00	
8,600.0	90.00	180.00	5,912.0	-3,143.4	381.5	3,143.4	0.00	0.00	
8,700.0	90.00	180.00	5,912.0	-3,243.4	381.5	3,243.4	0.00	0.00	
8,800.0	90.00	180.00	5,912.0	-3,343.4	381.5	3,343.4	0.00	0.00	
8,900.0	90.00	180.00	5,912.0	-3,443.4	381.5	3,443.4	0.00	0.00	
9,000.0	90.00	180.00	5,912.0	-3,543.4	381.5	3,543.4	0.00	0.00	
9,100.0	90.00	180.00	5,912.0	-3,643.4	381.5	3,643.4	0.00	0.00	

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Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,200.0	90.00	180.00	5,912.0	-3,743.4	381.5	3,743.4	0.00	0.00	
9,300.0	90.00	180.00	5,912.0	-3,843.4	381.4	3,843.4	0.00	0.00	
9,400.0	90.00	180.00	5,912.0	-3,943.4	381.4	3,943.4	0.00	0.00	
9,500.0	90.00	180.00	5,912.0	-4,043.4	381.4	4,043.4	0.00	0.00	
9,600.0	90.00	180.00	5,912.0	-4,143.4	381.4	4,143.4	0.00	0.00	
9,700.0	90.00	180.00	5,912.0	-4,243.4	381.4	4,243.4	0.00	0.00	
9,800.0	90.00	180.00	5,912.0	-4,343.4	381.4	4,343.4	0.00	0.00	
9,900.0	90.00	180.00	5,912.0	-4,443.4	381.4	4,443.4	0.00	0.00	
10,000.0	90.00	180.00	5,912.0	-4,543.4	381.4	4,543.4	0.00	0.00	
10,100.0	90.00	180.00	5,912.0	-4,643.4	381.4	4,643.4	0.00	0.00	
10,200.0	90.00	180.00	5,912.0	-4,743.4	381.4	4,743.4	0.00	0.00	
10,300.0	90.00	180.00	5,912.0	-4,843.4	381.4	4,843.4	0.00	0.00	
10,400.0	90.00	180.00	5,912.0	-4,943.4	381.4	4,943.4	0.00	0.00	
10,500.0	90.00	180.00	5,912.0	-5,043.4	381.4	5,043.4	0.00	0.00	
10,600.0	90.00	180.00	5,912.0	-5,143.4	381.4	5,143.4	0.00	0.00	
10,700.0	90.00	180.00	5,912.0	-5,243.4	381.4	5,243.4	0.00	0.00	
10,800.0	90.00	180.00	5,912.0	-5,343.4	381.4	5,343.4	0.00	0.00	
10,900.0	90.00	180.00	5,912.0	-5,443.4	381.4	5,443.4	0.00	0.00	
11,000.0	90.00	180.00	5,912.0	-5,543.4	381.4	5,543.4	0.00	0.00	
11,100.0	90.00	180.00	5,912.0	-5,643.4	381.4	5,643.4	0.00	0.00	
11,200.0	90.00	180.00	5,912.0	-5,743.4	381.4	5,743.4	0.00	0.00	
11,300.0	90.00	180.00	5,912.0	-5,843.4	381.4	5,843.4	0.00	0.00	
11,400.0	90.00	180.00	5,912.0	-5,943.4	381.4	5,943.4	0.00	0.00	
11,500.0	90.00	180.00	5,912.0	-6,043.4	381.4	6,043.4	0.00	0.00	
11,600.0	90.00	180.00	5,912.0	-6,143.4	381.4	6,143.4	0.00	0.00	
11,700.0	90.00	180.00	5,912.0	-6,243.4	381.4	6,243.4	0.00	0.00	
11,800.0	90.00	180.00	5,912.0	-6,343.4	381.4	6,343.4	0.00	0.00	
11,900.0	90.00	180.00	5,912.0	-6,443.4	381.4	6,443.4	0.00	0.00	
12,000.0	90.00	180.00	5,912.0	-6,543.4	381.3	6,543.4	0.00	0.00	
12,100.0	90.00	180.00	5,912.0	-6,643.4	381.3	6,643.4	0.00	0.00	
12,200.0	90.00	180.00	5,912.0	-6,743.4	381.3	6,743.4	0.00	0.00	
12,300.0	90.00	180.00	5,912.0	-6,843.4	381.3	6,843.4	0.00	0.00	
12,400.0	90.00	180.00	5,912.0	-6,943.4	381.3	6,943.4	0.00	0.00	
12,500.0	90.00	180.00	5,912.0	-7,043.4	381.3	7,043.4	0.00	0.00	
12,600.0	90.00	180.00	5,912.0	-7,143.4	381.3	7,143.4	0.00	0.00	
12,700.0	90.00	180.00	5,912.0	-7,243.4	381.3	7,243.4	0.00	0.00	
12,800.0	90.00	180.00	5,912.0	-7,343.4	381.3	7,343.4	0.00	0.00	
12,900.0	90.00	180.00	5,912.0	-7,443.4	381.3	7,443.4	0.00	0.00	
13,000.0	90.00	180.00	5,912.0	-7,543.4	381.3	7,543.4	0.00	0.00	
13,100.0	90.00	180.00	5,912.0	-7,643.4	381.3	7,643.4	0.00	0.00	
13,200.0	90.00	180.00	5,912.0	-7,743.4	381.3	7,743.4	0.00	0.00	
13,300.0	90.00	180.00	5,912.0	-7,843.4	381.3	7,843.4	0.00	0.00	
13,400.0	90.00	180.00	5,912.0	-7,943.4	381.3	7,943.4	0.00	0.00	
13,500.0	90.00	180.00	5,912.0	-8,043.4	381.3	8,043.4	0.00	0.00	
13,600.0	90.00	180.00	5,912.0	-8,143.4	381.3	8,143.4	0.00	0.00	
13,695.8	90.00	180.00	5,912.0	-8,239.2	381.3	8,239.2	0.00	0.00	PBHL @ 13,695' MD

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site:	S12-T10N-R58W	**North Reference:**	True
Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Razor #12F-1306B PBH - plan hits target center - Point	0.00	0.00	5,912.0	-8,239.2	381.3	1,550,313.69	3,465,885.00	40.831842	-103.816425

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,300.0	5,912.1	7" (1791' FWL, 2187' FSL)	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,804.4	5,755.0	Top Niobrara		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,000.0	1,000.0	0.0	0.0	KOP @ 1000' MD
1,200.0	1,199.8	-6.6	2.3	EOB; 4 Deg Inc
5,438.0	5,427.5	-285.4	100.5	Start 11 Deg Bulid
6,219.8	5,912.1	-775.5	273.1	LP @ 6,219' MD
6,866.6	5,912.1	-1,410.0	381.5	EOT; 180 Deg Azi
13,695.8	5,912.0	-8,239.2	381.3	PBHL @ 13,695' MD

Whiting Petroleum Corporation

Weld County, CO
S12-T10N-R58W
Razor Federal #12F-1306B
HZ
Plan #2

Anticollision Report

18 October, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Reference Plan #2

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 10/9/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	13,695.1	Plan #2 (HZ)	ISCWSA MWD	MWD - ISCWSA

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S12-T10N-R58W						
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	10,493.8	5,862.4	3,656.8	3,548.7	33.832	CC
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	10,600.0	5,862.4	3,658.3	3,548.1	33.201	ES
ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEY	13,000.0	5,862.4	4,433.2	4,275.3	28.069	SF
Razor #12F-0101A - HZ - Plan #2	500.0	500.0	151.3	149.3	76.197	CC, ES
Razor #12F-0101A - HZ - Plan #2	5,400.0	5,342.5	752.8	728.9	31.473	SF
Razor #12F-0102B - HZ - Plan #2	500.0	500.0	164.4	162.5	82.840	CC, ES
Razor #12F-0102B - HZ - Plan #2	5,438.0	5,388.7	724.2	700.1	30.075	SF
Razor #12F-0103A - HZ - Plan #2	1,000.0	1,000.0	99.4	95.2	23.480	CC, ES
Razor #12F-0103A - HZ - Plan #2	1,100.0	1,096.6	102.7	98.0	22.099	SF
Razor #12F-0104B - HZ - Plan #2	800.0	800.0	98.4	95.0	29.505	CC, ES
Razor #12F-0104B - HZ - Plan #2	1,400.0	1,394.7	126.4	120.5	21.433	SF
Razor #12F-0105A - HZ - Plan #2	1,000.0	1,000.0	74.9	70.7	17.697	CC, ES
Razor #12F-0105A - HZ - Plan #2	1,100.0	1,100.0	76.6	71.9	16.448	SF
Razor #12F-0106B - HZ - Plan #2	924.1	924.3	31.1	27.2	7.985	CC, ES
Razor #12F-0106B - HZ - Plan #2	1,000.0	1,000.0	31.5	27.3	7.437	SF
Razor #12F-0107A - HZ - Plan #2	1,000.0	1,000.0	99.9	95.7	23.601	CC, ES
Razor #12F-0107A - HZ - Plan #2	1,300.0	1,296.0	109.0	103.6	19.964	SF
Razor #12F-0108B - HZ - Plan #2	800.0	800.0	33.0	29.7	9.912	CC, ES
Razor #12F-0108B - HZ - Plan #2	1,000.0	998.3	37.6	33.4	8.909	SF
Razor Federal #12F-1301A - HZ - Plan #2	1,000.0	1,000.0	180.7	176.5	42.691	CC, ES
Razor Federal #12F-1301A - HZ - Plan #2	13,695.8	13,987.8	1,652.7	1,336.1	5.219	SF
Razor Federal #12F-1302B - HZ - Plan #2	1,000.0	1,000.0	131.4	127.2	31.045	CC, ES
Razor Federal #12F-1302B - HZ - Plan #2	13,695.8	13,867.5	1,319.9	1,004.2	4.181	SF
Razor Federal #12F-1303A - HZ - Plan #2	1,001.4	1,002.3	120.3	116.1	28.802	CC, ES
Razor Federal #12F-1303A - HZ - Plan #2	13,695.8	13,680.2	994.5	678.3	3.145	SF
Razor Federal #12F-1304B - HZ - Plan #2	1,000.0	1,000.0	65.3	61.1	15.432	CC, ES
Razor Federal #12F-1304B - HZ - Plan #2	13,695.8	13,664.9	659.6	342.8	2.082	SF
Razor Federal #12F-1305A - HZ - Plan #2	1,188.2	1,193.3	75.1	70.2	15.329	CC
Razor Federal #12F-1305A - HZ - Plan #2	13,695.8	13,614.5	344.9	38.8	1.127	Level 2, ES, SF
Razor Federal #12F-1307A - HZ - Plan #1	1,085.7	1,087.7	66.7	62.1	14.457	CC
Razor Federal #12F-1307A - HZ - Plan #1	13,695.8	13,734.0	344.9	39.1	1.128	Level 2, ES, SF
Razor Federal#12F-1308B - HZ - Plan #1	900.0	900.0	66.1	62.3	17.468	CC, ES
Razor Federal#12F-1308B - HZ - Plan #1	13,695.8	13,925.4	660.3	344.0	2.087	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 6719-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-146.97	-5,037.0	-3,275.4	6,008.5				
100.0	100.0	50.4	50.4	0.1	0.1	-146.97	-5,037.0	-3,275.4	6,008.3	6,008.1	0.15	N/A	
200.0	200.0	150.4	150.4	0.3	0.2	-146.97	-5,037.0	-3,275.4	6,008.3	6,007.8	0.49	N/A	
300.0	300.0	250.4	250.4	0.5	0.3	-146.97	-5,037.0	-3,275.4	6,008.3	6,007.5	0.82	7,291.149	
400.0	400.0	350.4	350.4	0.8	0.4	-146.97	-5,037.0	-3,275.4	6,008.3	6,007.1	1.16	5,174.874	
500.0	500.0	450.4	450.4	1.0	0.5	-146.97	-5,037.0	-3,275.4	6,008.3	6,006.8	1.50	4,010.745	
600.0	600.0	550.4	550.4	1.2	0.6	-146.97	-5,037.0	-3,275.4	6,008.3	6,006.5	1.84	3,274.190	
700.0	700.0	650.4	650.4	1.4	0.7	-146.97	-5,037.0	-3,275.4	6,008.3	6,006.1	2.17	2,766.191	
800.0	800.0	750.4	750.4	1.7	0.8	-146.97	-5,037.0	-3,275.4	6,008.3	6,005.8	2.51	2,394.655	
900.0	900.0	850.4	850.4	1.9	1.0	-146.97	-5,037.0	-3,275.4	6,008.3	6,005.5	2.85	2,111.105	
1,000.0	1,000.0	950.4	950.4	2.1	1.1	-146.97	-5,037.0	-3,275.4	6,008.3	6,005.1	3.18	1,887.592	
1,100.0	1,100.0	1,050.4	1,050.4	2.3	1.2	52.46	-5,037.0	-3,275.4	6,007.2	6,003.7	3.51	1,711.854	
1,200.0	1,199.8	1,150.2	1,150.2	2.5	1.3	52.55	-5,037.0	-3,275.4	6,004.0	6,000.2	3.82	1,572.348	
1,300.0	1,299.6	1,250.0	1,250.0	2.7	1.4	52.61	-5,037.0	-3,275.4	5,999.8	5,995.7	4.13	1,454.474	
1,400.0	1,399.4	1,349.7	1,349.7	2.9	1.5	52.66	-5,037.0	-3,275.4	5,995.6	5,991.1	4.44	1,350.015	
1,500.0	1,499.1	1,449.5	1,449.5	3.1	1.6	52.71	-5,037.0	-3,275.4	5,991.3	5,986.6	4.76	1,257.411	
1,600.0	1,598.9	1,549.3	1,549.3	3.3	1.7	52.77	-5,037.0	-3,275.4	5,987.1	5,982.0	5.09	1,175.150	
1,700.0	1,698.6	1,649.0	1,649.0	3.5	1.9	52.82	-5,037.0	-3,275.4	5,982.9	5,977.4	5.43	1,101.858	
1,800.0	1,798.4	1,748.8	1,748.8	3.8	2.0	52.87	-5,037.0	-3,275.4	5,978.7	5,972.9	5.77	1,036.327	
1,900.0	1,898.1	1,848.5	1,848.5	4.0	2.1	52.93	-5,037.0	-3,275.4	5,974.4	5,968.3	6.11	977.511	
2,000.0	1,997.9	1,948.3	1,948.3	4.2	2.2	52.98	-5,037.0	-3,275.4	5,970.2	5,963.8	6.46	924.519	
2,100.0	2,097.6	2,048.0	2,048.0	4.5	2.3	53.03	-5,037.0	-3,275.4	5,966.0	5,959.2	6.81	876.589	
2,200.0	2,197.4	2,147.8	2,147.8	4.7	2.4	53.09	-5,037.0	-3,275.4	5,961.8	5,954.7	7.16	833.077	
2,300.0	2,297.2	2,247.5	2,247.5	5.0	2.5	53.14	-5,037.0	-3,275.4	5,957.6	5,950.1	7.51	793.433	
2,400.0	2,396.9	2,347.3	2,347.3	5.2	2.6	53.19	-5,037.0	-3,275.4	5,953.4	5,945.6	7.86	757.188	
2,500.0	2,496.7	2,447.1	2,447.1	5.5	2.7	53.25	-5,037.0	-3,275.4	5,949.3	5,941.0	8.22	723.942	
2,600.0	2,596.4	2,546.8	2,546.8	5.7	2.9	53.30	-5,037.0	-3,275.4	5,945.1	5,936.5	8.57	693.354	
2,700.0	2,696.2	2,646.6	2,646.6	6.0	3.0	53.35	-5,037.0	-3,275.4	5,940.9	5,932.0	8.93	665.127	
2,800.0	2,795.9	2,746.3	2,746.3	6.2	3.1	53.41	-5,037.0	-3,275.4	5,936.7	5,927.5	9.29	639.008	
2,900.0	2,895.7	2,846.1	2,846.1	6.5	3.2	53.46	-5,037.0	-3,275.4	5,932.6	5,922.9	9.65	614.776	
3,000.0	2,995.5	2,945.8	2,945.8	6.7	3.3	53.52	-5,037.0	-3,275.4	5,928.4	5,918.4	10.01	592.240	
3,100.0	3,095.2	3,045.6	3,045.6	7.0	3.4	53.57	-5,037.0	-3,275.4	5,924.3	5,913.9	10.37	571.231	
3,200.0	3,195.0	3,145.4	3,145.4	7.3	3.5	53.62	-5,037.0	-3,275.4	5,920.1	5,909.4	10.73	551.603	
3,300.0	3,294.7	3,245.1	3,245.1	7.5	3.6	53.68	-5,037.0	-3,275.4	5,916.0	5,904.9	11.09	533.227	
3,400.0	3,394.5	3,344.9	3,344.9	7.8	3.8	53.73	-5,037.0	-3,275.4	5,911.8	5,900.4	11.46	515.990	
3,500.0	3,494.2	3,444.6	3,444.6	8.0	3.9	53.79	-5,037.0	-3,275.4	5,907.7	5,895.9	11.82	499.791	
3,600.0	3,594.0	3,544.4	3,544.4	8.3	4.0	53.84	-5,037.0	-3,275.4	5,903.6	5,891.4	12.18	484.541	
3,700.0	3,693.7	3,644.1	3,644.1	8.5	4.1	53.90	-5,037.0	-3,275.4	5,899.5	5,886.9	12.55	470.159	
3,800.0	3,793.5	3,743.9	3,743.9	8.8	4.2	53.95	-5,037.0	-3,275.4	5,895.4	5,882.4	12.91	456.575	
3,900.0	3,893.3	3,843.7	3,843.7	9.1	4.3	54.01	-5,037.0	-3,275.4	5,891.3	5,878.0	13.28	443.726	
4,000.0	3,993.0	3,943.4	3,943.4	9.3	4.4	54.06	-5,037.0	-3,275.4	5,887.1	5,873.5	13.64	431.554	
4,100.0	4,092.8	4,043.2	4,043.2	9.6	4.5	54.12	-5,037.0	-3,275.4	5,883.1	5,869.0	14.01	420.007	
4,200.0	4,192.5	4,142.9	4,142.9	9.8	4.6	54.17	-5,037.0	-3,275.4	5,879.0	5,864.6	14.37	409.040	
4,300.0	4,292.3	4,242.7	4,242.7	10.1	4.8	54.23	-5,037.0	-3,275.4	5,874.9	5,860.1	14.74	398.610	
4,400.0	4,392.0	4,342.4	4,342.4	10.4	4.9	54.28	-5,037.0	-3,275.4	5,870.8	5,855.7	15.10	388.679	
4,500.0	4,491.8	4,442.2	4,442.2	10.6	5.0	54.34	-5,037.0	-3,275.4	5,866.7	5,851.2	15.47	379.212	
4,600.0	4,591.6	4,541.9	4,541.9	10.9	5.1	54.39	-5,037.0	-3,275.4	5,862.6	5,846.8	15.84	370.179	
4,700.0	4,691.3	4,641.7	4,641.7	11.2	5.2	54.45	-5,037.0	-3,275.4	5,858.6	5,842.4	16.20	361.550	
4,800.0	4,791.1	4,741.5	4,741.5	11.4	5.3	54.50	-5,037.0	-3,275.4	5,854.5	5,837.9	16.57	353.299	
4,900.0	4,890.8	4,841.2	4,841.2	11.7	5.4	54.56	-5,037.0	-3,275.4	5,850.5	5,833.5	16.94	345.401	
5,000.0	4,990.6	4,941.0	4,941.0	11.9	5.5	54.61	-5,037.0	-3,275.4	5,846.4	5,829.1	17.31	337.836	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 6719-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,100.0	5,090.3	5,040.7	5,040.7	12.2	5.7	54.67	-5,037.0	-3,275.4	5,842.4	5,824.7	17.67	330.582	
5,200.0	5,190.1	5,140.5	5,140.5	12.5	5.8	54.73	-5,037.0	-3,275.4	5,838.3	5,820.3	18.04	323.621	
5,300.0	5,289.9	5,240.2	5,240.2	12.7	5.9	54.78	-5,037.0	-3,275.4	5,834.3	5,815.9	18.41	316.936	
5,400.0	5,389.6	5,340.0	5,340.0	13.0	6.0	54.84	-5,037.0	-3,275.4	5,830.3	5,811.5	18.78	310.510	
5,438.0	5,427.5	5,377.9	5,377.9	13.1	6.0	54.86	-5,037.0	-3,275.4	5,828.7	5,809.8	18.92	308.133	
5,450.0	5,439.5	5,389.9	5,389.9	13.1	6.0	54.92	-5,037.0	-3,275.4	5,828.2	5,809.2	18.97	307.243	
5,500.0	5,489.0	5,439.4	5,439.4	13.3	6.1	55.34	-5,037.0	-3,275.4	5,824.1	5,805.0	19.19	303.569	
5,550.0	5,537.5	5,487.9	5,487.9	13.5	6.2	56.05	-5,037.0	-3,275.4	5,817.4	5,798.0	19.40	299.863	
5,600.0	5,584.8	5,535.2	5,535.2	13.7	6.2	57.06	-5,037.0	-3,275.4	5,808.0	5,788.4	19.63	295.928	
5,650.0	5,630.2	5,580.6	5,580.6	14.0	6.3	58.35	-5,037.0	-3,275.4	5,796.2	5,776.3	19.88	291.499	
5,700.0	5,673.5	5,623.9	5,623.9	14.4	6.3	59.95	-5,037.0	-3,275.4	5,781.9	5,761.7	20.20	286.290	
5,750.0	5,714.1	5,664.5	5,664.5	14.7	6.4	61.84	-5,037.0	-3,275.4	5,765.5	5,744.9	20.59	280.056	
5,800.0	5,751.8	5,702.2	5,702.2	15.2	6.4	64.02	-5,037.0	-3,275.4	5,747.1	5,726.0	21.08	272.655	
5,850.0	5,786.2	5,736.6	5,736.6	15.7	6.4	66.48	-5,037.0	-3,275.4	5,726.8	5,705.1	21.68	264.107	
5,900.0	5,816.9	5,767.3	5,767.3	16.2	6.5	69.19	-5,037.0	-3,275.4	5,705.0	5,682.6	22.41	254.604	
5,950.0	5,843.7	5,794.1	5,794.1	16.8	6.5	72.14	-5,037.0	-3,275.4	5,681.9	5,658.7	23.24	244.490	
6,000.0	5,866.4	5,816.7	5,816.7	17.4	6.5	75.28	-5,037.0	-3,275.4	5,657.7	5,633.6	24.16	234.182	
6,050.0	5,884.6	5,835.0	5,835.0	18.1	6.5	78.56	-5,037.0	-3,275.4	5,632.7	5,607.6	25.14	224.094	
6,100.0	5,898.3	5,848.7	5,848.7	18.8	6.6	81.93	-5,037.0	-3,275.4	5,607.2	5,581.1	26.13	214.565	
6,150.0	5,907.4	5,857.8	5,857.8	19.6	6.6	85.33	-5,037.0	-3,275.4	5,581.4	5,554.3	27.12	205.828	
6,200.0	5,911.7	5,862.1	5,862.1	20.4	6.6	88.69	-5,037.0	-3,275.4	5,555.6	5,527.6	28.06	197.995	
6,219.8	5,912.1	5,862.5	5,862.5	20.7	6.6	90.00	-5,037.0	-3,275.4	5,545.5	5,517.0	28.42	195.144	
6,300.0	5,912.1	5,862.5	5,862.5	21.9	6.6	90.00	-5,037.0	-3,275.4	5,503.4	5,473.6	29.76	184.894	
6,400.0	5,912.1	5,862.5	5,862.5	23.3	6.6	90.00	-5,037.0	-3,275.4	5,448.1	5,416.7	31.32	173.965	
6,500.0	5,912.1	5,862.5	5,862.5	24.8	6.6	90.00	-5,037.0	-3,275.4	5,389.7	5,356.9	32.85	164.084	
6,600.0	5,912.1	5,862.5	5,862.5	26.3	6.6	90.00	-5,037.0	-3,275.4	5,328.3	5,294.0	34.33	155.200	
6,700.0	5,912.1	5,862.5	5,862.5	27.9	6.6	90.00	-5,037.0	-3,275.4	5,264.0	5,228.3	35.75	147.235	
6,800.0	5,912.1	5,862.5	5,862.5	29.4	6.6	90.00	-5,037.0	-3,275.4	5,196.8	5,159.8	37.09	140.099	
6,866.6	5,912.1	5,862.5	5,862.5	30.4	6.6	90.00	-5,037.0	-3,275.4	5,150.6	5,112.6	37.94	135.764	
6,900.0	5,912.1	5,862.5	5,862.5	31.0	6.6	90.00	-5,037.0	-3,275.4	5,127.1	5,088.6	38.52	133.113	
7,000.0	5,912.1	5,862.4	5,862.4	32.6	6.6	90.00	-5,037.0	-3,275.4	5,057.5	5,017.2	40.31	125.453	
7,100.0	5,912.1	5,862.4	5,862.4	34.3	6.6	90.00	-5,037.0	-3,275.4	4,988.9	4,946.8	42.13	118.409	
7,200.0	5,912.1	5,862.4	5,862.4	36.1	6.6	90.00	-5,037.0	-3,275.4	4,921.5	4,877.5	43.97	111.924	
7,300.0	5,912.1	5,862.4	5,862.4	37.8	6.6	90.00	-5,037.0	-3,275.4	4,855.1	4,809.3	45.83	105.947	
7,400.0	5,912.1	5,862.4	5,862.4	39.6	6.6	90.00	-5,037.0	-3,275.4	4,789.9	4,742.2	47.69	100.429	
7,500.0	5,912.1	5,862.4	5,862.4	41.3	6.6	90.00	-5,037.0	-3,275.4	4,725.9	4,676.4	49.58	95.328	
7,600.0	5,912.1	5,862.4	5,862.4	43.1	6.6	90.00	-5,037.0	-3,275.4	4,663.2	4,611.8	51.47	90.606	
7,700.0	5,912.1	5,862.4	5,862.4	44.9	6.6	90.00	-5,037.0	-3,275.4	4,601.9	4,548.5	53.37	86.228	
7,800.0	5,912.1	5,862.4	5,862.4	46.7	6.6	90.00	-5,037.0	-3,275.4	4,541.8	4,486.6	55.28	82.165	
7,900.0	5,912.1	5,862.4	5,862.4	48.5	6.6	90.00	-5,037.0	-3,275.4	4,483.3	4,426.1	57.19	78.387	
8,000.0	5,912.1	5,862.4	5,862.4	50.3	6.6	90.00	-5,037.0	-3,275.4	4,426.1	4,367.0	59.12	74.871	
8,100.0	5,912.1	5,862.4	5,862.4	52.2	6.6	90.00	-5,037.0	-3,275.4	4,370.6	4,309.5	61.05	71.595	
8,200.0	5,912.1	5,862.4	5,862.4	54.0	6.6	90.00	-5,037.0	-3,275.4	4,316.6	4,253.6	62.98	68.540	
8,300.0	5,912.1	5,862.4	5,862.4	55.9	6.6	90.00	-5,037.0	-3,275.4	4,264.3	4,199.4	64.92	65.688	
8,400.0	5,912.0	5,862.4	5,862.4	57.7	6.6	90.00	-5,037.0	-3,275.4	4,213.8	4,146.9	66.86	63.022	
8,500.0	5,912.0	5,862.4	5,862.4	59.5	6.6	90.00	-5,037.0	-3,275.4	4,165.0	4,096.2	68.81	60.530	
8,600.0	5,912.0	5,862.4	5,862.4	61.4	6.6	90.00	-5,037.0	-3,275.4	4,118.0	4,047.3	70.76	58.199	
8,700.0	5,912.0	5,862.4	5,862.4	63.3	6.6	90.00	-5,037.0	-3,275.4	4,073.0	4,000.3	72.71	56.016	
8,800.0	5,912.0	5,862.4	5,862.4	65.1	6.6	90.00	-5,037.0	-3,275.4	4,030.0	3,955.3	74.67	53.972	
8,900.0	5,912.0	5,862.4	5,862.4	67.0	6.6	90.00	-5,037.0	-3,275.4	3,989.0	3,912.4	76.63	52.057	
9,000.0	5,912.0	5,862.4	5,862.4	68.9	6.6	90.00	-5,037.0	-3,275.4	3,950.1	3,871.5	78.59	50.263	
9,100.0	5,912.0	5,862.4	5,862.4	70.7	6.6	90.00	-5,037.0	-3,275.4	3,913.4	3,832.8	80.55	48.582	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - ALLAN 1 (EXISTING) - DAVIS OIL WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 6719-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,200.0	5,912.0	5,862.4	5,862.4	72.6	6.6	90.00	-5,037.0	-3,275.4	3,878.9	3,796.4	82.52	47.007	
9,300.0	5,912.0	5,862.4	5,862.4	74.5	6.6	90.00	-5,037.0	-3,275.4	3,846.7	3,762.2	84.49	45.531	
9,400.0	5,912.0	5,862.4	5,862.4	76.4	6.6	90.00	-5,037.0	-3,275.4	3,816.8	3,730.4	86.45	44.148	
9,500.0	5,912.0	5,862.4	5,862.4	78.2	6.6	90.00	-5,037.0	-3,275.4	3,789.4	3,701.0	88.43	42.854	
9,600.0	5,912.0	5,862.4	5,862.4	80.1	6.6	90.00	-5,037.0	-3,275.4	3,764.4	3,674.0	90.40	41.643	
9,700.0	5,912.0	5,862.4	5,862.4	82.0	6.6	90.00	-5,037.0	-3,275.4	3,741.9	3,649.6	92.37	40.509	
9,800.0	5,912.0	5,862.4	5,862.4	83.9	6.6	90.00	-5,037.0	-3,275.4	3,722.0	3,627.7	94.35	39.450	
9,900.0	5,912.0	5,862.4	5,862.4	85.8	6.6	90.00	-5,037.0	-3,275.4	3,704.7	3,608.3	96.32	38.461	
10,000.0	5,912.0	5,862.4	5,862.4	87.7	6.6	90.00	-5,037.0	-3,275.4	3,690.0	3,591.7	98.30	37.537	
10,100.0	5,912.0	5,862.4	5,862.4	89.6	6.6	90.00	-5,037.0	-3,275.4	3,677.9	3,577.6	100.28	36.676	
10,200.0	5,912.0	5,862.4	5,862.4	91.5	6.6	90.00	-5,037.0	-3,275.4	3,668.6	3,566.3	102.26	35.875	
10,300.0	5,912.0	5,862.4	5,862.4	93.4	6.6	90.00	-5,037.0	-3,275.4	3,661.9	3,557.7	104.24	35.129	
10,400.0	5,912.0	5,862.4	5,862.4	95.3	6.6	90.00	-5,037.0	-3,275.4	3,658.0	3,551.8	106.22	34.437	
10,493.8	5,912.0	5,862.4	5,862.4	97.0	6.6	90.00	-5,037.0	-3,275.4	3,656.8	3,548.7	108.09	33.832	CC
10,500.0	5,912.0	5,862.4	5,862.4	97.1	6.6	90.00	-5,037.0	-3,275.4	3,656.8	3,548.6	108.20	33.795	
10,600.0	5,912.0	5,862.4	5,862.4	99.0	6.6	90.00	-5,037.0	-3,275.4	3,658.3	3,548.1	110.19	33.201	ES
10,700.0	5,912.0	5,862.4	5,862.4	100.9	6.6	90.00	-5,037.0	-3,275.4	3,662.6	3,550.4	112.17	32.652	
10,800.0	5,912.0	5,862.4	5,862.4	102.8	6.6	90.00	-5,037.0	-3,275.4	3,669.6	3,555.4	114.16	32.145	
10,900.0	5,912.0	5,862.4	5,862.4	104.7	6.6	90.00	-5,037.0	-3,275.4	3,679.3	3,563.1	116.14	31.679	
11,000.0	5,912.0	5,862.4	5,862.4	106.6	6.6	90.00	-5,037.0	-3,275.4	3,691.6	3,573.5	118.13	31.252	
11,100.0	5,912.0	5,862.4	5,862.4	108.5	6.6	90.00	-5,037.0	-3,275.4	3,706.7	3,586.6	120.11	30.860	
11,200.0	5,912.0	5,862.4	5,862.4	110.4	6.6	90.00	-5,037.0	-3,275.4	3,724.3	3,602.2	122.10	30.502	
11,300.0	5,912.0	5,862.4	5,862.4	112.3	6.6	90.00	-5,037.0	-3,275.4	3,744.6	3,620.5	124.09	30.177	
11,400.0	5,912.0	5,862.4	5,862.4	114.2	6.6	90.00	-5,037.0	-3,275.4	3,767.4	3,641.3	126.08	29.882	
11,500.0	5,912.0	5,862.4	5,862.4	116.2	6.6	90.00	-5,037.0	-3,275.4	3,792.7	3,664.6	128.06	29.615	
11,600.0	5,912.0	5,862.4	5,862.4	118.1	6.6	90.00	-5,037.0	-3,275.4	3,820.4	3,690.4	130.05	29.376	
11,700.0	5,912.0	5,862.4	5,862.4	120.0	6.6	90.00	-5,037.0	-3,275.4	3,850.6	3,718.5	132.04	29.162	
11,800.0	5,912.0	5,862.4	5,862.4	121.9	6.6	90.00	-5,037.0	-3,275.4	3,883.1	3,749.0	134.03	28.971	
11,900.0	5,912.0	5,862.4	5,862.4	123.8	6.6	90.00	-5,037.0	-3,275.4	3,917.8	3,781.8	136.02	28.803	
12,000.0	5,912.0	5,862.4	5,862.4	125.7	6.6	90.00	-5,037.0	-3,275.4	3,954.8	3,816.8	138.01	28.655	
12,100.0	5,912.0	5,862.4	5,862.4	127.6	6.6	90.00	-5,037.0	-3,275.4	3,994.0	3,854.0	140.00	28.528	
12,200.0	5,912.0	5,862.4	5,862.4	129.5	6.6	90.00	-5,037.0	-3,275.4	4,035.2	3,893.3	142.00	28.418	
12,300.0	5,912.0	5,862.4	5,862.4	131.4	6.6	90.00	-5,037.0	-3,275.4	4,078.5	3,934.6	143.99	28.326	
12,400.0	5,912.0	5,862.4	5,862.4	133.3	6.6	90.00	-5,037.0	-3,275.4	4,123.8	3,977.8	145.98	28.249	
12,500.0	5,912.0	5,862.4	5,862.4	135.2	6.6	90.00	-5,037.0	-3,275.4	4,171.0	4,023.0	147.97	28.188	
12,600.0	5,912.0	5,862.4	5,862.4	137.1	6.6	90.00	-5,037.0	-3,275.4	4,220.0	4,070.0	149.96	28.140	
12,700.0	5,912.0	5,862.4	5,862.4	139.0	6.6	90.00	-5,037.0	-3,275.4	4,270.8	4,118.8	151.96	28.105	
12,800.0	5,912.0	5,862.4	5,862.4	140.9	6.6	90.00	-5,037.0	-3,275.4	4,323.3	4,169.3	153.95	28.082	
12,900.0	5,912.0	5,862.4	5,862.4	142.9	6.6	90.00	-5,037.0	-3,275.4	4,377.4	4,221.5	155.94	28.071	
13,000.0	5,912.0	5,862.4	5,862.4	144.8	6.6	90.00	-5,037.0	-3,275.4	4,433.2	4,275.3	157.94	28.069	SF
13,100.0	5,912.0	5,862.4	5,862.4	146.7	6.6	90.00	-5,037.0	-3,275.4	4,490.5	4,330.6	159.93	28.078	
13,200.0	5,912.0	5,862.4	5,862.4	148.6	6.6	90.00	-5,037.0	-3,275.4	4,549.3	4,387.3	161.93	28.095	
13,300.0	5,912.0	5,862.4	5,862.4	150.5	6.6	90.00	-5,037.0	-3,275.4	4,609.4	4,445.5	163.92	28.120	
13,400.0	5,912.0	5,862.4	5,862.4	152.4	6.6	90.00	-5,037.0	-3,275.4	4,671.0	4,505.1	165.91	28.153	
13,500.0	5,912.0	5,862.4	5,862.4	154.3	6.6	90.00	-5,037.0	-3,275.4	4,733.9	4,566.0	167.91	28.193	
13,600.0	5,912.0	5,862.4	5,862.4	156.2	6.6	90.00	-5,037.0	-3,275.4	4,798.0	4,628.1	169.90	28.239	
13,695.8	5,912.0	5,862.4	5,862.4	157.7	6.6	90.00	-5,037.0	-3,275.4	4,860.6	4,689.1	171.48	28.345	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-60.31	74.9	-131.4	151.3				
100.0	100.0	100.0	100.0	0.1	0.1	-60.31	74.9	-131.4	151.3	151.1	0.19	808.860	
200.0	200.0	200.0	200.0	0.3	0.3	-60.31	74.9	-131.4	151.3	150.6	0.64	237.631	
300.0	300.0	300.0	300.0	0.5	0.5	-60.31	74.9	-131.4	151.3	150.2	1.09	139.274	
400.0	400.0	400.0	400.0	0.8	0.8	-60.31	74.9	-131.4	151.3	149.7	1.54	98.503	
500.0	500.0	500.0	500.0	1.0	1.0	-60.31	74.9	-131.4	151.3	149.3	1.99	76.197	CC, ES
600.0	600.0	595.1	595.0	1.2	1.2	-60.18	76.0	-132.6	152.9	150.5	2.42	63.150	
700.0	700.0	689.9	689.8	1.4	1.4	-59.81	79.2	-136.1	157.7	154.9	2.86	55.159	
800.0	800.0	789.1	788.8	1.7	1.6	-59.31	83.8	-141.2	164.5	161.2	3.31	49.727	
900.0	900.0	888.9	888.3	1.9	1.9	-58.84	88.5	-146.3	171.4	167.6	3.76	45.615	
1,000.0	1,000.0	988.6	987.8	2.1	2.1	-58.40	93.2	-151.5	178.2	174.0	4.21	42.363	
1,100.0	1,100.0	1,088.3	1,087.2	2.3	2.4	141.63	97.8	-156.6	186.5	181.8	4.62	40.360	
1,200.0	1,199.8	1,187.6	1,186.2	2.5	2.6	142.79	102.5	-161.7	197.5	192.5	5.02	39.351	
1,300.0	1,299.6	1,286.7	1,285.1	2.7	2.9	144.23	107.2	-166.8	210.0	204.5	5.43	38.699	
1,400.0	1,399.4	1,385.7	1,383.9	2.9	3.1	145.51	111.8	-171.9	222.6	216.8	5.84	38.100	
1,500.0	1,499.1	1,484.8	1,482.8	3.1	3.4	146.64	116.5	-177.1	235.3	229.0	6.27	37.554	
1,600.0	1,598.9	1,583.9	1,581.6	3.3	3.6	147.67	121.1	-182.2	248.1	241.4	6.69	37.060	
1,700.0	1,698.6	1,683.0	1,680.4	3.5	3.9	148.59	125.8	-187.3	261.0	253.9	7.13	36.612	
1,800.0	1,798.4	1,782.1	1,779.3	3.8	4.1	149.43	130.4	-192.4	273.9	266.3	7.57	36.206	
1,900.0	1,898.1	1,881.2	1,878.1	4.0	4.4	150.19	135.1	-197.5	286.9	278.9	8.01	35.837	
2,000.0	1,997.9	1,980.2	1,977.0	4.2	4.6	150.88	139.7	-202.6	299.9	291.5	8.45	35.502	
2,100.0	2,097.6	2,079.3	2,075.8	4.5	4.9	151.52	144.4	-207.7	313.0	304.1	8.89	35.197	
2,200.0	2,197.4	2,178.4	2,174.7	4.7	5.1	152.10	149.0	-212.8	326.1	316.8	9.34	34.918	
2,300.0	2,297.2	2,277.5	2,273.5	5.0	5.4	152.64	153.7	-218.0	339.2	329.4	9.79	34.662	
2,400.0	2,396.9	2,376.6	2,372.3	5.2	5.7	153.14	158.3	-223.1	352.4	342.2	10.24	34.427	
2,500.0	2,496.7	2,475.7	2,471.2	5.5	5.9	153.61	163.0	-228.2	365.6	354.9	10.69	34.211	
2,600.0	2,596.4	2,574.8	2,570.0	5.7	6.2	154.04	167.6	-233.3	378.8	367.6	11.14	34.011	
2,700.0	2,696.2	2,673.8	2,668.9	6.0	6.4	154.44	172.3	-238.4	392.0	380.4	11.59	33.826	
2,800.0	2,795.9	2,772.9	2,767.7	6.2	6.7	154.82	176.9	-243.5	405.3	393.2	12.04	33.654	
2,900.0	2,895.7	2,872.0	2,866.6	6.5	6.9	155.17	181.6	-248.6	418.5	406.0	12.50	33.494	
3,000.0	2,995.5	2,971.1	2,965.4	6.7	7.2	155.50	186.2	-253.7	431.8	418.8	12.95	33.345	
3,100.0	3,095.2	3,070.2	3,064.2	7.0	7.4	155.81	190.9	-258.9	445.1	431.7	13.40	33.205	
3,200.0	3,195.0	3,169.3	3,163.1	7.3	7.7	156.10	195.5	-264.0	458.4	444.5	13.86	33.075	
3,300.0	3,294.7	3,268.4	3,261.9	7.5	8.0	156.38	200.2	-269.1	471.7	457.4	14.31	32.952	
3,400.0	3,394.5	3,367.4	3,360.8	7.8	8.2	156.64	204.8	-274.2	485.0	470.2	14.77	32.837	
3,500.0	3,494.2	3,466.5	3,459.6	8.0	8.5	156.89	209.5	-279.3	498.3	483.1	15.23	32.729	
3,600.0	3,594.0	3,565.6	3,558.5	8.3	8.7	157.12	214.1	-284.4	511.7	496.0	15.68	32.627	
3,700.0	3,693.7	3,664.7	3,657.3	8.5	9.0	157.35	218.8	-289.5	525.0	508.9	16.14	32.531	
3,800.0	3,793.5	3,763.8	3,756.2	8.8	9.2	157.56	223.4	-294.6	538.4	521.8	16.60	32.440	
3,900.0	3,893.3	3,862.9	3,855.0	9.1	9.5	157.76	228.1	-299.8	551.8	534.7	17.05	32.353	
4,000.0	3,993.0	3,961.9	3,953.8	9.3	9.7	157.95	232.8	-304.9	565.1	547.6	17.51	32.271	
4,100.0	4,092.8	4,061.0	4,052.7	9.6	10.0	158.13	237.4	-310.0	578.5	560.5	17.97	32.193	
4,200.0	4,192.5	4,160.1	4,151.5	9.8	10.3	158.31	242.1	-315.1	591.9	573.5	18.43	32.120	
4,300.0	4,292.3	4,259.2	4,250.4	10.1	10.5	158.48	246.7	-320.2	605.3	586.4	18.89	32.049	
4,400.0	4,392.0	4,358.3	4,349.2	10.4	10.8	158.64	251.4	-325.3	618.7	599.3	19.34	31.982	
4,500.0	4,491.8	4,457.4	4,448.1	10.6	11.0	158.79	256.0	-330.4	632.1	612.3	19.80	31.918	
4,600.0	4,591.6	4,556.5	4,546.9	10.9	11.3	158.93	260.7	-335.5	645.5	625.2	20.26	31.857	
4,700.0	4,691.3	4,655.5	4,645.7	11.2	11.5	159.08	265.3	-340.6	658.9	638.1	20.72	31.798	
4,800.0	4,791.1	4,754.6	4,744.6	11.4	11.8	159.21	270.0	-345.8	672.3	651.1	21.18	31.742	
4,900.0	4,890.8	4,853.7	4,843.4	11.7	12.0	159.34	274.6	-350.9	685.7	664.0	21.64	31.689	
5,000.0	4,990.6	4,952.8	4,942.3	11.9	12.3	159.46	279.3	-356.0	699.1	677.0	22.10	31.638	
5,100.0	5,090.3	5,051.9	5,041.1	12.2	12.6	159.59	283.9	-361.1	712.5	690.0	22.56	31.588	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,151.0	5,140.0	12.5	12.8	159.70	288.6	-366.2	725.9	702.9	23.02	31.541	
5,300.0	5,289.9	5,250.1	5,238.8	12.7	13.1	159.81	293.2	-371.3	739.4	715.9	23.47	31.495	
5,400.0	5,389.6	5,342.5	5,331.1	13.0	13.3	159.91	297.6	-376.1	752.8	728.9	23.92	31.473	SF
5,438.0	5,427.5	5,350.0	5,338.5	13.1	13.3	159.92	298.0	-376.6	758.9	734.9	24.03	31.587	
5,450.0	5,439.5	5,350.0	5,338.5	13.1	13.3	159.83	298.0	-376.6	761.3	737.3	24.02	31.700	
5,500.0	5,489.0	5,382.4	5,370.6	13.3	13.4	159.36	300.7	-379.5	774.2	750.3	23.95	32.322	
5,550.0	5,537.5	5,400.0	5,388.0	13.5	13.5	158.62	302.7	-381.8	793.4	769.7	23.70	33.479	
5,600.0	5,584.8	5,418.0	5,405.6	13.7	13.6	157.59	305.2	-384.5	818.1	794.8	23.31	35.095	
5,650.0	5,630.2	5,433.5	5,420.6	14.0	13.6	156.16	307.7	-387.2	847.8	825.0	22.82	37.156	
5,700.0	5,673.5	5,450.0	5,436.6	14.4	13.7	154.26	310.6	-390.5	882.0	859.7	22.29	39.572	
5,750.0	5,714.1	5,450.0	5,436.6	14.7	13.7	151.29	310.6	-390.5	920.1	898.3	21.83	42.141	
5,800.0	5,751.8	5,468.5	5,454.2	15.2	13.8	147.76	314.4	-394.5	961.3	939.6	21.64	44.429	
5,850.0	5,786.2	5,476.3	5,461.6	15.7	13.8	142.36	316.0	-396.4	1,005.1	983.1	22.03	45.616	
5,900.0	5,816.9	5,482.2	5,467.2	16.2	13.8	134.33	317.4	-397.9	1,051.0	1,027.4	23.54	44.645	
5,950.0	5,843.7	5,500.0	5,483.8	16.8	13.9	123.87	321.6	-402.5	1,098.5	1,072.3	26.20	41.931	
6,000.0	5,866.4	5,500.0	5,483.8	17.4	13.9	106.24	321.6	-402.5	1,146.6	1,116.6	30.07	38.127	
6,050.0	5,884.6	5,500.0	5,483.8	18.1	13.9	83.77	321.6	-402.5	1,195.2	1,163.3	31.95	37.407	
6,100.0	5,898.3	5,500.0	5,483.8	18.8	13.9	62.25	321.6	-402.5	1,243.8	1,214.2	29.59	42.031	
6,150.0	5,907.4	5,500.0	5,483.8	19.6	13.9	46.30	321.6	-402.5	1,292.0	1,266.8	25.17	51.332	
6,200.0	5,911.7	5,500.0	5,483.8	20.4	13.9	35.65	321.6	-402.5	1,339.3	1,318.2	21.09	63.493	
6,219.8	5,912.1	5,500.0	5,483.8	20.7	13.9	32.50	321.6	-402.5	1,357.8	1,338.0	19.79	68.627	
6,300.0	5,912.1	5,475.6	5,460.9	21.9	13.8	35.58	315.9	-396.2	1,431.4	1,409.5	21.90	65.360	
6,400.0	5,912.1	5,450.0	5,436.6	23.3	13.7	39.34	310.6	-390.5	1,523.8	1,499.3	24.53	62.120	
6,500.0	5,912.1	5,450.0	5,436.6	24.8	13.7	44.34	310.6	-390.5	1,615.2	1,587.3	27.84	58.008	
6,600.0	5,912.1	5,450.0	5,436.6	26.3	13.7	48.83	310.6	-390.5	1,706.0	1,675.1	30.88	55.239	
6,700.0	5,912.1	5,450.0	5,436.6	27.9	13.7	52.80	310.6	-390.5	1,796.3	1,762.7	33.63	53.415	
6,800.0	5,912.1	5,450.0	5,436.6	29.4	13.7	56.29	310.6	-390.5	1,885.8	1,849.7	36.08	52.268	
6,866.6	5,912.1	5,450.0	5,436.6	30.4	13.7	58.37	310.6	-390.5	1,944.9	1,907.3	37.55	51.790	
6,900.0	5,912.1	5,450.0	5,436.6	31.0	13.7	58.37	310.6	-390.5	1,974.5	1,936.5	38.06	51.880	
7,000.0	5,912.1	5,450.0	5,436.6	32.6	13.7	58.37	310.6	-390.5	2,063.9	2,024.2	39.63	52.081	
7,100.0	5,912.1	5,450.0	5,436.6	34.3	13.7	58.37	310.6	-390.5	2,154.2	2,112.9	41.22	52.264	
7,200.0	5,912.1	5,450.0	5,436.6	36.1	13.7	58.37	310.6	-390.5	2,245.3	2,202.4	42.82	52.432	
7,300.0	5,912.1	5,427.6	5,414.9	37.8	13.6	57.07	306.7	-386.1	2,336.6	2,292.8	43.80	53.347	
7,400.0	5,912.1	5,424.4	5,411.8	39.6	13.6	56.89	306.2	-385.6	2,428.9	2,383.6	45.32	53.594	
7,500.0	5,912.1	5,421.4	5,408.9	41.3	13.6	56.72	305.7	-385.1	2,521.8	2,474.9	46.85	53.826	
7,600.0	5,912.1	5,400.0	5,388.0	43.1	13.5	55.53	302.7	-381.8	2,615.5	2,567.7	47.81	54.706	
7,700.0	5,912.1	5,400.0	5,388.0	44.9	13.5	55.53	302.7	-381.8	2,709.3	2,659.8	49.43	54.812	
7,800.0	5,912.1	5,400.0	5,388.0	46.7	13.5	55.53	302.7	-381.8	2,803.5	2,752.4	51.05	54.912	
7,900.0	5,912.1	5,400.0	5,388.0	48.5	13.5	55.53	302.7	-381.8	2,898.0	2,845.3	52.69	55.007	
8,000.0	5,912.1	5,400.0	5,388.0	50.3	13.5	55.53	302.7	-381.8	2,993.0	2,938.6	54.32	55.096	
8,100.0	5,912.1	5,400.0	5,388.0	52.2	13.5	55.53	302.7	-381.8	3,088.2	3,032.2	55.96	55.182	
8,200.0	5,912.1	5,400.0	5,388.0	54.0	13.5	55.53	302.7	-381.8	3,183.7	3,126.1	57.61	55.263	
8,300.0	5,912.1	5,400.0	5,388.0	55.9	13.5	55.53	302.7	-381.8	3,279.6	3,220.3	59.26	55.341	
8,400.0	5,912.0	5,400.0	5,388.0	57.7	13.5	55.53	302.7	-381.8	3,375.6	3,314.7	60.92	55.415	
8,500.0	5,912.0	5,400.0	5,388.0	59.5	13.5	55.53	302.7	-381.8	3,471.9	3,409.3	62.57	55.486	
8,600.0	5,912.0	5,400.0	5,388.0	61.4	13.5	55.53	302.7	-381.8	3,568.4	3,504.1	64.23	55.554	
8,700.0	5,912.0	5,400.0	5,388.0	63.3	13.5	55.53	302.7	-381.8	3,665.0	3,599.1	65.90	55.619	
8,800.0	5,912.0	5,400.0	5,388.0	65.1	13.5	55.53	302.7	-381.8	3,761.9	3,694.3	67.56	55.681	
8,900.0	5,912.0	5,400.0	5,388.0	67.0	13.5	55.53	302.7	-381.8	3,858.9	3,789.6	69.23	55.741	
9,000.0	5,912.0	5,400.0	5,388.0	68.9	13.5	55.53	302.7	-381.8	3,956.0	3,885.1	70.90	55.799	
9,100.0	5,912.0	5,400.0	5,388.0	70.7	13.5	55.53	302.7	-381.8	4,053.3	3,980.7	72.57	55.854	
9,200.0	5,912.0	5,400.0	5,388.0	72.6	13.5	55.53	302.7	-381.8	4,150.7	4,076.5	74.24	55.908	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor #12F-0101A - HZ - Plan #2

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,400.0	5,388.0	74.5	13.5	55.53	302.7	-381.8	4,248.3	4,172.3	75.92	55.959	
9,400.0	5,912.0	5,400.0	5,388.0	76.4	13.5	55.53	302.7	-381.8	4,345.9	4,268.3	77.59	56.009	
9,500.0	5,912.0	5,400.0	5,388.0	78.2	13.5	55.53	302.7	-381.8	4,443.7	4,364.4	79.27	56.057	
9,600.0	5,912.0	5,400.0	5,388.0	80.1	13.5	55.53	302.7	-381.8	4,541.5	4,460.6	80.95	56.103	
9,700.0	5,912.0	5,400.0	5,388.0	82.0	13.5	55.53	302.7	-381.8	4,639.5	4,556.8	82.63	56.148	
9,800.0	5,912.0	5,400.0	5,388.0	83.9	13.5	55.53	302.7	-381.8	4,737.5	4,653.2	84.31	56.191	
9,900.0	5,912.0	5,376.9	5,365.2	85.8	13.4	54.28	300.2	-378.9	4,835.1	4,750.3	84.81	57.010	
10,000.0	5,912.0	5,375.7	5,364.0	87.7	13.4	54.22	300.0	-378.8	4,933.3	4,846.9	86.42	57.088	
10,100.0	5,912.0	5,374.6	5,362.9	89.6	13.4	54.16	299.9	-378.7	5,031.5	4,943.5	88.02	57.164	
10,200.0	5,912.0	5,373.5	5,361.9	91.5	13.4	54.10	299.8	-378.6	5,129.8	5,040.2	89.62	57.237	
10,300.0	5,912.0	5,372.5	5,360.8	93.4	13.4	54.05	299.7	-378.5	5,228.1	5,136.9	91.23	57.308	
10,400.0	5,912.0	5,350.0	5,338.5	95.3	13.3	52.89	298.0	-376.6	5,326.9	5,235.3	91.66	58.115	
10,500.0	5,912.0	5,350.0	5,338.5	97.1	13.3	52.89	298.0	-376.6	5,425.3	5,332.0	93.31	58.146	
10,600.0	5,912.0	5,350.0	5,338.5	99.0	13.3	52.89	298.0	-376.6	5,523.8	5,428.9	94.95	58.177	
10,700.0	5,912.0	5,350.0	5,338.5	100.9	13.3	52.89	298.0	-376.6	5,622.4	5,525.8	96.59	58.207	
10,800.0	5,912.0	5,350.0	5,338.5	102.8	13.3	52.89	298.0	-376.6	5,720.9	5,622.7	98.24	58.236	
10,900.0	5,912.0	5,350.0	5,338.5	104.7	13.3	52.89	298.0	-376.6	5,819.6	5,719.7	99.88	58.264	
11,000.0	5,912.0	5,350.0	5,338.5	106.6	13.3	52.89	298.0	-376.6	5,918.2	5,816.7	101.53	58.292	
11,100.0	5,912.0	5,350.0	5,338.5	108.5	13.3	52.89	298.0	-376.6	6,017.0	5,913.8	103.17	58.319	
11,200.0	5,912.0	5,350.0	5,338.5	110.4	13.3	52.89	298.0	-376.6	6,115.7	6,010.9	104.82	58.345	
11,300.0	5,912.0	5,350.0	5,338.5	112.3	13.3	52.89	298.0	-376.6	6,214.5	6,108.1	106.47	58.370	
11,400.0	5,912.0	5,350.0	5,338.5	114.2	13.3	52.89	298.0	-376.6	6,313.4	6,205.3	108.12	58.395	
11,500.0	5,912.0	5,350.0	5,338.5	116.2	13.3	52.89	298.0	-376.6	6,412.3	6,302.5	109.76	58.419	
11,600.0	5,912.0	5,350.0	5,338.5	118.1	13.3	52.89	298.0	-376.6	6,511.2	6,399.8	111.41	58.443	
11,700.0	5,912.0	5,350.0	5,338.5	120.0	13.3	52.89	298.0	-376.6	6,610.1	6,497.1	113.06	58.466	
11,800.0	5,912.0	5,350.0	5,338.5	121.9	13.3	52.89	298.0	-376.6	6,709.1	6,594.4	114.71	58.488	
11,900.0	5,912.0	5,350.0	5,338.5	123.8	13.3	52.89	298.0	-376.6	6,808.1	6,691.7	116.36	58.510	
12,000.0	5,912.0	5,350.0	5,338.5	125.7	13.3	52.89	298.0	-376.6	6,907.1	6,789.1	118.01	58.531	
12,100.0	5,912.0	5,350.0	5,338.5	127.6	13.3	52.89	298.0	-376.6	7,006.2	6,886.5	119.66	58.552	
12,200.0	5,912.0	5,350.0	5,338.5	129.5	13.3	52.89	298.0	-376.6	7,105.3	6,984.0	121.31	58.573	
12,300.0	5,912.0	5,350.0	5,338.5	131.4	13.3	52.89	298.0	-376.6	7,204.4	7,081.4	122.96	58.593	
12,400.0	5,912.0	5,350.0	5,338.5	133.3	13.3	52.89	298.0	-376.6	7,303.5	7,178.9	124.61	58.612	
12,500.0	5,912.0	5,350.0	5,338.5	135.2	13.3	52.89	298.0	-376.6	7,402.7	7,276.4	126.26	58.631	
12,600.0	5,912.0	5,350.0	5,338.5	137.1	13.3	52.89	298.0	-376.6	7,501.9	7,374.0	127.91	58.650	
12,700.0	5,912.0	5,350.0	5,338.5	139.0	13.3	52.89	298.0	-376.6	7,601.1	7,471.5	129.56	58.668	
12,800.0	5,912.0	5,350.0	5,338.5	140.9	13.3	52.89	298.0	-376.6	7,700.3	7,569.1	131.21	58.686	
12,900.0	5,912.0	5,350.0	5,338.5	142.9	13.3	52.89	298.0	-376.6	7,799.5	7,666.7	132.86	58.703	
13,000.0	5,912.0	5,350.0	5,338.5	144.8	13.3	52.89	298.0	-376.6	7,898.8	7,764.3	134.52	58.720	
13,100.0	5,912.0	5,350.0	5,338.5	146.7	13.3	52.89	298.0	-376.6	7,998.1	7,861.9	136.17	58.737	
13,200.0	5,912.0	5,350.0	5,338.5	148.6	13.3	52.89	298.0	-376.6	8,097.4	7,959.6	137.82	58.753	
13,300.0	5,912.0	5,350.0	5,338.5	150.5	13.3	52.89	298.0	-376.6	8,196.7	8,057.2	139.47	58.769	
13,400.0	5,912.0	5,350.0	5,338.5	152.4	13.3	52.89	298.0	-376.6	8,296.0	8,154.9	141.13	58.785	
13,500.0	5,912.0	5,350.0	5,338.5	154.3	13.3	52.89	298.0	-376.6	8,395.4	8,252.6	142.78	58.800	
13,600.0	5,912.0	5,350.0	5,338.5	156.2	13.3	52.89	298.0	-376.6	8,494.8	8,350.3	144.43	58.815	
13,695.8	5,912.0	5,350.0	5,338.5	157.7	13.3	52.89	298.0	-376.6	8,590.0	8,444.3	145.70	58.956	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-164.4	164.4				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-164.4	164.4	163.3	0.19	879.383	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-164.4	164.4	163.8	0.64	258.350	
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-164.4	164.4	163.4	1.09	151.417	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-164.4	164.4	162.9	1.54	107.091	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-164.4	164.4	162.5	1.99	82.840	CC, ES
600.0	600.0	596.6	596.6	1.2	1.2	-89.54	1.3	-165.4	165.5	163.0	2.43	68.225	
700.0	700.0	693.1	692.9	1.4	1.4	-88.22	5.2	-168.3	168.6	165.7	2.87	58.766	
800.0	800.0	792.6	792.2	1.7	1.7	-86.42	10.8	-172.5	173.0	169.7	3.32	52.094	
900.0	900.0	892.3	891.7	1.9	1.9	-84.70	16.4	-176.6	177.6	173.8	3.77	47.072	
1,000.0	1,000.0	992.1	991.2	2.1	2.1	-83.07	22.0	-180.8	182.3	178.1	4.23	43.145	
1,100.0	1,100.0	1,091.7	1,090.6	2.3	2.4	118.23	27.5	-184.9	188.0	183.4	4.66	40.365	
1,200.0	1,199.8	1,191.0	1,189.6	2.5	2.6	120.87	33.1	-189.1	195.7	190.7	5.06	38.646	
1,300.0	1,299.6	1,290.0	1,288.4	2.7	2.9	123.82	38.6	-193.2	204.8	199.3	5.48	37.374	
1,400.0	1,399.4	1,389.1	1,387.2	2.9	3.1	126.52	44.2	-197.3	214.4	208.5	5.90	36.313	
1,500.0	1,499.1	1,488.1	1,486.0	3.1	3.4	128.99	49.7	-201.5	224.4	218.1	6.33	35.428	
1,600.0	1,598.9	1,587.2	1,584.8	3.3	3.6	131.24	55.2	-205.6	234.8	228.0	6.77	34.689	
1,700.0	1,698.6	1,686.2	1,683.7	3.5	3.9	133.30	60.8	-209.7	245.5	238.3	7.21	34.069	
1,800.0	1,798.4	1,785.3	1,782.5	3.8	4.1	135.19	66.3	-213.9	256.5	248.9	7.65	33.546	
1,900.0	1,898.1	1,884.3	1,881.3	4.0	4.4	136.92	71.9	-218.0	267.8	259.7	8.09	33.104	
2,000.0	1,997.9	1,983.4	1,980.1	4.2	4.6	138.51	77.4	-222.1	279.3	270.8	8.53	32.728	
2,100.0	2,097.6	2,082.4	2,078.9	4.5	4.9	139.98	82.9	-226.2	291.0	282.0	8.98	32.407	
2,200.0	2,197.4	2,181.5	2,177.7	4.7	5.2	141.33	88.5	-230.4	302.9	293.4	9.43	32.131	
2,300.0	2,297.2	2,280.5	2,276.5	5.0	5.4	142.58	94.0	-234.5	314.9	305.0	9.87	31.893	
2,400.0	2,396.9	2,379.6	2,375.3	5.2	5.7	143.74	99.6	-238.6	327.0	316.7	10.32	31.687	
2,500.0	2,496.7	2,478.6	2,474.1	5.5	5.9	144.81	105.1	-242.7	339.3	328.5	10.77	31.507	
2,600.0	2,596.4	2,577.7	2,572.9	5.7	6.2	145.81	110.6	-246.9	351.7	340.5	11.22	31.350	
2,700.0	2,696.2	2,676.7	2,671.7	6.0	6.4	146.74	116.2	-251.0	364.2	352.5	11.67	31.212	
2,800.0	2,795.9	2,775.8	2,770.5	6.2	6.7	147.61	121.7	-255.1	376.8	364.6	12.12	31.091	
2,900.0	2,895.7	2,874.8	2,869.3	6.5	6.9	148.42	127.3	-259.3	389.4	376.9	12.57	30.984	
3,000.0	2,995.5	2,973.9	2,968.2	6.7	7.2	149.19	132.8	-263.4	402.1	389.1	13.02	30.888	
3,100.0	3,095.2	3,072.9	3,067.0	7.0	7.4	149.90	138.4	-267.5	414.9	401.5	13.47	30.804	
3,200.0	3,195.0	3,172.0	3,165.8	7.3	7.7	150.57	143.9	-271.6	427.8	413.9	13.92	30.728	
3,300.0	3,294.7	3,271.0	3,264.6	7.5	8.0	151.21	149.4	-275.8	440.7	426.3	14.37	30.660	
3,400.0	3,394.5	3,370.0	3,363.4	7.8	8.2	151.80	155.0	-279.9	453.7	438.8	14.83	30.599	
3,500.0	3,494.2	3,469.1	3,462.2	8.0	8.5	152.37	160.5	-284.0	466.7	451.4	15.28	30.545	
3,600.0	3,594.0	3,568.1	3,561.0	8.3	8.7	152.90	166.1	-288.2	479.7	464.0	15.73	30.495	
3,700.0	3,693.7	3,667.2	3,659.8	8.5	9.0	153.41	171.6	-292.3	492.8	476.6	16.18	30.450	
3,800.0	3,793.5	3,766.2	3,758.6	8.8	9.2	153.89	177.1	-296.4	505.9	489.3	16.64	30.410	
3,900.0	3,893.3	3,865.3	3,857.4	9.1	9.5	154.34	182.7	-300.5	519.1	502.0	17.09	30.373	
4,000.0	3,993.0	3,964.3	3,956.2	9.3	9.7	154.77	188.2	-304.7	532.3	514.7	17.54	30.340	
4,100.0	4,092.8	4,063.4	4,055.0	9.6	10.0	155.19	193.8	-308.8	545.5	527.5	18.00	30.309	
4,200.0	4,192.5	4,162.4	4,153.8	9.8	10.2	155.58	199.3	-312.9	558.7	540.3	18.45	30.281	
4,300.0	4,292.3	4,261.5	4,252.6	10.1	10.5	155.95	204.8	-317.1	572.0	553.1	18.90	30.256	
4,400.0	4,392.0	4,360.5	4,351.5	10.4	10.8	156.31	210.4	-321.2	585.3	565.9	19.36	30.232	
4,500.0	4,491.8	4,459.6	4,450.3	10.6	11.0	156.65	215.9	-325.3	598.6	578.8	19.81	30.211	
4,600.0	4,591.6	4,558.6	4,549.1	10.9	11.3	156.98	221.5	-329.4	611.9	591.6	20.27	30.191	
4,700.0	4,691.3	4,657.7	4,647.9	11.2	11.5	157.29	227.0	-333.6	625.2	604.5	20.72	30.173	
4,800.0	4,791.1	4,756.7	4,746.7	11.4	11.8	157.59	232.5	-337.7	638.6	617.4	21.18	30.156	
4,900.0	4,890.8	4,855.8	4,845.5	11.7	12.0	157.88	238.1	-341.8	652.0	630.4	21.63	30.141	
5,000.0	4,990.6	4,954.8	4,944.3	11.9	12.3	158.15	243.6	-346.0	665.4	643.3	22.09	30.127	
5,100.0	5,090.3	5,053.9	5,043.1	12.2	12.5	158.42	249.2	-350.1	678.8	656.3	22.54	30.113	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,152.9	5,141.9	12.5	12.8	158.67	254.7	-354.2	692.2	669.2	23.00	30.101	
5,300.0	5,289.9	5,252.0	5,240.7	12.7	13.1	158.92	260.2	-358.3	705.7	682.2	23.45	30.090	
5,400.0	5,389.6	5,351.0	5,339.5	13.0	13.3	159.15	265.8	-362.5	719.1	695.2	23.91	30.079	
5,438.0	5,427.5	5,388.7	5,377.1	13.1	13.4	159.24	267.9	-364.0	724.2	700.1	24.08	30.075	SF
5,450.0	5,439.5	5,400.5	5,388.9	13.1	13.4	159.20	268.6	-364.5	726.0	701.9	24.10	30.126	
5,500.0	5,489.0	5,443.3	5,431.6	13.3	13.5	158.98	271.0	-366.3	736.0	712.0	24.05	30.598	
5,550.0	5,537.5	5,450.0	5,438.3	13.5	13.6	158.35	271.4	-366.7	751.9	728.1	23.78	31.620	
5,600.0	5,584.8	5,481.0	5,469.0	13.7	13.7	157.68	274.4	-368.9	773.1	749.7	23.42	33.011	
5,650.0	5,630.2	5,500.0	5,487.8	14.0	13.7	156.60	277.0	-370.8	800.0	777.1	22.93	34.891	
5,700.0	5,673.5	5,500.0	5,487.8	14.4	13.7	154.71	277.0	-370.8	831.9	809.5	22.38	37.179	
5,750.0	5,714.1	5,525.0	5,512.2	14.7	13.8	152.81	281.2	-373.9	867.6	845.7	21.88	39.656	
5,800.0	5,751.8	5,550.0	5,536.4	15.2	13.9	150.32	286.3	-377.7	907.4	885.9	21.52	42.168	
5,850.0	5,786.2	5,550.0	5,536.4	15.7	13.9	145.71	286.3	-377.7	949.7	928.0	21.68	43.797	
5,900.0	5,816.9	5,550.0	5,536.4	16.2	13.9	138.90	286.3	-377.7	994.5	971.7	22.78	43.657	
5,950.0	5,843.7	5,550.0	5,536.4	16.8	13.9	128.56	286.3	-377.7	1,041.1	1,015.7	25.43	40.944	
6,000.0	5,866.4	5,550.0	5,536.4	17.4	13.9	112.91	286.3	-377.7	1,089.0	1,059.6	29.37	37.078	
6,050.0	5,884.6	5,550.0	5,536.4	18.1	13.9	91.47	286.3	-377.7	1,137.5	1,105.1	32.38	35.133	
6,100.0	5,898.3	5,550.0	5,536.4	18.8	13.9	68.70	286.3	-377.7	1,186.1	1,154.9	31.21	38.003	
6,150.0	5,907.4	5,550.0	5,536.4	19.6	13.9	50.64	286.3	-377.7	1,234.5	1,207.6	26.91	45.868	
6,200.0	5,911.7	5,550.0	5,536.4	20.4	13.9	38.41	286.3	-377.7	1,282.2	1,259.7	22.48	57.034	
6,219.8	5,912.1	5,550.0	5,536.4	20.7	13.9	34.81	286.3	-377.7	1,300.8	1,279.8	21.00	61.948	
6,300.0	5,912.1	5,550.0	5,536.4	21.9	13.9	39.87	286.3	-377.7	1,375.8	1,351.7	24.14	56.997	
6,400.0	5,912.1	5,550.0	5,536.4	23.3	13.9	45.57	286.3	-377.7	1,469.1	1,441.4	27.72	52.998	
6,500.0	5,912.1	5,550.0	5,536.4	24.8	13.9	50.57	286.3	-377.7	1,562.0	1,531.0	30.95	50.463	
6,600.0	5,912.1	5,529.9	5,517.0	26.3	13.8	53.40	282.1	-374.6	1,653.7	1,620.5	33.17	49.852	
6,700.0	5,912.1	5,525.1	5,512.3	27.9	13.8	56.87	281.2	-373.9	1,744.9	1,709.3	35.63	48.972	
6,800.0	5,912.1	5,520.7	5,508.0	29.4	13.8	59.89	280.4	-373.3	1,835.2	1,797.4	37.82	48.522	
6,866.6	5,912.1	5,500.0	5,487.8	30.4	13.7	60.58	277.0	-370.8	1,895.2	1,856.5	38.70	48.974	
6,900.0	5,912.1	5,500.0	5,487.8	31.0	13.7	60.58	277.0	-370.8	1,925.0	1,885.8	39.21	49.091	
7,000.0	5,912.1	5,500.0	5,487.8	32.6	13.7	60.58	277.0	-370.8	2,014.9	1,974.1	40.81	49.370	
7,100.0	5,912.1	5,500.0	5,487.8	34.3	13.7	60.58	277.0	-370.8	2,105.7	2,063.2	42.43	49.627	
7,200.0	5,912.1	5,500.0	5,487.8	36.1	13.7	60.58	277.0	-370.8	2,197.3	2,153.2	44.07	49.863	
7,300.0	5,912.1	5,500.0	5,487.8	37.8	13.7	60.58	277.0	-370.8	2,289.5	2,243.8	45.72	50.081	
7,400.0	5,912.1	5,500.0	5,487.8	39.6	13.7	60.58	277.0	-370.8	2,382.4	2,335.1	47.38	50.284	
7,500.0	5,912.1	5,500.0	5,487.8	41.3	13.7	60.58	277.0	-370.8	2,475.9	2,426.9	49.05	50.473	
7,600.0	5,912.1	5,500.0	5,487.8	43.1	13.7	60.58	277.0	-370.8	2,569.9	2,519.1	50.74	50.650	
7,700.0	5,912.1	5,500.0	5,487.8	44.9	13.7	60.58	277.0	-370.8	2,664.3	2,611.8	52.43	50.816	
7,800.0	5,912.1	5,500.0	5,487.8	46.7	13.7	60.58	277.0	-370.8	2,759.0	2,704.9	54.13	50.971	
7,900.0	5,912.1	5,500.0	5,487.8	48.5	13.7	60.58	277.0	-370.8	2,854.2	2,798.4	55.84	51.118	
8,000.0	5,912.1	5,500.0	5,487.8	50.3	13.7	60.58	277.0	-370.8	2,949.7	2,892.1	57.55	51.256	
8,100.0	5,912.1	5,500.0	5,487.8	52.2	13.7	60.58	277.0	-370.8	3,045.4	2,986.1	59.26	51.387	
8,200.0	5,912.1	5,500.0	5,487.8	54.0	13.7	60.58	277.0	-370.8	3,141.4	3,080.4	60.99	51.510	
8,300.0	5,912.1	5,500.0	5,487.8	55.9	13.7	60.58	277.0	-370.8	3,237.7	3,175.0	62.71	51.628	
8,400.0	5,912.0	5,500.0	5,487.8	57.7	13.7	60.58	277.0	-370.8	3,334.2	3,269.7	64.44	51.739	
8,500.0	5,912.0	5,477.0	5,465.1	59.5	13.7	59.21	273.9	-368.5	3,430.3	3,365.0	65.30	52.533	
8,600.0	5,912.0	5,475.4	5,463.5	61.4	13.6	59.12	273.8	-368.4	3,527.1	3,460.2	66.95	52.681	
8,700.0	5,912.0	5,473.9	5,462.0	63.3	13.6	59.03	273.6	-368.3	3,624.1	3,555.5	68.61	52.822	
8,800.0	5,912.0	5,472.5	5,460.6	65.1	13.6	58.94	273.4	-368.2	3,721.2	3,650.9	70.27	52.956	
8,900.0	5,912.0	5,450.0	5,438.3	67.0	13.6	57.66	271.4	-366.7	3,818.9	3,747.9	71.05	53.749	
9,000.0	5,912.0	5,450.0	5,438.3	68.9	13.6	57.66	271.4	-366.7	3,916.3	3,843.5	72.75	53.829	
9,100.0	5,912.0	5,450.0	5,438.3	70.7	13.6	57.66	271.4	-366.7	4,013.7	3,939.3	74.46	53.905	
9,200.0	5,912.0	5,450.0	5,438.3	72.6	13.6	57.66	271.4	-366.7	4,111.3	4,035.2	76.17	53.979	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,450.0	5,438.3	74.5	13.6	57.66	271.4	-366.7	4,209.0	4,131.2	77.87	54.049	
9,400.0	5,912.0	5,450.0	5,438.3	76.4	13.6	57.66	271.4	-366.7	4,306.8	4,227.3	79.58	54.117	
9,500.0	5,912.0	5,450.0	5,438.3	78.2	13.6	57.66	271.4	-366.7	4,404.7	4,323.5	81.30	54.182	
9,600.0	5,912.0	5,450.0	5,438.3	80.1	13.6	57.66	271.4	-366.7	4,502.8	4,419.7	83.01	54.245	
9,700.0	5,912.0	5,450.0	5,438.3	82.0	13.6	57.66	271.4	-366.7	4,600.8	4,516.1	84.72	54.306	
9,800.0	5,912.0	5,450.0	5,438.3	83.9	13.6	57.66	271.4	-366.7	4,699.0	4,612.6	86.44	54.364	
9,900.0	5,912.0	5,450.0	5,438.3	85.8	13.6	57.66	271.4	-366.7	4,797.3	4,709.1	88.15	54.420	
10,000.0	5,912.0	5,450.0	5,438.3	87.7	13.6	57.66	271.4	-366.7	4,895.6	4,805.7	89.87	54.475	
10,100.0	5,912.0	5,450.0	5,438.3	89.6	13.6	57.66	271.4	-366.7	4,994.0	4,902.4	91.59	54.527	
10,200.0	5,912.0	5,450.0	5,438.3	91.5	13.6	57.66	271.4	-366.7	5,092.4	4,999.1	93.31	54.578	
10,300.0	5,912.0	5,450.0	5,438.3	93.4	13.6	57.66	271.4	-366.7	5,190.9	5,095.9	95.02	54.627	
10,400.0	5,912.0	5,450.0	5,438.3	95.3	13.6	57.66	271.4	-366.7	5,289.5	5,192.7	96.74	54.674	
10,500.0	5,912.0	5,450.0	5,438.3	97.1	13.6	57.66	271.4	-366.7	5,388.1	5,289.6	98.47	54.720	
10,600.0	5,912.0	5,450.0	5,438.3	99.0	13.6	57.66	271.4	-366.7	5,486.7	5,386.6	100.19	54.765	
10,700.0	5,912.0	5,450.0	5,438.3	100.9	13.6	57.66	271.4	-366.7	5,585.5	5,483.5	101.91	54.808	
10,800.0	5,912.0	5,450.0	5,438.3	102.8	13.6	57.66	271.4	-366.7	5,684.2	5,580.6	103.63	54.850	
10,900.0	5,912.0	5,450.0	5,438.3	104.7	13.6	57.66	271.4	-366.7	5,783.0	5,677.7	105.36	54.890	
11,000.0	5,912.0	5,450.0	5,438.3	106.6	13.6	57.66	271.4	-366.7	5,881.9	5,774.8	107.08	54.930	
11,100.0	5,912.0	5,450.0	5,438.3	108.5	13.6	57.66	271.4	-366.7	5,980.7	5,871.9	108.80	54.968	
11,200.0	5,912.0	5,450.0	5,438.3	110.4	13.6	57.66	271.4	-366.7	6,079.6	5,969.1	110.53	55.005	
11,300.0	5,912.0	5,450.0	5,438.3	112.3	13.6	57.66	271.4	-366.7	6,178.6	6,066.3	112.25	55.041	
11,400.0	5,912.0	5,450.0	5,438.3	114.2	13.6	57.66	271.4	-366.7	6,277.6	6,163.6	113.98	55.076	
11,500.0	5,912.0	5,450.0	5,438.3	116.2	13.6	57.66	271.4	-366.7	6,376.6	6,260.9	115.71	55.110	
11,600.0	5,912.0	5,450.0	5,438.3	118.1	13.6	57.66	271.4	-366.7	6,475.6	6,358.2	117.43	55.143	
11,700.0	5,912.0	5,450.0	5,438.3	120.0	13.6	57.66	271.4	-366.7	6,574.7	6,455.6	119.16	55.175	
11,800.0	5,912.0	5,450.0	5,438.3	121.9	13.6	57.66	271.4	-366.7	6,673.8	6,552.9	120.89	55.207	
11,900.0	5,912.0	5,450.0	5,438.3	123.8	13.6	57.66	271.4	-366.7	6,772.9	6,650.3	122.62	55.237	
12,000.0	5,912.0	5,444.8	5,433.0	125.7	13.6	57.36	271.1	-366.4	6,872.1	6,748.1	123.98	55.427	
12,100.0	5,912.0	5,444.2	5,432.5	127.6	13.5	57.33	271.0	-366.4	6,971.2	6,845.6	125.67	55.472	
12,200.0	5,912.0	5,439.0	5,427.3	129.5	13.5	57.04	270.7	-366.1	7,070.5	6,943.4	127.03	55.660	
12,300.0	5,912.0	5,439.0	5,427.3	131.4	13.5	57.04	270.7	-366.1	7,169.7	7,040.9	128.75	55.688	
12,400.0	5,912.0	5,439.0	5,427.3	133.3	13.5	57.04	270.7	-366.1	7,268.9	7,138.4	130.47	55.714	
12,500.0	5,912.0	5,439.0	5,427.3	135.2	13.5	57.04	270.7	-366.1	7,368.2	7,236.0	132.19	55.740	
12,600.0	5,912.0	5,439.0	5,427.3	137.1	13.5	57.04	270.7	-366.1	7,467.4	7,333.5	133.91	55.766	
12,700.0	5,912.0	5,439.0	5,427.3	139.0	13.5	57.04	270.7	-366.1	7,566.7	7,431.1	135.63	55.790	
12,800.0	5,912.0	5,439.0	5,427.3	140.9	13.5	57.04	270.7	-366.1	7,666.1	7,528.7	137.35	55.815	
12,900.0	5,912.0	5,439.0	5,427.3	142.9	13.5	57.04	270.7	-366.1	7,765.4	7,626.3	139.07	55.838	
13,000.0	5,912.0	5,439.0	5,427.3	144.8	13.5	57.04	270.7	-366.1	7,864.7	7,723.9	140.79	55.861	
13,100.0	5,912.0	5,439.0	5,427.3	146.7	13.5	57.04	270.7	-366.1	7,964.1	7,821.6	142.51	55.884	
13,200.0	5,912.0	5,439.0	5,427.3	148.6	13.5	57.04	270.7	-366.1	8,063.5	7,919.2	144.23	55.906	
13,300.0	5,912.0	5,437.5	5,425.8	150.5	13.5	56.96	270.6	-366.1	8,162.9	8,017.0	145.83	55.974	
13,400.0	5,912.0	5,431.9	5,420.2	152.4	13.5	56.65	270.3	-365.8	8,262.3	8,115.2	147.10	56.166	
13,500.0	5,912.0	5,426.3	5,414.6	154.3	13.5	56.35	270.0	-365.6	8,361.7	8,213.3	148.36	56.360	
13,600.0	5,912.0	5,420.7	5,409.1	156.2	13.5	56.04	269.7	-365.4	8,461.1	8,311.5	149.61	56.554	
13,695.8	5,912.0	5,415.4	5,403.7	157.7	13.5	55.76	269.4	-365.1	8,556.4	8,405.9	150.48	56.860	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-41.09	74.9	-65.3	99.4				
100.0	100.0	100.0	100.0	0.1	0.1	-41.09	74.9	-65.3	99.4	99.2	0.19	531.468	
200.0	200.0	200.0	200.0	0.3	0.3	-41.09	74.9	-65.3	99.4	98.8	0.64	156.138	
300.0	300.0	300.0	300.0	0.5	0.5	-41.09	74.9	-65.3	99.4	98.3	1.09	91.511	
400.0	400.0	400.0	400.0	0.8	0.8	-41.09	74.9	-65.3	99.4	97.9	1.54	64.722	
500.0	500.0	500.0	500.0	1.0	1.0	-41.09	74.9	-65.3	99.4	97.4	1.99	50.066	
600.0	600.0	600.0	600.0	1.2	1.2	-41.09	74.9	-65.3	99.4	97.0	2.43	40.822	
700.0	700.0	700.0	700.0	1.4	1.4	-41.09	74.9	-65.3	99.4	96.5	2.88	34.459	
800.0	800.0	800.0	800.0	1.7	1.7	-41.09	74.9	-65.3	99.4	96.1	3.33	29.813	
900.0	900.0	900.0	900.0	1.9	1.9	-41.09	74.9	-65.3	99.4	95.6	3.78	26.270	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-41.09	74.9	-65.3	99.4	95.2	4.23	23.480	CC, ES
1,100.0	1,100.0	1,096.6	1,096.6	2.3	2.3	158.81	76.3	-66.1	102.7	98.0	4.65	22.099	SF
1,200.0	1,199.8	1,192.5	1,192.4	2.5	2.5	160.14	80.5	-68.5	112.5	107.5	5.04	22.334	
1,300.0	1,299.6	1,291.3	1,290.9	2.7	2.8	161.72	86.5	-72.0	126.0	120.5	5.44	23.139	
1,400.0	1,399.4	1,390.3	1,389.7	2.9	3.0	163.01	92.5	-75.4	139.5	133.7	5.85	23.832	
1,500.0	1,499.1	1,489.3	1,488.5	3.1	3.2	164.06	98.5	-78.8	153.1	146.9	6.27	24.417	
1,600.0	1,598.9	1,588.4	1,587.3	3.3	3.5	164.95	104.5	-82.3	166.8	160.1	6.69	24.916	
1,700.0	1,698.6	1,687.4	1,686.1	3.5	3.7	165.70	110.5	-85.7	180.4	173.3	7.12	25.345	
1,800.0	1,798.4	1,786.4	1,784.9	3.8	4.0	166.34	116.4	-89.2	194.1	186.6	7.55	25.715	
1,900.0	1,898.1	1,885.5	1,883.6	4.0	4.2	166.90	122.4	-92.6	207.9	199.9	7.98	26.039	
2,000.0	1,997.9	1,984.5	1,982.4	4.2	4.4	167.39	128.4	-96.0	221.6	213.2	8.42	26.324	
2,100.0	2,097.6	2,083.5	2,081.2	4.5	4.7	167.82	134.4	-99.5	235.4	226.5	8.86	26.575	
2,200.0	2,197.4	2,182.6	2,180.0	4.7	4.9	168.21	140.4	-102.9	249.1	239.8	9.30	26.799	
2,300.0	2,297.2	2,281.6	2,278.8	5.0	5.2	168.55	146.4	-106.3	262.9	253.2	9.74	26.999	
2,400.0	2,396.9	2,380.7	2,377.6	5.2	5.4	168.86	152.4	-109.8	276.7	266.5	10.18	27.179	
2,500.0	2,496.7	2,479.7	2,476.4	5.5	5.7	169.14	158.4	-113.2	290.5	279.9	10.62	27.341	
2,600.0	2,596.4	2,578.7	2,575.2	5.7	5.9	169.40	164.4	-116.7	304.3	293.2	11.07	27.488	
2,700.0	2,696.2	2,677.8	2,674.0	6.0	6.2	169.63	170.4	-120.1	318.1	306.6	11.52	27.622	
2,800.0	2,795.9	2,776.8	2,772.8	6.2	6.4	169.85	176.4	-123.5	331.9	319.9	11.96	27.745	
2,900.0	2,895.7	2,875.8	2,871.6	6.5	6.7	170.04	182.4	-127.0	345.7	333.3	12.41	27.857	
3,000.0	2,995.5	2,974.9	2,970.4	6.7	6.9	170.23	188.3	-130.4	359.5	346.7	12.86	27.960	
3,100.0	3,095.2	3,073.9	3,069.2	7.0	7.2	170.39	194.3	-133.9	373.3	360.0	13.31	28.056	
3,200.0	3,195.0	3,172.9	3,168.0	7.3	7.4	170.55	200.3	-137.3	387.2	373.4	13.76	28.144	
3,300.0	3,294.7	3,272.0	3,266.8	7.5	7.7	170.70	206.3	-140.7	401.0	386.8	14.21	28.226	
3,400.0	3,394.5	3,371.0	3,365.6	7.8	7.9	170.83	212.3	-144.2	414.8	400.2	14.66	28.302	
3,500.0	3,494.2	3,470.0	3,464.3	8.0	8.2	170.96	218.3	-147.6	428.6	413.5	15.11	28.373	
3,600.0	3,594.0	3,569.1	3,563.1	8.3	8.4	171.08	224.3	-151.0	442.5	426.9	15.56	28.439	
3,700.0	3,693.7	3,668.1	3,661.9	8.5	8.7	171.19	230.3	-154.5	456.3	440.3	16.01	28.501	
3,800.0	3,793.5	3,767.1	3,760.7	8.8	8.9	171.29	236.3	-157.9	470.1	453.7	16.46	28.559	
3,900.0	3,893.3	3,866.2	3,859.5	9.1	9.2	171.39	242.3	-161.4	484.0	467.1	16.91	28.614	
4,000.0	3,993.0	3,965.2	3,958.3	9.3	9.5	171.49	248.3	-164.8	497.8	480.4	17.37	28.665	
4,100.0	4,092.8	4,064.2	4,057.1	9.6	9.7	171.58	254.3	-168.2	511.6	493.8	17.82	28.714	
4,200.0	4,192.5	4,163.3	4,155.9	9.8	10.0	171.66	260.2	-171.7	525.5	507.2	18.27	28.760	
4,300.0	4,292.3	4,262.3	4,254.7	10.1	10.2	171.74	266.2	-175.1	539.3	520.6	18.72	28.803	
4,400.0	4,392.0	4,361.4	4,353.5	10.4	10.5	171.82	272.2	-178.6	553.2	534.0	19.18	28.844	
4,500.0	4,491.8	4,460.4	4,452.3	10.6	10.7	171.89	278.2	-182.0	567.0	547.4	19.63	28.883	
4,600.0	4,591.6	4,559.4	4,551.1	10.9	11.0	171.96	284.2	-185.4	580.9	560.8	20.08	28.920	
4,700.0	4,691.3	4,658.5	4,649.9	11.2	11.2	172.02	290.2	-188.9	594.7	574.2	20.54	28.955	
4,800.0	4,791.1	4,757.5	4,748.7	11.4	11.5	172.08	296.2	-192.3	608.5	587.5	20.99	28.989	
4,900.0	4,890.8	4,856.5	4,847.5	11.7	11.7	172.14	302.2	-195.7	622.4	600.9	21.45	29.021	
5,000.0	4,990.6	4,955.6	4,946.2	11.9	12.0	172.20	308.2	-199.2	636.2	614.3	21.90	29.051	
5,100.0	5,090.3	5,054.6	5,045.0	12.2	12.2	172.26	314.2	-202.6	650.1	627.7	22.35	29.080	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,153.6	5,143.8	12.5	12.5	172.31	320.2	-206.1	663.9	641.1	22.81	29.108	
5,300.0	5,289.9	5,252.7	5,242.6	12.7	12.8	172.36	326.2	-209.5	677.8	654.5	23.26	29.134	
5,400.0	5,389.6	5,343.3	5,333.1	13.0	13.0	172.40	331.7	-212.7	691.7	668.0	23.70	29.187	
5,438.0	5,427.5	5,350.0	5,339.7	13.1	13.0	172.40	332.2	-213.0	698.2	674.4	23.80	29.331	
5,450.0	5,439.5	5,364.4	5,354.1	13.1	13.0	172.37	333.5	-213.7	700.4	676.5	23.83	29.396	
5,500.0	5,489.0	5,384.8	5,374.2	13.3	13.1	172.18	336.0	-215.2	714.2	690.5	23.70	30.131	
5,550.0	5,537.5	5,400.0	5,389.2	13.5	13.2	171.87	338.4	-216.5	734.4	711.0	23.38	31.411	
5,600.0	5,584.8	5,421.5	5,410.2	13.7	13.2	171.46	342.3	-218.7	760.3	737.4	22.89	33.217	
5,650.0	5,630.2	5,450.0	5,437.8	14.0	13.4	170.93	348.6	-222.4	791.6	769.4	22.24	35.603	
5,700.0	5,673.5	5,450.0	5,437.8	14.4	13.4	170.02	348.6	-222.4	827.1	805.7	21.36	38.712	
5,750.0	5,714.1	5,450.0	5,437.8	14.7	13.4	168.67	348.6	-222.4	866.9	846.5	20.38	42.526	
5,800.0	5,751.8	5,472.0	5,458.7	15.2	13.5	167.07	354.4	-225.7	909.4	890.0	19.38	46.921	
5,850.0	5,786.2	5,479.4	5,465.7	15.7	13.5	164.29	356.5	-226.9	954.8	936.3	18.47	51.694	
5,900.0	5,816.9	5,500.0	5,485.0	16.2	13.6	160.30	362.8	-230.6	1,002.5	984.5	17.95	55.842	
5,950.0	5,843.7	5,500.0	5,485.0	16.8	13.6	151.03	362.8	-230.6	1,051.0	1,031.7	19.34	54.356	
6,000.0	5,866.4	5,500.0	5,485.0	17.4	13.6	126.99	362.8	-230.6	1,100.4	1,074.3	26.16	42.060	
6,050.0	5,884.6	5,500.0	5,485.0	18.1	13.6	70.39	362.8	-230.6	1,150.2	1,119.7	30.56	37.635	
6,100.0	5,898.3	5,500.0	5,485.0	18.8	13.6	33.48	362.8	-230.6	1,199.9	1,180.0	19.89	60.318	
6,150.0	5,907.4	5,500.0	5,485.0	19.6	13.6	20.30	362.8	-230.6	1,249.0	1,234.8	14.20	87.973	
6,200.0	5,911.7	5,500.0	5,485.0	20.4	13.6	14.31	362.8	-230.6	1,297.2	1,285.7	11.52	112.628	
6,219.8	5,912.1	5,481.2	5,467.4	20.7	13.5	12.15	357.0	-227.2	1,315.6	1,304.9	10.65	123.574	
6,300.0	5,912.1	5,473.9	5,460.5	21.9	13.5	18.21	354.9	-226.0	1,390.9	1,377.2	13.63	102.035	
6,400.0	5,912.1	5,450.0	5,437.8	23.3	13.4	24.63	348.6	-222.4	1,485.2	1,467.9	17.25	86.117	
6,500.0	5,912.1	5,450.0	5,437.8	24.8	13.4	31.66	348.6	-222.4	1,578.8	1,557.1	21.64	72.958	
6,600.0	5,912.1	5,450.0	5,437.8	26.3	13.4	38.11	348.6	-222.4	1,672.2	1,646.4	25.84	64.710	
6,700.0	5,912.1	5,450.0	5,437.8	27.9	13.4	43.86	348.6	-222.4	1,765.3	1,735.6	29.65	59.535	
6,800.0	5,912.1	5,450.0	5,437.8	29.4	13.4	48.89	348.6	-222.4	1,857.8	1,824.7	33.01	56.286	
6,866.6	5,912.1	5,450.0	5,437.8	30.4	13.4	51.86	348.6	-222.4	1,918.9	1,883.9	34.99	54.847	
6,900.0	5,912.1	5,450.0	5,437.8	31.0	13.4	51.86	348.6	-222.4	1,949.6	1,914.2	35.46	54.977	
7,000.0	5,912.1	5,450.0	5,437.8	32.6	13.4	51.86	348.6	-222.4	2,041.9	2,005.0	36.93	55.285	
7,100.0	5,912.1	5,426.2	5,414.8	34.3	13.3	50.39	343.2	-219.3	2,134.2	2,096.6	37.64	56.706	
7,200.0	5,912.1	5,422.2	5,410.9	36.1	13.2	50.15	342.4	-218.8	2,227.6	2,188.6	38.98	57.143	
7,300.0	5,912.1	5,400.0	5,389.2	37.8	13.2	48.84	338.4	-216.5	2,321.9	2,282.2	39.70	58.479	
7,400.0	5,912.1	5,400.0	5,389.2	39.6	13.2	48.84	338.4	-216.5	2,416.1	2,374.9	41.19	58.664	
7,500.0	5,912.1	5,400.0	5,389.2	41.3	13.2	48.84	338.4	-216.5	2,510.7	2,468.1	42.68	58.833	
7,600.0	5,912.1	5,400.0	5,389.2	43.1	13.2	48.84	338.4	-216.5	2,605.8	2,561.6	44.17	58.989	
7,700.0	5,912.1	5,400.0	5,389.2	44.9	13.2	48.84	338.4	-216.5	2,701.2	2,655.5	45.68	59.132	
7,800.0	5,912.1	5,400.0	5,389.2	46.7	13.2	48.84	338.4	-216.5	2,796.9	2,749.7	47.19	59.265	
7,900.0	5,912.1	5,400.0	5,389.2	48.5	13.2	48.84	338.4	-216.5	2,893.0	2,844.2	48.71	59.388	
8,000.0	5,912.1	5,400.0	5,389.2	50.3	13.2	48.84	338.4	-216.5	2,989.2	2,939.0	50.24	59.503	
8,100.0	5,912.1	5,400.0	5,389.2	52.2	13.2	48.84	338.4	-216.5	3,085.8	3,034.0	51.77	59.611	
8,200.0	5,912.1	5,400.0	5,389.2	54.0	13.2	48.84	338.4	-216.5	3,182.5	3,129.2	53.30	59.712	
8,300.0	5,912.1	5,400.0	5,389.2	55.9	13.2	48.84	338.4	-216.5	3,279.4	3,224.6	54.83	59.806	
8,400.0	5,912.0	5,400.0	5,389.2	57.7	13.2	48.84	338.4	-216.5	3,376.5	3,320.2	56.37	59.896	
8,500.0	5,912.0	5,400.0	5,389.2	59.5	13.2	48.84	338.4	-216.5	3,473.8	3,415.9	57.92	59.980	
8,600.0	5,912.0	5,400.0	5,389.2	61.4	13.2	48.84	338.4	-216.5	3,571.2	3,511.8	59.46	60.059	
8,700.0	5,912.0	5,400.0	5,389.2	63.3	13.2	48.84	338.4	-216.5	3,668.8	3,607.8	61.01	60.135	
8,800.0	5,912.0	5,400.0	5,389.2	65.1	13.2	48.84	338.4	-216.5	3,766.5	3,703.9	62.56	60.207	
8,900.0	5,912.0	5,400.0	5,389.2	67.0	13.2	48.84	338.4	-216.5	3,864.3	3,800.2	64.11	60.275	
9,000.0	5,912.0	5,377.6	5,367.1	68.9	13.1	47.57	335.1	-214.6	3,961.7	3,897.2	64.52	61.404	
9,100.0	5,912.0	5,376.1	5,365.6	70.7	13.1	47.49	334.9	-214.5	4,059.6	3,993.7	65.97	61.537	
9,200.0	5,912.0	5,374.6	5,364.1	72.6	13.1	47.41	334.7	-214.4	4,157.7	4,090.3	67.42	61.664	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,373.2	5,362.7	74.5	13.1	47.33	334.5	-214.3	4,255.8	4,186.9	68.88	61.785	
9,400.0	5,912.0	5,350.0	5,339.7	76.4	13.0	46.09	332.2	-213.0	4,354.5	4,285.3	69.17	62.954	
9,500.0	5,912.0	5,350.0	5,339.7	78.2	13.0	46.09	332.2	-213.0	4,452.7	4,382.0	70.68	62.999	
9,600.0	5,912.0	5,350.0	5,339.7	80.1	13.0	46.09	332.2	-213.0	4,551.0	4,478.8	72.19	63.043	
9,700.0	5,912.0	5,350.0	5,339.7	82.0	13.0	46.09	332.2	-213.0	4,649.4	4,575.7	73.70	63.085	
9,800.0	5,912.0	5,350.0	5,339.7	83.9	13.0	46.09	332.2	-213.0	4,747.8	4,672.6	75.21	63.125	
9,900.0	5,912.0	5,350.0	5,339.7	85.8	13.0	46.09	332.2	-213.0	4,846.4	4,769.6	76.73	63.164	
10,000.0	5,912.0	5,350.0	5,339.7	87.7	13.0	46.09	332.2	-213.0	4,944.9	4,866.7	78.24	63.201	
10,100.0	5,912.0	5,350.0	5,339.7	89.6	13.0	46.09	332.2	-213.0	5,043.5	4,963.8	79.76	63.237	
10,200.0	5,912.0	5,350.0	5,339.7	91.5	13.0	46.09	332.2	-213.0	5,142.2	5,061.0	81.27	63.272	
10,300.0	5,912.0	5,350.0	5,339.7	93.4	13.0	46.09	332.2	-213.0	5,241.0	5,158.2	82.79	63.305	
10,400.0	5,912.0	5,350.0	5,339.7	95.3	13.0	46.09	332.2	-213.0	5,339.7	5,255.4	84.31	63.337	
10,500.0	5,912.0	5,350.0	5,339.7	97.1	13.0	46.09	332.2	-213.0	5,438.6	5,352.7	85.82	63.369	
10,600.0	5,912.0	5,350.0	5,339.7	99.0	13.0	46.09	332.2	-213.0	5,537.4	5,450.1	87.34	63.399	
10,700.0	5,912.0	5,350.0	5,339.7	100.9	13.0	46.09	332.2	-213.0	5,636.3	5,547.5	88.86	63.428	
10,800.0	5,912.0	5,350.0	5,339.7	102.8	13.0	46.09	332.2	-213.0	5,735.3	5,644.9	90.38	63.457	
10,900.0	5,912.0	5,350.0	5,339.7	104.7	13.0	46.09	332.2	-213.0	5,834.2	5,742.3	91.90	63.484	
11,000.0	5,912.0	5,350.0	5,339.7	106.6	13.0	46.09	332.2	-213.0	5,933.2	5,839.8	93.42	63.511	
11,100.0	5,912.0	5,350.0	5,339.7	108.5	13.0	46.09	332.2	-213.0	6,032.3	5,937.3	94.94	63.537	
11,200.0	5,912.0	5,350.0	5,339.7	110.4	13.0	46.09	332.2	-213.0	6,131.4	6,034.9	96.46	63.562	
11,300.0	5,912.0	5,350.0	5,339.7	112.3	13.0	46.09	332.2	-213.0	6,230.5	6,132.5	97.98	63.586	
11,400.0	5,912.0	5,350.0	5,339.7	114.2	13.0	46.09	332.2	-213.0	6,329.6	6,230.1	99.51	63.610	
11,500.0	5,912.0	5,350.0	5,339.7	116.2	13.0	46.09	332.2	-213.0	6,428.8	6,327.7	101.03	63.633	
11,600.0	5,912.0	5,350.0	5,339.7	118.1	13.0	46.09	332.2	-213.0	6,527.9	6,425.4	102.55	63.655	
11,700.0	5,912.0	5,350.0	5,339.7	120.0	13.0	46.09	332.2	-213.0	6,627.2	6,523.1	104.07	63.677	
11,800.0	5,912.0	5,350.0	5,339.7	121.9	13.0	46.09	332.2	-213.0	6,726.4	6,620.8	105.60	63.698	
11,900.0	5,912.0	5,350.0	5,339.7	123.8	13.0	46.09	332.2	-213.0	6,825.6	6,718.5	107.12	63.719	
12,000.0	5,912.0	5,350.0	5,339.7	125.7	13.0	46.09	332.2	-213.0	6,924.9	6,816.3	108.65	63.739	
12,100.0	5,912.0	5,350.0	5,339.7	127.6	13.0	46.09	332.2	-213.0	7,024.2	6,914.1	110.17	63.758	
12,200.0	5,912.0	5,350.0	5,339.7	129.5	13.0	46.09	332.2	-213.0	7,123.5	7,011.8	111.69	63.777	
12,300.0	5,912.0	5,350.0	5,339.7	131.4	13.0	46.09	332.2	-213.0	7,222.9	7,109.7	113.22	63.796	
12,400.0	5,912.0	5,350.0	5,339.7	133.3	13.0	46.09	332.2	-213.0	7,322.2	7,207.5	114.74	63.814	
12,500.0	5,912.0	5,350.0	5,339.7	135.2	13.0	46.09	332.2	-213.0	7,421.6	7,305.3	116.27	63.831	
12,600.0	5,912.0	5,350.0	5,339.7	137.1	13.0	46.09	332.2	-213.0	7,521.0	7,403.2	117.79	63.849	
12,700.0	5,912.0	5,350.0	5,339.7	139.0	13.0	46.09	332.2	-213.0	7,620.4	7,501.1	119.32	63.865	
12,800.0	5,912.0	5,343.9	5,333.6	140.9	13.0	45.77	331.7	-212.7	7,719.8	7,599.5	120.32	64.163	
12,900.0	5,912.0	5,343.4	5,333.1	142.9	13.0	45.75	331.7	-212.7	7,819.2	7,697.4	121.79	64.201	
13,000.0	5,912.0	5,337.0	5,326.8	144.8	13.0	45.42	331.3	-212.4	7,918.7	7,795.9	122.75	64.509	
13,100.0	5,912.0	5,337.0	5,326.8	146.7	13.0	45.42	331.3	-212.4	8,018.1	7,893.9	124.27	64.524	
13,200.0	5,912.0	5,337.0	5,326.8	148.6	13.0	45.42	331.3	-212.4	8,117.6	7,991.8	125.78	64.539	
13,300.0	5,912.0	5,337.0	5,326.8	150.5	13.0	45.42	331.3	-212.4	8,217.1	8,089.8	127.29	64.553	
13,400.0	5,912.0	5,337.0	5,326.8	152.4	13.0	45.42	331.3	-212.4	8,316.6	8,187.8	128.81	64.567	
13,500.0	5,912.0	5,337.0	5,326.8	154.3	13.0	45.42	331.3	-212.4	8,416.1	8,285.7	130.32	64.580	
13,600.0	5,912.0	5,337.0	5,326.8	156.2	13.0	45.42	331.3	-212.4	8,515.6	8,383.7	131.83	64.593	
13,695.8	5,912.0	5,337.0	5,326.8	157.7	13.0	45.42	331.3	-212.4	8,610.9	8,477.9	132.98	64.755	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-98.4	98.4				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-98.4	98.4	98.2	0.19	525.986	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-98.4	98.4	97.7	0.64	154.527	
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-98.4	98.4	97.3	1.09	90.567	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-98.4	98.4	96.8	1.54	64.055	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-98.4	98.4	96.4	1.99	49.549	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-98.4	98.4	95.9	2.43	40.401	
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-98.4	98.4	95.5	2.88	34.104	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-98.4	98.4	95.0	3.33	29.505	CC, ES
900.0	900.0	899.0	899.0	1.9	1.9	-89.04	1.7	-98.8	98.8	95.1	3.78	26.147	
1,000.0	1,000.0	997.8	997.7	2.1	2.1	-86.24	6.6	-100.2	100.4	96.2	4.23	23.754	
1,100.0	1,100.0	1,097.4	1,097.0	2.3	2.3	117.61	13.3	-102.1	103.8	99.1	4.65	22.314	
1,200.0	1,199.8	1,196.7	1,196.0	2.5	2.6	123.24	19.9	-104.0	109.6	104.5	5.06	21.672	
1,300.0	1,299.6	1,295.7	1,294.8	2.7	2.8	129.00	26.6	-105.8	117.5	112.0	5.47	21.464	
1,400.0	1,399.4	1,394.7	1,393.6	2.9	3.1	134.01	33.2	-107.7	126.4	120.5	5.90	21.433	SF
1,500.0	1,499.1	1,493.8	1,492.4	3.1	3.3	138.33	39.9	-109.5	136.2	129.9	6.33	21.523	
1,600.0	1,598.9	1,592.8	1,591.2	3.3	3.5	142.06	46.5	-111.4	146.6	139.9	6.76	21.690	
1,700.0	1,698.6	1,691.8	1,690.0	3.5	3.8	145.29	53.2	-113.3	157.6	150.4	7.20	21.905	
1,800.0	1,798.4	1,790.9	1,788.8	3.8	4.0	148.09	59.9	-115.1	169.0	161.4	7.63	22.147	
1,900.0	1,898.1	1,889.9	1,887.6	4.0	4.3	150.54	66.5	-117.0	180.8	172.7	8.07	22.402	
2,000.0	1,997.9	1,988.9	1,986.3	4.2	4.5	152.68	73.2	-118.9	192.8	184.3	8.51	22.662	
2,100.0	2,097.6	2,087.9	2,085.1	4.5	4.8	154.57	79.8	-120.7	205.1	196.2	8.95	22.920	
2,200.0	2,197.4	2,187.0	2,183.9	4.7	5.0	156.25	86.5	-122.6	217.6	208.2	9.39	23.172	
2,300.0	2,297.2	2,286.0	2,282.7	5.0	5.3	157.75	93.1	-124.5	230.2	220.4	9.83	23.416	
2,400.0	2,396.9	2,385.0	2,381.5	5.2	5.5	159.08	99.8	-126.3	243.0	232.7	10.28	23.650	
2,500.0	2,496.7	2,484.0	2,480.3	5.5	5.8	160.29	106.4	-128.2	255.9	245.2	10.72	23.874	
2,600.0	2,596.4	2,583.1	2,579.1	5.7	6.0	161.38	113.1	-130.1	268.9	257.7	11.16	24.088	
2,700.0	2,696.2	2,682.1	2,677.8	6.0	6.3	162.37	119.7	-131.9	282.0	270.4	11.61	24.292	
2,800.0	2,795.9	2,781.1	2,776.6	6.2	6.5	163.27	126.4	-133.8	295.2	283.1	12.05	24.486	
2,900.0	2,895.7	2,880.2	2,875.4	6.5	6.8	164.09	133.0	-135.7	308.4	295.9	12.50	24.669	
3,000.0	2,995.5	2,979.2	2,974.2	6.7	7.0	164.85	139.7	-137.5	321.7	308.7	12.95	24.844	
3,100.0	3,095.2	3,078.2	3,073.0	7.0	7.3	165.54	146.3	-139.4	335.0	321.6	13.39	25.010	
3,200.0	3,195.0	3,177.2	3,171.8	7.3	7.5	166.19	153.0	-141.3	348.4	334.5	13.84	25.167	
3,300.0	3,294.7	3,276.3	3,270.6	7.5	7.8	166.78	159.6	-143.1	361.8	347.5	14.29	25.317	
3,400.0	3,394.5	3,375.3	3,369.3	7.8	8.0	167.33	166.3	-145.0	375.3	360.5	14.74	25.459	
3,500.0	3,494.2	3,474.3	3,468.1	8.0	8.3	167.85	172.9	-146.9	388.8	373.6	15.19	25.594	
3,600.0	3,594.0	3,573.4	3,566.9	8.3	8.5	168.33	179.6	-148.7	402.3	386.6	15.64	25.723	
3,700.0	3,693.7	3,672.4	3,665.7	8.5	8.8	168.78	186.2	-150.6	415.8	399.7	16.09	25.846	
3,800.0	3,793.5	3,771.4	3,764.5	8.8	9.0	169.20	192.9	-152.5	429.4	412.8	16.54	25.963	
3,900.0	3,893.3	3,870.4	3,863.3	9.1	9.3	169.59	199.5	-154.3	443.0	426.0	16.99	26.075	
4,000.0	3,993.0	3,969.5	3,962.1	9.3	9.6	169.96	206.2	-156.2	456.6	439.1	17.44	26.181	
4,100.0	4,092.8	4,068.5	4,060.9	9.6	9.8	170.31	212.8	-158.1	470.2	452.3	17.89	26.283	
4,200.0	4,192.5	4,167.5	4,159.6	9.8	10.1	170.64	219.5	-159.9	483.8	465.5	18.34	26.380	
4,300.0	4,292.3	4,266.5	4,258.4	10.1	10.3	170.95	226.1	-161.8	497.5	478.7	18.79	26.474	
4,400.0	4,392.0	4,365.6	4,357.2	10.4	10.6	171.25	232.8	-163.7	511.2	491.9	19.24	26.563	
4,500.0	4,491.8	4,464.6	4,456.0	10.6	10.8	171.53	239.4	-165.5	524.8	505.2	19.70	26.648	
4,600.0	4,591.6	4,563.6	4,554.8	10.9	11.1	171.79	246.1	-167.4	538.5	518.4	20.15	26.730	
4,700.0	4,691.3	4,662.7	4,653.6	11.2	11.3	172.05	252.7	-169.3	552.2	531.6	20.60	26.809	
4,800.0	4,791.1	4,761.7	4,752.4	11.4	11.6	172.29	259.4	-171.1	566.0	544.9	21.05	26.885	
4,900.0	4,890.8	4,860.7	4,851.1	11.7	11.8	172.52	266.0	-173.0	579.7	558.2	21.50	26.958	
5,000.0	4,990.6	4,959.7	4,949.9	11.9	12.1	172.73	272.7	-174.9	593.4	571.5	21.96	27.027	
5,100.0	5,090.3	5,058.8	5,048.7	12.2	12.3	172.94	279.3	-176.7	607.2	584.7	22.41	27.095	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,157.8	5,147.5	12.5	12.6	173.14	286.0	-178.6	620.9	598.0	22.86	27.160	
5,300.0	5,289.9	5,256.8	5,246.3	12.7	12.8	173.33	292.6	-180.4	634.7	611.3	23.31	27.222	
5,400.0	5,389.6	5,355.9	5,345.1	13.0	13.1	173.51	299.3	-182.3	648.4	624.7	23.77	27.282	
5,438.0	5,427.5	5,393.5	5,382.6	13.1	13.2	173.58	301.8	-183.0	653.7	629.7	23.94	27.305	
5,450.0	5,439.5	5,405.3	5,394.5	13.1	13.2	173.58	302.6	-183.2	655.4	631.5	23.95	27.364	
5,500.0	5,489.0	5,445.2	5,434.2	13.3	13.3	173.55	305.3	-184.0	665.9	642.0	23.87	27.902	
5,550.0	5,537.5	5,465.9	5,454.8	13.5	13.4	173.41	307.4	-184.6	682.5	658.9	23.54	28.985	
5,600.0	5,584.8	5,485.1	5,473.8	13.7	13.5	173.19	310.0	-185.3	705.1	682.1	23.03	30.618	
5,650.0	5,630.2	5,500.0	5,488.5	14.0	13.5	172.85	312.5	-186.0	733.4	711.1	22.32	32.852	
5,700.0	5,673.5	5,517.9	5,506.0	14.4	13.6	172.40	316.0	-187.0	766.6	745.2	21.46	35.725	
5,750.0	5,714.1	5,531.0	5,518.7	14.7	13.6	171.70	319.0	-187.8	804.2	783.7	20.44	39.342	
5,800.0	5,751.8	5,550.0	5,537.1	15.2	13.7	170.83	323.8	-189.2	845.4	826.1	19.32	43.759	
5,850.0	5,786.2	5,550.0	5,537.1	15.7	13.7	169.03	323.8	-189.2	889.5	871.3	18.17	48.960	
5,900.0	5,816.9	5,550.0	5,537.1	16.2	13.7	166.00	323.8	-189.2	936.0	918.8	17.23	54.334	
5,950.0	5,843.7	5,550.0	5,537.1	16.8	13.7	160.05	323.8	-189.2	984.2	967.0	17.26	57.021	
6,000.0	5,866.4	5,550.0	5,537.1	17.4	13.7	144.62	323.8	-189.2	1,033.5	1,012.3	21.26	48.605	
6,050.0	5,884.6	5,550.0	5,537.1	18.1	13.7	88.88	323.8	-189.2	1,083.3	1,050.9	32.48	33.358	
6,100.0	5,898.3	5,550.0	5,537.1	18.8	13.7	33.43	323.8	-189.2	1,133.2	1,113.3	19.91	56.921	
6,150.0	5,907.4	5,550.0	5,537.1	19.6	13.7	18.08	323.8	-189.2	1,182.6	1,169.4	13.21	89.542	
6,200.0	5,911.7	5,550.0	5,537.1	20.4	13.7	12.13	323.8	-189.2	1,231.2	1,220.5	10.65	115.621	
6,219.8	5,912.1	5,550.0	5,537.1	20.7	13.7	10.71	323.8	-189.2	1,250.1	1,240.0	10.12	123.560	
6,300.0	5,912.1	5,550.0	5,537.1	21.9	13.7	18.09	323.8	-189.2	1,326.6	1,313.0	13.59	97.635	
6,400.0	5,912.1	5,550.0	5,537.1	23.3	13.7	27.02	323.8	-189.2	1,422.1	1,403.4	18.70	76.049	
6,500.0	5,912.1	5,550.0	5,537.1	24.8	13.7	35.21	323.8	-189.2	1,517.6	1,493.8	23.80	63.775	
6,600.0	5,912.1	5,530.6	5,518.4	26.3	13.6	40.97	318.9	-187.8	1,612.2	1,584.6	27.61	58.395	
6,700.0	5,912.1	5,524.9	5,512.9	27.9	13.6	46.70	317.6	-187.4	1,706.5	1,675.2	31.38	54.387	
6,800.0	5,912.1	5,519.8	5,507.8	29.4	13.6	51.57	316.4	-187.1	1,800.2	1,765.6	34.61	52.015	
6,866.6	5,912.1	5,500.0	5,488.5	30.4	13.5	53.27	312.5	-186.0	1,862.4	1,826.4	35.95	51.804	
6,900.0	5,912.1	5,500.0	5,488.5	31.0	13.5	53.27	312.5	-186.0	1,893.4	1,856.9	36.43	51.968	
7,000.0	5,912.1	5,500.0	5,488.5	32.6	13.5	53.27	312.5	-186.0	1,986.4	1,948.5	37.93	52.376	
7,100.0	5,912.1	5,500.0	5,488.5	34.3	13.5	53.27	312.5	-186.0	2,080.2	2,040.7	39.44	52.743	
7,200.0	5,912.1	5,500.0	5,488.5	36.1	13.5	53.27	312.5	-186.0	2,174.5	2,133.5	40.97	53.076	
7,300.0	5,912.1	5,500.0	5,488.5	37.8	13.5	53.27	312.5	-186.0	2,269.2	2,226.7	42.51	53.379	
7,400.0	5,912.1	5,500.0	5,488.5	39.6	13.5	53.27	312.5	-186.0	2,364.5	2,320.4	44.07	53.656	
7,500.0	5,912.1	5,500.0	5,488.5	41.3	13.5	53.27	312.5	-186.0	2,460.0	2,414.4	45.63	53.911	
7,600.0	5,912.1	5,500.0	5,488.5	43.1	13.5	53.27	312.5	-186.0	2,556.0	2,508.8	47.21	54.145	
7,700.0	5,912.1	5,500.0	5,488.5	44.9	13.5	53.27	312.5	-186.0	2,652.2	2,603.4	48.79	54.361	
7,800.0	5,912.1	5,500.0	5,488.5	46.7	13.5	53.27	312.5	-186.0	2,748.7	2,698.3	50.38	54.562	
7,900.0	5,912.1	5,500.0	5,488.5	48.5	13.5	53.27	312.5	-186.0	2,845.4	2,793.5	51.97	54.749	
8,000.0	5,912.1	5,500.0	5,488.5	50.3	13.5	53.27	312.5	-186.0	2,942.4	2,888.8	53.57	54.923	
8,100.0	5,912.1	5,478.4	5,467.2	52.2	13.4	51.87	309.0	-185.0	3,039.0	2,984.8	54.21	56.061	
8,200.0	5,912.1	5,476.4	5,465.2	54.0	13.4	51.74	308.7	-185.0	3,136.3	3,080.6	55.70	56.304	
8,300.0	5,912.1	5,474.5	5,463.3	55.9	13.4	51.62	308.5	-184.9	3,233.7	3,176.5	57.20	56.532	
8,400.0	5,912.0	5,472.7	5,461.5	57.7	13.4	51.50	308.2	-184.8	3,331.2	3,272.5	58.70	56.748	
8,500.0	5,912.0	5,450.0	5,439.0	59.5	13.3	50.10	305.7	-184.1	3,429.4	3,370.2	59.19	57.939	
8,600.0	5,912.0	5,450.0	5,439.0	61.4	13.3	50.10	305.7	-184.1	3,527.1	3,466.3	60.76	58.052	
8,700.0	5,912.0	5,450.0	5,439.0	63.3	13.3	50.10	305.7	-184.1	3,624.9	3,562.6	62.33	58.159	
8,800.0	5,912.0	5,450.0	5,439.0	65.1	13.3	50.10	305.7	-184.1	3,722.9	3,659.0	63.90	58.261	
8,900.0	5,912.0	5,450.0	5,439.0	67.0	13.3	50.10	305.7	-184.1	3,821.0	3,755.5	65.48	58.357	
9,000.0	5,912.0	5,450.0	5,439.0	68.9	13.3	50.10	305.7	-184.1	3,919.1	3,852.1	67.05	58.449	
9,100.0	5,912.0	5,450.0	5,439.0	70.7	13.3	50.10	305.7	-184.1	4,017.4	3,948.8	68.63	58.536	
9,200.0	5,912.0	5,450.0	5,439.0	72.6	13.3	50.10	305.7	-184.1	4,115.7	4,045.5	70.21	58.619	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,450.0	5,439.0	74.5	13.3	50.10	305.7	-184.1	4,214.2	4,142.4	71.79	58.699	
9,400.0	5,912.0	5,450.0	5,439.0	76.4	13.3	50.10	305.7	-184.1	4,312.7	4,239.3	73.38	58.775	
9,500.0	5,912.0	5,450.0	5,439.0	78.2	13.3	50.10	305.7	-184.1	4,411.2	4,336.3	74.96	58.847	
9,600.0	5,912.0	5,450.0	5,439.0	80.1	13.3	50.10	305.7	-184.1	4,509.8	4,433.3	76.55	58.917	
9,700.0	5,912.0	5,450.0	5,439.0	82.0	13.3	50.10	305.7	-184.1	4,608.5	4,530.4	78.13	58.983	
9,800.0	5,912.0	5,450.0	5,439.0	83.9	13.3	50.10	305.7	-184.1	4,707.3	4,627.5	79.72	59.047	
9,900.0	5,912.0	5,450.0	5,439.0	85.8	13.3	50.10	305.7	-184.1	4,806.1	4,724.7	81.31	59.109	
10,000.0	5,912.0	5,450.0	5,439.0	87.7	13.3	50.10	305.7	-184.1	4,904.9	4,822.0	82.90	59.168	
10,100.0	5,912.0	5,450.0	5,439.0	89.6	13.3	50.10	305.7	-184.1	5,003.8	4,919.3	84.49	59.224	
10,200.0	5,912.0	5,450.0	5,439.0	91.5	13.3	50.10	305.7	-184.1	5,102.7	5,016.6	86.08	59.279	
10,300.0	5,912.0	5,450.0	5,439.0	93.4	13.3	50.10	305.7	-184.1	5,201.7	5,114.0	87.67	59.331	
10,400.0	5,912.0	5,450.0	5,439.0	95.3	13.3	50.10	305.7	-184.1	5,300.7	5,211.4	89.26	59.382	
10,500.0	5,912.0	5,450.0	5,439.0	97.1	13.3	50.10	305.7	-184.1	5,399.7	5,308.9	90.86	59.431	
10,600.0	5,912.0	5,450.0	5,439.0	99.0	13.3	50.10	305.7	-184.1	5,498.8	5,406.4	92.45	59.478	
10,700.0	5,912.0	5,450.0	5,439.0	100.9	13.3	50.10	305.7	-184.1	5,597.9	5,503.9	94.05	59.523	
10,800.0	5,912.0	5,450.0	5,439.0	102.8	13.3	50.10	305.7	-184.1	5,697.1	5,601.4	95.64	59.567	
10,900.0	5,912.0	5,450.0	5,439.0	104.7	13.3	50.10	305.7	-184.1	5,796.2	5,699.0	97.24	59.610	
11,000.0	5,912.0	5,450.0	5,439.0	106.6	13.3	50.10	305.7	-184.1	5,895.4	5,796.6	98.83	59.651	
11,100.0	5,912.0	5,444.0	5,433.0	108.5	13.3	49.73	305.2	-184.0	5,994.6	5,894.7	99.97	59.964	
11,200.0	5,912.0	5,438.0	5,427.0	110.4	13.3	49.38	304.8	-183.9	6,093.9	5,992.8	101.10	60.276	
11,300.0	5,912.0	5,438.0	5,427.0	112.3	13.3	49.38	304.8	-183.9	6,193.2	6,090.5	102.68	60.313	
11,400.0	5,912.0	5,438.0	5,427.0	114.2	13.3	49.38	304.8	-183.9	6,292.5	6,188.2	104.27	60.348	
11,500.0	5,912.0	5,438.0	5,427.0	116.2	13.3	49.38	304.8	-183.9	6,391.8	6,285.9	105.85	60.383	
11,600.0	5,912.0	5,438.0	5,427.0	118.1	13.3	49.38	304.8	-183.9	6,491.1	6,383.7	107.44	60.417	
11,700.0	5,912.0	5,438.0	5,427.0	120.0	13.3	49.38	304.8	-183.9	6,590.4	6,481.4	109.02	60.449	
11,800.0	5,912.0	5,438.0	5,427.0	121.9	13.3	49.38	304.8	-183.9	6,689.8	6,579.2	110.61	60.481	
11,900.0	5,912.0	5,438.0	5,427.0	123.8	13.3	49.38	304.8	-183.9	6,789.2	6,677.0	112.20	60.512	
12,000.0	5,912.0	5,438.0	5,427.0	125.7	13.3	49.38	304.8	-183.9	6,888.6	6,774.8	113.78	60.542	
12,100.0	5,912.0	5,438.0	5,427.0	127.6	13.3	49.38	304.8	-183.9	6,988.0	6,872.7	115.37	60.571	
12,200.0	5,912.0	5,437.8	5,426.8	129.5	13.3	49.36	304.8	-183.9	7,087.5	6,970.5	116.94	60.610	
12,300.0	5,912.0	5,431.1	5,420.1	131.4	13.3	48.97	304.3	-183.7	7,186.9	7,069.0	117.93	60.943	
12,400.0	5,912.0	5,424.3	5,413.4	133.3	13.3	48.58	303.9	-183.6	7,286.4	7,167.5	118.91	61.277	
12,500.0	5,912.0	5,417.6	5,406.7	135.2	13.3	48.19	303.4	-183.5	7,385.8	7,266.0	119.88	61.611	
12,600.0	5,912.0	5,410.9	5,400.0	137.1	13.2	47.81	303.0	-183.4	7,485.3	7,364.5	120.84	61.946	
12,700.0	5,912.0	5,404.2	5,393.3	139.0	13.2	47.43	302.5	-183.2	7,584.8	7,463.0	121.78	62.281	
12,800.0	5,912.0	5,397.5	5,386.6	140.9	13.2	47.06	302.1	-183.1	7,684.3	7,561.6	122.72	62.617	
12,900.0	5,912.0	5,390.8	5,379.9	142.9	13.2	46.69	301.6	-183.0	7,783.8	7,660.1	123.65	62.953	
13,000.0	5,912.0	5,384.0	5,373.2	144.8	13.2	46.33	301.2	-182.8	7,883.3	7,758.7	124.56	63.289	
13,100.0	5,912.0	5,377.3	5,366.5	146.7	13.2	45.97	300.7	-182.7	7,982.8	7,857.3	125.47	63.625	
13,200.0	5,912.0	5,370.6	5,359.8	148.6	13.1	45.61	300.3	-182.6	8,082.3	7,956.0	126.36	63.961	
13,300.0	5,912.0	5,363.9	5,353.1	150.5	13.1	45.26	299.8	-182.5	8,181.8	8,054.6	127.25	64.298	
13,400.0	5,912.0	5,357.2	5,346.4	152.4	13.1	44.91	299.4	-182.3	8,281.4	8,153.3	128.13	64.635	
13,500.0	5,912.0	5,350.5	5,339.7	154.3	13.1	44.57	298.9	-182.2	8,380.9	8,251.9	128.99	64.972	
13,600.0	5,912.0	5,343.7	5,333.0	156.2	13.1	44.23	298.5	-182.1	8,480.5	8,350.6	129.85	65.309	
13,695.8	5,912.0	5,337.3	5,326.6	157.7	13.1	43.91	298.0	-182.0	8,575.8	8,445.5	130.36	65.786	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	74.9	0.0	74.9				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	74.9	0.0	74.9	74.7	0.19	400.571	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.64	117.682	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.09	68.973	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.54	48.781	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.99	37.735	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	74.9	0.0	74.9	72.5	2.43	30.768	
700.0	700.0	700.0	700.0	1.4	1.4	0.00	74.9	0.0	74.9	72.0	2.88	25.972	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	74.9	0.0	74.9	71.6	3.33	22.470	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	74.9	0.0	74.9	71.1	3.78	19.800	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	74.9	0.0	74.9	70.7	4.23	17.697	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-161.02	74.9	0.0	76.6	71.9	4.65	16.448	SF
1,200.0	1,199.8	1,197.0	1,197.0	2.5	2.6	-162.20	76.5	-0.1	83.2	78.2	5.05	16.481	
1,300.0	1,299.6	1,293.3	1,293.2	2.7	2.8	-163.58	81.4	-0.5	94.9	89.5	5.46	17.398	
1,400.0	1,399.4	1,392.2	1,391.8	2.9	3.0	-164.69	88.3	-1.0	108.6	102.7	5.87	18.490	
1,500.0	1,499.1	1,491.2	1,490.6	3.1	3.2	-165.56	95.2	-1.5	122.3	116.0	6.29	19.436	
1,600.0	1,598.9	1,590.3	1,589.4	3.3	3.5	-166.25	102.1	-2.0	136.0	129.3	6.71	20.253	
1,700.0	1,698.6	1,689.3	1,688.2	3.5	3.7	-166.82	109.0	-2.5	149.7	142.6	7.14	20.964	
1,800.0	1,798.4	1,788.3	1,787.0	3.8	3.9	-167.29	115.8	-3.0	163.4	155.9	7.57	21.586	
1,900.0	1,898.1	1,887.4	1,885.8	4.0	4.2	-167.68	122.7	-3.5	177.2	169.2	8.01	22.134	
2,000.0	1,997.9	1,986.4	1,984.6	4.2	4.4	-168.02	129.6	-4.0	190.9	182.5	8.44	22.620	
2,100.0	2,097.6	2,085.5	2,083.4	4.5	4.7	-168.32	136.5	-4.5	204.7	195.8	8.88	23.054	
2,200.0	2,197.4	2,184.5	2,182.2	4.7	4.9	-168.57	143.4	-5.1	218.5	209.1	9.32	23.443	
2,300.0	2,297.2	2,283.6	2,281.0	5.0	5.1	-168.80	150.3	-5.6	232.2	222.5	9.76	23.793	
2,400.0	2,396.9	2,382.6	2,379.8	5.2	5.4	-169.00	157.2	-6.1	246.0	235.8	10.20	24.110	
2,500.0	2,496.7	2,481.6	2,478.6	5.5	5.6	-169.18	164.1	-6.6	259.8	249.1	10.65	24.399	
2,600.0	2,596.4	2,580.7	2,577.4	5.7	5.9	-169.34	171.0	-7.1	273.5	262.5	11.09	24.662	
2,700.0	2,696.2	2,679.7	2,676.2	6.0	6.1	-169.49	177.9	-7.6	287.3	275.8	11.54	24.903	
2,800.0	2,795.9	2,778.8	2,775.0	6.2	6.4	-169.62	184.7	-8.1	301.1	289.1	11.98	25.124	
2,900.0	2,895.7	2,877.8	2,873.8	6.5	6.6	-169.74	191.6	-8.6	314.9	302.5	12.43	25.328	
3,000.0	2,995.5	2,976.9	2,972.6	6.7	6.9	-169.86	198.5	-9.1	328.7	315.8	12.88	25.517	
3,100.0	3,095.2	3,075.9	3,071.4	7.0	7.1	-169.96	205.4	-9.6	342.5	329.1	13.33	25.692	
3,200.0	3,195.0	3,175.0	3,170.2	7.3	7.4	-170.05	212.3	-10.1	356.2	342.5	13.78	25.854	
3,300.0	3,294.7	3,274.0	3,269.0	7.5	7.6	-170.14	219.2	-10.6	370.0	355.8	14.23	26.006	
3,400.0	3,394.5	3,373.0	3,367.8	7.8	7.9	-170.22	226.1	-11.2	383.8	369.1	14.68	26.148	
3,500.0	3,494.2	3,472.1	3,466.6	8.0	8.1	-170.30	233.0	-11.7	397.6	382.5	15.13	26.280	
3,600.0	3,594.0	3,571.1	3,565.4	8.3	8.4	-170.37	239.9	-12.2	411.4	395.8	15.58	26.404	
3,700.0	3,693.7	3,670.2	3,664.2	8.5	8.6	-170.43	246.8	-12.7	425.2	409.1	16.03	26.521	
3,800.0	3,793.5	3,769.2	3,763.0	8.8	8.9	-170.49	253.6	-13.2	439.0	422.5	16.48	26.631	
3,900.0	3,893.3	3,868.3	3,861.8	9.1	9.1	-170.55	260.5	-13.7	452.7	435.8	16.93	26.734	
4,000.0	3,993.0	3,967.3	3,960.6	9.3	9.4	-170.60	267.4	-14.2	466.5	449.1	17.39	26.832	
4,100.0	4,092.8	4,066.3	4,059.4	9.6	9.6	-170.66	274.3	-14.7	480.3	462.5	17.84	26.925	
4,200.0	4,192.5	4,165.4	4,158.2	9.8	9.9	-170.70	281.2	-15.2	494.1	475.8	18.29	27.013	
4,300.0	4,292.3	4,264.4	4,257.0	10.1	10.1	-170.75	288.1	-15.7	507.9	489.2	18.74	27.096	
4,400.0	4,392.0	4,363.5	4,355.9	10.4	10.4	-170.79	295.0	-16.2	521.7	502.5	19.20	27.175	
4,500.0	4,491.8	4,462.5	4,454.7	10.6	10.6	-170.84	301.9	-16.7	535.5	515.8	19.65	27.250	
4,600.0	4,591.6	4,561.6	4,553.5	10.9	10.9	-170.87	308.8	-17.3	549.3	529.2	20.10	27.321	
4,700.0	4,691.3	4,660.6	4,652.3	11.2	11.2	-170.91	315.7	-17.8	563.1	542.5	20.56	27.389	
4,800.0	4,791.1	4,759.7	4,751.1	11.4	11.4	-170.95	322.5	-18.3	576.9	555.8	21.01	27.454	
4,900.0	4,890.8	4,858.7	4,849.9	11.7	11.7	-170.98	329.4	-18.8	590.7	569.2	21.47	27.517	
5,000.0	4,990.6	4,957.7	4,948.7	11.9	11.9	-171.01	336.3	-19.3	604.4	582.5	21.92	27.576	
5,100.0	5,090.3	5,056.8	5,047.5	12.2	12.2	-171.04	343.2	-19.8	618.2	595.9	22.37	27.633	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,155.8	5,146.3	12.5	12.4	-171.07	350.1	-20.3	632.0	609.2	22.83	27.687	
5,300.0	5,289.9	5,254.9	5,245.1	12.7	12.7	-171.10	357.0	-20.8	645.8	622.5	23.28	27.739	
5,400.0	5,389.6	5,343.9	5,333.9	13.0	12.9	-171.12	363.3	-21.3	659.7	636.0	23.71	27.821	
5,438.0	5,427.5	5,350.0	5,340.0	13.1	12.9	-171.13	363.8	-21.3	666.3	642.5	23.82	27.980	
5,450.0	5,439.5	5,365.6	5,355.5	13.1	13.0	-171.08	365.5	-21.4	668.6	644.7	23.84	28.041	
5,500.0	5,489.0	5,400.0	5,389.4	13.3	13.1	-170.85	371.0	-21.8	682.9	659.2	23.76	28.744	
5,550.0	5,537.5	5,400.0	5,389.4	13.5	13.1	-170.46	371.0	-21.8	703.0	679.6	23.40	30.039	
5,600.0	5,584.8	5,424.3	5,413.1	13.7	13.2	-169.95	376.2	-22.2	729.0	706.1	22.93	31.799	
5,650.0	5,630.2	5,450.0	5,438.0	14.0	13.3	-169.28	382.9	-22.7	760.5	738.2	22.28	34.131	
5,700.0	5,673.5	5,450.0	5,438.0	14.4	13.3	-168.18	382.9	-22.7	796.2	774.7	21.43	37.146	
5,750.0	5,714.1	5,466.2	5,453.4	14.7	13.3	-166.79	387.7	-23.1	835.9	815.3	20.52	40.740	
5,800.0	5,751.8	5,475.9	5,462.5	15.2	13.4	-164.67	390.8	-23.3	878.8	859.2	19.58	44.886	
5,850.0	5,786.2	5,483.4	5,469.6	15.7	13.4	-161.35	393.4	-23.5	924.2	905.4	18.83	49.092	
5,900.0	5,816.9	5,500.0	5,485.1	16.2	13.5	-156.34	399.3	-23.9	971.8	953.1	18.66	52.081	
5,950.0	5,843.7	5,500.0	5,485.1	16.8	13.5	-145.19	399.3	-23.9	1,020.3	999.7	20.67	49.368	
6,000.0	5,866.4	5,500.0	5,485.1	17.4	13.5	-118.26	399.3	-23.9	1,069.8	1,042.1	27.68	38.643	
6,050.0	5,884.6	5,500.0	5,485.1	18.1	13.5	-67.62	399.3	-23.9	1,119.5	1,089.9	29.61	37.802	
6,100.0	5,898.3	5,500.0	5,485.1	18.8	13.5	-35.52	399.3	-23.9	1,169.1	1,148.4	20.62	56.705	
6,150.0	5,907.4	5,500.0	5,485.1	19.6	13.5	-22.44	399.3	-23.9	1,218.0	1,202.9	15.16	80.331	
6,200.0	5,911.7	5,500.0	5,485.1	20.4	13.5	-16.11	399.3	-23.9	1,266.1	1,253.8	12.32	102.794	
6,219.8	5,912.1	5,500.0	5,485.1	20.7	13.5	-14.46	399.3	-23.9	1,284.8	1,273.2	11.62	110.524	
6,300.0	5,912.1	5,477.2	5,463.9	21.9	13.4	-7.10	391.3	-23.3	1,359.9	1,350.3	9.51	143.011	
6,400.0	5,912.1	5,468.5	5,455.6	23.3	13.3	1.81	388.4	-23.1	1,454.5	1,445.5	9.03	161.146	
6,500.0	5,912.1	5,450.0	5,438.0	24.8	13.3	10.75	382.9	-22.7	1,549.8	1,538.2	11.61	133.500	
6,600.0	5,912.1	5,450.0	5,438.0	26.3	13.3	19.68	382.9	-22.7	1,644.9	1,628.8	16.10	102.199	
6,700.0	5,912.1	5,450.0	5,438.0	27.9	13.3	28.17	382.9	-22.7	1,740.1	1,718.7	21.40	81.321	
6,800.0	5,912.1	5,450.0	5,438.0	29.4	13.3	35.87	382.9	-22.7	1,835.0	1,808.6	26.47	69.325	
6,866.6	5,912.1	5,450.0	5,438.0	30.4	13.3	40.46	382.9	-22.7	1,898.0	1,868.5	29.52	64.290	
6,900.0	5,912.1	5,450.0	5,438.0	31.0	13.3	40.46	382.9	-22.7	1,929.6	1,899.7	29.93	64.461	
7,000.0	5,912.1	5,429.2	5,417.9	32.6	13.2	39.26	377.4	-22.3	2,024.0	1,993.5	30.47	66.425	
7,100.0	5,912.1	5,424.3	5,413.2	34.3	13.2	38.99	376.2	-22.2	2,119.1	2,087.6	31.56	67.139	
7,200.0	5,912.1	5,400.0	5,389.4	36.1	13.1	37.67	371.0	-21.8	2,215.1	2,183.1	31.96	69.311	
7,300.0	5,912.1	5,400.0	5,389.4	37.8	13.1	37.67	371.0	-21.8	2,310.7	2,277.5	33.22	69.558	
7,400.0	5,912.1	5,400.0	5,389.4	39.6	13.1	37.67	371.0	-21.8	2,406.7	2,372.2	34.49	69.779	
7,500.0	5,912.1	5,400.0	5,389.4	41.3	13.1	37.67	371.0	-21.8	2,503.0	2,467.3	35.77	69.976	
7,600.0	5,912.1	5,400.0	5,389.4	43.1	13.1	37.67	371.0	-21.8	2,599.6	2,562.6	37.06	70.153	
7,700.0	5,912.1	5,400.0	5,389.4	44.9	13.1	37.67	371.0	-21.8	2,696.5	2,658.1	38.35	70.313	
7,800.0	5,912.1	5,400.0	5,389.4	46.7	13.1	37.67	371.0	-21.8	2,793.5	2,753.9	39.65	70.458	
7,900.0	5,912.1	5,400.0	5,389.4	48.5	13.1	37.67	371.0	-21.8	2,890.8	2,849.8	40.95	70.591	
8,000.0	5,912.1	5,400.0	5,389.4	50.3	13.1	37.67	371.0	-21.8	2,988.2	2,946.0	42.26	70.712	
8,100.0	5,912.1	5,400.0	5,389.4	52.2	13.1	37.67	371.0	-21.8	3,085.8	3,042.3	43.57	70.824	
8,200.0	5,912.1	5,400.0	5,389.4	54.0	13.1	37.67	371.0	-21.8	3,183.6	3,138.7	44.89	70.927	
8,300.0	5,912.1	5,400.0	5,389.4	55.9	13.1	37.67	371.0	-21.8	3,281.5	3,235.3	46.20	71.022	
8,400.0	5,912.0	5,400.0	5,389.4	57.7	13.1	37.67	371.0	-21.8	3,379.5	3,332.0	47.52	71.111	
8,500.0	5,912.0	5,400.0	5,389.4	59.5	13.1	37.67	371.0	-21.8	3,477.6	3,428.8	48.85	71.193	
8,600.0	5,912.0	5,400.0	5,389.4	61.4	13.1	37.67	371.0	-21.8	3,575.9	3,525.7	50.17	71.270	
8,700.0	5,912.0	5,377.3	5,367.0	63.3	13.0	36.49	367.1	-21.6	3,673.6	3,623.3	50.36	72.951	
8,800.0	5,912.0	5,375.5	5,365.2	65.1	13.0	36.40	366.9	-21.5	3,772.0	3,720.4	51.57	73.140	
8,900.0	5,912.0	5,373.8	5,363.5	67.0	13.0	36.31	366.6	-21.5	3,870.4	3,817.6	52.79	73.318	
9,000.0	5,912.0	5,372.1	5,361.9	68.9	13.0	36.23	366.4	-21.5	3,968.8	3,914.8	54.01	73.487	
9,100.0	5,912.0	5,350.0	5,340.0	70.7	12.9	35.16	363.8	-21.3	4,067.8	4,013.7	54.16	75.102	
9,200.0	5,912.0	5,350.0	5,340.0	72.6	12.9	35.16	363.8	-21.3	4,166.4	4,110.9	55.45	75.142	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,350.0	5,340.0	74.5	12.9	35.16	363.8	-21.3	4,265.0	4,208.3	56.73	75.180	
9,400.0	5,912.0	5,350.0	5,340.0	76.4	12.9	35.16	363.8	-21.3	4,363.7	4,305.7	58.02	75.216	
9,500.0	5,912.0	5,350.0	5,340.0	78.2	12.9	35.16	363.8	-21.3	4,462.4	4,403.1	59.30	75.250	
9,600.0	5,912.0	5,350.0	5,340.0	80.1	12.9	35.16	363.8	-21.3	4,561.2	4,500.6	60.59	75.282	
9,700.0	5,912.0	5,350.0	5,340.0	82.0	12.9	35.16	363.8	-21.3	4,660.0	4,598.2	61.88	75.313	
9,800.0	5,912.0	5,350.0	5,340.0	83.9	12.9	35.16	363.8	-21.3	4,758.9	4,695.8	63.16	75.343	
9,900.0	5,912.0	5,350.0	5,340.0	85.8	12.9	35.16	363.8	-21.3	4,857.9	4,793.4	64.45	75.371	
10,000.0	5,912.0	5,350.0	5,340.0	87.7	12.9	35.16	363.8	-21.3	4,956.8	4,891.1	65.74	75.398	
10,100.0	5,912.0	5,350.0	5,340.0	89.6	12.9	35.16	363.8	-21.3	5,055.9	4,988.8	67.03	75.424	
10,200.0	5,912.0	5,350.0	5,340.0	91.5	12.9	35.16	363.8	-21.3	5,154.9	5,086.6	68.32	75.448	
10,300.0	5,912.0	5,350.0	5,340.0	93.4	12.9	35.16	363.8	-21.3	5,254.0	5,184.4	69.62	75.472	
10,400.0	5,912.0	5,350.0	5,340.0	95.3	12.9	35.16	363.8	-21.3	5,353.1	5,282.2	70.91	75.495	
10,500.0	5,912.0	5,350.0	5,340.0	97.1	12.9	35.16	363.8	-21.3	5,452.3	5,380.1	72.20	75.517	
10,600.0	5,912.0	5,350.0	5,340.0	99.0	12.9	35.16	363.8	-21.3	5,551.5	5,478.0	73.49	75.538	
10,700.0	5,912.0	5,350.0	5,340.0	100.9	12.9	35.16	363.8	-21.3	5,650.7	5,575.9	74.79	75.558	
10,800.0	5,912.0	5,350.0	5,340.0	102.8	12.9	35.16	363.8	-21.3	5,749.9	5,673.9	76.08	75.577	
10,900.0	5,912.0	5,350.0	5,340.0	104.7	12.9	35.16	363.8	-21.3	5,849.2	5,771.8	77.37	75.596	
11,000.0	5,912.0	5,350.0	5,340.0	106.6	12.9	35.16	363.8	-21.3	5,948.5	5,869.8	78.67	75.614	
11,100.0	5,912.0	5,350.0	5,340.0	108.5	12.9	35.16	363.8	-21.3	6,047.8	5,967.8	79.96	75.632	
11,200.0	5,912.0	5,350.0	5,340.0	110.4	12.9	35.16	363.8	-21.3	6,147.2	6,065.9	81.26	75.649	
11,300.0	5,912.0	5,350.0	5,340.0	112.3	12.9	35.16	363.8	-21.3	6,246.5	6,164.0	82.55	75.665	
11,400.0	5,912.0	5,350.0	5,340.0	114.2	12.9	35.16	363.8	-21.3	6,345.9	6,262.0	83.85	75.681	
11,500.0	5,912.0	5,350.0	5,340.0	116.2	12.9	35.16	363.8	-21.3	6,445.3	6,360.1	85.15	75.696	
11,600.0	5,912.0	5,350.0	5,340.0	118.1	12.9	35.16	363.8	-21.3	6,544.7	6,458.3	86.44	75.711	
11,700.0	5,912.0	5,350.0	5,340.0	120.0	12.9	35.16	363.8	-21.3	6,644.1	6,556.4	87.74	75.725	
11,800.0	5,912.0	5,350.0	5,340.0	121.9	12.9	35.16	363.8	-21.3	6,743.6	6,654.6	89.04	75.739	
11,900.0	5,912.0	5,350.0	5,340.0	123.8	12.9	35.16	363.8	-21.3	6,843.1	6,752.7	90.33	75.753	
12,000.0	5,912.0	5,343.1	5,333.1	125.7	12.9	34.83	363.2	-21.3	6,942.5	6,851.4	91.09	76.219	
12,100.0	5,912.0	5,342.6	5,332.5	127.6	12.9	34.81	363.1	-21.3	7,042.0	6,949.7	92.33	76.269	
12,200.0	5,912.0	5,336.0	5,326.0	129.5	12.9	34.50	362.6	-21.2	7,141.5	7,048.4	93.10	76.712	
12,300.0	5,912.0	5,336.0	5,326.0	131.4	12.9	34.50	362.6	-21.2	7,241.0	7,146.7	94.38	76.723	
12,400.0	5,912.0	5,336.0	5,326.0	133.3	12.9	34.50	362.6	-21.2	7,340.6	7,244.9	95.66	76.733	
12,500.0	5,912.0	5,336.0	5,326.0	135.2	12.9	34.50	362.6	-21.2	7,440.1	7,343.2	96.95	76.744	
12,600.0	5,912.0	5,336.0	5,326.0	137.1	12.9	34.50	362.6	-21.2	7,539.6	7,441.4	98.23	76.753	
12,700.0	5,912.0	5,336.0	5,326.0	139.0	12.9	34.50	362.6	-21.2	7,639.2	7,539.7	99.52	76.763	
12,800.0	5,912.0	5,336.0	5,326.0	140.9	12.9	34.50	362.6	-21.2	7,738.8	7,638.0	100.80	76.773	
12,900.0	5,912.0	5,336.0	5,326.0	142.9	12.9	34.50	362.6	-21.2	7,838.4	7,736.3	102.09	76.782	
13,000.0	5,912.0	5,336.0	5,326.0	144.8	12.9	34.50	362.6	-21.2	7,938.0	7,834.6	103.37	76.791	
13,100.0	5,912.0	5,336.0	5,326.0	146.7	12.9	34.50	362.6	-21.2	8,037.6	7,932.9	104.66	76.799	
13,200.0	5,912.0	5,336.0	5,326.0	148.6	12.9	34.50	362.6	-21.2	8,137.2	8,031.2	105.94	76.808	
13,300.0	5,912.0	5,336.0	5,326.0	150.5	12.9	34.50	362.6	-21.2	8,236.8	8,129.6	107.23	76.816	
13,400.0	5,912.0	5,336.0	5,326.0	152.4	12.9	34.50	362.6	-21.2	8,336.4	8,227.9	108.51	76.824	
13,500.0	5,912.0	5,333.7	5,323.7	154.3	12.9	34.40	362.5	-21.2	8,436.1	8,326.5	109.59	76.980	
13,600.0	5,912.0	5,326.8	5,316.8	156.2	12.8	34.08	362.0	-21.2	8,535.7	8,425.5	110.23	77.437	
13,695.8	5,912.0	5,320.1	5,310.1	157.7	12.8	33.79	361.5	-21.1	8,631.2	8,520.6	110.53	78.086	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-32.3	32.3				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-32.3	32.3	32.1	0.19	172.589	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-32.3	32.3	31.6	0.64	50.704	
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-32.3	32.3	31.2	1.09	29.717	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-32.3	32.3	30.7	1.54	21.018	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-32.3	32.3	30.3	1.99	16.258	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-32.3	32.3	29.8	2.43	13.256	
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-32.3	32.3	29.4	2.88	11.190	
800.0	800.0	800.3	800.2	1.7	1.7	-86.94	1.7	-31.8	31.8	28.5	3.33	9.556	
900.0	900.0	900.3	900.1	1.9	1.9	-77.48	6.7	-30.4	31.1	27.4	3.78	8.229	
924.1	924.1	924.3	924.1	1.9	2.0	-74.40	8.4	-29.9	31.1	27.2	3.89	7.985	CC, ES
1,000.0	1,000.0	1,000.0	999.6	2.1	2.1	-64.75	13.5	-28.5	31.5	27.3	4.24	7.437	SF
1,100.0	1,100.0	1,099.7	1,099.0	2.3	2.4	148.02	20.1	-26.7	34.9	30.2	4.67	7.471	
1,200.0	1,199.8	1,199.0	1,198.1	2.5	2.6	160.24	26.8	-24.8	43.1	38.0	5.08	8.478	
1,300.0	1,299.6	1,298.1	1,297.0	2.7	2.8	168.75	33.5	-22.9	54.2	48.7	5.49	9.877	
1,400.0	1,399.4	1,397.2	1,395.8	2.9	3.1	174.28	40.1	-21.1	66.2	60.3	5.91	11.202	
1,500.0	1,499.1	1,496.3	1,494.7	3.1	3.3	178.11	46.8	-19.2	78.6	72.3	6.33	12.409	
1,600.0	1,598.9	1,595.4	1,593.6	3.3	3.6	-179.12	53.5	-17.4	91.2	84.5	6.76	13.492	
1,700.0	1,698.6	1,694.6	1,692.5	3.5	3.8	-177.03	60.1	-15.5	104.0	96.8	7.19	14.461	
1,800.0	1,798.4	1,793.7	1,791.3	3.8	4.1	-175.39	66.8	-13.6	116.9	109.3	7.63	15.328	
1,900.0	1,898.1	1,892.8	1,890.2	4.0	4.3	-174.08	73.4	-11.8	129.9	121.8	8.07	16.104	
2,000.0	1,997.9	1,991.9	1,989.1	4.2	4.6	-173.01	80.1	-9.9	142.9	134.4	8.51	16.802	
2,100.0	2,097.6	2,091.0	2,088.0	4.5	4.8	-172.12	86.8	-8.1	156.0	147.1	8.95	17.432	
2,200.0	2,197.4	2,190.1	2,186.8	4.7	5.1	-171.36	93.4	-6.2	169.1	159.7	9.39	18.002	
2,300.0	2,297.2	2,289.3	2,285.7	5.0	5.3	-170.72	100.1	-4.3	182.2	172.4	9.84	18.520	
2,400.0	2,396.9	2,388.4	2,384.6	5.2	5.6	-170.16	106.7	-2.5	195.4	185.1	10.29	18.993	
2,500.0	2,496.7	2,487.5	2,483.5	5.5	5.8	-169.67	113.4	-0.6	208.6	197.8	10.74	19.426	
2,600.0	2,596.4	2,586.6	2,582.3	5.7	6.1	-169.24	120.0	1.2	221.7	210.6	11.19	19.823	
2,700.0	2,696.2	2,685.7	2,681.2	6.0	6.3	-168.86	126.7	3.1	234.9	223.3	11.64	20.188	
2,800.0	2,795.9	2,784.8	2,780.1	6.2	6.6	-168.51	133.4	5.0	248.1	236.0	12.09	20.526	
2,900.0	2,895.7	2,883.9	2,878.9	6.5	6.8	-168.21	140.0	6.8	261.3	248.8	12.54	20.839	
3,000.0	2,995.5	2,983.1	2,977.8	6.7	7.1	-167.93	146.7	8.7	274.6	261.6	12.99	21.129	
3,100.0	3,095.2	3,082.2	3,076.7	7.0	7.3	-167.68	153.3	10.5	287.8	274.3	13.45	21.400	
3,200.0	3,195.0	3,181.3	3,175.6	7.3	7.6	-167.45	160.0	12.4	301.0	287.1	13.90	21.652	
3,300.0	3,294.7	3,280.4	3,274.4	7.5	7.8	-167.24	166.7	14.3	314.2	299.9	14.36	21.887	
3,400.0	3,394.5	3,379.5	3,373.3	7.8	8.1	-167.04	173.3	16.1	327.5	312.6	14.81	22.108	
3,500.0	3,494.2	3,478.6	3,472.2	8.0	8.3	-166.87	180.0	18.0	340.7	325.4	15.27	22.316	
3,600.0	3,594.0	3,577.7	3,571.1	8.3	8.6	-166.70	186.6	19.8	353.9	338.2	15.72	22.511	
3,700.0	3,693.7	3,676.9	3,669.9	8.5	8.8	-166.55	193.3	21.7	367.2	351.0	16.18	22.694	
3,800.0	3,793.5	3,776.0	3,768.8	8.8	9.1	-166.41	200.0	23.6	380.4	363.8	16.64	22.868	
3,900.0	3,893.3	3,875.1	3,867.7	9.1	9.3	-166.27	206.6	25.4	393.7	376.6	17.09	23.032	
4,000.0	3,993.0	3,974.2	3,966.6	9.3	9.6	-166.15	213.3	27.3	406.9	389.4	17.55	23.187	
4,100.0	4,092.8	4,073.3	4,065.4	9.6	9.9	-166.03	219.9	29.1	420.2	402.2	18.01	23.334	
4,200.0	4,192.5	4,172.4	4,164.3	9.8	10.1	-165.92	226.6	31.0	433.4	415.0	18.46	23.473	
4,300.0	4,292.3	4,271.5	4,263.2	10.1	10.4	-165.82	233.3	32.8	446.7	427.7	18.92	23.606	
4,400.0	4,392.0	4,370.7	4,362.0	10.4	10.6	-165.72	239.9	34.7	459.9	440.5	19.38	23.732	
4,500.0	4,491.8	4,469.8	4,460.9	10.6	10.9	-165.63	246.6	36.6	473.2	453.3	19.84	23.852	
4,600.0	4,591.6	4,568.9	4,559.8	10.9	11.1	-165.54	253.2	38.4	486.4	466.1	20.30	23.966	
4,700.0	4,691.3	4,668.0	4,658.7	11.2	11.4	-165.46	259.9	40.3	499.7	478.9	20.76	24.076	
4,800.0	4,791.1	4,767.1	4,757.5	11.4	11.6	-165.38	266.5	42.1	513.0	491.7	21.21	24.180	
4,900.0	4,890.8	4,866.2	4,856.4	11.7	11.9	-165.31	273.2	44.0	526.2	504.5	21.67	24.280	
5,000.0	4,990.6	4,965.4	4,955.3	11.9	12.1	-165.24	279.9	45.9	539.5	517.3	22.13	24.376	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,090.3	5,064.5	5,054.2	12.2	12.4	-165.17	286.5	47.7	552.7	530.1	22.59	24.468	
5,200.0	5,190.1	5,163.6	5,153.0	12.5	12.6	-165.11	293.2	49.6	566.0	542.9	23.05	24.556	
5,300.0	5,289.9	5,262.7	5,251.9	12.7	12.9	-165.05	299.8	51.4	579.3	555.7	23.51	24.640	
5,400.0	5,389.6	5,361.8	5,350.8	13.0	13.1	-164.99	306.5	53.3	592.5	568.6	23.97	24.721	
5,438.0	5,427.5	5,399.5	5,388.4	13.1	13.2	-164.97	309.0	54.0	597.6	573.4	24.14	24.752	
5,450.0	5,439.5	5,411.3	5,400.2	13.1	13.3	-164.92	309.8	54.2	599.3	575.1	24.16	24.807	
5,500.0	5,489.0	5,450.0	5,438.7	13.3	13.4	-164.65	312.5	55.0	609.5	585.4	24.08	25.307	
5,550.0	5,537.5	5,471.5	5,460.1	13.5	13.4	-164.20	314.8	55.6	625.8	602.0	23.79	26.302	
5,600.0	5,584.8	5,500.0	5,488.2	13.7	13.5	-163.54	319.2	56.8	648.3	624.9	23.35	27.767	
5,650.0	5,630.2	5,500.0	5,488.2	14.0	13.5	-162.45	319.2	56.8	676.3	653.6	22.69	29.804	
5,700.0	5,673.5	5,528.0	5,515.6	14.4	13.6	-161.19	324.9	58.4	708.9	686.9	21.99	32.239	
5,750.0	5,714.1	5,550.0	5,536.9	14.7	13.7	-159.44	330.4	60.0	746.0	724.8	21.22	35.153	
5,800.0	5,751.8	5,550.0	5,536.9	15.2	13.7	-156.57	330.4	60.0	786.6	766.0	20.53	38.320	
5,850.0	5,786.2	5,550.0	5,536.9	15.7	13.7	-152.22	330.4	60.0	830.4	810.2	20.23	41.047	
5,900.0	5,816.9	5,572.0	5,557.8	16.2	13.8	-146.83	336.7	61.7	875.9	855.3	20.60	42.525	
5,950.0	5,843.7	5,577.4	5,563.0	16.8	13.8	-136.98	338.5	62.2	923.4	900.7	22.68	40.714	
6,000.0	5,866.4	5,580.9	5,566.2	17.4	13.9	-119.78	339.6	62.5	971.9	944.8	27.18	35.755	
6,050.0	5,884.6	5,582.5	5,567.7	18.1	13.9	-91.93	340.1	62.7	1,021.1	989.6	31.55	32.368	
6,100.0	5,898.3	5,582.3	5,567.6	18.8	13.9	-61.54	340.0	62.7	1,070.4	1,041.3	29.11	36.774	
6,150.0	5,907.4	5,580.6	5,566.0	19.6	13.9	-40.97	339.5	62.5	1,119.3	1,096.2	23.06	48.534	
6,200.0	5,911.7	5,577.4	5,563.0	20.4	13.8	-29.17	338.4	62.2	1,167.5	1,149.2	18.29	63.832	
6,219.8	5,912.1	5,575.8	5,561.4	20.7	13.8	-25.97	337.9	62.1	1,186.3	1,169.4	16.91	70.158	
6,300.0	5,912.1	5,569.0	5,555.0	21.9	13.8	-18.69	335.8	61.5	1,262.4	1,248.2	14.19	88.964	
6,400.0	5,912.1	5,550.0	5,536.9	23.3	13.7	-7.91	330.4	60.0	1,358.4	1,347.9	10.51	129.306	
6,500.0	5,912.1	5,550.0	5,536.9	24.8	13.7	2.87	330.4	60.0	1,454.8	1,445.1	9.74	149.407	
6,600.0	5,912.1	5,550.0	5,536.9	26.3	13.7	14.20	330.4	60.0	1,551.5	1,538.0	13.54	114.601	
6,700.0	5,912.1	5,550.0	5,536.9	27.9	13.7	25.14	330.4	60.0	1,648.4	1,628.5	19.90	82.814	
6,800.0	5,912.1	5,550.0	5,536.9	29.4	13.7	34.92	330.4	60.0	1,745.0	1,718.8	26.21	66.577	
6,866.6	5,912.1	5,529.8	5,517.4	30.4	13.6	39.30	325.3	58.6	1,808.7	1,779.6	29.14	62.070	
6,900.0	5,912.1	5,528.0	5,515.6	31.0	13.6	39.18	324.9	58.4	1,840.8	1,811.3	29.47	62.456	
7,000.0	5,912.1	5,522.7	5,510.5	32.6	13.6	38.85	323.7	58.1	1,937.0	1,906.5	30.52	63.475	
7,100.0	5,912.1	5,500.0	5,488.2	34.3	13.5	37.46	319.2	56.8	2,033.9	2,003.1	30.87	65.882	
7,200.0	5,912.1	5,500.0	5,488.2	36.1	13.5	37.46	319.2	56.8	2,130.6	2,098.5	32.12	66.336	
7,300.0	5,912.1	5,500.0	5,488.2	37.8	13.5	37.46	319.2	56.8	2,227.5	2,194.2	33.38	66.742	
7,400.0	5,912.1	5,500.0	5,488.2	39.6	13.5	37.46	319.2	56.8	2,324.8	2,290.1	34.64	67.107	
7,500.0	5,912.1	5,500.0	5,488.2	41.3	13.5	37.46	319.2	56.8	2,422.2	2,386.3	35.92	67.437	
7,600.0	5,912.1	5,500.0	5,488.2	43.1	13.5	37.46	319.2	56.8	2,519.8	2,482.6	37.20	67.737	
7,700.0	5,912.1	5,500.0	5,488.2	44.9	13.5	37.46	319.2	56.8	2,617.6	2,579.1	38.49	68.010	
7,800.0	5,912.1	5,500.0	5,488.2	46.7	13.5	37.46	319.2	56.8	2,715.6	2,675.8	39.78	68.260	
7,900.0	5,912.1	5,500.0	5,488.2	48.5	13.5	37.46	319.2	56.8	2,813.7	2,772.6	41.08	68.490	
8,000.0	5,912.1	5,500.0	5,488.2	50.3	13.5	37.46	319.2	56.8	2,912.0	2,869.6	42.39	68.702	
8,100.0	5,912.1	5,500.0	5,488.2	52.2	13.5	37.46	319.2	56.8	3,010.3	2,966.6	43.69	68.897	
8,200.0	5,912.1	5,500.0	5,488.2	54.0	13.5	37.46	319.2	56.8	3,108.8	3,063.8	45.00	69.078	
8,300.0	5,912.1	5,500.0	5,488.2	55.9	13.5	37.46	319.2	56.8	3,207.4	3,161.0	46.32	69.247	
8,400.0	5,912.0	5,478.1	5,466.7	57.7	13.5	36.18	315.7	55.9	3,305.5	3,259.0	46.46	71.143	
8,500.0	5,912.0	5,476.2	5,464.7	59.5	13.5	36.07	315.5	55.8	3,404.1	3,356.5	47.65	71.441	
8,600.0	5,912.0	5,474.3	5,462.9	61.4	13.4	35.96	315.2	55.7	3,502.8	3,454.0	48.84	71.721	
8,700.0	5,912.0	5,472.5	5,461.1	63.3	13.4	35.86	315.0	55.7	3,601.6	3,551.6	50.03	71.985	
8,800.0	5,912.0	5,450.0	5,438.7	65.1	13.4	34.61	312.5	55.0	3,700.9	3,650.8	50.06	73.926	
8,900.0	5,912.0	5,450.0	5,438.7	67.0	13.4	34.61	312.5	55.0	3,799.7	3,748.4	51.33	74.027	
9,000.0	5,912.0	5,450.0	5,438.7	68.9	13.4	34.61	312.5	55.0	3,898.6	3,846.0	52.60	74.122	
9,100.0	5,912.0	5,450.0	5,438.7	70.7	13.4	34.61	312.5	55.0	3,997.5	3,943.7	53.87	74.211	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,200.0	5,912.0	5,450.0	5,438.7	72.6	13.4	34.61	312.5	55.0	4,096.5	4,041.4	55.14	74.296	
9,300.0	5,912.0	5,450.0	5,438.7	74.5	13.4	34.61	312.5	55.0	4,195.5	4,139.1	56.41	74.376	
9,400.0	5,912.0	5,450.0	5,438.7	76.4	13.4	34.61	312.5	55.0	4,294.6	4,236.9	57.68	74.452	
9,500.0	5,912.0	5,450.0	5,438.7	78.2	13.4	34.61	312.5	55.0	4,393.7	4,334.8	58.96	74.525	
9,600.0	5,912.0	5,450.0	5,438.7	80.1	13.4	34.61	312.5	55.0	4,492.9	4,432.7	60.23	74.593	
9,700.0	5,912.0	5,450.0	5,438.7	82.0	13.4	34.61	312.5	55.0	4,592.1	4,530.6	61.51	74.659	
9,800.0	5,912.0	5,450.0	5,438.7	83.9	13.4	34.61	312.5	55.0	4,691.3	4,628.5	62.78	74.721	
9,900.0	5,912.0	5,450.0	5,438.7	85.8	13.4	34.61	312.5	55.0	4,790.6	4,726.5	64.06	74.781	
10,000.0	5,912.0	5,450.0	5,438.7	87.7	13.4	34.61	312.5	55.0	4,889.9	4,824.5	65.34	74.838	
10,100.0	5,912.0	5,450.0	5,438.7	89.6	13.4	34.61	312.5	55.0	4,989.2	4,922.6	66.62	74.893	
10,200.0	5,912.0	5,450.0	5,438.7	91.5	13.4	34.61	312.5	55.0	5,088.5	5,020.6	67.90	74.945	
10,300.0	5,912.0	5,450.0	5,438.7	93.4	13.4	34.61	312.5	55.0	5,187.9	5,118.7	69.18	74.995	
10,400.0	5,912.0	5,450.0	5,438.7	95.3	13.4	34.61	312.5	55.0	5,287.3	5,216.8	70.46	75.043	
10,500.0	5,912.0	5,450.0	5,438.7	97.1	13.4	34.61	312.5	55.0	5,386.7	5,315.0	71.74	75.089	
10,600.0	5,912.0	5,450.0	5,438.7	99.0	13.4	34.61	312.5	55.0	5,486.2	5,413.1	73.02	75.133	
10,700.0	5,912.0	5,450.0	5,438.7	100.9	13.4	34.61	312.5	55.0	5,585.6	5,511.3	74.30	75.176	
10,800.0	5,912.0	5,450.0	5,438.7	102.8	13.4	34.61	312.5	55.0	5,685.1	5,609.5	75.58	75.217	
10,900.0	5,912.0	5,450.0	5,438.7	104.7	13.4	34.61	312.5	55.0	5,784.6	5,707.7	76.87	75.256	
11,000.0	5,912.0	5,450.0	5,438.7	106.6	13.4	34.61	312.5	55.0	5,884.1	5,806.0	78.15	75.294	
11,100.0	5,912.0	5,450.0	5,438.7	108.5	13.4	34.61	312.5	55.0	5,983.6	5,904.2	79.43	75.331	
11,200.0	5,912.0	5,450.0	5,438.7	110.4	13.4	34.61	312.5	55.0	6,083.2	6,002.5	80.71	75.366	
11,300.0	5,912.0	5,450.0	5,438.7	112.3	13.4	34.61	312.5	55.0	6,182.7	6,100.7	82.00	75.401	
11,400.0	5,912.0	5,444.6	5,433.3	114.2	13.4	34.31	312.1	54.9	6,282.3	6,199.5	82.82	75.853	
11,500.0	5,912.0	5,439.0	5,427.8	116.2	13.3	34.02	311.7	54.7	6,381.9	6,298.3	83.63	76.313	
11,600.0	5,912.0	5,439.0	5,427.8	118.1	13.3	34.02	311.7	54.7	6,481.5	6,396.6	84.90	76.342	
11,700.0	5,912.0	5,439.0	5,427.8	120.0	13.3	34.02	311.7	54.7	6,581.1	6,494.9	86.17	76.371	
11,800.0	5,912.0	5,439.0	5,427.8	121.9	13.3	34.02	311.7	54.7	6,680.7	6,593.2	87.44	76.399	
11,900.0	5,912.0	5,439.0	5,427.8	123.8	13.3	34.02	311.7	54.7	6,780.3	6,691.6	88.72	76.426	
12,000.0	5,912.0	5,439.0	5,427.8	125.7	13.3	34.02	311.7	54.7	6,879.9	6,789.9	89.99	76.452	
12,100.0	5,912.0	5,439.0	5,427.8	127.6	13.3	34.02	311.7	54.7	6,979.6	6,888.3	91.26	76.478	
12,200.0	5,912.0	5,439.0	5,427.8	129.5	13.3	34.02	311.7	54.7	7,079.2	6,986.7	92.54	76.502	
12,300.0	5,912.0	5,439.0	5,427.8	131.4	13.3	34.02	311.7	54.7	7,178.9	7,085.1	93.81	76.526	
12,400.0	5,912.0	5,439.0	5,427.8	133.3	13.3	34.02	311.7	54.7	7,278.6	7,183.5	95.08	76.550	
12,500.0	5,912.0	5,434.0	5,422.8	135.2	13.3	33.75	311.4	54.7	7,378.3	7,282.4	95.88	76.953	
12,600.0	5,912.0	5,427.3	5,416.1	137.1	13.3	33.40	310.9	54.5	7,477.9	7,381.4	96.51	77.484	
12,700.0	5,912.0	5,420.6	5,409.4	139.0	13.3	33.06	310.5	54.4	7,577.6	7,480.5	97.14	78.011	
12,800.0	5,912.0	5,413.9	5,402.7	140.9	13.3	32.73	310.0	54.3	7,677.3	7,579.6	97.76	78.535	
12,900.0	5,912.0	5,407.1	5,396.0	142.9	13.3	32.40	309.5	54.2	7,777.0	7,678.6	98.38	79.054	
13,000.0	5,912.0	5,400.4	5,389.3	144.8	13.2	32.07	309.1	54.0	7,876.7	7,777.7	98.99	79.569	
13,100.0	5,912.0	5,393.7	5,382.6	146.7	13.2	31.75	308.6	53.9	7,976.4	7,876.8	99.60	80.081	
13,200.0	5,912.0	5,387.0	5,375.9	148.6	13.2	31.44	308.2	53.8	8,076.1	7,975.9	100.21	80.588	
13,300.0	5,912.0	5,380.3	5,369.2	150.5	13.2	31.14	307.7	53.6	8,175.8	8,075.0	100.82	81.091	
13,400.0	5,912.0	5,373.5	5,362.5	152.4	13.2	30.84	307.3	53.5	8,275.5	8,174.0	101.43	81.590	
13,500.0	5,912.0	5,366.8	5,355.8	154.3	13.2	30.54	306.8	53.4	8,375.2	8,273.1	102.03	82.084	
13,600.0	5,912.0	5,360.1	5,349.1	156.2	13.1	30.25	306.4	53.3	8,474.9	8,372.2	102.63	82.575	
13,695.8	5,912.0	5,353.7	5,342.7	157.7	13.1	29.98	306.0	53.1	8,570.4	8,467.5	102.90	83.286	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	41.42	74.9	66.1	99.9				
100.0	100.0	100.0	100.0	0.1	0.1	41.42	74.9	66.1	99.9	99.7	0.19	534.209	
200.0	200.0	200.0	200.0	0.3	0.3	41.42	74.9	66.1	99.9	99.3	0.64	156.943	
300.0	300.0	300.0	300.0	0.5	0.5	41.42	74.9	66.1	99.9	98.8	1.09	91.983	
400.0	400.0	400.0	400.0	0.8	0.8	41.42	74.9	66.1	99.9	98.4	1.54	65.056	
500.0	500.0	500.0	500.0	1.0	1.0	41.42	74.9	66.1	99.9	97.9	1.99	50.324	
600.0	600.0	600.0	600.0	1.2	1.2	41.42	74.9	66.1	99.9	97.5	2.43	41.032	
700.0	700.0	700.0	700.0	1.4	1.4	41.42	74.9	66.1	99.9	97.0	2.88	34.637	
800.0	800.0	800.0	800.0	1.7	1.7	41.42	74.9	66.1	99.9	96.6	3.33	29.966	
900.0	900.0	900.0	900.0	1.9	1.9	41.42	74.9	66.1	99.9	96.1	3.78	26.406	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	41.42	74.9	66.1	99.9	95.7	4.23	23.601	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-120.03	74.9	66.1	100.8	96.1	4.65	21.648	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-122.50	74.9	66.1	103.5	98.4	5.06	20.467	
1,300.0	1,299.6	1,296.0	1,296.0	2.7	2.8	-125.66	76.4	66.8	109.0	103.6	5.46	19.964	SF
1,400.0	1,399.4	1,391.6	1,391.5	2.9	3.0	-128.69	80.7	68.8	118.2	112.4	5.88	20.118	
1,500.0	1,499.1	1,490.5	1,490.1	3.1	3.2	-131.42	86.9	71.8	129.7	123.4	6.30	20.568	
1,600.0	1,598.9	1,589.6	1,589.0	3.3	3.4	-133.71	93.2	74.8	141.4	134.6	6.73	20.990	
1,700.0	1,698.6	1,688.8	1,687.9	3.5	3.7	-135.66	99.4	77.7	153.2	146.1	7.17	21.375	
1,800.0	1,798.4	1,788.0	1,786.9	3.8	3.9	-137.32	105.7	80.7	165.3	157.7	7.61	21.726	
1,900.0	1,898.1	1,887.1	1,885.8	4.0	4.1	-138.76	111.9	83.7	177.4	169.4	8.05	22.045	
2,000.0	1,997.9	1,986.3	1,984.7	4.2	4.4	-140.01	118.2	86.6	189.6	181.2	8.49	22.336	
2,100.0	2,097.6	2,085.5	2,083.6	4.5	4.6	-141.11	124.4	89.6	202.0	193.0	8.94	22.601	
2,200.0	2,197.4	2,184.6	2,182.6	4.7	4.9	-142.08	130.7	92.6	214.3	205.0	9.38	22.844	
2,300.0	2,297.2	2,283.8	2,281.5	5.0	5.1	-142.95	136.9	95.5	226.8	217.0	9.83	23.066	
2,400.0	2,396.9	2,383.0	2,380.4	5.2	5.4	-143.73	143.2	98.5	239.3	229.0	10.28	23.271	
2,500.0	2,496.7	2,482.1	2,479.3	5.5	5.6	-144.43	149.4	101.5	251.8	241.1	10.73	23.459	
2,600.0	2,596.4	2,581.3	2,578.3	5.7	5.8	-145.06	155.7	104.4	264.3	253.2	11.19	23.632	
2,700.0	2,696.2	2,680.5	2,677.2	6.0	6.1	-145.63	161.9	107.4	276.9	265.3	11.64	23.793	
2,800.0	2,795.9	2,779.6	2,776.1	6.2	6.3	-146.16	168.2	110.4	289.5	277.5	12.09	23.942	
2,900.0	2,895.7	2,878.8	2,875.1	6.5	6.6	-146.64	174.4	113.3	302.2	289.6	12.55	24.081	
3,000.0	2,995.5	2,978.0	2,974.0	6.7	6.8	-147.09	180.7	116.3	314.8	301.8	13.00	24.209	
3,100.0	3,095.2	3,077.2	3,072.9	7.0	7.1	-147.49	186.9	119.3	327.5	314.0	13.46	24.330	
3,200.0	3,195.0	3,176.3	3,171.8	7.3	7.3	-147.87	193.2	122.2	340.2	326.3	13.92	24.442	
3,300.0	3,294.7	3,275.5	3,270.8	7.5	7.6	-148.22	199.4	125.2	352.9	338.5	14.38	24.548	
3,400.0	3,394.5	3,374.7	3,369.7	7.8	7.8	-148.55	205.7	128.2	365.6	350.8	14.83	24.647	
3,500.0	3,494.2	3,473.8	3,468.6	8.0	8.1	-148.86	211.9	131.1	378.3	363.0	15.29	24.740	
3,600.0	3,594.0	3,573.0	3,567.5	8.3	8.3	-149.14	218.1	134.1	391.0	375.3	15.75	24.827	
3,700.0	3,693.7	3,672.2	3,666.5	8.5	8.6	-149.41	224.4	137.1	403.8	387.6	16.21	24.910	
3,800.0	3,793.5	3,771.3	3,765.4	8.8	8.8	-149.66	230.6	140.0	416.5	399.9	16.67	24.988	
3,900.0	3,893.3	3,870.5	3,864.3	9.1	9.1	-149.89	236.9	143.0	429.3	412.2	17.13	25.062	
4,000.0	3,993.0	3,969.7	3,963.2	9.3	9.3	-150.12	243.1	146.0	442.1	424.5	17.59	25.132	
4,100.0	4,092.8	4,068.8	4,062.2	9.6	9.6	-150.33	249.4	148.9	454.8	436.8	18.05	25.198	
4,200.0	4,192.5	4,168.0	4,161.1	9.8	9.8	-150.52	255.6	151.9	467.6	449.1	18.51	25.261	
4,300.0	4,292.3	4,267.2	4,260.0	10.1	10.1	-150.71	261.9	154.9	480.4	461.4	18.97	25.321	
4,400.0	4,392.0	4,366.3	4,358.9	10.4	10.3	-150.89	268.1	157.8	493.2	473.7	19.43	25.378	
4,500.0	4,491.8	4,465.5	4,457.9	10.6	10.6	-151.06	274.4	160.8	505.9	486.1	19.89	25.433	
4,600.0	4,591.6	4,564.7	4,556.8	10.9	10.8	-151.22	280.6	163.8	518.7	498.4	20.36	25.484	
4,700.0	4,691.3	4,663.8	4,655.7	11.2	11.1	-151.37	286.9	166.7	531.5	510.7	20.82	25.534	
4,800.0	4,791.1	4,763.0	4,754.7	11.4	11.4	-151.52	293.1	169.7	544.3	523.1	21.28	25.581	
4,900.0	4,890.8	4,862.2	4,853.6	11.7	11.6	-151.66	299.4	172.7	557.1	535.4	21.74	25.626	
5,000.0	4,990.6	4,961.3	4,952.5	11.9	11.9	-151.79	305.6	175.6	569.9	547.7	22.20	25.670	
5,100.0	5,090.3	5,060.5	5,051.4	12.2	12.1	-151.92	311.9	178.6	582.8	560.1	22.67	25.711	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,159.7	5,150.4	12.5	12.4	-152.04	318.1	181.6	595.6	572.4	23.13	25.751	
5,300.0	5,289.9	5,258.9	5,249.3	12.7	12.6	-152.16	324.4	184.5	608.4	584.8	23.59	25.790	
5,400.0	5,389.6	5,350.0	5,340.2	13.0	12.9	-152.25	330.3	187.3	621.4	597.4	24.04	25.855	
5,438.0	5,427.5	5,363.8	5,353.9	13.1	12.9	-152.25	331.7	188.0	627.6	603.4	24.16	25.977	
5,450.0	5,439.5	5,369.2	5,359.3	13.1	12.9	-152.13	332.3	188.3	629.9	605.7	24.17	26.061	
5,500.0	5,489.0	5,400.0	5,389.7	13.3	13.0	-151.48	336.8	190.4	643.5	619.3	24.15	26.646	
5,550.0	5,537.5	5,400.0	5,389.7	13.5	13.0	-150.34	336.8	190.4	662.9	639.0	23.93	27.700	
5,600.0	5,584.8	5,431.8	5,420.6	13.7	13.1	-149.04	343.2	193.5	687.4	663.7	23.70	29.007	
5,650.0	5,630.2	5,450.0	5,438.2	14.0	13.2	-147.17	347.6	195.5	717.0	693.6	23.38	30.661	
5,700.0	5,673.5	5,464.7	5,452.2	14.4	13.3	-144.62	351.5	197.4	750.9	727.8	23.10	32.501	
5,750.0	5,714.1	5,477.9	5,464.8	14.7	13.3	-141.22	355.4	199.3	788.5	765.5	22.99	34.295	
5,800.0	5,751.8	5,500.0	5,485.4	15.2	13.4	-137.14	362.5	202.6	829.4	806.2	23.19	35.771	
5,850.0	5,786.2	5,500.0	5,485.4	15.7	13.4	-130.44	362.5	202.6	872.4	848.3	24.08	36.229	
5,900.0	5,816.9	5,500.0	5,485.4	16.2	13.4	-121.12	362.5	202.6	917.4	891.6	25.84	35.504	
5,950.0	5,843.7	5,500.0	5,485.4	16.8	13.4	-108.47	362.5	202.6	963.9	935.7	28.26	34.111	
6,000.0	5,866.4	5,500.0	5,485.4	17.4	13.4	-92.63	362.5	202.6	1,011.3	981.0	30.26	33.423	
6,050.0	5,884.6	5,500.0	5,485.4	18.1	13.4	-75.54	362.5	202.6	1,058.9	1,028.6	30.34	34.899	
6,100.0	5,898.3	5,500.0	5,485.4	18.8	13.4	-60.11	362.5	202.6	1,106.4	1,078.1	28.27	39.133	
6,150.0	5,907.4	5,500.0	5,485.4	19.6	13.4	-47.96	362.5	202.6	1,153.4	1,128.2	25.19	45.786	
6,200.0	5,911.7	5,500.0	5,485.4	20.4	13.4	-38.98	362.5	202.6	1,199.4	1,177.3	22.18	54.080	
6,219.8	5,912.1	5,500.0	5,485.4	20.7	13.4	-36.13	362.5	202.6	1,217.4	1,196.3	21.13	57.609	
6,300.0	5,912.1	5,500.0	5,485.4	21.9	13.4	-31.70	362.5	202.6	1,290.5	1,270.5	19.99	64.566	
6,400.0	5,912.1	5,500.0	5,485.4	23.3	13.4	-24.93	362.5	202.6	1,383.6	1,365.9	17.70	78.171	
6,500.0	5,912.1	5,500.0	5,485.4	24.8	13.4	-16.62	362.5	202.6	1,478.4	1,463.8	14.56	101.562	
6,600.0	5,912.1	5,475.2	5,462.2	26.3	13.3	-5.83	354.6	198.9	1,573.5	1,562.3	11.14	141.227	
6,700.0	5,912.1	5,450.0	5,438.2	27.9	13.2	4.77	347.6	195.5	1,669.8	1,658.7	11.17	149.551	
6,800.0	5,912.1	5,450.0	5,438.2	29.4	13.2	14.87	347.6	195.5	1,765.8	1,750.8	14.98	117.885	
6,866.6	5,912.1	5,450.0	5,438.2	30.4	13.2	21.44	347.6	195.5	1,829.8	1,811.1	18.69	97.879	
6,900.0	5,912.1	5,450.0	5,438.2	31.0	13.2	21.44	347.6	195.5	1,861.9	1,842.9	18.99	98.034	
7,000.0	5,912.1	5,450.0	5,438.2	32.6	13.2	21.44	347.6	195.5	1,958.3	1,938.4	19.91	98.372	
7,100.0	5,912.1	5,450.0	5,438.2	34.3	13.2	21.44	347.6	195.5	2,055.0	2,034.2	20.83	98.641	
7,200.0	5,912.1	5,450.0	5,438.2	36.1	13.2	21.44	347.6	195.5	2,152.0	2,130.3	21.77	98.858	
7,300.0	5,912.1	5,450.0	5,438.2	37.8	13.2	21.44	347.6	195.5	2,249.3	2,226.6	22.71	99.033	
7,400.0	5,912.1	5,427.2	5,416.2	39.6	13.1	20.83	342.1	193.0	2,346.3	2,323.1	23.22	101.047	
7,500.0	5,912.1	5,422.9	5,412.1	41.3	13.1	20.71	341.2	192.5	2,443.8	2,419.7	24.08	101.488	
7,600.0	5,912.1	5,400.0	5,389.7	43.1	13.0	20.10	336.8	190.4	2,541.8	2,517.3	24.56	103.478	
7,700.0	5,912.1	5,400.0	5,389.7	44.9	13.0	20.10	336.8	190.4	2,639.5	2,614.0	25.50	103.489	
7,800.0	5,912.1	5,400.0	5,389.7	46.7	13.0	20.10	336.8	190.4	2,737.3	2,710.9	26.45	103.492	
7,900.0	5,912.1	5,400.0	5,389.7	48.5	13.0	20.10	336.8	190.4	2,835.3	2,807.9	27.40	103.488	
8,000.0	5,912.1	5,400.0	5,389.7	50.3	13.0	20.10	336.8	190.4	2,933.4	2,905.1	28.35	103.480	
8,100.0	5,912.1	5,400.0	5,389.7	52.2	13.0	20.10	336.8	190.4	3,031.7	3,002.4	29.30	103.467	
8,200.0	5,912.1	5,400.0	5,389.7	54.0	13.0	20.10	336.8	190.4	3,130.0	3,099.8	30.26	103.451	
8,300.0	5,912.1	5,400.0	5,389.7	55.9	13.0	20.10	336.8	190.4	3,228.5	3,197.3	31.21	103.434	
8,400.0	5,912.0	5,400.0	5,389.7	57.7	13.0	20.10	336.8	190.4	3,327.0	3,294.9	32.17	103.414	
8,500.0	5,912.0	5,400.0	5,389.7	59.5	13.0	20.10	336.8	190.4	3,425.7	3,392.5	33.13	103.394	
8,600.0	5,912.0	5,400.0	5,389.7	61.4	13.0	20.10	336.8	190.4	3,524.4	3,490.3	34.09	103.372	
8,700.0	5,912.0	5,400.0	5,389.7	63.3	13.0	20.10	336.8	190.4	3,623.2	3,588.1	35.06	103.350	
8,800.0	5,912.0	5,400.0	5,389.7	65.1	13.0	20.10	336.8	190.4	3,722.0	3,686.0	36.02	103.328	
8,900.0	5,912.0	5,400.0	5,389.7	67.0	13.0	20.10	336.8	190.4	3,820.9	3,783.9	36.99	103.306	
9,000.0	5,912.0	5,400.0	5,389.7	68.9	13.0	20.10	336.8	190.4	3,919.9	3,881.9	37.95	103.283	
9,100.0	5,912.0	5,400.0	5,389.7	70.7	13.0	20.10	336.8	190.4	4,018.9	3,980.0	38.92	103.261	
9,200.0	5,912.0	5,377.8	5,367.8	72.6	12.9	19.50	333.4	188.8	4,117.5	4,078.2	39.27	104.863	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,376.1	5,366.1	74.5	12.9	19.46	333.2	188.7	4,216.5	4,176.3	40.18	104.952	
9,400.0	5,912.0	5,374.6	5,364.6	76.4	12.9	19.42	333.0	188.6	4,315.6	4,274.5	41.09	105.036	
9,500.0	5,912.0	5,373.0	5,363.1	78.2	12.9	19.38	332.8	188.5	4,414.7	4,372.7	42.00	105.114	
9,600.0	5,912.0	5,350.0	5,340.2	80.1	12.9	18.76	330.3	187.3	4,514.3	4,472.0	42.28	106.783	
9,700.0	5,912.0	5,350.0	5,340.2	82.0	12.9	18.76	330.3	187.3	4,613.4	4,570.2	43.22	106.741	
9,800.0	5,912.0	5,350.0	5,340.2	83.9	12.9	18.76	330.3	187.3	4,712.6	4,668.4	44.17	106.700	
9,900.0	5,912.0	5,350.0	5,340.2	85.8	12.9	18.76	330.3	187.3	4,811.7	4,766.6	45.11	106.661	
10,000.0	5,912.0	5,350.0	5,340.2	87.7	12.9	18.76	330.3	187.3	4,911.0	4,864.9	46.06	106.623	
10,100.0	5,912.0	5,350.0	5,340.2	89.6	12.9	18.76	330.3	187.3	5,010.2	4,963.2	47.01	106.587	
10,200.0	5,912.0	5,350.0	5,340.2	91.5	12.9	18.76	330.3	187.3	5,109.5	5,061.6	47.95	106.552	
10,300.0	5,912.0	5,350.0	5,340.2	93.4	12.9	18.76	330.3	187.3	5,208.8	5,159.9	48.90	106.518	
10,400.0	5,912.0	5,350.0	5,340.2	95.3	12.9	18.76	330.3	187.3	5,308.2	5,258.3	49.85	106.485	
10,500.0	5,912.0	5,350.0	5,340.2	97.1	12.9	18.76	330.3	187.3	5,407.5	5,356.7	50.80	106.453	
10,600.0	5,912.0	5,350.0	5,340.2	99.0	12.9	18.76	330.3	187.3	5,506.9	5,455.2	51.75	106.423	
10,700.0	5,912.0	5,350.0	5,340.2	100.9	12.9	18.76	330.3	187.3	5,606.3	5,553.6	52.69	106.393	
10,800.0	5,912.0	5,350.0	5,340.2	102.8	12.9	18.76	330.3	187.3	5,705.7	5,652.1	53.64	106.364	
10,900.0	5,912.0	5,350.0	5,340.2	104.7	12.9	18.76	330.3	187.3	5,805.2	5,750.6	54.59	106.336	
11,000.0	5,912.0	5,350.0	5,340.2	106.6	12.9	18.76	330.3	187.3	5,904.7	5,849.1	55.54	106.310	
11,100.0	5,912.0	5,350.0	5,340.2	108.5	12.9	18.76	330.3	187.3	6,004.1	5,947.7	56.49	106.283	
11,200.0	5,912.0	5,350.0	5,340.2	110.4	12.9	18.76	330.3	187.3	6,103.6	6,046.2	57.44	106.258	
11,300.0	5,912.0	5,350.0	5,340.2	112.3	12.9	18.76	330.3	187.3	6,203.2	6,144.8	58.39	106.234	
11,400.0	5,912.0	5,350.0	5,340.2	114.2	12.9	18.76	330.3	187.3	6,302.7	6,243.4	59.34	106.210	
11,500.0	5,912.0	5,350.0	5,340.2	116.2	12.9	18.76	330.3	187.3	6,402.2	6,342.0	60.29	106.187	
11,600.0	5,912.0	5,350.0	5,340.2	118.1	12.9	18.76	330.3	187.3	6,501.8	6,440.6	61.24	106.164	
11,700.0	5,912.0	5,350.0	5,340.2	120.0	12.9	18.76	330.3	187.3	6,601.4	6,539.2	62.19	106.142	
11,800.0	5,912.0	5,350.0	5,340.2	121.9	12.9	18.76	330.3	187.3	6,701.0	6,637.8	63.14	106.121	
11,900.0	5,912.0	5,350.0	5,340.2	123.8	12.9	18.76	330.3	187.3	6,800.6	6,736.5	64.10	106.101	
12,000.0	5,912.0	5,350.0	5,340.2	125.7	12.9	18.76	330.3	187.3	6,900.2	6,835.1	65.05	106.081	
12,100.0	5,912.0	5,350.0	5,340.2	127.6	12.9	18.76	330.3	187.3	6,999.8	6,933.8	66.00	106.061	
12,200.0	5,912.0	5,350.0	5,340.2	129.5	12.9	18.76	330.3	187.3	7,099.4	7,032.5	66.95	106.042	
12,300.0	5,912.0	5,350.0	5,340.2	131.4	12.9	18.76	330.3	187.3	7,199.1	7,131.2	67.90	106.024	
12,400.0	5,912.0	5,350.0	5,340.2	133.3	12.9	18.76	330.3	187.3	7,298.7	7,229.9	68.85	106.006	
12,500.0	5,912.0	5,350.0	5,340.2	135.2	12.9	18.76	330.3	187.3	7,398.4	7,328.6	69.80	105.989	
12,600.0	5,912.0	5,350.0	5,340.2	137.1	12.9	18.76	330.3	187.3	7,498.1	7,427.3	70.76	105.972	
12,700.0	5,912.0	5,350.0	5,340.2	139.0	12.9	18.76	330.3	187.3	7,597.7	7,526.0	71.71	105.955	
12,800.0	5,912.0	5,350.0	5,340.2	140.9	12.9	18.76	330.3	187.3	7,697.4	7,624.8	72.66	105.939	
12,900.0	5,912.0	5,343.0	5,333.2	142.9	12.8	18.58	329.7	187.1	7,797.1	7,723.8	73.29	106.387	
13,000.0	5,912.0	5,336.0	5,326.3	144.8	12.8	18.39	329.2	186.8	7,896.8	7,822.9	73.92	106.835	
13,100.0	5,912.0	5,336.0	5,326.3	146.7	12.8	18.39	329.2	186.8	7,996.5	7,921.6	74.86	106.818	
13,200.0	5,912.0	5,336.0	5,326.3	148.6	12.8	18.39	329.2	186.8	8,096.2	8,020.4	75.81	106.802	
13,300.0	5,912.0	5,336.0	5,326.3	150.5	12.8	18.39	329.2	186.8	8,195.9	8,119.2	76.75	106.786	
13,400.0	5,912.0	5,336.0	5,326.3	152.4	12.8	18.39	329.2	186.8	8,295.6	8,217.9	77.70	106.770	
13,500.0	5,912.0	5,336.0	5,326.3	154.3	12.8	18.39	329.2	186.8	8,395.4	8,316.7	78.64	106.754	
13,600.0	5,912.0	5,336.0	5,326.3	156.2	12.8	18.39	329.2	186.8	8,495.1	8,415.5	79.59	106.740	
13,695.8	5,912.0	5,336.0	5,326.3	157.7	12.8	18.39	329.2	186.8	8,590.6	8,510.5	80.18	107.147	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	33.0	33.0				
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	33.0	33.0	32.9	0.19	176.698	
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	33.0	33.0	32.4	0.64	51.911	
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	33.0	33.0	32.0	1.09	30.425	
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	33.0	33.0	31.5	1.54	21.518	
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	33.0	33.0	31.1	1.99	16.646	
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	33.0	33.0	30.6	2.43	13.572	
700.0	700.0	700.0	700.0	1.4	1.4	90.01	0.0	33.0	33.0	30.2	2.88	11.457	
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	33.0	33.0	29.7	3.33	9.912	CC, ES
900.0	900.0	899.3	899.2	1.9	1.9	87.71	1.4	34.1	34.1	30.3	3.78	9.029	
1,000.0	1,000.0	998.3	998.1	2.1	2.1	81.64	5.5	37.2	37.6	33.4	4.22	8.909	SF
1,100.0	1,100.0	1,098.0	1,097.6	2.3	2.3	-87.71	11.0	41.4	42.8	38.1	4.64	9.216	
1,200.0	1,199.8	1,197.4	1,196.7	2.5	2.6	-98.45	16.5	45.6	49.1	44.1	5.04	9.742	
1,300.0	1,299.6	1,296.6	1,295.7	2.7	2.8	-108.28	22.1	49.7	57.4	51.9	5.46	10.509	
1,400.0	1,399.4	1,395.9	1,394.7	2.9	3.0	-115.50	27.6	53.9	66.8	60.9	5.88	11.363	
1,500.0	1,499.1	1,495.1	1,493.7	3.1	3.3	-120.88	33.1	58.1	77.1	70.8	6.31	12.214	
1,600.0	1,598.9	1,594.3	1,592.7	3.3	3.5	-124.97	38.6	62.3	87.9	81.1	6.75	13.022	
1,700.0	1,698.6	1,693.6	1,691.7	3.5	3.8	-128.16	44.1	66.5	99.0	91.8	7.19	13.772	
1,800.0	1,798.4	1,792.8	1,790.7	3.8	4.0	-130.70	49.6	70.6	110.4	102.7	7.63	14.461	
1,900.0	1,898.1	1,892.1	1,889.7	4.0	4.3	-132.76	55.2	74.8	121.9	113.8	8.08	15.089	
2,000.0	1,997.9	1,991.3	1,988.7	4.2	4.5	-134.47	60.7	79.0	133.6	125.0	8.53	15.662	
2,100.0	2,097.6	2,090.6	2,087.8	4.5	4.8	-135.90	66.2	83.2	145.3	136.4	8.98	16.184	
2,200.0	2,197.4	2,189.8	2,186.8	4.7	5.0	-137.11	71.7	87.4	157.2	147.8	9.43	16.662	
2,300.0	2,297.2	2,289.1	2,285.8	5.0	5.3	-138.16	77.2	91.5	169.1	159.2	9.89	17.098	
2,400.0	2,396.9	2,388.3	2,384.8	5.2	5.5	-139.06	82.8	95.7	181.0	170.7	10.35	17.498	
2,500.0	2,496.7	2,487.6	2,483.8	5.5	5.8	-139.86	88.3	99.9	193.0	182.2	10.80	17.867	
2,600.0	2,596.4	2,586.8	2,582.8	5.7	6.0	-140.56	93.8	104.1	205.1	193.8	11.26	18.206	
2,700.0	2,696.2	2,686.0	2,681.8	6.0	6.3	-141.18	99.3	108.2	217.1	205.4	11.72	18.519	
2,800.0	2,795.9	2,785.3	2,780.8	6.2	6.5	-141.74	104.8	112.4	229.2	217.0	12.18	18.809	
2,900.0	2,895.7	2,884.5	2,879.8	6.5	6.8	-142.24	110.4	116.6	241.3	228.6	12.65	19.079	
3,000.0	2,995.5	2,983.8	2,978.8	6.7	7.0	-142.70	115.9	120.8	253.4	240.3	13.11	19.330	
3,100.0	3,095.2	3,083.0	3,077.8	7.0	7.3	-143.11	121.4	125.0	265.5	251.9	13.57	19.563	
3,200.0	3,195.0	3,182.3	3,176.8	7.3	7.5	-143.49	126.9	129.1	277.6	263.6	14.04	19.782	
3,300.0	3,294.7	3,281.5	3,275.8	7.5	7.8	-143.83	132.4	133.3	289.8	275.3	14.50	19.986	
3,400.0	3,394.5	3,380.8	3,374.8	7.8	8.0	-144.15	138.0	137.5	301.9	287.0	14.96	20.178	
3,500.0	3,494.2	3,480.0	3,473.8	8.0	8.3	-144.44	143.5	141.7	314.1	298.7	15.43	20.358	
3,600.0	3,594.0	3,579.2	3,572.8	8.3	8.5	-144.72	149.0	145.9	326.3	310.4	15.89	20.528	
3,700.0	3,693.7	3,678.5	3,671.8	8.5	8.8	-144.97	154.5	150.0	338.5	322.1	16.36	20.688	
3,800.0	3,793.5	3,777.7	3,770.8	8.8	9.1	-145.20	160.0	154.2	350.6	333.8	16.83	20.839	
3,900.0	3,893.3	3,877.0	3,869.8	9.1	9.3	-145.42	165.6	158.4	362.8	345.5	17.29	20.982	
4,000.0	3,993.0	3,976.2	3,968.8	9.3	9.6	-145.62	171.1	162.6	375.0	357.3	17.76	21.118	
4,100.0	4,092.8	4,075.5	4,067.8	9.6	9.8	-145.81	176.6	166.8	387.2	369.0	18.23	21.246	
4,200.0	4,192.5	4,174.7	4,166.8	9.8	10.1	-145.99	182.1	170.9	399.4	380.7	18.69	21.368	
4,300.0	4,292.3	4,274.0	4,265.8	10.1	10.3	-146.16	187.6	175.1	411.6	392.5	19.16	21.484	
4,400.0	4,392.0	4,373.2	4,364.8	10.4	10.6	-146.32	193.2	179.3	423.8	404.2	19.63	21.594	
4,500.0	4,491.8	4,472.5	4,463.8	10.6	10.8	-146.47	198.7	183.5	436.1	416.0	20.10	21.699	
4,600.0	4,591.6	4,571.7	4,562.8	10.9	11.1	-146.62	204.2	187.6	448.3	427.7	20.56	21.800	
4,700.0	4,691.3	4,670.9	4,661.8	11.2	11.3	-146.75	209.7	191.8	460.5	439.5	21.03	21.895	
4,800.0	4,791.1	4,770.2	4,760.8	11.4	11.6	-146.88	215.2	196.0	472.7	451.2	21.50	21.987	
4,900.0	4,890.8	4,869.4	4,859.8	11.7	11.8	-147.00	220.8	200.2	484.9	463.0	21.97	22.075	
5,000.0	4,990.6	4,968.7	4,958.8	11.9	12.1	-147.11	226.3	204.4	497.2	474.7	22.44	22.159	
5,100.0	5,090.3	5,067.9	5,057.9	12.2	12.4	-147.22	231.8	208.5	509.4	486.5	22.91	22.239	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,167.2	5,156.9	12.5	12.6	-147.33	237.3	212.7	521.6	498.2	23.37	22.316	
5,300.0	5,289.9	5,266.4	5,255.9	12.7	12.9	-147.43	242.8	216.9	533.9	510.0	23.84	22.391	
5,400.0	5,389.6	5,365.7	5,354.9	13.0	13.1	-147.52	248.4	221.1	546.1	521.8	24.31	22.462	
5,438.0	5,427.5	5,403.4	5,392.5	13.1	13.2	-147.56	250.4	222.7	550.7	526.2	24.49	22.488	
5,450.0	5,439.5	5,415.3	5,404.3	13.1	13.2	-147.48	251.1	223.2	552.3	527.8	24.52	22.529	
5,500.0	5,489.0	5,450.0	5,439.0	13.3	13.3	-147.06	253.2	224.7	561.7	537.2	24.51	22.918	
5,550.0	5,537.5	5,475.1	5,463.9	13.5	13.4	-146.31	255.5	226.5	576.8	552.5	24.37	23.671	
5,600.0	5,584.8	5,500.0	5,488.5	13.7	13.5	-145.21	258.7	228.9	597.6	573.5	24.14	24.758	
5,650.0	5,630.2	5,518.0	5,506.1	14.0	13.6	-143.59	261.7	231.2	623.5	599.6	23.85	26.140	
5,700.0	5,673.5	5,536.5	5,524.0	14.4	13.6	-141.43	265.2	233.8	654.1	630.5	23.60	27.715	
5,750.0	5,714.1	5,550.0	5,537.1	14.7	13.7	-138.44	268.1	236.0	688.7	665.2	23.49	29.322	
5,800.0	5,751.8	5,566.6	5,552.9	15.2	13.8	-134.67	272.0	239.0	726.7	703.1	23.65	30.722	
5,850.0	5,786.2	5,578.1	5,563.8	15.7	13.8	-129.50	275.0	241.2	767.6	743.3	24.31	31.578	
5,900.0	5,816.9	5,600.0	5,584.3	16.2	13.9	-123.63	281.1	245.9	811.0	785.6	25.44	31.874	
5,950.0	5,843.7	5,600.0	5,584.3	16.8	13.9	-114.01	281.1	245.9	855.7	828.3	27.47	31.149	
6,000.0	5,866.4	5,600.0	5,584.3	17.4	13.9	-101.68	281.1	245.9	901.8	872.0	29.72	30.342	
6,050.0	5,884.6	5,600.0	5,584.3	18.1	13.9	-87.22	281.1	245.9	948.5	917.4	31.12	30.475	
6,100.0	5,898.3	5,600.0	5,584.3	18.8	13.9	-72.35	281.1	245.9	995.5	964.8	30.74	32.389	
6,150.0	5,907.4	5,600.0	5,584.3	19.6	13.9	-59.05	281.1	245.9	1,042.3	1,013.6	28.68	36.345	
6,200.0	5,911.7	5,600.0	5,584.3	20.4	13.9	-48.32	281.1	245.9	1,088.5	1,062.7	25.89	42.049	
6,219.8	5,912.1	5,600.0	5,584.3	20.7	13.9	-44.78	281.1	245.9	1,106.6	1,081.9	24.78	44.663	
6,300.0	5,912.1	5,600.0	5,584.3	21.9	13.9	-40.62	281.1	245.9	1,180.4	1,156.4	24.04	49.092	
6,400.0	5,912.1	5,600.0	5,584.3	23.3	13.9	-33.95	281.1	245.9	1,274.5	1,252.4	22.13	57.594	
6,500.0	5,912.1	5,578.0	5,563.7	24.8	13.8	-23.09	274.9	241.2	1,369.8	1,352.0	17.79	76.997	
6,600.0	5,912.1	5,570.7	5,556.8	26.3	13.8	-11.94	273.1	239.8	1,466.3	1,453.0	13.37	109.688	
6,700.0	5,912.1	5,550.0	5,537.1	27.9	13.7	0.93	268.1	236.0	1,563.7	1,552.7	10.92	143.217	
6,800.0	5,912.1	5,550.0	5,537.1	29.4	13.7	13.23	268.1	236.0	1,660.9	1,646.6	14.27	116.408	
6,866.6	5,912.1	5,550.0	5,537.1	30.4	13.7	21.22	268.1	236.0	1,725.6	1,706.9	18.72	92.176	
6,900.0	5,912.1	5,550.0	5,537.1	31.0	13.7	21.22	268.1	236.0	1,758.1	1,739.1	19.02	92.447	
7,000.0	5,912.1	5,550.0	5,537.1	32.6	13.7	21.22	268.1	236.0	1,855.6	1,835.7	19.93	93.114	
7,100.0	5,912.1	5,550.0	5,537.1	34.3	13.7	21.22	268.1	236.0	1,953.4	1,932.5	20.85	93.683	
7,200.0	5,912.1	5,550.0	5,537.1	36.1	13.7	21.22	268.1	236.0	2,051.3	2,029.5	21.78	94.172	
7,300.0	5,912.1	5,528.7	5,516.5	37.8	13.6	20.63	263.6	232.7	2,149.0	2,126.7	22.31	96.341	
7,400.0	5,912.1	5,524.2	5,512.1	39.6	13.6	20.51	262.8	232.0	2,247.1	2,224.0	23.15	97.060	
7,500.0	5,912.1	5,520.0	5,508.0	41.3	13.6	20.39	262.0	231.4	2,345.4	2,321.4	24.00	97.705	
7,600.0	5,912.1	5,500.0	5,488.5	43.1	13.5	19.82	258.7	228.9	2,444.0	2,419.5	24.52	99.674	
7,700.0	5,912.1	5,500.0	5,488.5	44.9	13.5	19.82	258.7	228.9	2,542.3	2,516.9	25.46	99.873	
7,800.0	5,912.1	5,500.0	5,488.5	46.7	13.5	19.82	258.7	228.9	2,640.8	2,614.4	26.40	100.050	
7,900.0	5,912.1	5,500.0	5,488.5	48.5	13.5	19.82	258.7	228.9	2,739.4	2,712.1	27.34	100.206	
8,000.0	5,912.1	5,500.0	5,488.5	50.3	13.5	19.82	258.7	228.9	2,838.1	2,809.8	28.28	100.347	
8,100.0	5,912.1	5,500.0	5,488.5	52.2	13.5	19.82	258.7	228.9	2,936.9	2,907.6	29.23	100.472	
8,200.0	5,912.1	5,500.0	5,488.5	54.0	13.5	19.82	258.7	228.9	3,035.7	3,005.5	30.18	100.586	
8,300.0	5,912.1	5,500.0	5,488.5	55.9	13.5	19.82	258.7	228.9	3,134.7	3,103.5	31.13	100.688	
8,400.0	5,912.0	5,500.0	5,488.5	57.7	13.5	19.82	258.7	228.9	3,233.6	3,201.6	32.09	100.781	
8,500.0	5,912.0	5,500.0	5,488.5	59.5	13.5	19.82	258.7	228.9	3,332.7	3,299.7	33.04	100.866	
8,600.0	5,912.0	5,500.0	5,488.5	61.4	13.5	19.82	258.7	228.9	3,431.8	3,397.8	34.00	100.944	
8,700.0	5,912.0	5,500.0	5,488.5	63.3	13.5	19.82	258.7	228.9	3,531.0	3,496.0	34.95	101.015	
8,800.0	5,912.0	5,500.0	5,488.5	65.1	13.5	19.82	258.7	228.9	3,630.2	3,594.3	35.91	101.081	
8,900.0	5,912.0	5,500.0	5,488.5	67.0	13.5	19.82	258.7	228.9	3,729.4	3,692.6	36.87	101.141	
9,000.0	5,912.0	5,500.0	5,488.5	68.9	13.5	19.82	258.7	228.9	3,828.7	3,790.9	37.83	101.197	
9,100.0	5,912.0	5,478.0	5,466.8	70.7	13.4	19.18	255.8	226.7	3,927.6	3,889.5	38.14	102.966	
9,200.0	5,912.0	5,476.3	5,465.1	72.6	13.4	19.13	255.6	226.6	4,026.9	3,987.9	39.04	103.136	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	5,474.8	5,463.6	74.5	13.4	19.08	255.4	226.5	4,126.2	4,086.3	39.95	103.296	
9,400.0	5,912.0	5,473.2	5,462.1	76.4	13.4	19.04	255.3	226.3	4,225.6	4,184.7	40.85	103.448	
9,500.0	5,912.0	5,471.8	5,460.6	78.2	13.4	18.99	255.1	226.2	4,325.0	4,283.2	41.75	103.591	
9,600.0	5,912.0	5,450.0	5,439.0	80.1	13.3	18.35	253.2	224.7	4,424.7	4,382.7	41.99	105.365	
9,700.0	5,912.0	5,450.0	5,439.0	82.0	13.3	18.35	253.2	224.7	4,524.1	4,481.2	42.93	105.379	
9,800.0	5,912.0	5,450.0	5,439.0	83.9	13.3	18.35	253.2	224.7	4,623.5	4,579.6	43.87	105.392	
9,900.0	5,912.0	5,450.0	5,439.0	85.8	13.3	18.35	253.2	224.7	4,722.9	4,678.1	44.81	105.404	
10,000.0	5,912.0	5,450.0	5,439.0	87.7	13.3	18.35	253.2	224.7	4,822.4	4,776.6	45.75	105.415	
10,100.0	5,912.0	5,450.0	5,439.0	89.6	13.3	18.35	253.2	224.7	4,921.9	4,875.2	46.69	105.426	
10,200.0	5,912.0	5,450.0	5,439.0	91.5	13.3	18.35	253.2	224.7	5,021.4	4,973.7	47.63	105.435	
10,300.0	5,912.0	5,450.0	5,439.0	93.4	13.3	18.35	253.2	224.7	5,120.9	5,072.3	48.56	105.444	
10,400.0	5,912.0	5,450.0	5,439.0	95.3	13.3	18.35	253.2	224.7	5,220.4	5,170.9	49.50	105.452	
10,500.0	5,912.0	5,450.0	5,439.0	97.1	13.3	18.35	253.2	224.7	5,320.0	5,269.5	50.45	105.460	
10,600.0	5,912.0	5,450.0	5,439.0	99.0	13.3	18.35	253.2	224.7	5,419.5	5,368.1	51.39	105.467	
10,700.0	5,912.0	5,450.0	5,439.0	100.9	13.3	18.35	253.2	224.7	5,519.1	5,466.8	52.33	105.473	
10,800.0	5,912.0	5,450.0	5,439.0	102.8	13.3	18.35	253.2	224.7	5,618.7	5,565.4	53.27	105.480	
10,900.0	5,912.0	5,450.0	5,439.0	104.7	13.3	18.35	253.2	224.7	5,718.3	5,664.1	54.21	105.486	
11,000.0	5,912.0	5,450.0	5,439.0	106.6	13.3	18.35	253.2	224.7	5,817.9	5,762.8	55.15	105.491	
11,100.0	5,912.0	5,450.0	5,439.0	108.5	13.3	18.35	253.2	224.7	5,917.6	5,861.5	56.09	105.496	
11,200.0	5,912.0	5,450.0	5,439.0	110.4	13.3	18.35	253.2	224.7	6,017.2	5,960.2	57.03	105.501	
11,300.0	5,912.0	5,450.0	5,439.0	112.3	13.3	18.35	253.2	224.7	6,116.9	6,058.9	57.98	105.506	
11,400.0	5,912.0	5,450.0	5,439.0	114.2	13.3	18.35	253.2	224.7	6,216.6	6,157.6	58.92	105.510	
11,500.0	5,912.0	5,450.0	5,439.0	116.2	13.3	18.35	253.2	224.7	6,316.2	6,256.4	59.86	105.514	
11,600.0	5,912.0	5,450.0	5,439.0	118.1	13.3	18.35	253.2	224.7	6,415.9	6,355.1	60.80	105.518	
11,700.0	5,912.0	5,450.0	5,439.0	120.0	13.3	18.35	253.2	224.7	6,515.6	6,453.9	61.75	105.521	
11,800.0	5,912.0	5,450.0	5,439.0	121.9	13.3	18.35	253.2	224.7	6,615.4	6,552.7	62.69	105.525	
11,900.0	5,912.0	5,450.0	5,439.0	123.8	13.3	18.35	253.2	224.7	6,715.1	6,651.4	63.63	105.528	
12,000.0	5,912.0	5,450.0	5,439.0	125.7	13.3	18.35	253.2	224.7	6,814.8	6,750.2	64.58	105.531	
12,100.0	5,912.0	5,450.0	5,439.0	127.6	13.3	18.35	253.2	224.7	6,914.5	6,849.0	65.52	105.534	
12,200.0	5,912.0	5,450.0	5,439.0	129.5	13.3	18.35	253.2	224.7	7,014.3	6,947.8	66.46	105.537	
12,300.0	5,912.0	5,450.0	5,439.0	131.4	13.3	18.35	253.2	224.7	7,114.0	7,046.6	67.41	105.539	
12,400.0	5,912.0	5,450.0	5,439.0	133.3	13.3	18.35	253.2	224.7	7,213.8	7,145.4	68.35	105.542	
12,500.0	5,912.0	5,450.0	5,439.0	135.2	13.3	18.35	253.2	224.7	7,313.6	7,244.3	69.29	105.544	
12,600.0	5,912.0	5,450.0	5,439.0	137.1	13.3	18.35	253.2	224.7	7,413.3	7,343.1	70.24	105.546	
12,700.0	5,912.0	5,444.0	5,433.0	139.0	13.3	18.17	252.7	224.4	7,513.1	7,442.2	70.88	105.995	
12,800.0	5,912.0	5,438.0	5,427.0	140.9	13.3	17.99	252.4	224.1	7,612.9	7,541.4	71.52	106.441	
12,900.0	5,912.0	5,438.0	5,427.0	142.9	13.3	17.99	252.4	224.1	7,712.7	7,640.2	72.46	106.441	
13,000.0	5,912.0	5,438.0	5,427.0	144.8	13.3	17.99	252.4	224.1	7,812.4	7,739.0	73.40	106.442	
13,100.0	5,912.0	5,438.0	5,427.0	146.7	13.3	17.99	252.4	224.1	7,912.2	7,837.9	74.33	106.442	
13,200.0	5,912.0	5,438.0	5,427.0	148.6	13.3	17.99	252.4	224.1	8,012.0	7,936.7	75.27	106.442	
13,300.0	5,912.0	5,438.0	5,427.0	150.5	13.3	17.99	252.4	224.1	8,111.8	8,035.6	76.21	106.442	
13,400.0	5,912.0	5,438.0	5,427.0	152.4	13.3	17.99	252.4	224.1	8,211.6	8,134.5	77.15	106.442	
13,500.0	5,912.0	5,438.0	5,427.0	154.3	13.3	17.99	252.4	224.1	8,311.4	8,233.4	78.08	106.442	
13,600.0	5,912.0	5,438.0	5,427.0	156.2	13.3	17.99	252.4	224.1	8,411.2	8,332.2	79.02	106.442	
13,695.8	5,912.0	5,438.0	5,427.0	157.7	13.3	17.99	252.4	224.1	8,506.9	8,427.3	79.60	106.866	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-65.51	74.9	-164.4	180.7				
100.0	100.0	100.0	100.0	0.1	0.1	-65.51	74.9	-164.4	180.7	180.5	0.19	966.280	
200.0	200.0	200.0	200.0	0.3	0.3	-65.51	74.9	-164.4	180.7	180.1	0.64	283.887	
300.0	300.0	300.0	300.0	0.5	0.5	-65.51	74.9	-164.4	180.7	179.6	1.09	166.383	
400.0	400.0	400.0	400.0	0.8	0.8	-65.51	74.9	-164.4	180.7	179.2	1.54	117.676	
500.0	500.0	500.0	500.0	1.0	1.0	-65.51	74.9	-164.4	180.7	178.7	1.99	91.028	
600.0	600.0	600.0	600.0	1.2	1.2	-65.51	74.9	-164.4	180.7	178.3	2.43	74.221	
700.0	700.0	700.0	700.0	1.4	1.4	-65.51	74.9	-164.4	180.7	177.8	2.88	62.652	
800.0	800.0	800.0	800.0	1.7	1.7	-65.51	74.9	-164.4	180.7	177.4	3.33	54.204	
900.0	900.0	900.0	900.0	1.9	1.9	-65.51	74.9	-164.4	180.7	176.9	3.78	47.764	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-65.51	74.9	-164.4	180.7	176.5	4.23	42.691	CC, ES
1,100.0	1,100.0	1,097.9	1,097.9	2.3	2.3	133.75	73.7	-165.6	182.5	177.9	4.63	39.454	
1,200.0	1,199.8	1,195.6	1,195.4	2.5	2.5	133.36	70.1	-169.1	187.8	182.8	4.98	37.708	
1,300.0	1,299.6	1,295.2	1,294.8	2.7	2.7	132.93	65.1	-173.9	195.0	189.7	5.36	36.363	
1,400.0	1,399.4	1,395.0	1,394.3	2.9	2.9	132.52	60.1	-178.8	202.2	196.4	5.76	35.079	
1,500.0	1,499.1	1,494.7	1,493.8	3.1	3.1	132.15	55.1	-183.6	209.4	203.2	6.18	33.876	
1,600.0	1,598.9	1,594.4	1,593.3	3.3	3.3	131.79	50.1	-188.4	216.6	210.0	6.61	32.760	
1,700.0	1,698.6	1,694.2	1,692.8	3.5	3.6	131.46	45.1	-193.3	223.9	216.8	7.05	31.734	
1,800.0	1,798.4	1,793.9	1,792.3	3.8	3.8	131.15	40.1	-198.1	231.1	223.6	7.50	30.793	
1,900.0	1,898.1	1,893.6	1,891.8	4.0	4.0	130.86	35.1	-202.9	238.3	230.4	7.96	29.931	
2,000.0	1,997.9	1,993.3	1,991.2	4.2	4.3	130.59	30.1	-207.8	245.6	237.1	8.43	29.143	
2,100.0	2,097.6	2,093.1	2,090.7	4.5	4.5	130.33	25.1	-212.6	252.8	243.9	8.90	28.420	
2,200.0	2,197.4	2,192.8	2,190.2	4.7	4.8	130.09	20.1	-217.5	260.1	250.7	9.37	27.757	
2,300.0	2,297.2	2,292.5	2,289.7	5.0	5.0	129.86	15.1	-222.3	267.3	257.5	9.85	27.148	
2,400.0	2,396.9	2,392.3	2,389.2	5.2	5.3	129.64	10.1	-227.1	274.6	264.2	10.33	26.587	
2,500.0	2,496.7	2,492.0	2,488.7	5.5	5.5	129.43	5.1	-232.0	281.8	271.0	10.81	26.069	
2,600.0	2,596.4	2,591.7	2,588.2	5.7	5.8	129.24	0.1	-236.8	289.1	277.8	11.30	25.591	
2,700.0	2,696.2	2,691.5	2,687.7	6.0	6.0	129.05	-4.9	-241.7	296.4	284.6	11.79	25.147	
2,800.0	2,795.9	2,791.2	2,787.2	6.2	6.3	128.87	-9.9	-246.5	303.7	291.4	12.28	24.735	
2,900.0	2,895.7	2,890.9	2,886.6	6.5	6.5	128.70	-14.9	-251.3	310.9	298.2	12.77	24.352	
3,000.0	2,995.5	2,990.7	2,986.1	6.7	6.8	128.54	-19.9	-256.2	318.2	304.9	13.26	23.995	
3,100.0	3,095.2	3,090.4	3,085.6	7.0	7.0	128.39	-24.9	-261.0	325.5	311.7	13.76	23.661	
3,200.0	3,195.0	3,190.1	3,185.1	7.3	7.3	128.24	-29.9	-265.8	332.8	318.5	14.25	23.348	
3,300.0	3,294.7	3,289.8	3,284.6	7.5	7.5	128.10	-34.9	-270.7	340.1	325.3	14.75	23.055	
3,400.0	3,394.5	3,389.6	3,384.1	7.8	7.8	127.96	-39.9	-275.5	347.3	332.1	15.25	22.780	
3,500.0	3,494.2	3,489.3	3,483.6	8.0	8.1	127.83	-44.9	-280.4	354.6	338.9	15.75	22.521	
3,600.0	3,594.0	3,589.0	3,583.1	8.3	8.3	127.71	-49.9	-285.2	361.9	345.7	16.25	22.276	
3,700.0	3,693.7	3,688.8	3,682.5	8.5	8.6	127.59	-54.9	-290.0	369.2	352.5	16.75	22.046	
3,800.0	3,793.5	3,788.5	3,782.0	8.8	8.8	127.47	-59.9	-294.9	376.5	359.3	17.25	21.828	
3,900.0	3,893.3	3,888.2	3,881.5	9.1	9.1	127.36	-64.9	-299.7	383.8	366.1	17.75	21.622	
4,000.0	3,993.0	3,988.0	3,981.0	9.3	9.4	127.26	-69.9	-304.5	391.1	372.8	18.25	21.426	
4,100.0	4,092.8	4,087.7	4,080.5	9.6	9.6	127.15	-74.9	-309.4	398.4	379.6	18.76	21.241	
4,200.0	4,192.5	4,187.4	4,180.0	9.8	9.9	127.05	-79.9	-314.2	405.7	386.4	19.26	21.065	
4,300.0	4,292.3	4,287.2	4,279.5	10.1	10.1	126.96	-84.9	-319.1	413.0	393.2	19.76	20.897	
4,400.0	4,392.0	4,386.9	4,379.0	10.4	10.4	126.87	-89.9	-323.9	420.3	400.0	20.27	20.737	
4,500.0	4,491.8	4,486.6	4,478.4	10.6	10.7	126.78	-94.9	-328.7	427.6	406.8	20.77	20.585	
4,600.0	4,591.6	4,586.3	4,577.9	10.9	10.9	126.69	-99.9	-333.6	434.9	413.6	21.28	20.439	
4,700.0	4,691.3	4,686.1	4,677.4	11.2	11.2	126.61	-104.9	-338.4	442.2	420.4	21.78	20.300	
4,800.0	4,791.1	4,785.8	4,776.9	11.4	11.4	126.53	-109.9	-343.2	449.5	427.2	22.29	20.168	
4,900.0	4,890.8	4,885.5	4,876.4	11.7	11.7	126.45	-114.9	-348.1	456.8	434.0	22.80	20.040	
5,000.0	4,990.6	4,985.3	4,975.9	11.9	12.0	126.37	-119.9	-352.9	464.1	440.8	23.30	19.919	
5,100.0	5,090.3	5,085.0	5,075.4	12.2	12.2	126.30	-124.9	-357.8	471.4	447.6	23.81	19.802	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,184.7	5,174.9	12.5	12.5	126.23	-129.9	-362.6	478.8	454.4	24.31	19.690	
5,300.0	5,289.9	5,284.5	5,274.3	12.7	12.7	126.16	-134.9	-367.4	486.1	461.2	24.82	19.582	
5,400.0	5,389.6	5,369.9	5,359.5	13.0	13.0	126.00	-139.9	-372.3	494.1	468.7	25.30	19.524	
5,438.0	5,427.5	5,400.0	5,389.2	13.1	13.1	125.69	-143.4	-375.7	498.4	472.9	25.50	19.549	
5,450.0	5,439.5	5,400.0	5,389.2	13.1	13.1	125.55	-143.4	-375.7	500.0	474.5	25.51	19.599	
5,500.0	5,489.0	5,437.7	5,425.9	13.3	13.2	124.29	-149.5	-381.6	509.4	483.7	25.71	19.815	
5,550.0	5,537.5	5,470.3	5,457.1	13.5	13.4	122.76	-156.3	-388.1	523.0	497.1	25.88	20.209	
5,600.0	5,584.8	5,500.0	5,485.0	13.7	13.5	120.92	-163.7	-395.3	540.4	514.4	26.05	20.748	
5,650.0	5,630.2	5,531.7	5,514.0	14.0	13.7	118.73	-172.8	-404.2	561.5	535.2	26.28	21.367	
5,700.0	5,673.5	5,560.2	5,539.4	14.4	13.9	116.19	-182.1	-413.2	585.8	559.2	26.57	22.049	
5,750.0	5,714.1	5,587.2	5,562.7	14.7	14.1	113.27	-191.8	-422.5	613.0	586.0	26.96	22.738	
5,800.0	5,751.8	5,612.5	5,584.0	15.2	14.3	109.94	-201.7	-432.1	642.7	615.3	27.49	23.385	
5,850.0	5,786.2	5,636.2	5,603.3	15.7	14.4	106.20	-211.6	-441.7	674.7	646.5	28.20	23.928	
5,900.0	5,816.9	5,650.0	5,614.2	16.2	14.6	101.71	-217.7	-447.6	708.7	679.7	29.02	24.422	
5,950.0	5,843.7	5,678.7	5,636.1	16.8	14.8	97.47	-230.9	-460.4	744.0	714.1	29.95	24.839	
6,000.0	5,866.4	5,700.0	5,651.8	17.4	15.0	92.67	-241.3	-470.5	780.6	749.8	30.88	25.281	
6,050.0	5,884.6	5,714.7	5,662.3	18.1	15.1	87.31	-248.8	-477.7	818.2	786.5	31.70	25.809	
6,100.0	5,898.3	5,730.4	5,673.1	18.8	15.3	81.89	-256.9	-485.6	856.3	824.0	32.35	26.467	
6,150.0	5,907.4	5,750.0	5,686.1	19.6	15.5	76.81	-267.4	-495.7	894.9	862.0	32.84	27.252	
6,200.0	5,911.7	5,750.0	5,686.1	20.4	15.5	70.39	-267.4	-495.7	933.5	900.7	32.77	28.486	
6,219.8	5,912.1	5,761.8	5,693.7	20.7	15.6	68.85	-273.9	-502.0	948.7	915.8	32.90	28.838	
6,300.0	5,912.1	5,781.1	5,705.6	21.9	15.8	71.29	-284.8	-512.6	1,010.5	975.7	34.85	28.998	
6,400.0	5,912.1	5,809.1	5,721.9	23.3	16.2	74.19	-301.2	-528.4	1,087.5	1,050.3	37.16	29.264	
6,500.0	5,912.1	5,842.1	5,739.5	24.8	16.6	76.87	-321.3	-547.8	1,163.7	1,124.3	39.46	29.490	
6,600.0	5,912.1	5,880.7	5,757.8	26.3	17.1	79.27	-345.6	-571.4	1,238.8	1,197.1	41.75	29.675	
6,700.0	5,912.1	5,925.2	5,775.7	27.9	17.7	81.34	-374.9	-599.8	1,312.2	1,268.2	44.02	29.810	
6,800.0	5,912.1	5,976.0	5,791.9	29.4	18.4	83.01	-409.5	-633.3	1,383.5	1,337.2	46.31	29.878	
6,866.6	5,912.1	6,013.2	5,800.6	30.4	19.0	83.88	-435.5	-658.4	1,429.5	1,381.7	47.84	29.879	
6,900.0	5,912.1	6,032.7	5,804.2	31.0	19.3	84.15	-449.2	-671.7	1,452.3	1,403.7	48.66	29.845	
7,000.0	5,912.1	6,092.1	5,810.6	32.6	20.2	84.70	-491.7	-712.7	1,521.1	1,470.0	51.19	29.718	
7,100.0	5,912.1	6,354.1	5,811.3	34.3	24.3	85.45	-689.6	-884.1	1,588.0	1,531.9	56.17	28.274	
7,200.0	5,912.1	6,913.4	5,811.3	36.1	33.3	86.24	-1,178.9	-1,151.0	1,636.3	1,570.1	66.23	24.705	
7,300.0	5,912.1	7,592.0	5,811.3	37.8	43.4	86.51	-1,843.5	-1,268.7	1,653.3	1,574.5	78.87	20.964	
7,400.0	5,912.1	7,692.0	5,811.3	39.6	44.9	86.51	-1,943.5	-1,268.7	1,653.3	1,571.1	82.25	20.101	
7,500.0	5,912.1	7,792.0	5,811.3	41.3	46.3	86.51	-2,043.5	-1,268.7	1,653.3	1,567.7	85.67	19.298	
7,600.0	5,912.1	7,892.0	5,811.3	43.1	47.8	86.51	-2,143.5	-1,268.7	1,653.3	1,564.2	89.13	18.550	
7,700.0	5,912.1	7,992.0	5,811.3	44.9	49.3	86.51	-2,243.5	-1,268.7	1,653.3	1,560.7	92.62	17.851	
7,800.0	5,912.1	8,092.0	5,811.3	46.7	50.8	86.50	-2,343.5	-1,268.7	1,653.3	1,557.2	96.13	17.198	
7,900.0	5,912.1	8,192.0	5,811.2	48.5	52.3	86.50	-2,443.5	-1,268.7	1,653.3	1,553.6	99.67	16.588	
8,000.0	5,912.1	8,292.0	5,811.2	50.3	53.9	86.50	-2,543.5	-1,268.7	1,653.3	1,550.0	103.23	16.015	
8,100.0	5,912.1	8,392.0	5,811.2	52.2	55.5	86.50	-2,643.5	-1,268.7	1,653.3	1,546.5	106.81	15.478	
8,200.0	5,912.1	8,492.0	5,811.2	54.0	57.1	86.50	-2,743.5	-1,268.7	1,653.3	1,542.9	110.41	14.974	
8,300.0	5,912.1	8,592.0	5,811.2	55.9	58.7	86.50	-2,843.5	-1,268.7	1,653.3	1,539.2	114.03	14.499	
8,400.0	5,912.0	8,692.0	5,811.2	57.7	60.4	86.50	-2,943.5	-1,268.7	1,653.2	1,535.6	117.66	14.052	
8,500.0	5,912.0	8,792.0	5,811.2	59.5	62.1	86.50	-3,043.5	-1,268.7	1,653.2	1,531.9	121.30	13.630	
8,600.0	5,912.0	8,892.0	5,811.2	61.4	63.7	86.50	-3,143.5	-1,268.7	1,653.2	1,528.3	124.95	13.231	
8,700.0	5,912.0	8,992.0	5,811.2	63.3	65.4	86.50	-3,243.5	-1,268.7	1,653.2	1,524.6	128.62	12.854	
8,800.0	5,912.0	9,092.0	5,811.2	65.1	67.1	86.50	-3,343.5	-1,268.7	1,653.2	1,520.9	132.29	12.497	
8,900.0	5,912.0	9,192.0	5,811.2	67.0	68.9	86.50	-3,443.5	-1,268.7	1,653.2	1,517.2	135.98	12.158	
9,000.0	5,912.0	9,292.0	5,811.2	68.9	70.6	86.50	-3,543.5	-1,268.6	1,653.2	1,513.5	139.67	11.836	
9,100.0	5,912.0	9,392.0	5,811.2	70.7	72.3	86.50	-3,643.5	-1,268.6	1,653.2	1,509.8	143.37	11.531	
9,200.0	5,912.0	9,492.0	5,811.2	72.6	74.1	86.50	-3,743.5	-1,268.6	1,653.2	1,506.1	147.08	11.240	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1301A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	9,592.0	5,811.2	74.5	75.8	86.50	-3,843.5	-1,268.6	1,653.2	1,502.4	150.79	10.963	
9,400.0	5,912.0	9,692.0	5,811.2	76.4	77.6	86.50	-3,943.5	-1,268.6	1,653.2	1,498.6	154.51	10.699	
9,500.0	5,912.0	9,792.0	5,811.2	78.2	79.4	86.50	-4,043.5	-1,268.6	1,653.1	1,494.9	158.24	10.447	
9,600.0	5,912.0	9,892.0	5,811.2	80.1	81.1	86.50	-4,143.5	-1,268.6	1,653.1	1,491.2	161.97	10.206	
9,700.0	5,912.0	9,992.0	5,811.2	82.0	82.9	86.50	-4,243.5	-1,268.6	1,653.1	1,487.4	165.71	9.976	
9,800.0	5,912.0	10,092.0	5,811.2	83.9	84.7	86.50	-4,343.5	-1,268.6	1,653.1	1,483.7	169.45	9.756	
9,900.0	5,912.0	10,192.0	5,811.2	85.8	86.5	86.50	-4,443.5	-1,268.6	1,653.1	1,479.9	173.19	9.545	
10,000.0	5,912.0	10,292.0	5,811.2	87.7	88.3	86.50	-4,543.5	-1,268.6	1,653.1	1,476.2	176.94	9.342	
10,100.0	5,912.0	10,392.0	5,811.2	89.6	90.1	86.50	-4,643.5	-1,268.6	1,653.1	1,472.4	180.70	9.148	
10,200.0	5,912.0	10,492.0	5,811.1	91.5	91.9	86.50	-4,743.5	-1,268.6	1,653.1	1,468.6	184.45	8.962	
10,300.0	5,912.0	10,592.0	5,811.1	93.4	93.8	86.50	-4,843.5	-1,268.6	1,653.1	1,464.9	188.21	8.783	
10,400.0	5,912.0	10,692.0	5,811.1	95.3	95.6	86.50	-4,943.5	-1,268.6	1,653.1	1,461.1	191.98	8.611	
10,500.0	5,912.0	10,792.0	5,811.1	97.1	97.4	86.50	-5,043.5	-1,268.6	1,653.0	1,457.3	195.74	8.445	
10,600.0	5,912.0	10,892.0	5,811.1	99.0	99.2	86.50	-5,143.5	-1,268.6	1,653.0	1,453.5	199.51	8.285	
10,700.0	5,912.0	10,992.0	5,811.1	100.9	101.1	86.50	-5,243.5	-1,268.6	1,653.0	1,449.7	203.28	8.132	
10,800.0	5,912.0	11,092.0	5,811.1	102.8	102.9	86.50	-5,343.5	-1,268.5	1,653.0	1,446.0	207.06	7.983	
10,900.0	5,912.0	11,192.0	5,811.1	104.7	104.7	86.50	-5,443.5	-1,268.5	1,653.0	1,442.2	210.83	7.840	
11,000.0	5,912.0	11,292.0	5,811.1	106.6	106.6	86.50	-5,543.5	-1,268.5	1,653.0	1,438.4	214.61	7.702	
11,100.0	5,912.0	11,392.0	5,811.1	108.5	108.4	86.50	-5,643.5	-1,268.5	1,653.0	1,434.6	218.39	7.569	
11,200.0	5,912.0	11,492.0	5,811.1	110.4	110.3	86.50	-5,743.5	-1,268.5	1,653.0	1,430.8	222.17	7.440	
11,300.0	5,912.0	11,592.0	5,811.1	112.3	112.1	86.50	-5,843.5	-1,268.5	1,653.0	1,427.0	225.96	7.315	
11,400.0	5,912.0	11,692.0	5,811.1	114.2	114.0	86.50	-5,943.5	-1,268.5	1,653.0	1,423.2	229.75	7.195	
11,500.0	5,912.0	11,792.0	5,811.1	116.2	115.8	86.50	-6,043.5	-1,268.5	1,653.0	1,419.4	233.53	7.078	
11,600.0	5,912.0	11,892.0	5,811.1	118.1	117.7	86.50	-6,143.5	-1,268.5	1,652.9	1,415.6	237.32	6.965	
11,700.0	5,912.0	11,992.0	5,811.1	120.0	119.5	86.50	-6,243.5	-1,268.5	1,652.9	1,411.8	241.11	6.855	
11,800.0	5,912.0	12,092.0	5,811.1	121.9	121.4	86.50	-6,343.5	-1,268.5	1,652.9	1,408.0	244.91	6.749	
11,900.0	5,912.0	12,192.0	5,811.1	123.8	123.3	86.50	-6,443.5	-1,268.5	1,652.9	1,404.2	248.70	6.646	
12,000.0	5,912.0	12,292.0	5,811.1	125.7	125.1	86.50	-6,543.5	-1,268.5	1,652.9	1,400.4	252.49	6.546	
12,100.0	5,912.0	12,392.0	5,811.1	127.6	127.0	86.50	-6,643.5	-1,268.5	1,652.9	1,396.6	256.29	6.449	
12,200.0	5,912.0	12,492.0	5,811.1	129.5	128.9	86.50	-6,743.5	-1,268.5	1,652.9	1,392.8	260.09	6.355	
12,300.0	5,912.0	12,592.0	5,811.1	131.4	130.7	86.50	-6,843.5	-1,268.5	1,652.9	1,389.0	263.89	6.264	
12,400.0	5,912.0	12,692.0	5,811.1	133.3	132.6	86.50	-6,943.5	-1,268.5	1,652.9	1,385.2	267.69	6.175	
12,500.0	5,912.0	12,792.0	5,811.1	135.2	134.5	86.50	-7,043.5	-1,268.4	1,652.9	1,381.4	271.49	6.088	
12,600.0	5,912.0	12,892.0	5,811.0	137.1	136.4	86.50	-7,143.5	-1,268.4	1,652.9	1,377.6	275.29	6.004	
12,700.0	5,912.0	12,992.0	5,811.0	139.0	138.2	86.50	-7,243.5	-1,268.4	1,652.8	1,373.7	279.09	5.922	
12,800.0	5,912.0	13,092.0	5,811.0	140.9	140.1	86.50	-7,343.5	-1,268.4	1,652.8	1,369.9	282.90	5.843	
12,900.0	5,912.0	13,192.0	5,811.0	142.9	142.0	86.50	-7,443.5	-1,268.4	1,652.8	1,366.1	286.70	5.765	
13,000.0	5,912.0	13,292.0	5,811.0	144.8	143.9	86.50	-7,543.5	-1,268.4	1,652.8	1,362.3	290.51	5.689	
13,100.0	5,912.0	13,392.0	5,811.0	146.7	145.8	86.50	-7,643.5	-1,268.4	1,652.8	1,358.5	294.31	5.616	
13,200.0	5,912.0	13,492.0	5,811.0	148.6	147.6	86.50	-7,743.5	-1,268.4	1,652.8	1,354.7	298.12	5.544	
13,300.0	5,912.0	13,592.0	5,811.0	150.5	149.5	86.50	-7,843.5	-1,268.4	1,652.8	1,350.9	301.93	5.474	
13,400.0	5,912.0	13,692.0	5,811.0	152.4	151.4	86.50	-7,943.5	-1,268.4	1,652.8	1,347.0	305.74	5.406	
13,500.0	5,912.0	13,792.0	5,811.0	154.3	153.3	86.50	-8,043.5	-1,268.4	1,652.8	1,343.2	309.55	5.339	
13,600.0	5,912.0	13,892.0	5,811.0	156.2	155.2	86.50	-8,143.5	-1,268.4	1,652.8	1,339.4	313.36	5.274	
13,695.8	5,912.0	13,987.8	5,811.0	157.7	157.0	86.50	-8,239.3	-1,268.4	1,652.7	1,336.1	316.67	5.219	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-131.4	131.4				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-131.4	131.4	131.2	0.19	702.684	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-131.4	131.4	130.8	0.64	206.438	
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-131.4	131.4	130.3	1.09	120.992	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-131.4	131.4	129.9	1.54	85.573	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-131.4	131.4	129.4	1.99	66.195	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-131.4	131.4	129.0	2.43	53.973	
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-131.4	131.4	128.5	2.88	45.561	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-131.4	131.4	128.1	3.33	39.417	
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-131.4	131.4	127.6	3.78	34.733	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-131.4	131.4	127.2	4.23	31.045	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	110.11	0.0	-131.4	132.0	127.3	4.65	28.363	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	112.18	0.0	-131.4	133.9	128.8	5.05	26.488	
1,300.0	1,299.6	1,297.3	1,297.3	2.7	2.8	114.22	-1.3	-132.4	137.5	132.1	5.44	25.291	
1,400.0	1,399.4	1,394.8	1,394.6	2.9	2.9	114.99	-5.4	-135.2	142.9	137.1	5.81	24.592	
1,500.0	1,499.1	1,494.4	1,494.0	3.1	3.1	115.08	-11.1	-139.2	149.3	143.1	6.21	24.045	
1,600.0	1,598.9	1,594.2	1,593.6	3.3	3.3	115.16	-16.8	-143.2	155.7	149.1	6.62	23.508	
1,700.0	1,698.6	1,694.0	1,693.1	3.5	3.5	115.24	-22.5	-147.2	162.0	155.0	7.05	22.990	
1,800.0	1,798.4	1,793.8	1,792.7	3.8	3.7	115.31	-28.2	-151.1	168.4	160.9	7.49	22.496	
1,900.0	1,898.1	1,893.6	1,892.2	4.0	4.0	115.38	-33.9	-155.1	174.8	166.8	7.93	22.031	
2,000.0	1,997.9	1,993.4	1,991.8	4.2	4.2	115.44	-39.6	-159.1	181.1	172.7	8.39	21.595	
2,100.0	2,097.6	2,093.2	2,091.4	4.5	4.4	115.49	-45.3	-163.1	187.5	178.7	8.85	21.187	
2,200.0	2,197.4	2,193.0	2,190.9	4.7	4.7	115.55	-51.0	-167.1	193.9	184.6	9.32	20.808	
2,300.0	2,297.2	2,292.8	2,290.5	5.0	4.9	115.60	-56.7	-171.1	200.2	190.4	9.79	20.454	
2,400.0	2,396.9	2,392.6	2,390.0	5.2	5.1	115.64	-62.5	-175.1	206.6	196.3	10.27	20.124	
2,500.0	2,496.7	2,492.4	2,489.6	5.5	5.4	115.69	-68.2	-179.1	213.0	202.2	10.75	19.817	
2,600.0	2,596.4	2,592.2	2,589.1	5.7	5.6	115.73	-73.9	-183.0	219.3	208.1	11.23	19.531	
2,700.0	2,696.2	2,692.0	2,688.7	6.0	5.9	115.77	-79.6	-187.0	225.7	214.0	11.72	19.263	
2,800.0	2,795.9	2,791.8	2,788.2	6.2	6.1	115.81	-85.3	-191.0	232.1	219.9	12.21	19.013	
2,900.0	2,895.7	2,891.6	2,887.8	6.5	6.4	115.84	-91.0	-195.0	238.4	225.7	12.70	18.779	
3,000.0	2,995.5	2,991.4	2,987.3	6.7	6.6	115.87	-96.7	-199.0	244.8	231.6	13.19	18.560	
3,100.0	3,095.2	3,091.2	3,086.9	7.0	6.9	115.91	-102.4	-203.0	251.2	237.5	13.68	18.354	
3,200.0	3,195.0	3,191.0	3,186.4	7.3	7.1	115.94	-108.1	-207.0	257.5	243.4	14.18	18.161	
3,300.0	3,294.7	3,290.8	3,286.0	7.5	7.4	115.96	-113.8	-211.0	263.9	249.2	14.68	17.979	
3,400.0	3,394.5	3,390.6	3,385.6	7.8	7.6	115.99	-119.5	-214.9	270.3	255.1	15.18	17.807	
3,500.0	3,494.2	3,490.4	3,485.1	8.0	7.9	116.02	-125.2	-218.9	276.6	261.0	15.68	17.645	
3,600.0	3,594.0	3,590.2	3,584.7	8.3	8.1	116.04	-130.9	-222.9	283.0	266.8	16.18	17.492	
3,700.0	3,693.7	3,690.0	3,684.2	8.5	8.4	116.07	-136.6	-226.9	289.4	272.7	16.68	17.347	
3,800.0	3,793.5	3,789.8	3,783.8	8.8	8.7	116.09	-142.3	-230.9	295.7	278.6	17.18	17.210	
3,900.0	3,893.3	3,889.6	3,883.3	9.1	8.9	116.11	-148.0	-234.9	302.1	284.4	17.69	17.080	
4,000.0	3,993.0	3,989.4	3,982.9	9.3	9.2	116.13	-153.7	-238.9	308.5	290.3	18.19	16.956	
4,100.0	4,092.8	4,089.1	4,082.4	9.6	9.4	116.15	-159.5	-242.9	314.8	296.1	18.70	16.839	
4,200.0	4,192.5	4,188.9	4,182.0	9.8	9.7	116.17	-165.2	-246.9	321.2	302.0	19.20	16.727	
4,300.0	4,292.3	4,288.7	4,281.5	10.1	9.9	116.19	-170.9	-250.8	327.6	307.9	19.71	16.620	
4,400.0	4,392.0	4,388.5	4,381.1	10.4	10.2	116.21	-176.6	-254.8	333.9	313.7	20.22	16.519	
4,500.0	4,491.8	4,488.3	4,480.6	10.6	10.5	116.22	-182.3	-258.8	340.3	319.6	20.72	16.422	
4,600.0	4,591.6	4,588.1	4,580.2	10.9	10.7	116.24	-188.0	-262.8	346.7	325.4	21.23	16.329	
4,700.0	4,691.3	4,687.9	4,679.8	11.2	11.0	116.26	-193.7	-266.8	353.0	331.3	21.74	16.240	
4,800.0	4,791.1	4,787.7	4,779.3	11.4	11.2	116.27	-199.4	-270.8	359.4	337.2	22.25	16.155	
4,900.0	4,890.8	4,887.5	4,878.9	11.7	11.5	116.29	-205.1	-274.8	365.8	343.0	22.76	16.073	
5,000.0	4,990.6	4,987.3	4,978.4	11.9	11.8	116.30	-210.8	-278.8	372.2	348.9	23.27	15.995	
5,100.0	5,090.3	5,087.1	5,078.0	12.2	12.0	116.31	-216.5	-282.7	378.5	354.7	23.78	15.920	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,186.9	5,177.5	12.5	12.3	116.33	-222.2	-286.7	384.9	360.6	24.29	15.848	
5,300.0	5,289.9	5,286.7	5,277.1	12.7	12.5	116.34	-227.9	-290.7	391.3	366.5	24.80	15.779	
5,400.0	5,389.6	5,386.5	5,376.6	13.0	12.8	116.35	-233.6	-294.7	397.6	372.3	25.31	15.712	
5,438.0	5,427.5	5,424.4	5,414.5	13.1	12.9	116.36	-235.8	-296.2	400.0	374.5	25.50	15.688	
5,450.0	5,439.5	5,436.4	5,426.4	13.1	12.9	116.29	-236.5	-296.7	400.9	375.3	25.55	15.687	
5,500.0	5,489.0	5,473.3	5,463.1	13.3	13.0	115.93	-239.6	-298.9	406.4	380.6	25.75	15.779	
5,550.0	5,537.5	5,509.3	5,498.6	13.5	13.2	115.31	-244.6	-302.4	415.6	389.6	25.96	16.006	
5,600.0	5,584.8	5,550.0	5,538.0	13.7	13.3	114.50	-252.7	-308.1	428.4	402.1	26.22	16.338	
5,650.0	5,630.2	5,578.8	5,565.5	14.0	13.5	113.27	-260.0	-313.1	444.4	418.0	26.48	16.783	
5,700.0	5,673.5	5,612.0	5,596.4	14.4	13.6	111.82	-269.9	-320.0	463.7	436.9	26.82	17.291	
5,750.0	5,714.1	5,650.0	5,630.7	14.7	13.9	110.22	-283.2	-329.3	486.0	458.7	27.26	17.831	
5,800.0	5,751.8	5,674.5	5,652.3	15.2	14.0	107.98	-292.8	-336.1	510.8	483.1	27.76	18.402	
5,850.0	5,786.2	5,700.0	5,674.0	15.7	14.2	105.42	-303.7	-343.7	538.1	509.7	28.43	18.925	
5,900.0	5,816.9	5,731.5	5,699.9	16.2	14.4	102.81	-318.3	-353.9	567.5	538.3	29.25	19.400	
5,950.0	5,843.7	5,757.8	5,720.7	16.8	14.6	99.71	-331.5	-363.1	598.8	568.6	30.16	19.853	
6,000.0	5,866.4	5,782.7	5,739.7	17.4	14.8	96.28	-344.8	-372.4	631.6	600.5	31.14	20.283	
6,050.0	5,884.6	5,800.0	5,752.3	18.1	15.0	92.15	-354.4	-379.1	665.8	633.7	32.11	20.734	
6,100.0	5,898.3	5,828.3	5,772.2	18.8	15.3	88.53	-370.9	-390.7	700.9	667.8	33.10	21.175	
6,150.0	5,907.4	5,850.0	5,786.7	19.6	15.5	84.38	-384.2	-399.9	736.9	702.9	33.97	21.690	
6,200.0	5,911.7	5,868.5	5,798.5	20.4	15.7	79.94	-395.8	-408.1	773.4	738.7	34.69	22.295	
6,219.8	5,912.1	5,875.8	5,803.0	20.7	15.7	78.18	-400.5	-411.4	788.0	753.1	34.93	22.559	
6,300.0	5,912.1	5,907.2	5,821.5	21.9	16.1	80.92	-421.3	-425.9	847.1	810.3	36.86	22.982	
6,400.0	5,912.1	5,950.0	5,844.2	23.3	16.6	83.84	-451.1	-446.7	920.2	881.1	39.11	23.527	
6,500.0	5,912.1	6,007.3	5,869.8	24.8	17.3	86.55	-493.1	-476.0	991.8	950.3	41.47	23.916	
6,600.0	5,912.1	6,070.4	5,891.3	26.3	18.2	88.47	-541.6	-510.0	1,061.0	1,017.1	43.88	24.181	
6,700.0	5,912.1	6,141.7	5,906.7	27.9	19.2	89.64	-598.7	-549.9	1,126.9	1,080.5	46.41	24.284	
6,800.0	5,912.1	6,219.5	5,912.5	29.4	20.4	90.03	-662.2	-594.3	1,189.1	1,140.0	49.08	24.227	
6,866.6	5,912.1	6,369.7	5,912.5	30.4	22.6	90.03	-788.5	-675.4	1,226.1	1,174.0	52.09	23.536	
6,900.0	5,912.1	6,452.2	5,912.5	31.0	23.8	90.03	-860.5	-715.6	1,242.4	1,188.6	53.75	23.112	
7,000.0	5,912.1	6,722.2	5,912.5	32.6	27.9	90.02	-1,107.1	-825.1	1,283.1	1,223.6	59.42	21.594	
7,100.0	5,912.1	7,022.6	5,912.5	34.3	32.5	90.02	-1,396.5	-904.6	1,309.6	1,243.8	65.87	19.883	
7,200.0	5,912.1	7,342.2	5,912.5	36.1	37.4	90.02	-1,714.0	-938.4	1,320.3	1,247.5	72.71	18.157	
7,300.0	5,912.1	7,471.7	5,912.5	37.8	39.3	90.02	-1,843.5	-938.9	1,320.4	1,243.8	76.58	17.241	
7,400.0	5,912.1	7,571.7	5,912.5	39.6	40.9	90.02	-1,943.5	-938.9	1,320.4	1,240.4	80.03	16.499	
7,500.0	5,912.1	7,671.7	5,912.5	41.3	42.4	90.02	-2,043.5	-938.9	1,320.4	1,236.9	83.51	15.810	
7,600.0	5,912.1	7,771.7	5,912.5	43.1	44.0	90.02	-2,143.5	-938.9	1,320.4	1,233.3	87.03	15.172	
7,700.0	5,912.1	7,871.7	5,912.5	44.9	45.7	90.02	-2,243.5	-938.9	1,320.4	1,229.8	90.57	14.578	
7,800.0	5,912.1	7,971.7	5,912.5	46.7	47.3	90.02	-2,343.5	-938.8	1,320.4	1,226.2	94.14	14.026	
7,900.0	5,912.1	8,071.7	5,912.5	48.5	48.9	90.02	-2,443.5	-938.8	1,320.3	1,222.6	97.72	13.511	
8,000.0	5,912.1	8,171.7	5,912.4	50.3	50.6	90.02	-2,543.5	-938.8	1,320.3	1,219.0	101.33	13.030	
8,100.0	5,912.1	8,271.7	5,912.4	52.2	52.3	90.02	-2,643.5	-938.8	1,320.3	1,215.4	104.96	12.580	
8,200.0	5,912.1	8,371.7	5,912.4	54.0	54.0	90.02	-2,743.5	-938.8	1,320.3	1,211.7	108.60	12.158	
8,300.0	5,912.1	8,471.7	5,912.4	55.9	55.8	90.02	-2,843.5	-938.8	1,320.3	1,208.1	112.25	11.762	
8,400.0	5,912.0	8,571.7	5,912.4	57.7	57.5	90.02	-2,943.5	-938.8	1,320.3	1,204.4	115.92	11.390	
8,500.0	5,912.0	8,671.7	5,912.4	59.5	59.2	90.02	-3,043.5	-938.8	1,320.3	1,200.7	119.60	11.039	
8,600.0	5,912.0	8,771.7	5,912.4	61.4	61.0	90.02	-3,143.5	-938.8	1,320.3	1,197.0	123.29	10.709	
8,700.0	5,912.0	8,871.7	5,912.4	63.3	62.8	90.01	-3,243.5	-938.8	1,320.3	1,193.3	126.99	10.397	
8,800.0	5,912.0	8,971.7	5,912.4	65.1	64.5	90.01	-3,343.5	-938.8	1,320.3	1,189.6	130.69	10.102	
8,900.0	5,912.0	9,071.7	5,912.4	67.0	66.3	90.01	-3,443.5	-938.8	1,320.3	1,185.9	134.41	9.823	
9,000.0	5,912.0	9,171.7	5,912.4	68.9	68.1	90.01	-3,543.5	-938.8	1,320.3	1,182.1	138.13	9.558	
9,100.0	5,912.0	9,271.7	5,912.4	70.7	69.9	90.01	-3,643.5	-938.8	1,320.3	1,178.4	141.86	9.307	
9,200.0	5,912.0	9,371.7	5,912.4	72.6	71.7	90.01	-3,743.5	-938.8	1,320.2	1,174.7	145.59	9.068	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	9,471.7	5,912.3	74.5	73.5	90.01	-3,843.5	-938.8	1,320.2	1,170.9	149.33	8.841	
9,400.0	5,912.0	9,571.7	5,912.3	76.4	75.3	90.01	-3,943.5	-938.8	1,320.2	1,167.1	153.08	8.625	
9,500.0	5,912.0	9,671.7	5,912.3	78.2	77.2	90.01	-4,043.5	-938.8	1,320.2	1,163.4	156.83	8.418	
9,600.0	5,912.0	9,771.7	5,912.3	80.1	79.0	90.01	-4,143.5	-938.8	1,320.2	1,159.6	160.58	8.221	
9,700.0	5,912.0	9,871.7	5,912.3	82.0	80.8	90.01	-4,243.5	-938.8	1,320.2	1,155.9	164.34	8.033	
9,800.0	5,912.0	9,971.7	5,912.3	83.9	82.7	90.01	-4,343.5	-938.8	1,320.2	1,152.1	168.11	7.853	
9,900.0	5,912.0	10,071.7	5,912.3	85.8	84.5	90.01	-4,443.5	-938.8	1,320.2	1,148.3	171.87	7.681	
10,000.0	5,912.0	10,171.7	5,912.3	87.7	86.3	90.01	-4,543.5	-938.8	1,320.2	1,144.5	175.64	7.516	
10,100.0	5,912.0	10,271.7	5,912.3	89.6	88.2	90.01	-4,643.5	-938.8	1,320.2	1,140.8	179.42	7.358	
10,200.0	5,912.0	10,371.7	5,912.3	91.5	90.0	90.01	-4,743.5	-938.7	1,320.2	1,137.0	183.19	7.206	
10,300.0	5,912.0	10,471.7	5,912.3	93.4	91.9	90.01	-4,843.5	-938.7	1,320.2	1,133.2	186.97	7.061	
10,400.0	5,912.0	10,571.7	5,912.3	95.3	93.7	90.01	-4,943.5	-938.7	1,320.1	1,129.4	190.75	6.921	
10,500.0	5,912.0	10,671.7	5,912.3	97.1	95.6	90.01	-5,043.5	-938.7	1,320.1	1,125.6	194.54	6.786	
10,600.0	5,912.0	10,771.7	5,912.2	99.0	97.5	90.01	-5,143.5	-938.7	1,320.1	1,121.8	198.32	6.656	
10,700.0	5,912.0	10,871.7	5,912.2	100.9	99.3	90.01	-5,243.5	-938.7	1,320.1	1,118.0	202.11	6.532	
10,800.0	5,912.0	10,971.7	5,912.2	102.8	101.2	90.01	-5,343.5	-938.7	1,320.1	1,114.2	205.90	6.411	
10,900.0	5,912.0	11,071.7	5,912.2	104.7	103.1	90.01	-5,443.5	-938.7	1,320.1	1,110.4	209.70	6.295	
11,000.0	5,912.0	11,171.7	5,912.2	106.6	104.9	90.01	-5,543.5	-938.7	1,320.1	1,106.6	213.49	6.183	
11,100.0	5,912.0	11,271.7	5,912.2	108.5	106.8	90.01	-5,643.5	-938.7	1,320.1	1,102.8	217.29	6.075	
11,200.0	5,912.0	11,371.7	5,912.2	110.4	108.7	90.01	-5,743.5	-938.7	1,320.1	1,099.0	221.08	5.971	
11,300.0	5,912.0	11,471.7	5,912.2	112.3	110.6	90.01	-5,843.5	-938.7	1,320.1	1,095.2	224.88	5.870	
11,400.0	5,912.0	11,571.7	5,912.2	114.2	112.4	90.01	-5,943.5	-938.7	1,320.1	1,091.4	228.68	5.772	
11,500.0	5,912.0	11,671.7	5,912.2	116.2	114.3	90.01	-6,043.5	-938.7	1,320.1	1,087.6	232.49	5.678	
11,600.0	5,912.0	11,771.7	5,912.2	118.1	116.2	90.01	-6,143.5	-938.7	1,320.1	1,083.8	236.29	5.587	
11,700.0	5,912.0	11,871.7	5,912.2	120.0	118.1	90.01	-6,243.5	-938.7	1,320.0	1,079.9	240.10	5.498	
11,800.0	5,912.0	11,971.7	5,912.2	121.9	120.0	90.01	-6,343.5	-938.7	1,320.0	1,076.1	243.90	5.412	
11,900.0	5,912.0	12,071.7	5,912.1	123.8	121.8	90.01	-6,443.5	-938.7	1,320.0	1,072.3	247.71	5.329	
12,000.0	5,912.0	12,171.7	5,912.1	125.7	123.7	90.01	-6,543.5	-938.7	1,320.0	1,068.5	251.52	5.248	
12,100.0	5,912.0	12,271.7	5,912.1	127.6	125.6	90.00	-6,643.5	-938.7	1,320.0	1,064.7	255.33	5.170	
12,200.0	5,912.0	12,371.7	5,912.1	129.5	127.5	90.00	-6,743.5	-938.7	1,320.0	1,060.9	259.14	5.094	
12,300.0	5,912.0	12,471.7	5,912.1	131.4	129.4	90.00	-6,843.5	-938.7	1,320.0	1,057.0	262.95	5.020	
12,400.0	5,912.0	12,571.7	5,912.1	133.3	131.3	90.00	-6,943.5	-938.7	1,320.0	1,053.2	266.76	4.948	
12,500.0	5,912.0	12,671.7	5,912.1	135.2	133.2	90.00	-7,043.5	-938.6	1,320.0	1,049.4	270.57	4.878	
12,600.0	5,912.0	12,771.7	5,912.1	137.1	135.1	90.00	-7,143.5	-938.6	1,320.0	1,045.6	274.39	4.811	
12,700.0	5,912.0	12,871.7	5,912.1	139.0	136.9	90.00	-7,243.5	-938.6	1,320.0	1,041.8	278.20	4.745	
12,800.0	5,912.0	12,971.7	5,912.1	140.9	138.8	90.00	-7,343.5	-938.6	1,320.0	1,037.9	282.02	4.680	
12,900.0	5,912.0	13,071.7	5,912.1	142.9	140.7	90.00	-7,443.5	-938.6	1,319.9	1,034.1	285.84	4.618	
13,000.0	5,912.0	13,171.7	5,912.1	144.8	142.6	90.00	-7,543.5	-938.6	1,319.9	1,030.3	289.65	4.557	
13,100.0	5,912.0	13,271.7	5,912.1	146.7	144.5	90.00	-7,643.5	-938.6	1,319.9	1,026.5	293.47	4.498	
13,200.0	5,912.0	13,371.7	5,912.0	148.6	146.4	90.00	-7,743.5	-938.6	1,319.9	1,022.6	297.29	4.440	
13,300.0	5,912.0	13,471.7	5,912.0	150.5	148.3	90.00	-7,843.5	-938.6	1,319.9	1,018.8	301.11	4.383	
13,400.0	5,912.0	13,571.7	5,912.0	152.4	150.2	90.00	-7,943.5	-938.6	1,319.9	1,015.0	304.93	4.329	
13,500.0	5,912.0	13,671.7	5,912.0	154.3	152.1	90.00	-8,043.5	-938.6	1,319.9	1,011.1	308.75	4.275	
13,600.0	5,912.0	13,771.7	5,912.0	156.2	154.0	90.00	-8,143.5	-938.6	1,319.9	1,007.3	312.57	4.223	
13,695.8	5,912.0	13,867.5	5,912.0	157.7	155.6	90.00	-8,239.3	-938.6	1,319.9	1,004.2	315.67	4.181	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-52.71	74.9	-98.4	123.6				
100.0	100.0	100.0	100.0	0.1	0.1	-52.71	74.9	-98.4	123.6	123.4	0.19	661.129	
200.0	200.0	200.0	200.0	0.3	0.3	-52.71	74.9	-98.4	123.6	123.0	0.64	194.235	
300.0	300.0	300.0	300.0	0.5	0.5	-52.71	74.9	-98.4	123.6	122.5	1.09	113.839	
400.0	400.0	400.0	400.0	0.8	0.8	-52.71	74.9	-98.4	123.6	122.1	1.54	80.514	
500.0	500.0	500.0	500.0	1.0	1.0	-52.71	74.9	-98.4	123.6	121.7	1.99	62.281	
600.0	600.0	601.0	600.9	1.2	1.2	-53.51	73.3	-99.1	123.2	120.8	2.41	51.117	
700.0	700.0	701.7	701.5	1.4	1.4	-55.95	68.4	-101.2	122.2	119.4	2.83	43.222	
800.0	800.0	801.4	801.0	1.7	1.6	-59.19	62.1	-104.1	121.2	117.9	3.26	37.167	
900.0	900.0	901.2	900.5	1.9	1.8	-62.47	55.7	-106.9	120.5	116.8	3.71	32.521	
1,000.0	1,000.0	1,000.9	1,000.0	2.1	2.1	-65.78	49.3	-109.7	120.3	116.1	4.16	28.895	
1,001.4	1,001.4	1,002.3	1,001.4	2.1	2.1	133.57	49.2	-109.7	120.3	116.1	4.18	28.802	CC, ES
1,100.0	1,100.0	1,100.8	1,099.6	2.3	2.3	130.91	43.0	-112.5	121.6	117.0	4.61	26.390	
1,200.0	1,199.8	1,200.6	1,199.3	2.5	2.5	129.47	36.6	-115.3	125.3	120.3	5.03	24.933	
1,300.0	1,299.6	1,300.5	1,298.9	2.7	2.8	128.78	30.2	-118.2	130.2	124.8	5.46	23.843	
1,400.0	1,399.4	1,400.4	1,398.5	2.9	3.0	128.13	23.9	-121.0	135.2	129.3	5.91	22.867	
1,500.0	1,499.1	1,500.2	1,498.1	3.1	3.3	127.53	17.5	-123.8	140.1	133.7	6.37	21.996	
1,600.0	1,598.9	1,600.1	1,597.8	3.3	3.5	126.98	11.1	-126.6	145.1	138.2	6.84	21.218	
1,700.0	1,698.6	1,700.0	1,697.4	3.5	3.8	126.45	4.8	-129.4	150.0	142.7	7.31	20.522	
1,800.0	1,798.4	1,799.8	1,797.0	3.8	4.1	125.97	-1.6	-132.3	155.0	147.2	7.79	19.898	
1,900.0	1,898.1	1,899.7	1,896.6	4.0	4.3	125.51	-8.0	-135.1	160.0	151.7	8.27	19.337	
2,000.0	1,997.9	1,999.6	1,996.2	4.2	4.6	125.08	-14.4	-137.9	165.0	156.2	8.76	18.830	
2,100.0	2,097.6	2,099.4	2,095.9	4.5	4.8	124.68	-20.7	-140.7	170.0	160.7	9.25	18.369	
2,200.0	2,197.4	2,199.3	2,195.5	4.7	5.1	124.30	-27.1	-143.6	175.0	165.3	9.75	17.951	
2,300.0	2,297.2	2,299.2	2,295.1	5.0	5.4	123.94	-33.5	-146.4	180.0	169.8	10.25	17.569	
2,400.0	2,396.9	2,399.0	2,394.7	5.2	5.6	123.60	-39.8	-149.2	185.1	174.3	10.75	17.219	
2,500.0	2,496.7	2,498.9	2,494.4	5.5	5.9	123.27	-46.2	-152.0	190.1	178.9	11.25	16.898	
2,600.0	2,596.4	2,598.8	2,594.0	5.7	6.1	122.97	-52.6	-154.9	195.2	183.4	11.75	16.603	
2,700.0	2,696.2	2,698.6	2,693.6	6.0	6.4	122.68	-58.9	-157.7	200.2	187.9	12.26	16.331	
2,800.0	2,795.9	2,798.5	2,793.2	6.2	6.7	122.40	-65.3	-160.5	205.3	192.5	12.77	16.079	
2,900.0	2,895.7	2,898.4	2,892.9	6.5	6.9	122.14	-71.7	-163.3	210.3	197.0	13.27	15.845	
3,000.0	2,995.5	2,998.3	2,992.5	6.7	7.2	121.89	-78.0	-166.1	215.4	201.6	13.78	15.627	
3,100.0	3,095.2	3,098.1	3,092.1	7.0	7.5	121.65	-84.4	-169.0	220.4	206.1	14.29	15.424	
3,200.0	3,195.0	3,198.0	3,191.7	7.3	7.7	121.42	-90.8	-171.8	225.5	210.7	14.80	15.235	
3,300.0	3,294.7	3,297.9	3,291.4	7.5	8.0	121.20	-97.2	-174.6	230.6	215.3	15.31	15.057	
3,400.0	3,394.5	3,397.7	3,391.0	7.8	8.2	120.99	-103.5	-177.4	235.7	219.8	15.83	14.891	
3,500.0	3,494.2	3,497.6	3,490.6	8.0	8.5	120.79	-109.9	-180.3	240.7	224.4	16.34	14.735	
3,600.0	3,594.0	3,597.5	3,590.2	8.3	8.8	120.60	-116.3	-183.1	245.8	229.0	16.85	14.588	
3,700.0	3,693.7	3,697.3	3,689.9	8.5	9.0	120.42	-122.6	-185.9	250.9	233.5	17.36	14.449	
3,800.0	3,793.5	3,797.2	3,789.5	8.8	9.3	120.24	-129.0	-188.7	256.0	238.1	17.88	14.318	
3,900.0	3,893.3	3,897.1	3,889.1	9.1	9.6	120.07	-135.4	-191.5	261.1	242.7	18.39	14.194	
4,000.0	3,993.0	3,996.9	3,988.7	9.3	9.8	119.91	-141.7	-194.4	266.2	247.3	18.91	14.077	
4,100.0	4,092.8	4,096.8	4,088.4	9.6	10.1	119.75	-148.1	-197.2	271.3	251.8	19.42	13.966	
4,200.0	4,192.5	4,196.7	4,188.0	9.8	10.3	119.60	-154.5	-200.0	276.3	256.4	19.94	13.860	
4,300.0	4,292.3	4,296.5	4,287.6	10.1	10.6	119.46	-160.8	-202.8	281.4	261.0	20.45	13.760	
4,400.0	4,392.0	4,396.4	4,387.2	10.4	10.9	119.32	-167.2	-205.7	286.5	265.6	20.97	13.664	
4,500.0	4,491.8	4,496.3	4,486.9	10.6	11.1	119.18	-173.6	-208.5	291.6	270.2	21.49	13.573	
4,600.0	4,591.6	4,596.1	4,586.5	10.9	11.4	119.05	-180.0	-211.3	296.7	274.7	22.00	13.486	
4,700.0	4,691.3	4,696.0	4,686.1	11.2	11.7	118.92	-186.3	-214.1	301.8	279.3	22.52	13.403	
4,800.0	4,791.1	4,795.9	4,785.7	11.4	11.9	118.80	-192.7	-216.9	306.9	283.9	23.04	13.324	
4,900.0	4,890.8	4,895.7	4,885.4	11.7	12.2	118.68	-199.1	-219.8	312.1	288.5	23.55	13.248	
5,000.0	4,990.6	4,995.6	4,985.0	11.9	12.5	118.57	-205.4	-222.6	317.2	293.1	24.07	13.176	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,090.3	5,095.5	5,084.6	12.2	12.7	118.46	-211.8	-225.4	322.3	297.7	24.59	13.106	
5,200.0	5,190.1	5,195.3	5,184.2	12.5	13.0	118.35	-218.2	-228.2	327.4	302.3	25.11	13.039	
5,300.0	5,289.9	5,295.2	5,283.8	12.7	13.2	118.24	-224.5	-231.1	332.5	306.9	25.62	12.975	
5,400.0	5,389.6	5,386.7	5,374.9	13.0	13.5	117.78	-232.4	-234.6	338.3	312.2	26.15	12.939	
5,438.0	5,427.5	5,418.5	5,406.1	13.1	13.6	117.11	-238.0	-237.1	341.5	315.2	26.37	12.954	
5,450.0	5,439.5	5,428.4	5,415.8	13.1	13.7	116.74	-240.1	-238.0	342.8	316.3	26.43	12.969	
5,500.0	5,489.0	5,469.3	5,455.0	13.3	13.9	115.03	-250.6	-242.6	350.0	323.3	26.71	13.102	
5,550.0	5,537.5	5,509.2	5,492.4	13.5	14.1	113.12	-263.4	-248.3	360.5	333.5	27.02	13.341	
5,600.0	5,584.8	5,550.0	5,529.3	13.7	14.3	111.00	-279.2	-255.4	374.2	346.8	27.39	13.661	
5,650.0	5,630.2	5,585.7	5,560.4	14.0	14.6	108.77	-295.1	-262.4	390.6	362.8	27.79	14.054	
5,700.0	5,673.5	5,622.1	5,590.9	14.4	14.8	106.35	-313.4	-270.6	409.7	381.4	28.28	14.489	
5,750.0	5,714.1	5,657.4	5,618.9	14.7	15.1	103.80	-332.8	-279.2	431.1	402.3	28.84	14.952	
5,800.0	5,751.8	5,691.4	5,644.6	15.2	15.4	101.12	-353.2	-288.3	454.6	425.1	29.52	15.401	
5,850.0	5,786.2	5,724.3	5,668.0	15.7	15.8	98.32	-374.3	-297.7	479.9	449.6	30.29	15.841	
5,900.0	5,816.9	5,750.0	5,685.2	16.2	16.0	95.29	-391.8	-305.4	506.7	475.6	31.09	16.298	
5,950.0	5,843.7	5,786.8	5,708.2	16.8	16.4	92.43	-418.0	-317.1	534.8	502.7	32.04	16.692	
6,000.0	5,866.4	5,816.6	5,725.3	17.4	16.8	89.38	-440.4	-327.1	563.9	530.9	32.96	17.106	
6,050.0	5,884.6	5,850.0	5,742.7	18.1	17.1	86.46	-466.4	-338.6	593.8	559.9	33.94	17.498	
6,100.0	5,898.3	5,874.0	5,754.1	18.8	17.5	83.22	-485.6	-347.2	624.3	589.5	34.82	17.931	
6,150.0	5,907.4	5,900.0	5,765.4	19.6	17.8	80.09	-507.1	-356.7	655.3	619.6	35.69	18.360	
6,200.0	5,911.7	5,928.9	5,776.5	20.4	18.2	77.19	-531.5	-367.6	686.4	649.8	36.59	18.762	
6,219.8	5,912.1	5,939.6	5,780.2	20.7	18.3	76.04	-540.6	-371.7	698.8	661.9	36.92	18.926	
6,300.0	5,912.1	5,984.9	5,793.7	21.9	19.0	78.43	-580.1	-389.2	748.5	709.3	39.22	19.087	
6,400.0	5,912.1	6,050.0	5,806.4	23.3	19.9	80.67	-638.4	-415.2	809.1	767.1	42.01	19.260	
6,500.0	5,912.1	6,113.8	5,811.1	24.8	20.9	81.86	-696.5	-441.0	867.3	822.6	44.75	19.380	
6,600.0	5,912.1	6,266.0	5,811.1	26.3	23.0	82.89	-837.7	-497.7	919.3	870.7	48.52	18.947	
6,700.0	5,912.1	6,445.6	5,811.1	27.9	25.6	83.60	-1,009.5	-550.0	958.8	906.0	52.76	18.173	
6,800.0	5,912.1	6,641.4	5,811.1	29.4	28.5	84.02	-1,201.3	-588.2	984.2	926.8	57.42	17.139	
6,866.6	5,912.1	6,777.5	5,811.1	30.4	30.6	84.15	-1,336.6	-603.2	992.6	932.0	60.65	16.366	
6,900.0	5,912.1	6,846.7	5,811.1	31.0	31.6	84.17	-1,405.7	-607.1	994.5	932.2	62.28	15.969	
7,000.0	5,912.1	6,984.5	5,811.1	32.6	33.8	84.18	-1,543.5	-608.5	995.1	928.9	66.18	15.036	
7,100.0	5,912.1	7,084.5	5,811.1	34.3	35.4	84.18	-1,643.5	-608.5	995.1	925.5	69.60	14.299	
7,200.0	5,912.1	7,184.5	5,811.1	36.1	37.0	84.18	-1,743.5	-608.4	995.1	922.1	73.05	13.622	
7,300.0	5,912.1	7,284.5	5,811.1	37.8	38.7	84.18	-1,843.5	-608.4	995.1	918.6	76.55	13.000	
7,400.0	5,912.1	7,384.5	5,811.1	39.6	40.4	84.18	-1,943.5	-608.4	995.1	915.0	80.07	12.427	
7,500.0	5,912.1	7,484.5	5,811.1	41.3	42.1	84.18	-2,043.5	-608.4	995.1	911.5	83.63	11.899	
7,600.0	5,912.1	7,584.5	5,811.1	43.1	43.9	84.18	-2,143.5	-608.4	995.1	907.9	87.20	11.411	
7,700.0	5,912.1	7,684.5	5,811.1	44.9	45.6	84.18	-2,243.5	-608.4	995.1	904.3	90.80	10.959	
7,800.0	5,912.1	7,784.5	5,811.1	46.7	47.4	84.18	-2,343.5	-608.4	995.1	900.6	94.42	10.539	
7,900.0	5,912.1	7,884.5	5,811.1	48.5	49.2	84.18	-2,443.5	-608.4	995.0	897.0	98.05	10.148	
8,000.0	5,912.1	7,984.5	5,811.1	50.3	51.0	84.18	-2,543.5	-608.4	995.0	893.3	101.70	9.784	
8,100.0	5,912.1	8,084.5	5,811.1	52.2	52.8	84.18	-2,643.5	-608.4	995.0	889.7	105.36	9.444	
8,200.0	5,912.1	8,184.5	5,811.1	54.0	54.6	84.18	-2,743.5	-608.4	995.0	886.0	109.03	9.126	
8,300.0	5,912.1	8,284.5	5,811.1	55.9	56.4	84.18	-2,843.5	-608.4	995.0	882.3	112.71	8.828	
8,400.0	5,912.0	8,384.5	5,811.1	57.7	58.2	84.18	-2,943.5	-608.4	995.0	878.6	116.40	8.548	
8,500.0	5,912.0	8,484.5	5,811.1	59.5	60.0	84.18	-3,043.5	-608.4	995.0	874.9	120.10	8.285	
8,600.0	5,912.0	8,584.5	5,811.1	61.4	61.8	84.18	-3,143.5	-608.4	995.0	871.2	123.81	8.036	
8,700.0	5,912.0	8,684.5	5,811.1	63.3	63.7	84.18	-3,243.5	-608.4	995.0	867.4	127.52	7.802	
8,800.0	5,912.0	8,784.5	5,811.1	65.1	65.5	84.18	-3,343.5	-608.3	995.0	863.7	131.24	7.581	
8,900.0	5,912.0	8,884.5	5,811.1	67.0	67.4	84.17	-3,443.5	-608.3	994.9	860.0	134.97	7.371	
9,000.0	5,912.0	8,984.5	5,811.1	68.9	69.2	84.17	-3,543.5	-608.3	994.9	856.2	138.70	7.173	
9,100.0	5,912.0	9,084.5	5,811.1	70.7	71.1	84.17	-3,643.5	-608.3	994.9	852.5	142.44	6.985	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1303A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,200.0	5,912.0	9,184.5	5,811.1	72.6	72.9	84.17	-3,743.5	-608.3	994.9	848.7	146.19	6.806	
9,300.0	5,912.0	9,284.5	5,811.1	74.5	74.8	84.17	-3,843.5	-608.3	994.9	845.0	149.93	6.636	
9,400.0	5,912.0	9,384.5	5,811.1	76.4	76.7	84.17	-3,943.5	-608.3	994.9	841.2	153.68	6.474	
9,500.0	5,912.0	9,484.5	5,811.1	78.2	78.5	84.17	-4,043.5	-608.3	994.9	837.4	157.44	6.319	
9,600.0	5,912.0	9,584.5	5,811.0	80.1	80.4	84.17	-4,143.5	-608.3	994.9	833.7	161.19	6.172	
9,700.0	5,912.0	9,684.5	5,811.0	82.0	82.3	84.17	-4,243.5	-608.3	994.9	829.9	164.96	6.031	
9,800.0	5,912.0	9,784.5	5,811.0	83.9	84.1	84.17	-4,343.5	-608.3	994.9	826.1	168.72	5.896	
9,900.0	5,912.0	9,884.5	5,811.0	85.8	86.0	84.17	-4,443.5	-608.3	994.8	822.4	172.49	5.768	
10,000.0	5,912.0	9,984.5	5,811.0	87.7	87.9	84.17	-4,543.5	-608.3	994.8	818.6	176.26	5.644	
10,100.0	5,912.0	10,084.5	5,811.0	89.6	89.8	84.17	-4,643.5	-608.3	994.8	814.8	180.03	5.526	
10,200.0	5,912.0	10,184.5	5,811.0	91.5	91.7	84.17	-4,743.5	-608.3	994.8	811.0	183.80	5.412	
10,300.0	5,912.0	10,284.5	5,811.0	93.4	93.5	84.17	-4,843.5	-608.3	994.8	807.2	187.58	5.303	
10,400.0	5,912.0	10,384.5	5,811.0	95.3	95.4	84.17	-4,943.5	-608.3	994.8	803.4	191.36	5.199	
10,500.0	5,912.0	10,484.5	5,811.0	97.1	97.3	84.17	-5,043.5	-608.2	994.8	799.7	195.14	5.098	
10,600.0	5,912.0	10,584.5	5,811.0	99.0	99.2	84.17	-5,143.5	-608.2	994.8	795.9	198.92	5.001	
10,700.0	5,912.0	10,684.5	5,811.0	100.9	101.1	84.17	-5,243.5	-608.2	994.8	792.1	202.70	4.908	
10,800.0	5,912.0	10,784.5	5,811.0	102.8	103.0	84.17	-5,343.5	-608.2	994.8	788.3	206.49	4.818	
10,900.0	5,912.0	10,884.5	5,811.0	104.7	104.9	84.17	-5,443.5	-608.2	994.7	784.5	210.27	4.731	
11,000.0	5,912.0	10,984.5	5,811.0	106.6	106.8	84.17	-5,543.5	-608.2	994.7	780.7	214.06	4.647	
11,100.0	5,912.0	11,084.5	5,811.0	108.5	108.7	84.17	-5,643.5	-608.2	994.7	776.9	217.85	4.566	
11,200.0	5,912.0	11,184.5	5,811.0	110.4	110.6	84.17	-5,743.5	-608.2	994.7	773.1	221.64	4.488	
11,300.0	5,912.0	11,284.5	5,811.0	112.3	112.4	84.17	-5,843.5	-608.2	994.7	769.3	225.43	4.412	
11,400.0	5,912.0	11,384.5	5,811.0	114.2	114.3	84.17	-5,943.5	-608.2	994.7	765.5	229.23	4.339	
11,500.0	5,912.0	11,484.5	5,811.0	116.2	116.2	84.17	-6,043.5	-608.2	994.7	761.7	233.02	4.269	
11,600.0	5,912.0	11,584.5	5,811.0	118.1	118.1	84.17	-6,143.5	-608.2	994.7	757.9	236.82	4.200	
11,700.0	5,912.0	11,684.5	5,811.0	120.0	120.0	84.17	-6,243.5	-608.2	994.7	754.1	240.61	4.134	
11,800.0	5,912.0	11,784.5	5,811.0	121.9	121.9	84.17	-6,343.5	-608.2	994.7	750.3	244.41	4.070	
11,900.0	5,912.0	11,884.5	5,811.0	123.8	123.8	84.17	-6,443.5	-608.2	994.7	746.4	248.21	4.007	
12,000.0	5,912.0	11,984.5	5,811.0	125.7	125.7	84.17	-6,543.5	-608.2	994.6	742.6	252.01	3.947	
12,100.0	5,912.0	12,084.5	5,811.0	127.6	127.6	84.17	-6,643.5	-608.1	994.6	738.8	255.81	3.888	
12,200.0	5,912.0	12,184.5	5,811.0	129.5	129.5	84.17	-6,743.5	-608.1	994.6	735.0	259.61	3.831	
12,300.0	5,912.0	12,284.5	5,811.0	131.4	131.4	84.17	-6,843.5	-608.1	994.6	731.2	263.41	3.776	
12,400.0	5,912.0	12,384.5	5,811.0	133.3	133.3	84.17	-6,943.5	-608.1	994.6	727.4	267.21	3.722	
12,500.0	5,912.0	12,484.5	5,811.0	135.2	135.3	84.17	-7,043.5	-608.1	994.6	723.6	271.01	3.670	
12,600.0	5,912.0	12,584.5	5,811.0	137.1	137.2	84.17	-7,143.5	-608.1	994.6	719.8	274.81	3.619	
12,700.0	5,912.0	12,684.5	5,811.0	139.0	139.1	84.17	-7,243.5	-608.1	994.6	716.0	278.62	3.570	
12,800.0	5,912.0	12,784.5	5,811.0	140.9	141.0	84.17	-7,343.5	-608.1	994.6	712.1	282.42	3.522	
12,900.0	5,912.0	12,884.5	5,811.0	142.9	142.9	84.17	-7,443.5	-608.1	994.6	708.3	286.23	3.475	
13,000.0	5,912.0	12,984.5	5,811.0	144.8	144.8	84.17	-7,543.5	-608.1	994.5	704.5	290.03	3.429	
13,100.0	5,912.0	13,084.5	5,811.0	146.7	146.7	84.17	-7,643.5	-608.1	994.5	700.7	293.84	3.385	
13,200.0	5,912.0	13,184.5	5,811.0	148.6	148.6	84.17	-7,743.5	-608.1	994.5	696.9	297.65	3.341	
13,300.0	5,912.0	13,284.5	5,811.0	150.5	150.5	84.17	-7,843.5	-608.1	994.5	693.1	301.45	3.299	
13,400.0	5,912.0	13,384.5	5,811.0	152.4	152.4	84.17	-7,943.5	-608.1	994.5	689.2	305.26	3.258	
13,500.0	5,912.0	13,484.5	5,811.0	154.3	154.3	84.17	-8,043.5	-608.1	994.5	685.4	309.07	3.218	
13,600.0	5,912.0	13,584.5	5,811.0	156.2	156.2	84.17	-8,143.5	-608.1	994.5	681.6	312.88	3.179	
13,695.8	5,912.0	13,680.2	5,811.0	157.7	158.1	84.17	-8,239.3	-608.1	994.5	678.3	316.19	3.145	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	0.0	-65.3	65.3				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-65.3	65.3	65.1	0.19	349.287	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-65.3	65.3	64.7	0.64	102.616	
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-65.3	65.3	64.2	1.09	60.142	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-65.3	65.3	63.8	1.54	42.536	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	0.0	-65.3	65.3	63.3	1.99	32.904	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	0.0	-65.3	65.3	62.9	2.43	26.829	
700.0	700.0	700.0	700.0	1.4	1.4	-89.99	0.0	-65.3	65.3	62.4	2.88	22.647	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	0.0	-65.3	65.3	62.0	3.33	19.593	
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	0.0	-65.3	65.3	61.5	3.78	17.265	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	0.0	-65.3	65.3	61.1	4.23	15.432	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	110.83	0.0	-65.3	65.9	61.3	4.65	14.164	
1,200.0	1,199.8	1,199.5	1,199.5	2.5	2.5	113.45	-1.7	-65.7	68.2	63.2	5.02	13.568	
1,300.0	1,299.6	1,299.1	1,299.0	2.7	2.7	114.44	-6.8	-66.8	71.7	66.3	5.39	13.305	
1,400.0	1,399.4	1,399.1	1,398.7	2.9	2.9	114.01	-13.6	-68.2	75.4	69.7	5.78	13.060	
1,500.0	1,499.1	1,499.0	1,498.4	3.1	3.1	113.61	-20.4	-69.7	79.2	73.0	6.18	12.805	
1,600.0	1,598.9	1,598.9	1,598.0	3.3	3.3	113.25	-27.2	-71.2	82.9	76.3	6.61	12.551	
1,700.0	1,698.6	1,698.9	1,697.7	3.5	3.5	112.92	-34.0	-72.6	86.7	79.6	7.05	12.304	
1,800.0	1,798.4	1,798.8	1,797.4	3.8	3.7	112.62	-40.8	-74.1	90.5	83.0	7.50	12.068	
1,900.0	1,898.1	1,898.7	1,897.1	4.0	4.0	112.34	-47.7	-75.5	94.2	86.3	7.95	11.845	
2,000.0	1,997.9	1,998.6	1,996.8	4.2	4.2	112.09	-54.5	-77.0	98.0	89.6	8.42	11.636	
2,100.0	2,097.6	2,098.6	2,096.5	4.5	4.4	111.85	-61.3	-78.5	101.7	92.8	8.89	11.440	
2,200.0	2,197.4	2,198.5	2,196.1	4.7	4.7	111.63	-68.1	-79.9	105.5	96.1	9.37	11.258	
2,300.0	2,297.2	2,298.4	2,295.8	5.0	4.9	111.43	-74.9	-81.4	109.3	99.4	9.85	11.088	
2,400.0	2,396.9	2,398.4	2,395.5	5.2	5.2	111.24	-81.7	-82.8	113.0	102.7	10.34	10.930	
2,500.0	2,496.7	2,498.3	2,495.2	5.5	5.4	111.06	-88.5	-84.3	116.8	106.0	10.83	10.783	
2,600.0	2,596.4	2,598.2	2,594.9	5.7	5.7	110.89	-95.4	-85.8	120.6	109.2	11.33	10.645	
2,700.0	2,696.2	2,698.1	2,694.6	6.0	5.9	110.73	-102.2	-87.2	124.3	112.5	11.82	10.517	
2,800.0	2,795.9	2,798.1	2,794.3	6.2	6.1	110.58	-109.0	-88.7	128.1	115.8	12.32	10.397	
2,900.0	2,895.7	2,898.0	2,893.9	6.5	6.4	110.45	-115.8	-90.1	131.9	119.1	12.82	10.285	
3,000.0	2,995.5	2,997.9	2,993.6	6.7	6.7	110.31	-122.6	-91.6	135.7	122.3	13.33	10.180	
3,100.0	3,095.2	3,097.9	3,093.3	7.0	6.9	110.19	-129.4	-93.1	139.4	125.6	13.83	10.081	
3,200.0	3,195.0	3,197.8	3,193.0	7.3	7.2	110.07	-136.3	-94.5	143.2	128.9	14.34	9.989	
3,300.0	3,294.7	3,297.7	3,292.7	7.5	7.4	109.96	-143.1	-96.0	147.0	132.1	14.85	9.902	
3,400.0	3,394.5	3,397.6	3,392.4	7.8	7.7	109.85	-149.9	-97.5	150.8	135.4	15.35	9.819	
3,500.0	3,494.2	3,497.6	3,492.1	8.0	7.9	109.75	-156.7	-98.9	154.5	138.7	15.86	9.742	
3,600.0	3,594.0	3,597.5	3,591.7	8.3	8.2	109.65	-163.5	-100.4	158.3	141.9	16.37	9.669	
3,700.0	3,693.7	3,697.4	3,691.4	8.5	8.4	109.56	-170.3	-101.8	162.1	145.2	16.89	9.599	
3,800.0	3,793.5	3,797.4	3,791.1	8.8	8.7	109.47	-177.2	-103.3	165.9	148.5	17.40	9.534	
3,900.0	3,893.3	3,897.3	3,890.8	9.1	9.0	109.39	-184.0	-104.8	169.7	151.7	17.91	9.472	
4,000.0	3,993.0	3,997.2	3,990.5	9.3	9.2	109.31	-190.8	-106.2	173.4	155.0	18.43	9.412	
4,100.0	4,092.8	4,097.1	4,090.2	9.6	9.5	109.23	-197.6	-107.7	177.2	158.3	18.94	9.356	
4,200.0	4,192.5	4,197.1	4,189.8	9.8	9.7	109.16	-204.4	-109.1	181.0	161.5	19.46	9.303	
4,300.0	4,292.3	4,297.0	4,289.5	10.1	10.0	109.09	-211.2	-110.6	184.8	164.8	19.97	9.252	
4,400.0	4,392.0	4,396.9	4,389.2	10.4	10.2	109.02	-218.0	-112.1	188.6	168.1	20.49	9.203	
4,500.0	4,491.8	4,496.9	4,488.9	10.6	10.5	108.96	-224.9	-113.5	192.3	171.3	21.00	9.157	
4,600.0	4,591.6	4,596.8	4,588.6	10.9	10.8	108.89	-231.7	-115.0	196.1	174.6	21.52	9.113	
4,700.0	4,691.3	4,696.7	4,688.3	11.2	11.0	108.83	-238.5	-116.4	199.9	177.9	22.04	9.070	
4,800.0	4,791.1	4,796.6	4,788.0	11.4	11.3	108.78	-245.3	-117.9	203.7	181.1	22.56	9.030	
4,900.0	4,890.8	4,896.6	4,887.6	11.7	11.6	108.72	-252.1	-119.4	207.5	184.4	23.07	8.991	
5,000.0	4,990.6	4,996.5	4,987.3	11.9	11.8	108.67	-258.9	-120.8	211.2	187.6	23.59	8.953	
5,100.0	5,090.3	5,096.4	5,087.0	12.2	12.1	108.61	-265.8	-122.3	215.0	190.9	24.11	8.918	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,196.3	5,186.7	12.5	12.3	108.56	-272.6	-123.8	218.8	194.2	24.63	8.883	
5,300.0	5,289.9	5,296.3	5,286.4	12.7	12.6	108.52	-279.4	-125.2	222.6	197.4	25.15	8.850	
5,400.0	5,389.6	5,396.2	5,386.1	13.0	12.9	108.47	-286.2	-126.7	226.4	200.7	25.67	8.819	
5,438.0	5,427.5	5,434.2	5,424.0	13.1	13.0	108.45	-288.8	-127.2	227.8	201.9	25.87	8.807	
5,450.0	5,439.5	5,445.4	5,435.2	13.1	13.0	108.41	-289.6	-127.4	228.3	202.4	25.93	8.807	
5,500.0	5,489.0	5,490.8	5,480.2	13.3	13.1	108.13	-295.3	-128.6	232.0	205.8	26.20	8.855	
5,550.0	5,537.5	5,535.9	5,524.2	13.5	13.3	107.67	-304.6	-130.6	238.1	211.5	26.52	8.977	
5,600.0	5,584.8	5,580.7	5,567.0	13.7	13.5	107.02	-317.6	-133.4	246.5	219.6	26.90	9.166	
5,650.0	5,630.2	5,625.0	5,608.0	14.0	13.7	106.19	-333.9	-136.9	257.3	230.0	27.34	9.410	
5,700.0	5,673.5	5,668.7	5,646.9	14.4	14.0	105.20	-353.3	-141.1	270.2	242.4	27.86	9.700	
5,750.0	5,714.1	5,711.8	5,683.6	14.7	14.3	104.05	-375.5	-145.8	285.2	256.7	28.46	10.022	
5,800.0	5,751.8	5,754.3	5,717.8	15.2	14.6	102.76	-400.2	-151.1	302.0	272.9	29.18	10.352	
5,850.0	5,786.2	5,796.2	5,749.4	15.7	15.0	101.33	-427.1	-156.9	320.6	290.6	30.01	10.683	
5,900.0	5,816.9	5,837.6	5,778.2	16.2	15.4	99.77	-456.0	-163.1	340.7	309.7	30.95	11.009	
5,950.0	5,843.7	5,878.4	5,804.3	16.8	15.8	98.11	-486.7	-169.7	362.1	330.2	31.98	11.324	
6,000.0	5,866.4	5,918.8	5,827.7	17.4	16.2	96.34	-518.9	-176.6	384.8	351.7	33.10	11.625	
6,050.0	5,884.6	5,958.8	5,848.3	18.1	16.7	94.51	-552.5	-183.8	408.4	374.1	34.29	11.910	
6,100.0	5,898.3	6,000.0	5,866.6	18.8	17.2	92.65	-588.5	-191.5	432.9	397.3	35.55	12.175	
6,150.0	5,907.4	6,038.5	5,881.1	19.6	17.7	90.69	-623.4	-199.0	458.0	421.1	36.84	12.429	
6,200.0	5,911.7	6,078.5	5,893.2	20.4	18.2	88.76	-660.6	-206.9	483.5	445.3	38.18	12.664	
6,219.8	5,912.1	6,094.4	5,897.3	20.7	18.4	88.00	-675.6	-210.2	493.7	455.0	38.71	12.753	
6,300.0	5,912.1	6,161.4	5,909.0	21.9	19.4	89.63	-740.1	-224.0	533.9	492.9	41.05	13.007	
6,400.0	5,912.1	6,262.9	5,912.3	23.3	20.9	90.03	-839.3	-244.8	579.9	535.8	44.12	13.142	
6,500.0	5,912.1	6,398.5	5,912.3	24.8	22.7	90.02	-973.3	-265.4	616.2	568.6	47.60	12.945	
6,600.0	5,912.1	6,543.1	5,912.3	26.3	24.8	90.02	-1,117.4	-277.0	640.5	589.2	51.32	12.481	
6,700.0	5,912.1	6,669.4	5,912.3	27.9	26.7	90.02	-1,243.7	-278.6	652.9	598.1	54.87	11.900	
6,800.0	5,912.1	6,769.2	5,912.3	29.4	28.3	90.02	-1,343.5	-278.6	659.0	600.9	58.08	11.346	
6,866.6	5,912.1	6,835.7	5,912.3	30.4	29.4	90.02	-1,410.0	-278.6	660.2	600.0	60.19	10.969	
6,900.0	5,912.1	6,869.2	5,912.3	31.0	30.0	90.02	-1,443.4	-278.6	660.2	598.9	61.31	10.768	
7,000.0	5,912.1	6,969.2	5,912.3	32.6	31.7	90.02	-1,543.4	-278.6	660.2	595.4	64.75	10.195	
7,100.0	5,912.1	7,069.2	5,912.3	34.3	33.4	90.02	-1,643.4	-278.6	660.2	591.9	68.24	9.674	
7,200.0	5,912.1	7,169.2	5,912.3	36.1	35.2	90.02	-1,743.4	-278.6	660.1	588.4	71.76	9.199	
7,300.0	5,912.1	7,269.2	5,912.3	37.8	36.9	90.02	-1,843.4	-278.6	660.1	584.8	75.32	8.765	
7,400.0	5,912.1	7,369.2	5,912.3	39.6	38.7	90.02	-1,943.4	-278.6	660.1	581.2	78.90	8.367	
7,500.0	5,912.1	7,469.2	5,912.3	41.3	40.5	90.02	-2,043.4	-278.6	660.1	577.6	82.50	8.001	
7,600.0	5,912.1	7,569.2	5,912.3	43.1	42.3	90.02	-2,143.4	-278.6	660.1	574.0	86.13	7.664	
7,700.0	5,912.1	7,669.2	5,912.3	44.9	44.2	90.02	-2,243.4	-278.6	660.1	570.3	89.78	7.353	
7,800.0	5,912.1	7,769.2	5,912.3	46.7	46.0	90.02	-2,343.4	-278.6	660.1	566.6	93.44	7.064	
7,900.0	5,912.1	7,869.2	5,912.2	48.5	47.8	90.02	-2,443.4	-278.6	660.1	563.0	97.12	6.797	
8,000.0	5,912.1	7,969.2	5,912.2	50.3	49.7	90.02	-2,543.4	-278.6	660.1	559.3	100.80	6.548	
8,100.0	5,912.1	8,069.2	5,912.2	52.2	51.5	90.02	-2,643.4	-278.6	660.1	555.6	104.50	6.316	
8,200.0	5,912.1	8,169.2	5,912.2	54.0	53.4	90.02	-2,743.4	-278.6	660.1	551.8	108.21	6.100	
8,300.0	5,912.1	8,269.2	5,912.2	55.9	55.2	90.02	-2,843.4	-278.6	660.0	548.1	111.93	5.897	
8,400.0	5,912.0	8,369.2	5,912.2	57.7	57.1	90.02	-2,943.4	-278.6	660.0	544.4	115.66	5.707	
8,500.0	5,912.0	8,469.2	5,912.2	59.5	58.9	90.02	-3,043.4	-278.5	660.0	540.6	119.40	5.528	
8,600.0	5,912.0	8,569.2	5,912.2	61.4	60.8	90.01	-3,143.4	-278.5	660.0	536.9	123.14	5.360	
8,700.0	5,912.0	8,669.2	5,912.2	63.3	62.7	90.01	-3,243.4	-278.5	660.0	533.1	126.89	5.202	
8,800.0	5,912.0	8,769.2	5,912.2	65.1	64.5	90.01	-3,343.4	-278.5	660.0	529.4	130.64	5.052	
8,900.0	5,912.0	8,869.2	5,912.2	67.0	66.4	90.01	-3,443.4	-278.5	660.0	525.6	134.40	4.911	
9,000.0	5,912.0	8,969.2	5,912.2	68.9	68.3	90.01	-3,543.4	-278.5	660.0	521.8	138.16	4.777	
9,100.0	5,912.0	9,069.2	5,912.2	70.7	70.2	90.01	-3,643.4	-278.5	660.0	518.0	141.93	4.650	
9,200.0	5,912.0	9,169.2	5,912.2	72.6	72.1	90.01	-3,743.4	-278.5	660.0	514.3	145.70	4.530	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

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

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	9,269.2	5,912.2	74.5	74.0	90.01	-3,843.4	-278.5	660.0	510.5	149.48	4.415	
9,400.0	5,912.0	9,369.2	5,912.2	76.4	75.8	90.01	-3,943.4	-278.5	659.9	506.7	153.25	4.306	
9,500.0	5,912.0	9,469.2	5,912.2	78.2	77.7	90.01	-4,043.4	-278.5	659.9	502.9	157.04	4.202	
9,600.0	5,912.0	9,569.2	5,912.2	80.1	79.6	90.01	-4,143.4	-278.5	659.9	499.1	160.82	4.103	
9,700.0	5,912.0	9,669.2	5,912.2	82.0	81.5	90.01	-4,243.4	-278.5	659.9	495.3	164.61	4.009	
9,800.0	5,912.0	9,769.2	5,912.2	83.9	83.4	90.01	-4,343.4	-278.5	659.9	491.5	168.40	3.919	
9,900.0	5,912.0	9,869.2	5,912.2	85.8	85.3	90.01	-4,443.4	-278.5	659.9	487.7	172.19	3.832	
10,000.0	5,912.0	9,969.2	5,912.2	87.7	87.2	90.01	-4,543.4	-278.5	659.9	483.9	175.99	3.750	
10,100.0	5,912.0	10,069.2	5,912.2	89.6	89.1	90.01	-4,643.4	-278.5	659.9	480.1	179.78	3.670	
10,200.0	5,912.0	10,169.2	5,912.2	91.5	91.0	90.01	-4,743.4	-278.5	659.9	476.3	183.58	3.594	
10,300.0	5,912.0	10,269.2	5,912.1	93.4	92.9	90.01	-4,843.4	-278.5	659.9	472.5	187.38	3.521	
10,400.0	5,912.0	10,369.2	5,912.1	95.3	94.8	90.01	-4,943.4	-278.4	659.9	468.7	191.18	3.451	
10,500.0	5,912.0	10,469.2	5,912.1	97.1	96.7	90.01	-5,043.4	-278.4	659.8	464.9	194.99	3.384	
10,600.0	5,912.0	10,569.2	5,912.1	99.0	98.6	90.01	-5,143.4	-278.4	659.8	461.0	198.79	3.319	
10,700.0	5,912.0	10,669.2	5,912.1	100.9	100.5	90.01	-5,243.4	-278.4	659.8	457.2	202.60	3.257	
10,800.0	5,912.0	10,769.2	5,912.1	102.8	102.4	90.01	-5,343.4	-278.4	659.8	453.4	206.41	3.197	
10,900.0	5,912.0	10,869.2	5,912.1	104.7	104.3	90.01	-5,443.4	-278.4	659.8	449.6	210.22	3.139	
11,000.0	5,912.0	10,969.2	5,912.1	106.6	106.2	90.01	-5,543.4	-278.4	659.8	445.8	214.03	3.083	
11,100.0	5,912.0	11,069.2	5,912.1	108.5	108.1	90.01	-5,643.4	-278.4	659.8	441.9	217.84	3.029	
11,200.0	5,912.0	11,169.2	5,912.1	110.4	110.0	90.01	-5,743.4	-278.4	659.8	438.1	221.65	2.977	
11,300.0	5,912.0	11,269.2	5,912.1	112.3	111.9	90.01	-5,843.4	-278.4	659.8	434.3	225.47	2.926	
11,400.0	5,912.0	11,369.2	5,912.1	114.2	113.8	90.01	-5,943.4	-278.4	659.8	430.5	229.28	2.878	
11,500.0	5,912.0	11,469.2	5,912.1	116.2	115.7	90.01	-6,043.4	-278.4	659.8	426.7	233.10	2.830	
11,600.0	5,912.0	11,569.2	5,912.1	118.1	117.7	90.01	-6,143.4	-278.4	659.7	422.8	236.92	2.785	
11,700.0	5,912.0	11,669.2	5,912.1	120.0	119.6	90.01	-6,243.4	-278.4	659.7	419.0	240.73	2.741	
11,800.0	5,912.0	11,769.2	5,912.1	121.9	121.5	90.01	-6,343.4	-278.4	659.7	415.2	244.55	2.698	
11,900.0	5,912.0	11,869.2	5,912.1	123.8	123.4	90.01	-6,443.4	-278.4	659.7	411.3	248.37	2.656	
12,000.0	5,912.0	11,969.2	5,912.1	125.7	125.3	90.00	-6,543.4	-278.4	659.7	407.5	252.19	2.616	
12,100.0	5,912.0	12,069.2	5,912.1	127.6	127.2	90.00	-6,643.4	-278.4	659.7	403.7	256.01	2.577	
12,200.0	5,912.0	12,169.2	5,912.1	129.5	129.1	90.00	-6,743.4	-278.4	659.7	399.9	259.83	2.539	
12,300.0	5,912.0	12,269.2	5,912.1	131.4	131.0	90.00	-6,843.4	-278.3	659.7	396.0	263.66	2.502	
12,400.0	5,912.0	12,369.2	5,912.1	133.3	132.9	90.00	-6,943.4	-278.3	659.7	392.2	267.48	2.466	
12,500.0	5,912.0	12,469.2	5,912.1	135.2	134.8	90.00	-7,043.4	-278.3	659.7	388.4	271.30	2.431	
12,600.0	5,912.0	12,569.2	5,912.1	137.1	136.8	90.00	-7,143.4	-278.3	659.7	384.5	275.13	2.398	
12,700.0	5,912.0	12,669.2	5,912.1	139.0	138.7	90.00	-7,243.4	-278.3	659.6	380.7	278.95	2.365	
12,800.0	5,912.0	12,769.2	5,912.0	140.9	140.6	90.00	-7,343.4	-278.3	659.6	376.9	282.77	2.333	
12,900.0	5,912.0	12,869.2	5,912.0	142.9	142.5	90.00	-7,443.4	-278.3	659.6	373.0	286.60	2.302	
13,000.0	5,912.0	12,969.2	5,912.0	144.8	144.4	90.00	-7,543.4	-278.3	659.6	369.2	290.43	2.271	
13,100.0	5,912.0	13,069.2	5,912.0	146.7	146.3	90.00	-7,643.4	-278.3	659.6	365.4	294.25	2.242	
13,200.0	5,912.0	13,169.2	5,912.0	148.6	148.2	90.00	-7,743.4	-278.3	659.6	361.5	298.08	2.213	
13,300.0	5,912.0	13,269.2	5,912.0	150.5	150.1	90.00	-7,843.4	-278.3	659.6	357.7	301.91	2.185	
13,400.0	5,912.0	13,369.2	5,912.0	152.4	152.1	90.00	-7,943.4	-278.3	659.6	353.8	305.73	2.157	
13,500.0	5,912.0	13,469.2	5,912.0	154.3	154.0	90.00	-8,043.4	-278.3	659.6	350.0	309.56	2.131	
13,600.0	5,912.0	13,569.2	5,912.0	156.2	155.9	90.00	-8,143.4	-278.3	659.6	346.2	313.39	2.105	
13,695.8	5,912.0	13,664.9	5,912.0	157.7	157.7	90.00	-8,239.2	-278.3	659.6	342.8	316.72	2.082	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-23.31	74.9	-32.3	81.6				
100.0	100.0	100.0	100.0	0.1	0.1	-23.31	74.9	-32.3	81.6	81.4	0.19	436.107	
200.0	200.0	200.0	200.0	0.3	0.3	-23.31	74.9	-32.3	81.6	80.9	0.64	128.126	
300.0	300.0	300.0	300.0	0.5	0.5	-23.31	74.9	-32.3	81.6	80.5	1.09	75.093	
400.0	400.0	400.0	400.0	0.8	0.8	-23.31	74.9	-32.3	81.6	80.0	1.54	53.110	
500.0	500.0	500.0	500.0	1.0	1.0	-23.31	74.9	-32.3	81.6	79.6	1.99	41.083	
600.0	600.0	600.0	600.0	1.2	1.2	-23.31	74.9	-32.3	81.6	79.1	2.43	33.498	
700.0	700.0	700.0	700.0	1.4	1.4	-23.31	74.9	-32.3	81.6	78.7	2.88	28.277	
800.0	800.0	800.0	800.0	1.7	1.7	-23.31	74.9	-32.3	81.6	78.2	3.33	24.464	
900.0	900.0	900.0	900.0	1.9	1.9	-23.31	74.9	-32.3	81.6	77.8	3.78	21.557	
1,000.0	1,000.0	1,002.7	1,002.7	2.1	2.1	-23.72	73.1	-32.1	79.9	75.6	4.21	18.966	
1,100.0	1,100.0	1,105.2	1,105.0	2.3	2.3	174.48	67.6	-31.6	76.5	71.9	4.59	16.676	
1,188.2	1,188.0	1,193.3	1,192.9	2.5	2.4	173.23	61.5	-31.0	75.1	70.2	4.90	15.329	CC
1,200.0	1,199.8	1,205.1	1,204.7	2.5	2.5	173.08	60.6	-31.0	75.2	70.2	4.94	15.204	
1,300.0	1,299.6	1,305.1	1,304.5	2.7	2.7	171.81	53.7	-30.3	75.6	70.3	5.32	14.206	
1,400.0	1,399.4	1,405.1	1,404.2	2.9	2.9	170.56	46.8	-29.7	76.1	70.4	5.71	13.314	
1,500.0	1,499.1	1,505.1	1,503.9	3.1	3.1	169.33	39.8	-29.1	76.6	70.5	6.12	12.520	
1,600.0	1,598.9	1,605.1	1,603.7	3.3	3.3	168.11	32.9	-28.4	77.1	70.6	6.53	11.811	
1,700.0	1,698.6	1,705.1	1,703.4	3.5	3.6	166.92	25.9	-27.8	77.7	70.7	6.95	11.177	
1,800.0	1,798.4	1,805.1	1,803.2	3.8	3.8	165.74	19.0	-27.1	78.3	70.9	7.38	10.610	
1,900.0	1,898.1	1,905.0	1,902.9	4.0	4.0	164.57	12.0	-26.5	78.9	71.1	7.82	10.100	
2,000.0	1,997.9	2,005.0	2,002.7	4.2	4.3	163.43	5.1	-25.9	79.6	71.4	8.26	9.641	
2,100.0	2,097.6	2,105.0	2,102.4	4.5	4.5	162.31	-1.9	-25.2	80.3	71.6	8.71	9.226	
2,200.0	2,197.4	2,205.0	2,202.1	4.7	4.8	161.21	-8.8	-24.6	81.1	71.9	9.16	8.850	
2,300.0	2,297.2	2,305.0	2,301.9	5.0	5.0	160.12	-15.8	-23.9	81.8	72.2	9.62	8.509	
2,400.0	2,396.9	2,405.0	2,401.6	5.2	5.3	159.06	-22.7	-23.3	82.6	72.5	10.08	8.198	
2,500.0	2,496.7	2,504.9	2,501.4	5.5	5.5	158.02	-29.6	-22.7	83.4	72.9	10.54	7.914	
2,600.0	2,596.4	2,604.9	2,601.1	5.7	5.8	157.00	-36.6	-22.0	84.3	73.3	11.01	7.653	
2,700.0	2,696.2	2,704.9	2,700.8	6.0	6.1	156.00	-43.5	-21.4	85.2	73.7	11.49	7.414	
2,800.0	2,795.9	2,804.9	2,800.6	6.2	6.3	155.02	-50.5	-20.8	86.1	74.1	11.96	7.194	
2,900.0	2,895.7	2,904.9	2,900.3	6.5	6.6	154.06	-57.4	-20.1	87.0	74.5	12.44	6.991	
3,000.0	2,995.5	3,004.9	3,000.1	6.7	6.8	153.12	-64.4	-19.5	87.9	75.0	12.93	6.803	
3,100.0	3,095.2	3,104.9	3,099.8	7.0	7.1	152.20	-71.3	-18.8	88.9	75.5	13.41	6.629	
3,200.0	3,195.0	3,204.8	3,199.6	7.3	7.3	151.30	-78.3	-18.2	89.9	76.0	13.90	6.467	
3,300.0	3,294.7	3,304.8	3,299.3	7.5	7.6	150.42	-85.2	-17.6	90.9	76.5	14.39	6.317	
3,400.0	3,394.5	3,404.8	3,399.0	7.8	7.9	149.56	-92.2	-16.9	91.9	77.1	14.88	6.177	
3,500.0	3,494.2	3,504.8	3,498.8	8.0	8.1	148.72	-99.1	-16.3	93.0	77.6	15.38	6.047	
3,600.0	3,594.0	3,604.8	3,598.5	8.3	8.4	147.90	-106.0	-15.6	94.1	78.2	15.88	5.925	
3,700.0	3,693.7	3,704.8	3,698.3	8.5	8.6	147.10	-113.0	-15.0	95.2	78.8	16.38	5.810	
3,800.0	3,793.5	3,804.8	3,798.0	8.8	8.9	146.32	-119.9	-14.4	96.3	79.4	16.88	5.704	
3,900.0	3,893.3	3,904.7	3,897.7	9.1	9.2	145.55	-126.9	-13.7	97.4	80.0	17.39	5.603	
4,000.0	3,993.0	4,004.7	3,997.5	9.3	9.4	144.80	-133.8	-13.1	98.6	80.7	17.89	5.509	
4,100.0	4,092.8	4,104.7	4,097.2	9.6	9.7	144.07	-140.8	-12.5	99.7	81.3	18.40	5.420	
4,200.0	4,192.5	4,204.7	4,197.0	9.8	9.9	143.36	-147.7	-11.8	100.9	82.0	18.91	5.337	
4,300.0	4,292.3	4,304.7	4,296.7	10.1	10.2	142.66	-154.7	-11.2	102.1	82.7	19.42	5.258	
4,400.0	4,392.0	4,404.7	4,396.5	10.4	10.5	141.98	-161.6	-10.5	103.3	83.4	19.93	5.183	
4,500.0	4,491.8	4,504.7	4,496.2	10.6	10.7	141.32	-168.6	-9.9	104.5	84.1	20.44	5.113	
4,600.0	4,591.6	4,604.6	4,595.9	10.9	11.0	140.67	-175.5	-9.3	105.8	84.8	20.96	5.047	
4,700.0	4,691.3	4,704.6	4,695.7	11.2	11.2	140.03	-182.4	-8.6	107.0	85.5	21.47	4.984	
4,800.0	4,791.1	4,804.6	4,795.4	11.4	11.5	139.41	-189.4	-8.0	108.3	86.3	21.99	4.924	
4,900.0	4,890.8	4,904.6	4,895.2	11.7	11.8	138.81	-196.3	-7.4	109.6	87.1	22.51	4.867	
5,000.0	4,990.6	5,004.6	4,994.9	11.9	12.0	138.22	-203.3	-6.7	110.8	87.8	23.03	4.814	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,090.3	5,104.6	5,094.6	12.2	12.3	137.64	-210.2	-6.1	112.1	88.6	23.55	4.763	
5,200.0	5,190.1	5,204.5	5,194.4	12.5	12.6	137.07	-217.2	-5.4	113.5	89.4	24.07	4.714	
5,300.0	5,289.9	5,304.5	5,294.1	12.7	12.8	136.52	-224.1	-4.8	114.8	90.2	24.59	4.668	
5,400.0	5,389.6	5,413.0	5,401.7	13.0	13.2	133.56	-237.1	-3.6	113.6	88.3	25.28	4.494	
5,438.0	5,427.5	5,454.5	5,441.9	13.1	13.3	129.88	-247.6	-2.6	110.8	85.1	25.68	4.315	
5,450.0	5,439.5	5,467.4	5,454.1	13.1	13.4	128.53	-251.5	-2.3	109.8	84.0	25.82	4.255	
5,500.0	5,489.0	5,520.1	5,503.2	13.3	13.7	122.40	-270.5	-0.5	107.1	80.7	26.40	4.055	
5,534.9	5,523.0	5,556.1	5,535.5	13.4	13.9	117.77	-286.2	0.9	106.5	79.6	26.85	3.965	
5,550.0	5,537.5	5,571.5	5,549.0	13.5	14.0	115.70	-293.7	1.6	106.6	79.5	27.06	3.939	
5,600.0	5,584.8	5,621.5	5,591.1	13.7	14.4	108.79	-320.4	4.0	108.6	80.8	27.80	3.908	
5,650.0	5,630.2	5,670.2	5,629.5	14.0	14.7	102.06	-350.2	6.8	113.2	84.6	28.59	3.957	
5,700.0	5,673.5	5,717.7	5,664.1	14.4	15.2	95.79	-382.7	9.8	120.0	90.6	29.41	4.080	
5,750.0	5,714.1	5,764.1	5,694.8	14.7	15.6	90.17	-417.2	12.9	128.8	98.6	30.21	4.263	
5,800.0	5,751.8	5,809.4	5,721.8	15.2	16.1	85.26	-453.5	16.3	139.2	108.2	30.98	4.493	
5,850.0	5,786.2	5,853.9	5,745.1	15.7	16.6	81.04	-491.2	19.7	150.8	119.1	31.71	4.756	
5,900.0	5,816.9	5,897.5	5,764.7	16.2	17.2	77.45	-530.0	23.3	163.3	130.9	32.41	5.038	
5,950.0	5,843.7	5,940.4	5,780.8	16.8	17.8	74.41	-569.5	26.9	176.4	143.3	33.11	5.326	
6,000.0	5,866.4	5,982.6	5,793.3	17.4	18.3	71.85	-609.7	30.6	189.8	156.0	33.84	5.610	
6,050.0	5,884.6	6,024.3	5,802.5	18.1	18.9	69.69	-650.1	34.3	203.4	168.8	34.64	5.873	
6,100.0	5,898.3	6,065.5	5,808.3	18.8	19.5	67.88	-690.8	38.1	217.0	181.5	35.51	6.112	
6,150.0	5,907.4	6,106.3	5,810.9	19.6	20.2	66.36	-731.3	41.8	230.4	194.0	36.45	6.323	
6,200.0	5,911.7	6,148.8	5,811.1	20.4	20.8	65.33	-773.6	45.5	243.5	205.9	37.53	6.486	
6,219.8	5,912.1	6,165.9	5,811.1	20.7	21.0	65.21	-790.7	46.7	248.4	210.3	38.05	6.527	
6,300.0	5,912.1	6,234.6	5,811.1	21.9	22.0	67.14	-859.4	50.0	268.0	227.3	40.72	6.581	
6,400.0	5,912.1	6,323.3	5,811.1	23.3	23.3	69.19	-948.1	51.0	291.9	248.0	43.94	6.644	
6,500.0	5,912.1	6,421.0	5,811.1	24.8	24.8	70.81	-1,045.7	51.0	312.3	265.0	47.33	6.599	
6,600.0	5,912.1	6,519.6	5,811.1	26.3	26.5	71.90	-1,144.3	51.0	327.9	277.3	50.60	6.480	
6,700.0	5,912.1	6,618.9	5,811.1	27.9	28.2	72.59	-1,243.6	51.0	338.7	285.0	53.75	6.301	
6,800.0	5,912.1	6,718.7	5,811.1	29.4	29.9	72.94	-1,343.4	51.0	344.5	287.8	56.74	6.072	
6,866.6	5,912.1	6,785.3	5,811.1	30.4	31.1	73.01	-1,410.0	51.0	345.6	287.0	58.63	5.895	
6,900.0	5,912.1	6,818.7	5,811.1	31.0	31.7	73.01	-1,443.4	51.0	345.6	285.9	59.72	5.787	
7,000.0	5,912.1	6,918.7	5,811.1	32.6	33.5	73.01	-1,543.4	51.0	345.6	282.5	63.08	5.479	
7,100.0	5,912.1	7,018.7	5,811.1	34.3	35.2	73.01	-1,643.4	51.0	345.6	279.1	66.48	5.199	
7,200.0	5,912.1	7,118.7	5,811.1	36.1	37.0	73.01	-1,743.4	51.0	345.6	275.7	69.90	4.944	
7,300.0	5,912.1	7,218.7	5,811.1	37.8	38.9	73.01	-1,843.4	51.0	345.6	272.2	73.36	4.711	
7,400.0	5,912.1	7,318.7	5,811.1	39.6	40.7	73.01	-1,943.4	51.0	345.6	268.7	76.83	4.498	
7,500.0	5,912.1	7,418.7	5,811.1	41.3	42.5	73.01	-2,043.4	51.0	345.6	265.2	80.33	4.302	
7,600.0	5,912.1	7,518.7	5,811.1	43.1	44.3	73.01	-2,143.4	51.1	345.5	261.7	83.84	4.121	
7,700.0	5,912.1	7,618.7	5,811.1	44.9	46.2	73.01	-2,243.4	51.1	345.5	258.2	87.37	3.955	
7,800.0	5,912.1	7,718.7	5,811.1	46.7	48.0	73.01	-2,343.4	51.1	345.5	254.6	90.92	3.800	
7,900.0	5,912.1	7,818.7	5,811.0	48.5	49.9	73.00	-2,443.4	51.1	345.5	251.0	94.47	3.657	
8,000.0	5,912.1	7,918.7	5,811.0	50.3	51.8	73.00	-2,543.4	51.1	345.5	247.5	98.04	3.524	
8,100.0	5,912.1	8,018.7	5,811.0	52.2	53.6	73.00	-2,643.4	51.1	345.5	243.9	101.61	3.400	
8,200.0	5,912.1	8,118.7	5,811.0	54.0	55.5	73.00	-2,743.4	51.1	345.5	240.3	105.20	3.284	
8,300.0	5,912.1	8,218.7	5,811.0	55.9	57.4	73.00	-2,843.4	51.1	345.5	236.7	108.79	3.176	
8,400.0	5,912.0	8,318.7	5,811.0	57.7	59.2	73.00	-2,943.4	51.1	345.5	233.1	112.39	3.074	
8,500.0	5,912.0	8,418.7	5,811.0	59.5	61.1	73.00	-3,043.4	51.1	345.5	229.5	116.00	2.978	
8,600.0	5,912.0	8,518.7	5,811.0	61.4	63.0	73.00	-3,143.4	51.1	345.4	225.8	119.61	2.888	
8,700.0	5,912.0	8,618.7	5,811.0	63.3	64.9	73.00	-3,243.4	51.1	345.4	222.2	123.22	2.803	
8,800.0	5,912.0	8,718.7	5,811.0	65.1	66.8	73.00	-3,343.4	51.1	345.4	218.6	126.84	2.723	
8,900.0	5,912.0	8,818.7	5,811.0	67.0	68.7	73.00	-3,443.4	51.1	345.4	214.9	130.47	2.647	
9,000.0	5,912.0	8,918.7	5,811.0	68.9	70.6	73.00	-3,543.4	51.2	345.4	211.3	134.10	2.576	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1305A - HZ - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,100.0	5,912.0	9,018.7	5,811.0	70.7	72.5	73.00	-3,643.4	51.2	345.4	207.7	137.73	2.508	
9,200.0	5,912.0	9,118.7	5,811.0	72.6	74.3	73.00	-3,743.4	51.2	345.4	204.0	141.37	2.443	
9,300.0	5,912.0	9,218.7	5,811.0	74.5	76.2	73.00	-3,843.4	51.2	345.4	200.4	145.01	2.382	
9,400.0	5,912.0	9,318.7	5,811.0	76.4	78.1	73.00	-3,943.4	51.2	345.4	196.7	148.65	2.323	
9,500.0	5,912.0	9,418.7	5,811.0	78.2	80.0	73.00	-4,043.4	51.2	345.3	193.0	152.30	2.268	
9,600.0	5,912.0	9,518.7	5,811.0	80.1	81.9	72.99	-4,143.4	51.2	345.3	189.4	155.95	2.214	
9,700.0	5,912.0	9,618.7	5,811.0	82.0	83.8	72.99	-4,243.4	51.2	345.3	185.7	159.60	2.164	
9,800.0	5,912.0	9,718.7	5,811.0	83.9	85.7	72.99	-4,343.4	51.2	345.3	182.1	163.25	2.115	
9,900.0	5,912.0	9,818.7	5,811.0	85.8	87.6	72.99	-4,443.4	51.2	345.3	178.4	166.90	2.069	
10,000.0	5,912.0	9,918.7	5,811.0	87.7	89.5	72.99	-4,543.4	51.2	345.3	174.7	170.56	2.024	
10,100.0	5,912.0	10,018.7	5,811.0	89.6	91.4	72.99	-4,643.4	51.2	345.3	171.1	174.22	1.982	
10,200.0	5,912.0	10,118.7	5,811.0	91.5	93.3	72.99	-4,743.4	51.2	345.3	167.4	177.88	1.941	
10,300.0	5,912.0	10,218.7	5,811.0	93.4	95.2	72.99	-4,843.4	51.3	345.3	163.7	181.54	1.902	
10,400.0	5,912.0	10,318.7	5,811.0	95.3	97.2	72.99	-4,943.4	51.3	345.3	160.0	185.20	1.864	
10,500.0	5,912.0	10,418.7	5,811.0	97.1	99.1	72.99	-5,043.4	51.3	345.2	156.4	188.87	1.828	
10,600.0	5,912.0	10,518.7	5,811.0	99.0	101.0	72.99	-5,143.4	51.3	345.2	152.7	192.53	1.793	
10,700.0	5,912.0	10,618.7	5,811.0	100.9	102.9	72.99	-5,243.4	51.3	345.2	149.0	196.20	1.760	
10,800.0	5,912.0	10,718.7	5,811.0	102.8	104.8	72.99	-5,343.4	51.3	345.2	145.3	199.87	1.727	
10,900.0	5,912.0	10,818.7	5,811.0	104.7	106.7	72.99	-5,443.4	51.3	345.2	141.7	203.54	1.696	
11,000.0	5,912.0	10,918.7	5,811.0	106.6	108.6	72.99	-5,543.4	51.3	345.2	138.0	207.21	1.666	
11,100.0	5,912.0	11,018.7	5,811.0	108.5	110.5	72.99	-5,643.4	51.3	345.2	134.3	210.88	1.637	
11,200.0	5,912.0	11,118.7	5,811.0	110.4	112.4	72.99	-5,743.4	51.3	345.2	130.6	214.55	1.609	
11,300.0	5,912.0	11,218.7	5,811.0	112.3	114.3	72.99	-5,843.4	51.3	345.2	126.9	218.23	1.582	
11,400.0	5,912.0	11,318.7	5,811.0	114.2	116.2	72.98	-5,943.4	51.3	345.1	123.2	221.90	1.555	
11,500.0	5,912.0	11,418.7	5,811.0	116.2	118.1	72.98	-6,043.4	51.3	345.1	119.6	225.57	1.530	
11,600.0	5,912.0	11,518.7	5,811.0	118.1	120.1	72.98	-6,143.4	51.3	345.1	115.9	229.25	1.505	
11,700.0	5,912.0	11,618.7	5,811.0	120.0	122.0	72.98	-6,243.4	51.4	345.1	112.2	232.93	1.482	Level 3
11,800.0	5,912.0	11,718.7	5,811.0	121.9	123.9	72.98	-6,343.4	51.4	345.1	108.5	236.60	1.459	Level 3
11,900.0	5,912.0	11,818.7	5,811.0	123.8	125.8	72.98	-6,443.4	51.4	345.1	104.8	240.28	1.436	Level 3
12,000.0	5,912.0	11,918.7	5,811.0	125.7	127.7	72.98	-6,543.4	51.4	345.1	101.1	243.96	1.414	Level 3
12,100.0	5,912.0	12,018.7	5,811.0	127.6	129.6	72.98	-6,643.4	51.4	345.1	97.4	247.64	1.393	Level 3
12,200.0	5,912.0	12,118.7	5,811.0	129.5	131.5	72.98	-6,743.4	51.4	345.1	93.7	251.32	1.373	Level 3
12,300.0	5,912.0	12,218.7	5,811.0	131.4	133.4	72.98	-6,843.4	51.4	345.0	90.1	255.00	1.353	Level 3
12,400.0	5,912.0	12,318.7	5,811.0	133.3	135.4	72.98	-6,943.4	51.4	345.0	86.4	258.68	1.334	Level 3
12,500.0	5,912.0	12,418.7	5,811.0	135.2	137.3	72.98	-7,043.4	51.4	345.0	82.7	262.36	1.315	Level 3
12,600.0	5,912.0	12,518.7	5,811.0	137.1	139.2	72.98	-7,143.4	51.4	345.0	79.0	266.04	1.297	Level 3
12,700.0	5,912.0	12,618.7	5,811.0	139.0	141.1	72.98	-7,243.4	51.4	345.0	75.3	269.72	1.279	Level 3
12,800.0	5,912.0	12,718.7	5,811.0	140.9	143.0	72.98	-7,343.4	51.4	345.0	71.6	273.40	1.262	Level 3
12,900.0	5,912.0	12,818.7	5,811.0	142.9	144.9	72.98	-7,443.4	51.4	345.0	67.9	277.09	1.245	Level 2
13,000.0	5,912.0	12,918.7	5,811.0	144.8	146.8	72.98	-7,543.4	51.5	345.0	64.2	280.77	1.229	Level 2
13,100.0	5,912.0	13,018.7	5,811.0	146.7	148.8	72.98	-7,643.4	51.5	345.0	60.5	284.45	1.213	Level 2
13,200.0	5,912.0	13,118.7	5,811.0	148.6	150.7	72.97	-7,743.4	51.5	345.0	56.8	288.14	1.197	Level 2
13,300.0	5,912.0	13,218.7	5,811.0	150.5	152.6	72.97	-7,843.4	51.5	344.9	53.1	291.82	1.182	Level 2
13,400.0	5,912.0	13,318.7	5,811.0	152.4	154.5	72.97	-7,943.4	51.5	344.9	49.4	295.51	1.167	Level 2
13,500.0	5,912.0	13,418.7	5,811.0	154.3	156.4	72.97	-8,043.4	51.5	344.9	45.7	299.19	1.153	Level 2
13,600.0	5,912.0	13,518.7	5,811.0	156.2	158.3	72.97	-8,143.4	51.5	344.9	42.0	302.88	1.139	Level 2
13,695.8	5,912.0	13,614.5	5,811.0	157.7	160.2	72.97	-8,239.2	51.5	344.9	38.8	306.08	1.127	Level 2, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	23.81	74.9	33.0	81.8				
100.0	100.0	100.0	100.0	0.1	0.1	23.81	74.9	33.0	81.8	81.7	0.19	437.673	
200.0	200.0	200.0	200.0	0.3	0.3	23.81	74.9	33.0	81.8	81.2	0.64	128.585	
300.0	300.0	300.0	300.0	0.5	0.5	23.81	74.9	33.0	81.8	80.8	1.09	75.362	
400.0	400.0	400.0	400.0	0.8	0.8	23.81	74.9	33.0	81.8	80.3	1.54	53.301	
500.0	500.0	501.7	501.7	1.0	1.0	24.84	73.3	33.9	80.8	78.8	1.96	41.141	
600.0	600.0	603.1	602.9	1.2	1.2	28.08	68.6	36.6	77.9	75.5	2.39	32.607	
700.0	700.0	702.8	702.4	1.4	1.4	32.63	62.6	40.1	74.4	71.5	2.83	26.278	
800.0	800.0	802.6	801.9	1.7	1.6	37.58	56.6	43.5	71.4	68.1	3.29	21.725	
900.0	900.0	902.3	901.4	1.9	1.9	42.92	50.5	47.0	69.0	65.3	3.75	18.396	
1,000.0	1,000.0	1,002.1	1,000.9	2.1	2.1	48.59	44.5	50.5	67.3	63.0	4.22	15.937	
1,085.7	1,085.7	1,087.7	1,086.3	2.3	2.3	-108.01	39.3	53.4	66.7	62.1	4.61	14.457	CC
1,100.0	1,100.0	1,101.9	1,100.5	2.3	2.4	-107.54	38.4	53.9	66.7	62.0	4.68	14.262	
1,200.0	1,199.8	1,201.9	1,200.3	2.5	2.6	-105.88	32.4	57.4	67.5	62.3	5.11	13.200	
1,300.0	1,299.6	1,301.9	1,300.0	2.7	2.9	-105.69	26.3	60.8	68.7	63.1	5.56	12.363	
1,400.0	1,399.4	1,401.9	1,399.8	2.9	3.1	-105.50	20.3	64.3	69.9	63.9	6.02	11.627	
1,500.0	1,499.1	1,501.9	1,499.5	3.1	3.4	-105.31	14.2	67.8	71.2	64.7	6.49	10.977	
1,600.0	1,598.9	1,601.9	1,599.3	3.3	3.6	-105.14	8.2	71.2	72.4	65.5	6.96	10.403	
1,700.0	1,698.6	1,701.9	1,699.0	3.5	3.9	-104.97	2.1	74.7	73.7	66.2	7.45	9.894	
1,800.0	1,798.4	1,801.9	1,798.8	3.8	4.2	-104.80	-3.9	78.2	74.9	67.0	7.94	9.441	
1,900.0	1,898.1	1,901.9	1,898.5	4.0	4.4	-104.65	-10.0	81.6	76.2	67.7	8.43	9.035	
2,000.0	1,997.9	2,001.8	1,998.3	4.2	4.7	-104.49	-16.0	85.1	77.4	68.5	8.93	8.671	
2,100.0	2,097.6	2,101.8	2,098.0	4.5	4.9	-104.34	-22.1	88.6	78.7	69.2	9.43	8.342	
2,200.0	2,197.4	2,201.8	2,197.8	4.7	5.2	-104.20	-28.1	92.0	79.9	70.0	9.93	8.045	
2,300.0	2,297.2	2,301.8	2,297.5	5.0	5.5	-104.06	-34.2	95.5	81.2	70.7	10.44	7.774	
2,400.0	2,396.9	2,401.8	2,397.3	5.2	5.7	-103.92	-40.2	99.0	82.4	71.5	10.95	7.527	
2,500.0	2,496.7	2,501.8	2,497.0	5.5	6.0	-103.79	-46.3	102.4	83.7	72.2	11.46	7.301	
2,600.0	2,596.4	2,601.8	2,596.8	5.7	6.3	-103.66	-52.3	105.9	84.9	72.9	11.97	7.094	
2,700.0	2,696.2	2,701.8	2,696.5	6.0	6.5	-103.54	-58.4	109.4	86.2	73.7	12.48	6.902	
2,800.0	2,795.9	2,801.8	2,796.3	6.2	6.8	-103.42	-64.5	112.8	87.4	74.4	13.00	6.725	
2,900.0	2,895.7	2,901.8	2,896.0	6.5	7.0	-103.30	-70.5	116.3	88.7	75.2	13.51	6.562	
3,000.0	2,995.5	3,001.8	2,995.8	6.7	7.3	-103.19	-76.6	119.8	89.9	75.9	14.03	6.410	
3,100.0	3,095.2	3,101.8	3,095.5	7.0	7.6	-103.08	-82.6	123.2	91.2	76.6	14.55	6.268	
3,200.0	3,195.0	3,201.7	3,195.2	7.3	7.8	-102.97	-88.7	126.7	92.4	77.4	15.06	6.136	
3,300.0	3,294.7	3,301.7	3,295.0	7.5	8.1	-102.87	-94.7	130.2	93.7	78.1	15.58	6.012	
3,400.0	3,394.5	3,401.7	3,394.7	7.8	8.4	-102.76	-100.8	133.6	94.9	78.8	16.10	5.896	
3,500.0	3,494.2	3,501.7	3,494.5	8.0	8.6	-102.66	-106.8	137.1	96.2	79.6	16.62	5.787	
3,600.0	3,594.0	3,601.7	3,594.2	8.3	8.9	-102.57	-112.9	140.6	97.4	80.3	17.14	5.685	
3,700.0	3,693.7	3,701.7	3,694.0	8.5	9.2	-102.47	-118.9	144.0	98.7	81.0	17.66	5.588	
3,800.0	3,793.5	3,801.7	3,793.7	8.8	9.4	-102.38	-125.0	147.5	99.9	81.8	18.18	5.497	
3,900.0	3,893.3	3,901.7	3,893.5	9.1	9.7	-102.29	-131.0	151.0	101.2	82.5	18.70	5.411	
4,000.0	3,993.0	4,001.7	3,993.2	9.3	9.9	-102.20	-137.1	154.4	102.5	83.2	19.23	5.329	
4,100.0	4,092.8	4,101.7	4,093.0	9.6	10.2	-102.12	-143.1	157.9	103.7	84.0	19.75	5.252	
4,200.0	4,192.5	4,201.7	4,192.7	9.8	10.5	-102.04	-149.2	161.4	105.0	84.7	20.27	5.178	
4,300.0	4,292.3	4,301.7	4,292.5	10.1	10.7	-101.95	-155.2	164.8	106.2	85.4	20.80	5.108	
4,400.0	4,392.0	4,401.7	4,392.2	10.4	11.0	-101.88	-161.3	168.3	107.5	86.2	21.32	5.041	
4,500.0	4,491.8	4,501.6	4,492.0	10.6	11.3	-101.80	-167.3	171.8	108.7	86.9	21.84	4.978	
4,600.0	4,591.6	4,601.6	4,591.7	10.9	11.5	-101.72	-173.4	175.2	110.0	87.6	22.37	4.918	
4,700.0	4,691.3	4,701.6	4,691.5	11.2	11.8	-101.65	-179.5	178.7	111.2	88.4	22.89	4.860	
4,800.0	4,791.1	4,801.6	4,791.2	11.4	12.1	-101.58	-185.5	182.2	112.5	89.1	23.42	4.805	
4,900.0	4,890.8	4,901.6	4,891.0	11.7	12.3	-101.50	-191.6	185.6	113.8	89.8	23.94	4.752	
5,000.0	4,990.6	5,001.6	4,990.7	11.9	12.6	-101.44	-197.6	189.1	115.0	90.6	24.47	4.701	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #1

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,090.3	5,101.6	5,090.5	12.2	12.9	-101.37	-203.7	192.6	116.3	91.3	24.99	4.653	
5,200.0	5,190.1	5,201.6	5,190.2	12.5	13.1	-101.30	-209.7	196.0	117.5	92.0	25.52	4.606	
5,300.0	5,289.9	5,301.6	5,290.0	12.7	13.4	-101.24	-215.8	199.5	118.8	92.7	26.04	4.562	
5,400.0	5,389.6	5,401.5	5,389.2	13.0	13.7	-99.33	-225.2	204.9	120.1	93.4	26.62	4.510	
5,438.0	5,427.5	5,438.6	5,425.4	13.1	13.8	-96.55	-232.4	209.0	120.8	93.9	26.90	4.491	
5,450.0	5,439.5	5,450.0	5,436.3	13.1	13.9	-95.48	-235.1	210.6	121.1	94.2	26.98	4.490	
5,500.0	5,489.0	5,497.8	5,481.6	13.3	14.1	-91.02	-248.6	218.3	123.6	96.2	27.38	4.514	
5,550.0	5,537.5	5,544.7	5,524.3	13.5	14.4	-86.81	-265.2	227.8	127.5	99.7	27.83	4.582	
5,600.0	5,584.8	5,590.7	5,564.5	13.7	14.7	-82.95	-284.7	239.0	132.7	104.4	28.32	4.687	
5,650.0	5,630.2	5,636.1	5,601.9	14.0	15.1	-79.49	-306.9	251.7	139.1	110.2	28.84	4.822	
5,700.0	5,673.5	5,680.8	5,636.5	14.4	15.5	-76.47	-331.4	265.7	146.3	116.9	29.37	4.980	
5,750.0	5,714.1	5,724.9	5,668.1	14.7	15.9	-73.87	-358.0	281.0	154.2	124.2	29.92	5.152	
5,800.0	5,751.8	5,768.4	5,696.7	15.2	16.4	-71.66	-386.5	297.3	162.6	132.1	30.50	5.331	
5,850.0	5,786.2	5,811.4	5,722.2	15.7	16.9	-69.82	-416.6	314.5	171.4	140.3	31.11	5.508	
5,900.0	5,816.9	5,854.0	5,744.5	16.2	17.4	-68.31	-448.1	332.5	180.4	148.6	31.78	5.676	
5,950.0	5,843.7	5,896.2	5,763.6	16.8	18.0	-67.10	-480.7	351.2	189.5	157.0	32.52	5.827	
6,000.0	5,866.4	5,938.1	5,779.4	17.4	18.6	-66.14	-514.3	370.5	198.6	165.3	33.36	5.955	
6,050.0	5,884.6	5,979.7	5,792.1	18.1	19.2	-65.41	-548.8	390.2	207.7	173.4	34.29	6.056	
6,100.0	5,898.3	6,021.1	5,801.5	18.8	19.9	-64.89	-583.8	410.2	216.6	181.3	35.34	6.129	
6,150.0	5,907.4	6,062.4	5,807.7	19.6	20.6	-64.55	-619.2	430.5	225.3	188.8	36.50	6.172	
6,200.0	5,911.7	6,103.6	5,810.6	20.4	21.2	-64.38	-654.8	451.0	233.8	196.0	37.78	6.187	
6,219.8	5,912.1	6,120.0	5,810.8	20.7	21.5	-64.35	-669.0	459.1	237.0	198.7	38.32	6.185	
6,300.0	5,912.1	6,209.3	5,810.8	21.9	22.9	-65.78	-747.5	501.6	250.0	208.9	41.10	6.082	
6,400.0	5,912.1	6,321.7	5,810.8	23.3	24.6	-67.33	-849.0	549.9	265.9	221.5	44.37	5.992	
6,500.0	5,912.1	6,435.5	5,810.8	24.8	26.5	-68.65	-954.5	592.6	281.3	233.7	47.61	5.907	
6,600.0	5,912.1	6,550.5	5,810.8	26.3	28.3	-69.79	-1,063.5	629.3	296.1	245.3	50.80	5.829	
6,700.0	5,912.1	6,666.8	5,810.8	27.9	30.2	-70.77	-1,175.7	659.6	310.3	256.4	53.90	5.757	
6,800.0	5,912.1	6,784.2	5,810.8	29.4	32.1	-71.62	-1,290.7	683.3	323.7	266.8	56.87	5.692	
6,866.6	5,912.1	6,863.1	5,810.8	30.4	33.4	-72.12	-1,368.7	695.2	332.2	273.4	58.77	5.651	
6,900.0	5,912.1	6,902.9	5,810.8	31.0	34.1	-72.37	-1,408.2	700.0	336.0	276.0	60.03	5.597	
7,000.0	5,912.1	7,023.0	5,810.8	32.6	36.0	-72.85	-1,527.9	709.4	343.5	279.7	63.79	5.385	
7,100.0	5,912.1	7,138.6	5,810.8	34.3	37.8	-72.95	-1,643.4	711.5	345.2	277.8	67.37	5.124	
7,200.0	5,912.1	7,238.6	5,810.8	36.1	39.4	-72.95	-1,743.4	711.5	345.2	274.5	70.70	4.882	
7,300.0	5,912.1	7,338.6	5,810.8	37.8	41.0	-72.95	-1,843.4	711.5	345.2	271.1	74.08	4.659	
7,400.0	5,912.1	7,438.6	5,810.9	39.6	42.7	-72.95	-1,943.4	711.5	345.2	267.7	77.49	4.454	
7,500.0	5,912.1	7,538.6	5,810.9	41.3	44.4	-72.95	-2,043.4	711.5	345.2	264.2	80.93	4.265	
7,600.0	5,912.1	7,638.6	5,810.9	43.1	46.1	-72.95	-2,143.4	711.5	345.2	260.8	84.39	4.090	
7,700.0	5,912.1	7,738.6	5,810.9	44.9	47.8	-72.95	-2,243.4	711.5	345.2	257.3	87.86	3.928	
7,800.0	5,912.1	7,838.6	5,810.9	46.7	49.5	-72.95	-2,343.4	711.5	345.1	253.8	91.36	3.778	
7,900.0	5,912.1	7,938.6	5,810.9	48.5	51.3	-72.95	-2,443.4	711.5	345.1	250.3	94.87	3.638	
8,000.0	5,912.1	8,038.6	5,810.9	50.3	53.0	-72.95	-2,543.4	711.5	345.1	246.7	98.40	3.508	
8,100.0	5,912.1	8,138.6	5,810.9	52.2	54.8	-72.95	-2,643.4	711.5	345.1	243.2	101.93	3.386	
8,200.0	5,912.1	8,238.6	5,810.9	54.0	56.6	-72.95	-2,743.4	711.5	345.1	239.6	105.48	3.272	
8,300.0	5,912.1	8,338.6	5,810.9	55.9	58.4	-72.95	-2,843.4	711.5	345.1	236.1	109.04	3.165	
8,400.0	5,912.0	8,438.6	5,810.9	57.7	60.1	-72.95	-2,943.4	711.4	345.1	232.5	112.61	3.065	
8,500.0	5,912.0	8,538.6	5,810.9	59.5	61.9	-72.96	-3,043.4	711.4	345.1	228.9	116.19	2.970	
8,600.0	5,912.0	8,638.6	5,810.9	61.4	63.8	-72.96	-3,143.4	711.4	345.1	225.3	119.77	2.881	
8,700.0	5,912.0	8,738.6	5,810.9	63.3	65.6	-72.96	-3,243.4	711.4	345.1	221.8	123.36	2.798	
8,800.0	5,912.0	8,838.6	5,810.9	65.1	67.4	-72.96	-3,343.4	711.4	345.1	218.1	126.96	2.718	
8,900.0	5,912.0	8,938.6	5,810.9	67.0	69.2	-72.96	-3,443.4	711.4	345.1	214.5	130.56	2.643	
9,000.0	5,912.0	9,038.6	5,810.9	68.9	71.1	-72.96	-3,543.4	711.4	345.1	210.9	134.17	2.572	
9,100.0	5,912.0	9,138.6	5,810.9	70.7	72.9	-72.96	-3,643.4	711.4	345.1	207.3	137.78	2.505	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,200.0	5,912.0	9,238.6	5,810.9	72.6	74.7	-72.96	-3,743.4	711.4	345.1	203.7	141.40	2.441	
9,300.0	5,912.0	9,338.6	5,810.9	74.5	76.6	-72.96	-3,843.4	711.4	345.1	200.1	145.02	2.380	
9,400.0	5,912.0	9,438.6	5,810.9	76.4	78.4	-72.96	-3,943.4	711.4	345.1	196.4	148.65	2.321	
9,500.0	5,912.0	9,538.6	5,810.9	78.2	80.3	-72.96	-4,043.4	711.4	345.1	192.8	152.28	2.266	
9,600.0	5,912.0	9,638.6	5,810.9	80.1	82.1	-72.96	-4,143.4	711.4	345.1	189.2	155.91	2.213	
9,700.0	5,912.0	9,738.6	5,810.9	82.0	84.0	-72.96	-4,243.4	711.4	345.1	185.5	159.55	2.163	
9,800.0	5,912.0	9,838.6	5,810.9	83.9	85.9	-72.96	-4,343.4	711.3	345.1	181.9	163.19	2.115	
9,900.0	5,912.0	9,938.6	5,810.9	85.8	87.7	-72.96	-4,443.4	711.3	345.1	178.2	166.83	2.068	
10,000.0	5,912.0	10,038.6	5,810.9	87.7	89.6	-72.96	-4,543.4	711.3	345.1	174.6	170.47	2.024	
10,100.0	5,912.0	10,138.6	5,810.9	89.6	91.5	-72.96	-4,643.4	711.3	345.1	170.9	174.12	1.982	
10,200.0	5,912.0	10,238.6	5,810.9	91.5	93.3	-72.96	-4,743.4	711.3	345.0	167.3	177.77	1.941	
10,300.0	5,912.0	10,338.6	5,810.9	93.4	95.2	-72.96	-4,843.4	711.3	345.0	163.6	181.42	1.902	
10,400.0	5,912.0	10,438.6	5,810.9	95.3	97.1	-72.96	-4,943.4	711.3	345.0	160.0	185.07	1.864	
10,500.0	5,912.0	10,538.6	5,810.9	97.1	99.0	-72.96	-5,043.4	711.3	345.0	156.3	188.73	1.828	
10,600.0	5,912.0	10,638.6	5,810.9	99.0	100.8	-72.96	-5,143.4	711.3	345.0	152.6	192.38	1.793	
10,700.0	5,912.0	10,738.6	5,810.9	100.9	102.7	-72.96	-5,243.4	711.3	345.0	149.0	196.04	1.760	
10,800.0	5,912.0	10,838.6	5,810.9	102.8	104.6	-72.96	-5,343.4	711.3	345.0	145.3	199.70	1.728	
10,900.0	5,912.0	10,938.6	5,810.9	104.7	106.5	-72.96	-5,443.4	711.3	345.0	141.7	203.36	1.697	
11,000.0	5,912.0	11,038.6	5,810.9	106.6	108.4	-72.96	-5,543.4	711.3	345.0	138.0	207.02	1.667	
11,100.0	5,912.0	11,138.6	5,810.9	108.5	110.3	-72.96	-5,643.4	711.2	345.0	134.3	210.69	1.638	
11,200.0	5,912.0	11,238.6	5,810.9	110.4	112.1	-72.96	-5,743.4	711.2	345.0	130.7	214.35	1.610	
11,300.0	5,912.0	11,338.6	5,810.9	112.3	114.0	-72.96	-5,843.4	711.2	345.0	127.0	218.02	1.582	
11,400.0	5,912.0	11,438.6	5,810.9	114.2	115.9	-72.96	-5,943.4	711.2	345.0	123.3	221.69	1.556	
11,500.0	5,912.0	11,538.6	5,810.9	116.2	117.8	-72.96	-6,043.4	711.2	345.0	119.6	225.36	1.531	
11,600.0	5,912.0	11,638.6	5,811.0	118.1	119.7	-72.97	-6,143.4	711.2	345.0	116.0	229.03	1.506	
11,700.0	5,912.0	11,738.6	5,811.0	120.0	121.6	-72.97	-6,243.4	711.2	345.0	112.3	232.70	1.483	Level 3
11,800.0	5,912.0	11,838.6	5,811.0	121.9	123.5	-72.97	-6,343.4	711.2	345.0	108.6	236.37	1.459	Level 3
11,900.0	5,912.0	11,938.6	5,811.0	123.8	125.4	-72.97	-6,443.4	711.2	345.0	104.9	240.04	1.437	Level 3
12,000.0	5,912.0	12,038.6	5,811.0	125.7	127.3	-72.97	-6,543.4	711.2	345.0	101.3	243.72	1.415	Level 3
12,100.0	5,912.0	12,138.6	5,811.0	127.6	129.2	-72.97	-6,643.4	711.2	345.0	97.6	247.39	1.394	Level 3
12,200.0	5,912.0	12,238.6	5,811.0	129.5	131.1	-72.97	-6,743.4	711.2	345.0	93.9	251.07	1.374	Level 3
12,300.0	5,912.0	12,338.6	5,811.0	131.4	133.0	-72.97	-6,843.4	711.2	345.0	90.2	254.74	1.354	Level 3
12,400.0	5,912.0	12,438.6	5,811.0	133.3	134.9	-72.97	-6,943.4	711.2	345.0	86.5	258.42	1.335	Level 3
12,500.0	5,912.0	12,538.6	5,811.0	135.2	136.8	-72.97	-7,043.4	711.1	344.9	82.9	262.09	1.316	Level 3
12,600.0	5,912.0	12,638.6	5,811.0	137.1	138.7	-72.97	-7,143.4	711.1	344.9	79.2	265.77	1.298	Level 3
12,700.0	5,912.0	12,738.6	5,811.0	139.0	140.6	-72.97	-7,243.4	711.1	344.9	75.5	269.45	1.280	Level 3
12,800.0	5,912.0	12,838.6	5,811.0	140.9	142.5	-72.97	-7,343.4	711.1	344.9	71.8	273.13	1.263	Level 3
12,900.0	5,912.0	12,938.6	5,811.0	142.9	144.4	-72.97	-7,443.4	711.1	344.9	68.1	276.81	1.246	Level 2
13,000.0	5,912.0	13,038.6	5,811.0	144.8	146.3	-72.97	-7,543.4	711.1	344.9	64.4	280.49	1.230	Level 2
13,100.0	5,912.0	13,138.6	5,811.0	146.7	148.2	-72.97	-7,643.4	711.1	344.9	60.8	284.17	1.214	Level 2
13,200.0	5,912.0	13,238.6	5,811.0	148.6	150.1	-72.97	-7,743.4	711.1	344.9	57.1	287.85	1.198	Level 2
13,300.0	5,912.0	13,338.6	5,811.0	150.5	152.0	-72.97	-7,843.4	711.1	344.9	53.4	291.54	1.183	Level 2
13,400.0	5,912.0	13,438.6	5,811.0	152.4	153.9	-72.97	-7,943.4	711.1	344.9	49.7	295.22	1.168	Level 2
13,500.0	5,912.0	13,538.6	5,811.0	154.3	155.8	-72.97	-8,043.4	711.1	344.9	46.0	298.90	1.154	Level 2
13,600.0	5,912.0	13,638.6	5,811.0	156.2	157.7	-72.97	-8,143.4	711.1	344.9	42.3	302.58	1.140	Level 2
13,665.9	5,912.0	13,704.5	5,811.0	157.3	158.9	-72.97	-8,209.4	711.1	344.9	40.1	304.76	1.132	Level 2
13,695.8	5,912.0	13,734.0	5,811.0	157.7	159.5	-72.97	-8,238.9	711.1	344.9	39.1	305.77	1.128	Level 2, ES, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	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	353.397	
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	66.1	66.1	65.5	0.64	103.823	
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	66.1	66.1	65.0	1.09	60.850	
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	66.1	66.1	64.6	1.54	43.037	
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	
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	66.1	66.1	63.7	2.43	27.144	
700.0	700.0	700.0	700.0	1.4	1.4	90.01	0.0	66.1	66.1	63.2	2.88	22.914	
800.0	800.0	800.0	800.0	1.7	1.7	90.01	0.0	66.1	66.1	62.8	3.33	19.824	
900.0	900.0	900.0	900.0	1.9	1.9	90.01	0.0	66.1	66.1	62.3	3.78	17.468	CC, ES
1,000.0	1,000.0	998.5	998.5	2.1	2.1	91.11	-1.3	67.2	67.2	63.0	4.21	15.981	
1,100.0	1,100.0	1,096.9	1,096.7	2.3	2.3	-67.62	-5.2	70.4	70.0	65.4	4.58	15.281	
1,200.0	1,199.8	1,196.8	1,196.4	2.5	2.5	-67.35	-10.5	74.9	72.8	67.8	4.95	14.698	
1,300.0	1,299.6	1,296.7	1,296.1	2.7	2.7	-68.38	-15.9	79.4	74.9	69.5	5.34	14.009	
1,400.0	1,399.4	1,396.7	1,395.8	2.9	2.9	-69.35	-21.2	83.8	77.0	71.2	5.76	13.372	
1,500.0	1,499.1	1,496.7	1,495.5	3.1	3.1	-70.27	-26.6	88.3	79.1	72.9	6.19	12.791	
1,600.0	1,598.9	1,596.6	1,595.3	3.3	3.4	-71.15	-31.9	92.8	81.3	74.6	6.63	12.264	
1,700.0	1,698.6	1,696.6	1,695.0	3.5	3.6	-71.97	-37.3	97.2	83.5	76.4	7.08	11.787	
1,800.0	1,798.4	1,796.6	1,794.7	3.8	3.8	-72.76	-42.7	101.7	85.6	78.1	7.54	11.355	
1,900.0	1,898.1	1,896.6	1,894.5	4.0	4.1	-73.50	-48.0	106.2	87.9	79.8	8.01	10.965	
2,000.0	1,997.9	1,996.5	1,994.2	4.2	4.3	-74.21	-53.4	110.7	90.1	81.6	8.49	10.611	
2,100.0	2,097.6	2,096.5	2,093.9	4.5	4.6	-74.89	-58.7	115.1	92.3	83.3	8.97	10.290	
2,200.0	2,197.4	2,196.5	2,193.6	4.7	4.8	-75.53	-64.1	119.6	94.6	85.1	9.46	9.999	
2,300.0	2,297.2	2,296.4	2,293.4	5.0	5.1	-76.14	-69.4	124.1	96.8	86.9	9.95	9.732	
2,400.0	2,396.9	2,396.4	2,393.1	5.2	5.3	-76.73	-74.8	128.5	99.1	88.6	10.44	9.489	
2,500.0	2,496.7	2,496.4	2,492.8	5.5	5.6	-77.29	-80.1	133.0	101.4	90.4	10.94	9.265	
2,600.0	2,596.4	2,596.3	2,592.5	5.7	5.8	-77.82	-85.5	137.5	103.7	92.2	11.44	9.060	
2,700.0	2,696.2	2,696.3	2,692.3	6.0	6.1	-78.33	-90.8	142.0	106.0	94.0	11.94	8.871	
2,800.0	2,795.9	2,796.3	2,792.0	6.2	6.3	-78.82	-96.2	146.4	108.3	95.8	12.45	8.696	
2,900.0	2,895.7	2,896.2	2,891.7	6.5	6.6	-79.29	-101.5	150.9	110.6	97.6	12.96	8.535	
3,000.0	2,995.5	2,996.2	2,991.4	6.7	6.9	-79.74	-106.9	155.4	112.9	99.4	13.46	8.385	
3,100.0	3,095.2	3,096.2	3,091.2	7.0	7.1	-80.17	-112.2	159.8	115.2	101.2	13.97	8.245	
3,200.0	3,195.0	3,196.2	3,190.9	7.3	7.4	-80.59	-117.6	164.3	117.5	103.1	14.49	8.115	
3,300.0	3,294.7	3,296.1	3,290.6	7.5	7.6	-80.98	-122.9	168.8	119.9	104.9	15.00	7.993	
3,400.0	3,394.5	3,396.1	3,390.3	7.8	7.9	-81.37	-128.3	173.3	122.2	106.7	15.51	7.880	
3,500.0	3,494.2	3,496.1	3,490.1	8.0	8.1	-81.74	-133.6	177.7	124.6	108.6	16.03	7.773	
3,600.0	3,594.0	3,596.0	3,589.8	8.3	8.4	-82.09	-139.0	182.2	126.9	110.4	16.54	7.673	
3,700.0	3,693.7	3,696.0	3,689.5	8.5	8.7	-82.43	-144.3	186.7	129.3	112.2	17.06	7.579	
3,800.0	3,793.5	3,796.0	3,789.2	8.8	8.9	-82.76	-149.7	191.1	131.7	114.1	17.58	7.491	
3,900.0	3,893.3	3,895.9	3,889.0	9.1	9.2	-83.08	-155.0	195.6	134.0	115.9	18.09	7.407	
4,000.0	3,993.0	3,995.9	3,988.7	9.3	9.4	-83.39	-160.4	200.1	136.4	117.8	18.61	7.328	
4,100.0	4,092.8	4,095.9	4,088.4	9.6	9.7	-83.68	-165.7	204.6	138.8	119.6	19.13	7.253	
4,200.0	4,192.5	4,195.8	4,188.1	9.8	10.0	-83.97	-171.1	209.0	141.2	121.5	19.65	7.183	
4,300.0	4,292.3	4,295.8	4,287.9	10.1	10.2	-84.25	-176.4	213.5	143.5	123.4	20.17	7.116	
4,400.0	4,392.0	4,395.8	4,387.6	10.4	10.5	-84.51	-181.8	218.0	145.9	125.2	20.69	7.052	
4,500.0	4,491.8	4,495.8	4,487.3	10.6	10.7	-84.77	-187.1	222.4	148.3	127.1	21.21	6.991	
4,600.0	4,591.6	4,595.7	4,587.0	10.9	11.0	-85.02	-192.5	226.9	150.7	129.0	21.74	6.934	
4,700.0	4,691.3	4,695.7	4,686.8	11.2	11.3	-85.27	-197.8	231.4	153.1	130.8	22.26	6.879	
4,800.0	4,791.1	4,795.7	4,786.5	11.4	11.5	-85.50	-203.2	235.9	155.5	132.7	22.78	6.826	
4,900.0	4,890.8	4,895.6	4,886.2	11.7	11.8	-85.73	-208.5	240.3	157.9	134.6	23.30	6.776	
5,000.0	4,990.6	4,995.6	4,985.9	11.9	12.1	-85.95	-213.9	244.8	160.3	136.5	23.82	6.728	
5,100.0	5,090.3	5,095.6	5,085.7	12.2	12.3	-86.17	-219.2	249.3	162.7	138.4	24.35	6.683	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #1

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 ft

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,195.5	5,185.4	12.5	12.6	-86.38	-224.6	253.7	165.1	140.2	24.87	6.639	
5,300.0	5,289.9	5,295.5	5,285.1	12.7	12.8	-86.58	-229.9	258.2	167.5	142.1	25.39	6.597	
5,400.0	5,389.6	5,395.5	5,384.9	13.0	13.1	-86.78	-235.3	262.7	169.9	144.0	25.92	6.557	
5,438.0	5,427.5	5,433.5	5,422.8	13.1	13.2	-86.85	-237.3	264.4	170.8	144.7	26.12	6.542	
5,450.0	5,439.5	5,444.6	5,433.8	13.1	13.2	-86.87	-238.0	264.9	171.1	145.0	26.18	6.538	
5,500.0	5,489.0	5,488.8	5,477.6	13.3	13.4	-87.02	-242.2	268.4	173.3	146.8	26.48	6.543	
5,550.0	5,537.5	5,532.9	5,520.8	13.5	13.5	-87.26	-249.2	274.3	176.8	149.9	26.85	6.584	
5,600.0	5,584.8	5,576.9	5,562.9	13.7	13.8	-87.57	-259.0	282.5	181.7	154.4	27.30	6.657	
5,650.0	5,630.2	5,620.8	5,603.7	14.0	14.0	-87.91	-271.5	292.9	188.1	160.3	27.82	6.760	
5,700.0	5,673.5	5,664.6	5,642.8	14.4	14.3	-88.27	-286.5	305.4	195.8	167.4	28.42	6.888	
5,750.0	5,714.1	5,708.2	5,680.1	14.7	14.6	-88.60	-303.9	320.0	204.8	175.7	29.11	7.036	
5,800.0	5,751.8	5,750.0	5,713.9	15.2	14.9	-88.83	-322.7	335.7	215.0	185.2	29.86	7.203	
5,850.0	5,786.2	5,795.3	5,748.2	15.7	15.3	-89.12	-345.4	354.7	226.5	195.7	30.73	7.370	
5,900.0	5,816.9	5,838.7	5,778.5	16.2	15.8	-89.27	-369.3	374.6	239.0	207.3	31.68	7.546	
5,950.0	5,843.7	5,882.2	5,806.2	16.8	16.2	-89.33	-395.0	396.1	252.6	219.9	32.71	7.721	
6,000.0	5,866.4	5,925.7	5,830.9	17.4	16.8	-89.30	-422.4	419.0	267.0	233.2	33.83	7.893	
6,050.0	5,884.6	5,969.3	5,852.7	18.1	17.3	-89.18	-451.4	443.2	282.3	247.3	35.04	8.057	
6,100.0	5,898.3	6,013.2	5,871.3	18.8	17.9	-88.98	-481.9	468.7	298.3	261.9	36.32	8.212	
6,150.0	5,907.4	6,057.3	5,886.7	19.6	18.6	-88.71	-513.6	495.2	314.8	277.1	37.67	8.355	
6,200.0	5,911.7	6,101.9	5,898.5	20.4	19.3	-88.37	-546.6	522.8	331.7	292.6	39.09	8.486	
6,219.8	5,912.1	6,119.8	5,902.2	20.7	19.6	-88.23	-560.0	534.0	338.5	298.9	39.67	8.533	
6,300.0	5,912.1	6,193.0	5,911.1	21.9	20.8	-89.84	-615.8	580.6	368.0	326.2	41.79	8.806	
6,400.0	5,912.1	6,301.5	5,911.8	23.3	22.6	-89.96	-700.1	648.8	407.9	363.3	44.57	9.153	
6,500.0	5,912.1	6,420.0	5,911.8	24.8	24.6	-89.96	-796.4	717.8	447.3	399.8	47.46	9.423	
6,600.0	5,912.1	6,542.2	5,911.8	26.3	26.7	-89.97	-899.9	782.6	485.6	435.2	50.40	9.636	
6,700.0	5,912.1	6,668.3	5,911.8	27.9	28.9	-89.97	-1,011.0	842.5	522.8	469.5	53.32	9.805	
6,800.0	5,912.1	6,798.6	5,911.8	29.4	31.1	-89.97	-1,129.5	896.4	558.6	502.4	56.20	9.940	
6,866.6	5,912.1	6,887.7	5,911.8	30.4	32.7	-89.97	-1,212.6	928.6	581.6	523.5	58.08	10.014	
6,900.0	5,912.1	6,933.3	5,911.8	31.0	33.5	-89.97	-1,255.6	943.6	592.6	533.1	59.45	9.968	
7,000.0	5,912.1	7,073.9	5,911.8	32.6	35.8	-89.98	-1,390.5	983.2	620.8	557.1	63.70	9.745	
7,100.0	5,912.1	7,220.0	5,911.8	34.3	38.3	-89.98	-1,533.4	1,013.7	641.7	573.6	68.08	9.426	
7,200.0	5,912.1	7,370.1	5,911.8	36.1	40.7	-89.98	-1,682.1	1,033.6	655.0	582.4	72.51	9.032	
7,300.0	5,912.1	7,522.4	5,911.8	37.8	43.0	-89.98	-1,834.2	1,041.8	660.4	583.4	76.95	8.582	
7,400.0	5,912.1	7,631.7	5,911.8	39.6	44.7	-89.98	-1,943.5	1,042.0	660.5	579.9	80.58	8.196	
7,500.0	5,912.1	7,731.7	5,911.8	41.3	46.2	-89.98	-2,043.5	1,042.0	660.5	576.4	84.07	7.856	
7,600.0	5,912.1	7,831.7	5,911.8	43.1	47.8	-89.98	-2,143.5	1,042.0	660.5	572.9	87.60	7.540	
7,700.0	5,912.1	7,931.7	5,911.8	44.9	49.3	-89.98	-2,243.5	1,042.0	660.5	569.3	91.15	7.246	
7,800.0	5,912.1	8,031.7	5,911.8	46.7	50.9	-89.98	-2,343.5	1,042.0	660.5	565.7	94.72	6.973	
7,900.0	5,912.1	8,131.7	5,911.8	48.5	52.6	-89.98	-2,443.5	1,042.0	660.5	562.2	98.31	6.718	
8,000.0	5,912.1	8,231.7	5,911.8	50.3	54.2	-89.98	-2,543.5	1,042.0	660.5	558.5	101.92	6.480	
8,100.0	5,912.1	8,331.7	5,911.8	52.2	55.9	-89.98	-2,643.5	1,042.0	660.5	554.9	105.55	6.257	
8,200.0	5,912.1	8,431.7	5,911.9	54.0	57.6	-89.98	-2,743.5	1,041.9	660.5	551.3	109.19	6.048	
8,300.0	5,912.1	8,531.7	5,911.9	55.9	59.2	-89.98	-2,843.5	1,041.9	660.5	547.6	112.85	5.852	
8,400.0	5,912.0	8,631.7	5,911.9	57.7	61.0	-89.98	-2,943.5	1,041.9	660.5	543.9	116.52	5.668	
8,500.0	5,912.0	8,731.7	5,911.9	59.5	62.7	-89.98	-3,043.5	1,041.9	660.4	540.3	120.20	5.495	
8,600.0	5,912.0	8,831.7	5,911.9	61.4	64.4	-89.98	-3,143.5	1,041.9	660.4	536.6	123.89	5.331	
8,700.0	5,912.0	8,931.7	5,911.9	63.3	66.1	-89.98	-3,243.5	1,041.9	660.4	532.9	127.59	5.176	
8,800.0	5,912.0	9,031.7	5,911.9	65.1	67.9	-89.98	-3,343.5	1,041.9	660.4	529.1	131.29	5.030	
8,900.0	5,912.0	9,131.7	5,911.9	67.0	69.6	-89.99	-3,443.5	1,041.9	660.4	525.4	135.01	4.892	
9,000.0	5,912.0	9,231.7	5,911.9	68.9	71.4	-89.99	-3,543.5	1,041.9	660.4	521.7	138.73	4.761	
9,100.0	5,912.0	9,331.7	5,911.9	70.7	73.2	-89.99	-3,643.5	1,041.9	660.4	518.0	142.46	4.636	
9,200.0	5,912.0	9,431.7	5,911.9	72.6	75.0	-89.99	-3,743.5	1,041.9	660.4	514.2	146.19	4.518	

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 Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Offset Design S12-T10N-R58W - Razor Federal#12F-1308B - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

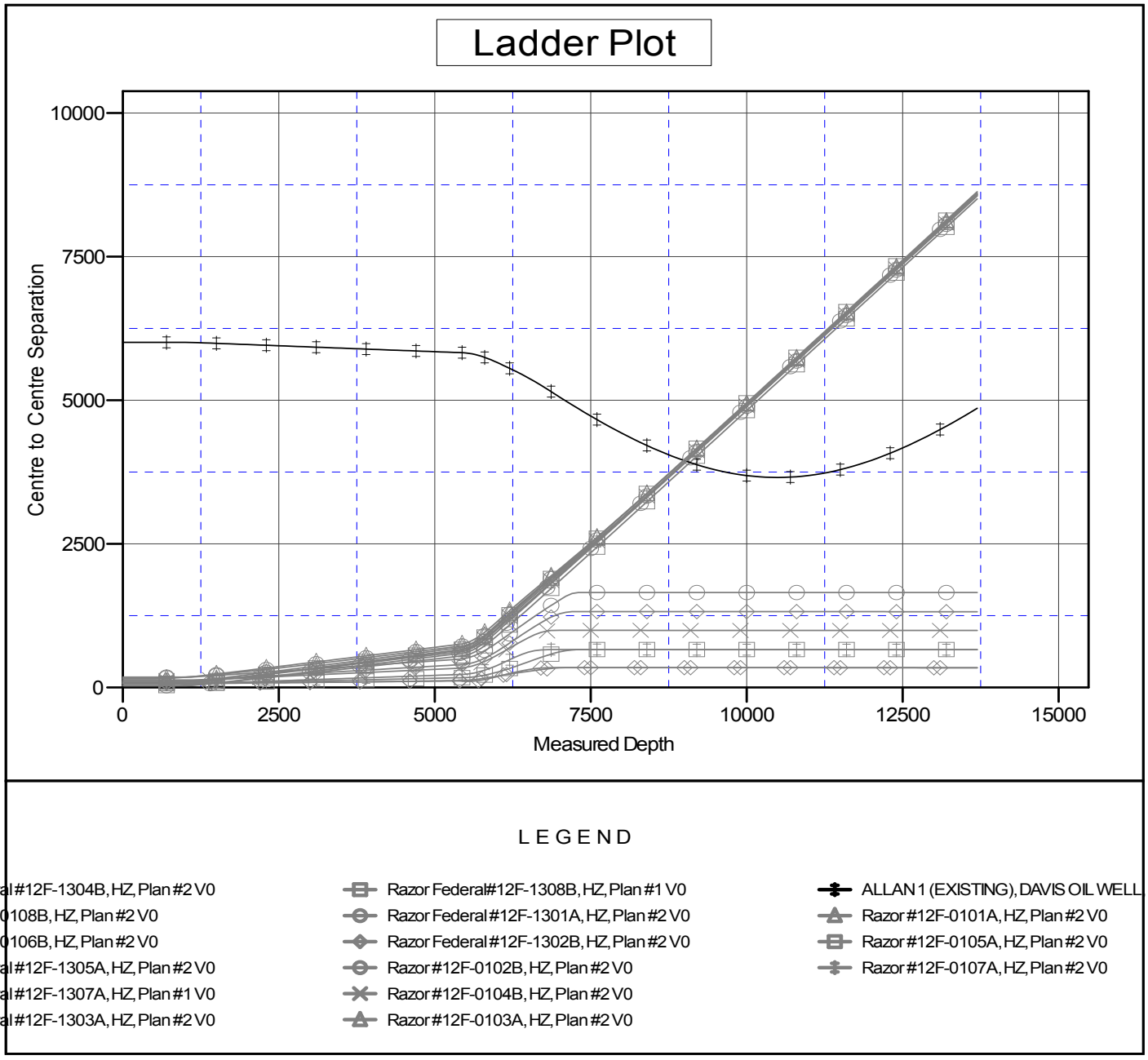
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,300.0	5,912.0	9,531.7	5,911.9	74.5	76.8	-89.99	-3,843.5	1,041.9	660.4	510.5	149.93	4.405	
9,400.0	5,912.0	9,631.7	5,911.9	76.4	78.6	-89.99	-3,943.5	1,041.9	660.4	506.8	153.68	4.297	
9,500.0	5,912.0	9,731.7	5,911.9	78.2	80.4	-89.99	-4,043.5	1,041.9	660.4	503.0	157.43	4.195	
9,600.0	5,912.0	9,831.7	5,911.9	80.1	82.2	-89.99	-4,143.5	1,041.9	660.4	499.2	161.18	4.097	
9,700.0	5,912.0	9,931.7	5,911.9	82.0	84.0	-89.99	-4,243.5	1,041.9	660.4	495.5	164.94	4.004	
9,800.0	5,912.0	10,031.7	5,911.9	83.9	85.8	-89.99	-4,343.5	1,041.8	660.4	491.7	168.70	3.915	
9,900.0	5,912.0	10,131.7	5,911.9	85.8	87.6	-89.99	-4,443.5	1,041.8	660.4	487.9	172.47	3.829	
10,000.0	5,912.0	10,231.7	5,911.9	87.7	89.4	-89.99	-4,543.5	1,041.8	660.4	484.2	176.24	3.747	
10,100.0	5,912.0	10,331.7	5,911.9	89.6	91.3	-89.99	-4,643.5	1,041.8	660.4	480.4	180.01	3.669	
10,200.0	5,912.0	10,431.7	5,911.9	91.5	93.1	-89.99	-4,743.5	1,041.8	660.4	476.6	183.79	3.593	
10,300.0	5,912.0	10,531.7	5,911.9	93.4	94.9	-89.99	-4,843.5	1,041.8	660.4	472.8	187.56	3.521	
10,400.0	5,912.0	10,631.7	5,911.9	95.3	96.8	-89.99	-4,943.5	1,041.8	660.4	469.1	191.34	3.451	
10,500.0	5,912.0	10,731.7	5,911.9	97.1	98.6	-89.99	-5,043.5	1,041.8	660.4	465.3	195.13	3.384	
10,600.0	5,912.0	10,831.7	5,911.9	99.0	100.5	-89.99	-5,143.5	1,041.8	660.4	461.5	198.91	3.320	
10,700.0	5,912.0	10,931.7	5,911.9	100.9	102.3	-89.99	-5,243.5	1,041.8	660.4	457.7	202.70	3.258	
10,800.0	5,912.0	11,031.7	5,911.9	102.8	104.2	-89.99	-5,343.5	1,041.8	660.4	453.9	206.49	3.198	
10,900.0	5,912.0	11,131.7	5,911.9	104.7	106.0	-89.99	-5,443.5	1,041.8	660.4	450.1	210.28	3.141	
11,000.0	5,912.0	11,231.7	5,911.9	106.6	107.9	-89.99	-5,543.5	1,041.8	660.4	446.3	214.08	3.085	
11,100.0	5,912.0	11,331.7	5,911.9	108.5	109.7	-89.99	-5,643.5	1,041.8	660.4	442.5	217.87	3.031	
11,200.0	5,912.0	11,431.7	5,911.9	110.4	111.6	-89.99	-5,743.5	1,041.8	660.4	438.7	221.67	2.979	
11,300.0	5,912.0	11,531.7	5,911.9	112.3	113.5	-89.99	-5,843.5	1,041.8	660.4	434.9	225.47	2.929	
11,400.0	5,912.0	11,631.7	5,911.9	114.2	115.3	-89.99	-5,943.5	1,041.7	660.4	431.1	229.27	2.880	
11,500.0	5,912.0	11,731.7	5,911.9	116.2	117.2	-89.99	-6,043.5	1,041.7	660.4	427.3	233.07	2.833	
11,600.0	5,912.0	11,831.7	5,912.0	118.1	119.1	-89.99	-6,143.5	1,041.7	660.4	423.5	236.87	2.788	
11,700.0	5,912.0	11,931.7	5,912.0	120.0	120.9	-89.99	-6,243.5	1,041.7	660.4	419.7	240.68	2.744	
11,800.0	5,912.0	12,031.7	5,912.0	121.9	122.8	-89.99	-6,343.5	1,041.7	660.4	415.9	244.48	2.701	
11,900.0	5,912.0	12,131.7	5,912.0	123.8	124.7	-89.99	-6,443.5	1,041.7	660.4	412.1	248.29	2.660	
12,000.0	5,912.0	12,231.7	5,912.0	125.7	126.6	-89.99	-6,543.5	1,041.7	660.4	408.3	252.10	2.620	
12,100.0	5,912.0	12,331.7	5,912.0	127.6	128.4	-90.00	-6,643.5	1,041.7	660.4	404.5	255.90	2.581	
12,200.0	5,912.0	12,431.7	5,912.0	129.5	130.3	-90.00	-6,743.5	1,041.7	660.4	400.6	259.71	2.543	
12,300.0	5,912.0	12,531.7	5,912.0	131.4	132.2	-90.00	-6,843.5	1,041.7	660.4	396.8	263.52	2.506	
12,400.0	5,912.0	12,631.7	5,912.0	133.3	134.1	-90.00	-6,943.5	1,041.7	660.4	393.0	267.34	2.470	
12,500.0	5,912.0	12,731.7	5,912.0	135.2	136.0	-90.00	-7,043.5	1,041.7	660.4	389.2	271.15	2.435	
12,600.0	5,912.0	12,831.7	5,912.0	137.1	137.8	-90.00	-7,143.5	1,041.7	660.4	385.4	274.96	2.402	
12,700.0	5,912.0	12,931.7	5,912.0	139.0	139.7	-90.00	-7,243.5	1,041.7	660.3	381.6	278.78	2.369	
12,800.0	5,912.0	13,031.7	5,912.0	140.9	141.6	-90.00	-7,343.5	1,041.7	660.3	377.8	282.59	2.337	
12,900.0	5,912.0	13,131.7	5,912.0	142.9	143.5	-90.00	-7,443.5	1,041.7	660.3	373.9	286.41	2.306	
13,000.0	5,912.0	13,231.7	5,912.0	144.8	145.4	-90.00	-7,543.5	1,041.6	660.3	370.1	290.22	2.275	
13,100.0	5,912.0	13,331.7	5,912.0	146.7	147.3	-90.00	-7,643.5	1,041.6	660.3	366.3	294.04	2.246	
13,200.0	5,912.0	13,431.7	5,912.0	148.6	149.2	-90.00	-7,743.5	1,041.6	660.3	362.5	297.86	2.217	
13,300.0	5,912.0	13,531.7	5,912.0	150.5	151.1	-90.00	-7,843.5	1,041.6	660.3	358.7	301.68	2.189	
13,400.0	5,912.0	13,631.7	5,912.0	152.4	152.9	-90.00	-7,943.5	1,041.6	660.3	354.8	305.50	2.161	
13,500.0	5,912.0	13,731.7	5,912.0	154.3	154.8	-90.00	-8,043.5	1,041.6	660.3	351.0	309.32	2.135	
13,600.0	5,912.0	13,831.7	5,912.0	156.2	156.7	-90.00	-8,143.5	1,041.6	660.3	347.2	313.14	2.109	
13,668.5	5,912.0	13,900.3	5,912.0	157.3	158.0	-90.00	-8,212.0	1,041.6	660.3	344.8	315.49	2.093	
13,695.8	5,912.0	13,925.4	5,912.0	157.7	158.4	-90.00	-8,237.2	1,041.6	660.3	344.0	316.33	2.087	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor Federal #12F-1306B
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Reference Site:	S12-T10N-R58W	**MD Reference:**	WELL @ 4953.6ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor Federal #12F-1306B	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4953.6ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Razor Federal #12F-1306B
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.09°



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