WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S10-T10N-R58W
Well: Razor #10E-1503A
Wellbore: HZ
Design: Plan #1

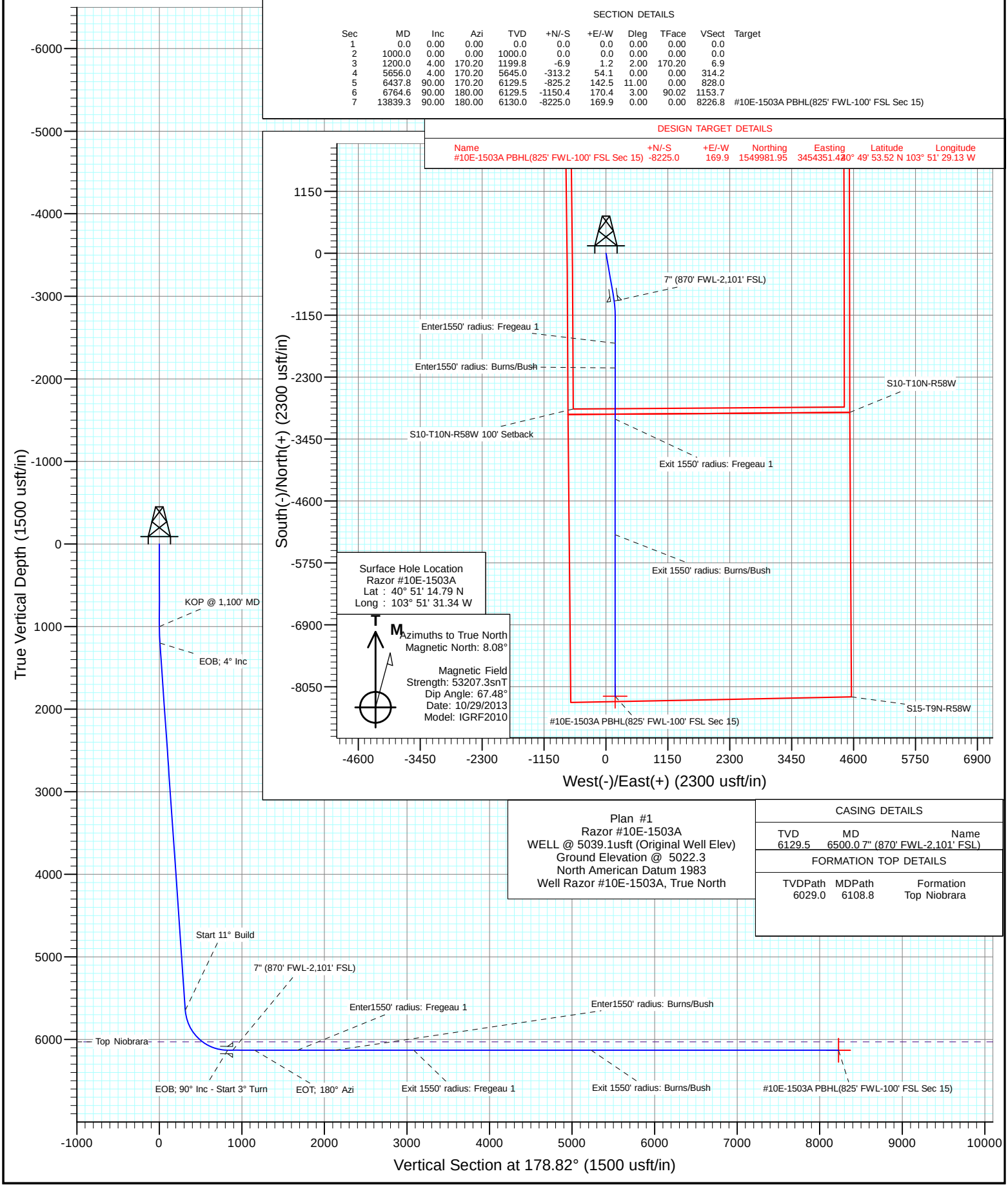
CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
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	
3	1200.0	4.00	170.20	1199.8	-6.9	1.2	2.00	170.20	6.9	
4	5656.0	4.00	170.20	5645.0	-313.2	54.1	0.00	0.00	314.2	
5	6437.8	90.00	170.20	6129.5	-825.2	142.5	11.00	0.00	828.0	
6	6764.6	90.00	180.00	6129.5	-1150.4	170.4	3.00	90.02	1153.7	
7	13839.3	90.00	180.00	6130.0	-8225.0	169.9	0.00	0.00	8226.8	#10E-1503A PBHL(825' FWL-100' FSL Sec 15)

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
#10E-1503A PBHL(825' FWL-100' FSL Sec 15)	-8225.0	169.9	1549981.95	3454351.42	40° 49' 53.52 N	103° 51' 29.13 W



Plan #1
Razor #10E-1503A
WELL @ 5039.1usft (Original Well Elev)
Ground Elevation @ 5022.3
North American Datum 1983
Well Razor #10E-1503A, True North

CASING DETAILS

TVD	MD	Name
6129.5	6500.0	7" (870' FWL-2,101' FSL)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6029.0	6108.8	Top Niobrara

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project Weld County, CO

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

Site S10-T10N-R58W

Site Position:		**Northing:**	1,558,370.48 usft	**Latitude:**	40° 51' 15.74 N
From:	Lat/Long	**Easting:**	3,457,889.23 usft	**Longitude:**	103° 50' 41.08 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	1.07 °

Well Razor #10E-1503A

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,558,202.44 usft	**Latitude:**	40° 51' 14.79 N
	+E/-W	0.0 usft	**Easting:**	3,454,029.30 usft	**Longitude:**	103° 51' 31.34 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	5,022.3 usft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/29/2013	8.08	67.48	53,207

Design Plan #1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	178.82

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
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	170.20	1,199.8	-6.9	1.2	2.00	2.00	0.00	170.20	
5,656.0	4.00	170.20	5,645.0	-313.2	54.1	0.00	0.00	0.00	0.00	
6,437.8	90.00	170.20	6,129.5	-825.2	142.5	11.00	11.00	0.00	0.00	
6,764.6	90.00	180.00	6,129.5	-1,150.4	170.4	3.00	0.00	3.00	90.02	
13,839.3	90.00	180.00	6,130.0	-8,225.0	169.9	0.00	0.00	0.00	0.00	#10E-1503A PBHL(82

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
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 @ 1,100' MD
1,100.0	2.00	170.20	1,100.0	-1.7	0.3	1.7	2.00	2.00	
1,200.0	4.00	170.20	1,199.8	-6.9	1.2	6.9	2.00	2.00	EOB; 4° Inc
1,300.0	4.00	170.20	1,299.6	-13.8	2.4	13.8	0.00	0.00	
1,400.0	4.00	170.20	1,399.4	-20.6	3.6	20.7	0.00	0.00	
1,500.0	4.00	170.20	1,499.1	-27.5	4.7	27.6	0.00	0.00	
1,600.0	4.00	170.20	1,598.9	-34.4	5.9	34.5	0.00	0.00	
1,700.0	4.00	170.20	1,698.6	-41.2	7.1	41.4	0.00	0.00	
1,800.0	4.00	170.20	1,798.4	-48.1	8.3	48.3	0.00	0.00	
1,900.0	4.00	170.20	1,898.1	-55.0	9.5	55.2	0.00	0.00	
2,000.0	4.00	170.20	1,997.9	-61.9	10.7	62.1	0.00	0.00	
2,100.0	4.00	170.20	2,097.6	-68.7	11.9	69.0	0.00	0.00	
2,200.0	4.00	170.20	2,197.4	-75.6	13.1	75.9	0.00	0.00	
2,300.0	4.00	170.20	2,297.2	-82.5	14.2	82.8	0.00	0.00	
2,400.0	4.00	170.20	2,396.9	-89.4	15.4	89.7	0.00	0.00	
2,500.0	4.00	170.20	2,496.7	-96.2	16.6	96.6	0.00	0.00	
2,600.0	4.00	170.20	2,596.4	-103.1	17.8	103.5	0.00	0.00	
2,700.0	4.00	170.20	2,696.2	-110.0	19.0	110.4	0.00	0.00	
2,800.0	4.00	170.20	2,795.9	-116.9	20.2	117.3	0.00	0.00	
2,900.0	4.00	170.20	2,895.7	-123.7	21.4	124.1	0.00	0.00	
3,000.0	4.00	170.20	2,995.5	-130.6	22.6	131.0	0.00	0.00	
3,100.0	4.00	170.20	3,095.2	-137.5	23.7	137.9	0.00	0.00	
3,200.0	4.00	170.20	3,195.0	-144.4	24.9	144.8	0.00	0.00	
3,300.0	4.00	170.20	3,294.7	-151.2	26.1	151.7	0.00	0.00	
3,400.0	4.00	170.20	3,394.5	-158.1	27.3	158.6	0.00	0.00	
3,500.0	4.00	170.20	3,494.2	-165.0	28.5	165.5	0.00	0.00	
3,600.0	4.00	170.20	3,594.0	-171.8	29.7	172.4	0.00	0.00	
3,700.0	4.00	170.20	3,693.7	-178.7	30.9	179.3	0.00	0.00	
3,800.0	4.00	170.20	3,793.5	-185.6	32.1	186.2	0.00	0.00	
3,900.0	4.00	170.20	3,893.3	-192.5	33.2	193.1	0.00	0.00	
4,000.0	4.00	170.20	3,993.0	-199.3	34.4	200.0	0.00	0.00	
4,100.0	4.00	170.20	4,092.8	-206.2	35.6	206.9	0.00	0.00	
4,200.0	4.00	170.20	4,192.5	-213.1	36.8	213.8	0.00	0.00	
4,300.0	4.00	170.20	4,292.3	-220.0	38.0	220.7	0.00	0.00	
4,400.0	4.00	170.20	4,392.0	-226.8	39.2	227.6	0.00	0.00	
4,500.0	4.00	170.20	4,491.8	-233.7	40.4	234.5	0.00	0.00	
4,600.0	4.00	170.20	4,591.6	-240.6	41.6	241.4	0.00	0.00	
4,700.0	4.00	170.20	4,691.3	-247.5	42.7	248.3	0.00	0.00	
4,800.0	4.00	170.20	4,791.1	-254.3	43.9	255.2	0.00	0.00	
4,900.0	4.00	170.20	4,890.8	-261.2	45.1	262.1	0.00	0.00	
5,000.0	4.00	170.20	4,990.6	-268.1	46.3	269.0	0.00	0.00	
5,100.0	4.00	170.20	5,090.3	-275.0	47.5	275.9	0.00	0.00	

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Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
5,200.0	4.00	170.20	5,190.1	-281.8	48.7	282.8	0.00	0.00	
5,300.0	4.00	170.20	5,289.9	-288.7	49.9	289.7	0.00	0.00	
5,400.0	4.00	170.20	5,389.6	-295.6	51.1	296.6	0.00	0.00	
5,500.0	4.00	170.20	5,489.4	-302.5	52.2	303.5	0.00	0.00	
5,600.0	4.00	170.20	5,589.1	-309.3	53.4	310.4	0.00	0.00	
5,656.0	4.00	170.20	5,645.0	-313.2	54.1	314.2	0.00	0.00	Start 11° Build
5,700.0	8.84	170.20	5,688.7	-318.0	54.9	319.1	11.00	11.00	
5,750.0	14.34	170.20	5,737.7	-327.9	56.6	329.0	11.00	11.00	
5,800.0	19.84	170.20	5,785.4	-342.4	59.1	343.5	11.00	11.00	
5,850.0	25.34	170.20	5,831.6	-361.3	62.4	362.5	11.00	11.00	
5,900.0	30.84	170.20	5,875.7	-384.5	66.4	385.8	11.00	11.00	
5,950.0	36.34	170.20	5,917.3	-411.7	71.1	413.1	11.00	11.00	
6,000.0	41.84	170.20	5,956.1	-442.8	76.5	444.3	11.00	11.00	
6,050.0	47.34	170.20	5,991.7	-477.4	82.5	479.0	11.00	11.00	
6,100.0	52.84	170.20	6,023.8	-515.2	89.0	516.9	11.00	11.00	
6,108.8	53.80	170.20	6,029.0	-522.1	90.2	523.8	11.00	11.00	Top Niobrara
6,150.0	58.34	170.20	6,052.0	-555.8	96.0	557.7	11.00	11.00	
6,200.0	63.84	170.20	6,076.2	-598.9	103.4	600.9	11.00	11.00	
6,250.0	69.34	170.20	6,096.0	-644.1	111.3	646.3	11.00	11.00	
6,300.0	74.84	170.20	6,111.4	-691.0	119.4	693.3	11.00	11.00	
6,350.0	80.34	170.20	6,122.1	-739.1	127.7	741.5	11.00	11.00	
6,400.0	85.84	170.20	6,128.1	-788.0	136.1	790.6	11.00	11.00	
6,437.8	90.00	170.20	6,129.5	-825.2	142.5	827.9	11.00	11.00	EOB; 90° Inc - Start 3° Turn
6,500.0	90.00	172.07	6,129.5	-886.6	152.1	889.6	3.00	0.00	7" (870' FWL-2,101' FSL)
6,600.0	90.00	175.07	6,129.5	-986.0	163.3	989.2	3.00	0.00	
6,700.0	90.00	178.07	6,129.5	-1,085.8	169.3	1,089.1	3.00	0.00	
6,764.6	90.00	180.00	6,129.5	-1,150.4	170.4	1,153.6	3.00	0.00	EOT; 180° Azi
6,800.0	90.00	180.00	6,129.5	-1,185.8	170.4	1,189.1	0.00	0.00	
6,900.0	90.00	180.00	6,129.5	-1,285.8	170.4	1,289.0	0.00	0.00	
7,000.0	90.00	180.00	6,129.5	-1,385.8	170.4	1,389.0	0.00	0.00	
7,100.0	90.00	180.00	6,129.6	-1,485.8	170.4	1,489.0	0.00	0.00	
7,200.0	90.00	180.00	6,129.6	-1,585.8	170.4	1,589.0	0.00	0.00	
7,284.2	90.00	180.00	6,129.6	-1,670.0	170.4	1,673.1	0.00	0.00	Enter1550' radius: Fregeau 1
7,300.0	90.00	180.00	6,129.6	-1,685.8	170.4	1,688.9	0.00	0.00	
7,400.0	90.00	180.00	6,129.6	-1,785.8	170.4	1,788.9	0.00	0.00	
7,500.0	90.00	180.00	6,129.6	-1,885.8	170.4	1,888.9	0.00	0.00	
7,600.0	90.00	180.00	6,129.6	-1,985.8	170.3	1,988.9	0.00	0.00	
7,700.0	90.00	180.00	6,129.6	-2,085.8	170.3	2,088.9	0.00	0.00	
7,743.2	90.00	180.00	6,129.6	-2,129.0	170.3	2,132.0	0.00	0.00	Enter1550' radius: Burns/Bush
7,800.0	90.00	180.00	6,129.6	-2,185.8	170.3	2,188.8	0.00	0.00	
7,900.0	90.00	180.00	6,129.6	-2,285.8	170.3	2,288.8	0.00	0.00	
8,000.0	90.00	180.00	6,129.6	-2,385.8	170.3	2,388.8	0.00	0.00	
8,100.0	90.00	180.00	6,129.6	-2,485.8	170.3	2,488.8	0.00	0.00	
8,200.0	90.00	180.00	6,129.6	-2,585.8	170.3	2,588.8	0.00	0.00	
8,300.0	90.00	180.00	6,129.6	-2,685.8	170.3	2,688.7	0.00	0.00	
8,400.0	90.00	180.00	6,129.6	-2,785.8	170.3	2,788.7	0.00	0.00	
8,500.0	90.00	180.00	6,129.6	-2,885.8	170.3	2,888.7	0.00	0.00	
8,600.0	90.00	180.00	6,129.7	-2,985.8	170.3	2,988.7	0.00	0.00	
8,692.2	90.00	180.00	6,129.7	-3,078.0	170.3	3,080.8	0.00	0.00	Exit 1550' radius: Fregeau 1
8,700.0	90.00	180.00	6,129.7	-3,085.8	170.3	3,088.6	0.00	0.00	
8,800.0	90.00	180.00	6,129.7	-3,185.8	170.3	3,188.6	0.00	0.00	
8,900.0	90.00	180.00	6,129.7	-3,285.8	170.3	3,288.6	0.00	0.00	

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Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
9,000.0	90.00	180.00	6,129.7	-3,385.8	170.3	3,388.6	0.00	0.00	
9,100.0	90.00	180.00	6,129.7	-3,485.8	170.2	3,488.6	0.00	0.00	
9,200.0	90.00	180.00	6,129.7	-3,585.8	170.2	3,588.5	0.00	0.00	
9,300.0	90.00	180.00	6,129.7	-3,685.8	170.2	3,688.5	0.00	0.00	
9,400.0	90.00	180.00	6,129.7	-3,785.8	170.2	3,788.5	0.00	0.00	
9,500.0	90.00	180.00	6,129.7	-3,885.8	170.2	3,888.5	0.00	0.00	
9,600.0	90.00	180.00	6,129.7	-3,985.8	170.2	3,988.5	0.00	0.00	
9,700.0	90.00	180.00	6,129.7	-4,085.8	170.2	4,088.4	0.00	0.00	
9,800.0	90.00	180.00	6,129.7	-4,185.8	170.2	4,188.4	0.00	0.00	
9,900.0	90.00	180.00	6,129.7	-4,285.8	170.2	4,288.4	0.00	0.00	
10,000.0	90.00	180.00	6,129.7	-4,385.8	170.2	4,388.4	0.00	0.00	
10,100.0	90.00	180.00	6,129.8	-4,485.8	170.2	4,488.3	0.00	0.00	
10,200.0	90.00	180.00	6,129.8	-4,585.8	170.2	4,588.3	0.00	0.00	
10,300.0	90.00	180.00	6,129.8	-4,685.8	170.2	4,688.3	0.00	0.00	
10,400.0	90.00	180.00	6,129.8	-4,785.8	170.2	4,788.3	0.00	0.00	
10,500.0	90.00	180.00	6,129.8	-4,885.8	170.1	4,888.3	0.00	0.00	
10,600.0	90.00	180.00	6,129.8	-4,985.8	170.1	4,988.2	0.00	0.00	
10,700.0	90.00	180.00	6,129.8	-5,085.8	170.1	5,088.2	0.00	0.00	
10,800.0	90.00	180.00	6,129.8	-5,185.8	170.1	5,188.2	0.00	0.00	
10,842.2	90.00	180.00	6,129.8	-5,228.0	170.1	5,230.4	0.00	0.00	Exit 1550' radius: Burns/Bush
10,900.0	90.00	180.00	6,129.8	-5,285.8	170.1	5,288.2	0.00	0.00	
11,000.0	90.00	180.00	6,129.8	-5,385.8	170.1	5,388.2	0.00	0.00	
11,100.0	90.00	180.00	6,129.8	-5,485.8	170.1	5,488.1	0.00	0.00	
11,200.0	90.00	180.00	6,129.8	-5,585.8	170.1	5,588.1	0.00	0.00	
11,300.0	90.00	180.00	6,129.8	-5,685.8	170.1	5,688.1	0.00	0.00	
11,400.0	90.00	180.00	6,129.8	-5,785.8	170.1	5,788.1	0.00	0.00	
11,500.0	90.00	180.00	6,129.8	-5,885.8	170.1	5,888.0	0.00	0.00	
11,600.0	90.00	180.00	6,129.9	-5,985.8	170.1	5,988.0	0.00	0.00	
11,700.0	90.00	180.00	6,129.9	-6,085.8	170.1	6,088.0	0.00	0.00	
11,800.0	90.00	180.00	6,129.9	-6,185.8	170.1	6,188.0	0.00	0.00	
11,900.0	90.00	180.00	6,129.9	-6,285.8	170.1	6,288.0	0.00	0.00	
12,000.0	90.00	180.00	6,129.9	-6,385.8	170.0	6,387.9	0.00	0.00	
12,100.0	90.00	180.00	6,129.9	-6,485.8	170.0	6,487.9	0.00	0.00	
12,200.0	90.00	180.00	6,129.9	-6,585.8	170.0	6,587.9	0.00	0.00	
12,300.0	90.00	180.00	6,129.9	-6,685.8	170.0	6,687.9	0.00	0.00	
12,400.0	90.00	180.00	6,129.9	-6,785.8	170.0	6,787.9	0.00	0.00	
12,500.0	90.00	180.00	6,129.9	-6,885.8	170.0	6,887.8	0.00	0.00	
12,600.0	90.00	180.00	6,129.9	-6,985.8	170.0	6,987.8	0.00	0.00	
12,700.0	90.00	180.00	6,129.9	-7,085.8	170.0	7,087.8	0.00	0.00	
12,800.0	90.00	180.00	6,129.9	-7,185.8	170.0	7,187.8	0.00	0.00	
12,900.0	90.00	180.00	6,129.9	-7,285.8	170.0	7,287.7	0.00	0.00	
13,000.0	90.00	180.00	6,129.9	-7,385.8	170.0	7,387.7	0.00	0.00	
13,100.0	90.00	180.00	6,130.0	-7,485.8	170.0	7,487.7	0.00	0.00	
13,200.0	90.00	180.00	6,130.0	-7,585.8	170.0	7,587.7	0.00	0.00	
13,300.0	90.00	180.00	6,130.0	-7,685.8	170.0	7,687.7	0.00	0.00	
13,400.0	90.00	180.00	6,130.0	-7,785.8	169.9	7,787.6	0.00	0.00	
13,500.0	90.00	180.00	6,130.0	-7,885.8	169.9	7,887.6	0.00	0.00	
13,600.0	90.00	180.00	6,130.0	-7,985.8	169.9	7,987.6	0.00	0.00	
13,700.0	90.00	180.00	6,130.0	-8,085.8	169.9	8,087.6	0.00	0.00	
13,800.0	90.00	180.00	6,130.0	-8,185.8	169.9	8,187.6	0.00	0.00	
13,839.3	90.00	180.00	6,130.0	-8,225.0	169.9	8,226.8	0.00	0.00	PBHL @ 13,839' MD

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
#10E-1503A PBHL(825' - plan hits target center - Point	0.00	0.00	6,130.0	-8,225.0	169.9	1,549,981.95	3,454,351.42	40° 49' 53.52 N	103° 51' 29.13 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,500.0	6,129.5	7" (870' FWL-2,101' FSL)	7	7-1/2

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,108.8	6,029.0	Top Niobrara		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,000.0	1,000.0	0.0	0.0	KOP @ 1,100' MD
1,200.0	1,199.8	-6.9	1.2	EOB; 4° Inc
5,656.0	5,645.0	-313.2	54.1	Start 11° Build
6,437.8	6,129.5	-825.2	142.5	EOB; 90° Inc - Start 3° Turn
6,764.6	6,129.5	-1,150.4	170.4	EOT; 180° Azi
7,284.2	6,129.6	-1,670.0	170.4	Enter1550' radius: Fregeau 1
7,743.2	6,129.6	-2,129.0	170.3	Enter1550' radius: Burns/Bush
8,692.2	6,129.7	-3,078.0	170.3	Exit 1550' radius: Fregeau 1
10,842.2	6,129.8	-5,228.0	170.1	Exit 1550' radius: Burns/Bush
13,839.3	6,130.0	-8,225.0	169.9	PBHL @ 13,839' MD

Whiting Petroleum Corporation

Weld County, CO
S10-T10N-R58W
Razor #10E-1503A
HZ
Plan #1

Anticollision Report

06 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,356.1usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 10/30/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	13,838.9	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
S10-T10N-R58W						
BUSH 1 (EXISTING) - BURNS WELL - NO SURVEYS	9,293.4	6,026.6	49.6	-31.7	0.610	Level 1, CC, ES, SF
FREGEAU 1 (EXISTING) - CREST WELL - NO SURVEY						Out of range
FREGEAU 2 (EXISTING) - CREST WELL - NO SURVEY						Out of range
Razor #10E-0301A - HZ - Plan #1	900.0	900.0	99.8	96.1	26.390	CC, ES
Razor #10E-0301A - HZ - Plan #1	1,100.0	1,093.1	107.8	103.2	23.239	SF
Razor #10E-0302B - HZ - Plan #1	1,000.0	1,000.0	82.0	77.7	19.362	CC, ES
Razor #10E-0302B - HZ - Plan #1	1,100.0	1,097.1	85.3	80.7	18.355	SF
Razor #10E-0303A - HZ - Plan #1	1,000.0	1,000.0	75.1	70.8	17.732	CC, ES
Razor #10E-0303A - HZ - Plan #1	1,100.0	1,100.0	76.8	72.1	16.498	SF
Razor #10E-0304B - HZ - Plan #1	1,000.0	1,000.0	82.1	77.8	19.389	CC, ES
Razor #10E-0304B - HZ - Plan #1	1,200.0	1,199.8	88.0	82.9	17.413	SF
Razor #10E-1501A - HZ - Plan #1	1,000.0	1,000.0	65.3	61.1	15.424	CC
Razor #10E-1501A - HZ - Plan #1	1,100.0	1,100.0	65.6	61.0	14.099	ES
Razor #10E-1501A - HZ - Plan #1	13,839.3	13,910.4	659.5	343.6	2.088	SF
Razor #10E-1502B - HZ - Plan #1	1,000.0	1,000.0	32.1	27.9	7.581	CC
Razor #10E-1502B - HZ - Plan #1	1,100.0	1,100.0	32.4	27.8	6.970	ES
Razor #10E-1502B - HZ - Plan #1	13,839.3	13,951.2	350.4	50.1	1.167	Level 2, SF
Razor #10E-1504B - HZ - Plan #1	900.0	900.0	33.2	29.4	8.775	CC, ES
Razor #10E-1504B - HZ - Plan #1	13,839.3	14,006.5	350.7	51.3	1.171	Level 2, SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - BUSH 1 (EXISTING) - BURNS WELL - NO SURVEYS

Offset Site Error: 0.0 usft

Survey Program: 6820-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
8,000.0	6,129.6	6,026.5	6,026.5	47.4	6.8	89.90	-3,679.1	120.6	1,294.3	1,238.3	56.03	23.099	
8,100.0	6,129.6	6,026.5	6,026.5	49.2	6.8	89.91	-3,679.1	120.6	1,194.4	1,136.4	57.96	20.607	
8,200.0	6,129.6	6,026.5	6,026.5	51.1	6.8	89.92	-3,679.1	120.6	1,094.5	1,034.6	59.90	18.273	
8,300.0	6,129.6	6,026.5	6,026.5	52.9	6.8	89.92	-3,679.1	120.6	994.6	932.8	61.83	16.085	
8,400.0	6,129.6	6,026.5	6,026.5	54.8	6.8	89.93	-3,679.1	120.6	894.8	831.0	63.78	14.029	
8,500.0	6,129.6	6,026.5	6,026.5	56.7	6.8	89.94	-3,679.1	120.6	794.9	729.2	65.72	12.095	
8,600.0	6,129.7	6,026.5	6,026.5	58.5	6.8	89.95	-3,679.1	120.6	695.2	627.5	67.67	10.272	
8,700.0	6,129.7	6,026.5	6,026.5	60.4	6.8	89.95	-3,679.1	120.6	595.5	525.8	69.63	8.552	
8,800.0	6,129.7	6,026.6	6,026.6	62.3	6.8	89.96	-3,679.1	120.6	495.9	424.3	71.58	6.927	
8,900.0	6,129.7	6,026.6	6,026.6	64.1	6.8	89.97	-3,679.1	120.6	396.5	323.0	73.54	5.391	
9,000.0	6,129.7	6,026.6	6,026.6	66.0	6.8	89.98	-3,679.1	120.6	297.5	222.0	75.51	3.941	
9,100.0	6,129.7	6,026.6	6,026.6	67.9	6.8	89.99	-3,679.1	120.6	199.6	122.2	77.47	2.577	
9,200.0	6,129.7	6,026.6	6,026.6	69.8	6.8	89.99	-3,679.1	120.6	105.7	26.3	79.44	1.331	Level 3
9,293.4	6,129.7	6,026.6	6,026.6	71.5	6.8	90.00	-3,679.1	120.6	49.6	-31.7	81.28	0.610	Level 1, CC, ES, SF
9,300.0	6,129.7	6,026.6	6,026.6	71.7	6.8	90.00	-3,679.1	120.6	50.0	-31.4	81.40	0.615	Level 1
9,400.0	6,129.7	6,026.6	6,026.6	73.6	6.8	90.01	-3,679.1	120.6	117.6	34.2	83.37	1.410	Level 3
9,500.0	6,129.7	6,026.6	6,026.6	75.4	6.8	90.02	-3,679.1	120.6	212.5	127.1	85.35	2.490	
9,600.0	6,129.7	6,026.6	6,026.6	77.3	6.8	90.02	-3,679.1	120.6	310.6	223.3	87.32	3.557	
9,700.0	6,129.7	6,026.6	6,026.6	79.2	6.8	90.03	-3,679.1	120.6	409.6	320.3	89.29	4.587	
9,800.0	6,129.7	6,026.6	6,026.6	81.1	6.8	90.04	-3,679.1	120.6	509.0	417.8	91.27	5.577	
9,900.0	6,129.7	6,026.6	6,026.6	83.0	6.8	90.05	-3,679.1	120.6	608.6	515.4	93.25	6.527	
10,000.0	6,129.7	6,026.6	6,026.6	84.9	6.8	90.05	-3,679.1	120.6	708.4	613.1	95.22	7.439	
10,100.0	6,129.8	6,026.6	6,026.6	86.8	6.8	90.06	-3,679.1	120.6	808.1	710.9	97.20	8.314	
10,200.0	6,129.8	6,026.6	6,026.6	88.7	6.8	90.07	-3,679.1	120.6	908.0	808.8	99.18	9.154	
10,300.0	6,129.8	6,026.7	6,026.7	90.6	6.8	90.08	-3,679.1	120.6	1,007.8	906.7	101.17	9.962	
10,400.0	6,129.8	6,026.7	6,026.7	92.5	6.8	90.08	-3,679.1	120.6	1,107.7	1,004.6	103.15	10.739	
10,500.0	6,129.8	6,026.7	6,026.7	94.4	6.8	90.09	-3,679.1	120.6	1,207.6	1,102.5	105.13	11.487	
10,600.0	6,129.8	6,026.7	6,026.7	96.3	6.8	90.10	-3,679.1	120.6	1,307.6	1,200.4	107.11	12.207	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0301A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-41.26	75.1	-65.8	99.8				
100.0	100.0	100.0	100.0	0.1	0.1	-41.26	75.1	-65.8	99.8	99.7	0.19	533.897	
200.0	200.0	200.0	200.0	0.3	0.3	-41.26	75.1	-65.8	99.8	99.2	0.64	156.851	
300.0	300.0	300.0	300.0	0.5	0.5	-41.26	75.1	-65.8	99.8	98.8	1.09	91.929	
400.0	400.0	400.0	400.0	0.8	0.8	-41.26	75.1	-65.8	99.8	98.3	1.54	65.018	
500.0	500.0	500.0	500.0	1.0	1.0	-41.26	75.1	-65.8	99.8	97.9	1.99	50.295	
600.0	600.0	600.0	600.0	1.2	1.2	-41.26	75.1	-65.8	99.8	97.4	2.43	41.008	
700.0	700.0	700.0	700.0	1.4	1.4	-41.26	75.1	-65.8	99.8	97.0	2.88	34.617	
800.0	800.0	800.0	800.0	1.7	1.7	-41.26	75.1	-65.8	99.8	96.5	3.33	29.949	
900.0	900.0	900.0	900.0	1.9	1.9	-41.26	75.1	-65.8	99.8	96.1	3.78	26.390	CC, ES
1,000.0	1,000.0	996.7	996.7	2.1	2.1	-41.00	76.5	-66.5	101.5	97.2	4.23	24.014	
1,100.0	1,100.0	1,093.1	1,093.0	2.3	2.3	149.92	81.0	-68.6	107.8	103.2	4.64	23.239	SF
1,200.0	1,199.8	1,192.1	1,191.7	2.5	2.6	151.93	87.2	-71.5	119.2	114.1	5.04	23.646	
1,300.0	1,299.6	1,291.2	1,290.5	2.7	2.8	154.02	93.5	-74.4	132.2	126.7	5.44	24.286	
1,400.0	1,399.3	1,390.2	1,389.3	2.9	3.0	155.73	99.7	-77.3	145.4	139.5	5.86	24.826	
1,500.0	1,499.1	1,489.2	1,488.1	3.1	3.3	157.16	106.0	-80.2	158.6	152.4	6.27	25.286	
1,600.0	1,598.9	1,588.3	1,586.9	3.3	3.5	158.37	112.3	-83.1	172.0	165.3	6.70	25.680	
1,700.0	1,698.6	1,687.3	1,685.7	3.5	3.7	159.41	118.5	-86.1	185.4	178.3	7.13	26.020	
1,800.0	1,798.4	1,786.4	1,784.5	3.8	4.0	160.30	124.8	-89.0	198.9	191.3	7.56	26.316	
1,900.0	1,898.1	1,885.4	1,883.3	4.0	4.2	161.08	131.1	-91.9	212.4	204.4	7.99	26.576	
2,000.0	1,997.9	1,984.5	1,982.1	4.2	4.5	161.77	137.3	-94.8	225.9	217.5	8.43	26.805	
2,100.0	2,097.6	2,083.5	2,080.9	4.5	4.7	162.38	143.6	-97.7	239.5	230.7	8.87	27.009	
2,200.0	2,197.4	2,182.5	2,179.7	4.7	5.0	162.92	149.9	-100.6	253.1	243.8	9.31	27.190	
2,300.0	2,297.2	2,281.6	2,278.6	5.0	5.2	163.41	156.1	-103.5	266.7	257.0	9.75	27.353	
2,400.0	2,396.9	2,380.6	2,377.4	5.2	5.5	163.85	162.4	-106.5	280.4	270.2	10.20	27.500	
2,500.0	2,496.7	2,479.7	2,476.2	5.5	5.7	164.25	168.6	-109.4	294.0	283.4	10.64	27.633	
2,600.0	2,596.4	2,578.7	2,575.0	5.7	6.0	164.62	174.9	-112.3	307.7	296.6	11.09	27.754	
2,700.0	2,696.2	2,677.8	2,673.8	6.0	6.2	164.95	181.2	-115.2	321.4	309.8	11.53	27.864	
2,800.0	2,795.9	2,776.8	2,772.6	6.2	6.5	165.26	187.4	-118.1	335.1	323.1	11.98	27.965	
2,900.0	2,895.7	2,875.9	2,871.4	6.5	6.7	165.54	193.7	-121.0	348.8	336.3	12.43	28.058	
3,000.0	2,995.4	2,974.9	2,970.2	6.7	7.0	165.80	200.0	-123.9	362.5	349.6	12.88	28.143	
3,100.0	3,095.2	3,073.9	3,069.0	7.0	7.2	166.04	206.2	-126.8	376.2	362.8	13.33	28.222	
3,200.0	3,195.0	3,173.0	3,167.8	7.2	7.5	166.27	212.5	-129.8	389.9	376.1	13.78	28.295	
3,300.0	3,294.7	3,272.0	3,266.6	7.5	7.7	166.48	218.8	-132.7	403.6	389.4	14.23	28.363	
3,400.0	3,394.5	3,371.1	3,365.4	7.8	8.0	166.67	225.0	-135.6	417.3	402.7	14.68	28.426	
3,500.0	3,494.2	3,470.1	3,464.2	8.0	8.2	166.85	231.3	-138.5	431.1	415.9	15.13	28.486	
3,600.0	3,594.0	3,569.2	3,563.0	8.3	8.5	167.03	237.6	-141.4	444.8	429.2	15.58	28.541	
3,700.0	3,693.7	3,668.2	3,661.8	8.5	8.7	167.19	243.8	-144.3	458.5	442.5	16.04	28.593	
3,800.0	3,793.5	3,767.2	3,760.6	8.8	9.0	167.34	250.1	-147.2	472.3	455.8	16.49	28.641	
3,900.0	3,893.3	3,866.3	3,859.4	9.1	9.2	167.48	256.4	-150.2	486.0	469.1	16.94	28.687	
4,000.0	3,993.0	3,965.3	3,958.2	9.3	9.5	167.62	262.6	-153.1	499.8	482.4	17.40	28.730	
4,100.0	4,092.8	4,064.4	4,057.0	9.6	9.8	167.75	268.9	-156.0	513.5	495.7	17.85	28.771	
4,200.0	4,192.5	4,163.4	4,155.8	9.8	10.0	167.87	275.1	-158.9	527.3	509.0	18.30	28.809	
4,300.0	4,292.3	4,262.5	4,254.6	10.1	10.3	167.99	281.4	-161.8	541.0	522.3	18.76	28.846	
4,400.0	4,392.0	4,361.5	4,353.4	10.4	10.5	168.10	287.7	-164.7	554.8	535.6	19.21	28.880	
4,500.0	4,491.8	4,460.5	4,452.2	10.6	10.8	168.20	293.9	-167.6	568.6	548.9	19.66	28.913	
4,600.0	4,591.5	4,559.6	4,551.0	10.9	11.0	168.30	300.2	-170.5	582.3	562.2	20.12	28.944	
4,700.0	4,691.3	4,658.6	4,649.8	11.1	11.3	168.40	306.5	-173.5	596.1	575.5	20.57	28.974	
4,800.0	4,791.1	4,757.7	4,748.6	11.4	11.5	168.49	312.7	-176.4	609.8	588.8	21.03	29.002	
4,900.0	4,890.8	4,856.7	4,847.4	11.7	11.8	168.57	319.0	-179.3	623.6	602.1	21.48	29.029	
5,000.0	4,990.6	4,955.8	4,946.2	11.9	12.0	168.66	325.3	-182.2	637.4	615.4	21.94	29.054	
5,100.0	5,090.3	5,054.8	5,045.0	12.2	12.3	168.74	331.5	-185.1	651.1	628.7	22.39	29.079	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0301A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,153.9	5,143.8	12.4	12.5	168.81	337.8	-188.0	664.9	642.1	22.85	29.102	
5,300.0	5,289.8	5,252.9	5,242.6	12.7	12.8	168.89	344.1	-190.9	678.7	655.4	23.30	29.125	
5,400.0	5,389.6	5,351.9	5,341.4	13.0	13.1	168.96	350.3	-193.9	692.5	668.7	23.76	29.146	
5,500.0	5,489.4	5,451.0	5,440.2	13.2	13.3	169.02	356.6	-196.8	706.2	682.0	24.21	29.167	
5,600.0	5,589.1	5,550.0	5,539.0	13.5	13.6	169.09	362.9	-199.7	720.0	695.3	24.67	29.187	
5,700.0	5,688.7	5,648.8	5,637.5	13.8	13.8	169.01	369.1	-202.6	735.6	710.7	24.91	29.524	
5,800.0	5,785.4	5,700.0	5,688.4	14.2	14.0	168.40	373.9	-204.8	769.6	745.3	24.23	31.765	
5,900.0	5,875.7	5,724.5	5,712.6	14.8	14.0	166.96	377.8	-206.6	826.0	803.2	22.78	36.265	
6,000.0	5,956.1	5,750.0	5,737.4	15.6	14.1	164.17	383.0	-209.0	900.7	879.8	20.88	43.130	
6,100.0	6,023.8	5,750.0	5,737.4	16.5	14.1	157.33	383.0	-209.0	988.6	969.1	19.55	50.576	
6,200.0	6,076.2	5,775.2	5,761.7	17.7	14.2	140.12	389.1	-211.9	1,083.7	1,060.9	22.88	47.372	
6,300.0	6,111.4	5,777.4	5,763.8	19.0	14.3	73.53	389.7	-212.2	1,182.6	1,150.3	32.33	36.577	
6,400.0	6,128.1	5,773.9	5,760.4	20.5	14.2	27.11	388.8	-211.7	1,281.0	1,263.3	17.63	72.666	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0302B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-23.68	75.1	-32.9	82.0				
100.0	100.0	100.0	100.0	0.1	0.1	-23.68	75.1	-32.9	82.0	81.8	0.19	438.263	
200.0	200.0	200.0	200.0	0.3	0.3	-23.68	75.1	-32.9	82.0	81.3	0.64	128.755	
300.0	300.0	300.0	300.0	0.5	0.5	-23.68	75.1	-32.9	82.0	80.9	1.09	75.463	
400.0	400.0	400.0	400.0	0.8	0.8	-23.68	75.1	-32.9	82.0	80.4	1.54	53.372	
500.0	500.0	500.0	500.0	1.0	1.0	-23.68	75.1	-32.9	82.0	80.0	1.99	41.286	
600.0	600.0	600.0	600.0	1.2	1.2	-23.68	75.1	-32.9	82.0	79.5	2.43	33.663	
700.0	700.0	700.0	700.0	1.4	1.4	-23.68	75.1	-32.9	82.0	79.1	2.88	28.416	
800.0	800.0	800.0	800.0	1.7	1.7	-23.68	75.1	-32.9	82.0	78.6	3.33	24.584	
900.0	900.0	900.0	900.0	1.9	1.9	-23.68	75.1	-32.9	82.0	78.2	3.78	21.663	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-23.68	75.1	-32.9	82.0	77.7	4.23	19.362	CC, ES
1,100.0	1,100.0	1,097.1	1,097.1	2.3	2.3	166.58	76.7	-33.3	85.3	80.7	4.65	18.355	SF
1,200.0	1,199.8	1,193.6	1,193.5	2.5	2.6	167.77	81.4	-34.4	95.4	90.4	5.04	18.917	
1,300.0	1,299.6	1,292.4	1,292.0	2.7	2.8	169.12	88.1	-35.9	109.1	103.7	5.45	20.017	
1,400.0	1,399.3	1,391.5	1,390.8	2.9	3.0	170.17	94.9	-37.5	122.9	117.0	5.86	20.960	
1,500.0	1,499.1	1,490.5	1,489.6	3.1	3.2	171.01	101.6	-39.0	136.6	130.4	6.28	21.764	
1,600.0	1,598.9	1,589.5	1,588.4	3.3	3.5	171.70	108.3	-40.6	150.5	143.8	6.70	22.454	
1,700.0	1,698.6	1,688.5	1,687.2	3.5	3.7	172.26	115.1	-42.1	164.3	157.2	7.13	23.050	
1,800.0	1,798.4	1,787.6	1,786.0	3.8	4.0	172.75	121.8	-43.6	178.1	170.6	7.56	23.570	
1,900.0	1,898.1	1,886.6	1,884.8	4.0	4.2	173.16	128.5	-45.2	192.0	184.0	7.99	24.027	
2,000.0	1,997.9	1,985.6	1,983.6	4.2	4.4	173.51	135.3	-46.7	205.8	197.4	8.43	24.431	
2,100.0	2,097.6	2,084.7	2,082.3	4.5	4.7	173.82	142.0	-48.3	219.7	210.8	8.86	24.789	
2,200.0	2,197.4	2,183.7	2,181.1	4.7	4.9	174.10	148.7	-49.8	233.6	224.3	9.30	25.110	
2,300.0	2,297.2	2,282.7	2,279.9	5.0	5.2	174.34	155.5	-51.4	247.4	237.7	9.74	25.398	
2,400.0	2,396.9	2,381.7	2,378.7	5.2	5.4	174.56	162.2	-52.9	261.3	251.1	10.18	25.658	
2,500.0	2,496.7	2,480.8	2,477.5	5.5	5.7	174.76	168.9	-54.5	275.2	264.6	10.63	25.894	
2,600.0	2,596.4	2,579.8	2,576.3	5.7	5.9	174.93	175.7	-56.0	289.1	278.0	11.07	26.108	
2,700.0	2,696.2	2,678.8	2,675.1	6.0	6.2	175.09	182.4	-57.5	303.0	291.5	11.52	26.305	
2,800.0	2,795.9	2,777.8	2,773.8	6.2	6.4	175.24	189.1	-59.1	316.9	304.9	11.96	26.485	
2,900.0	2,895.7	2,876.9	2,872.6	6.5	6.7	175.38	195.9	-60.6	330.8	318.3	12.41	26.650	
3,000.0	2,995.4	2,975.9	2,971.4	6.7	6.9	175.50	202.6	-62.2	344.7	331.8	12.86	26.803	
3,100.0	3,095.2	3,074.9	3,070.2	7.0	7.2	175.61	209.3	-63.7	358.5	345.2	13.31	26.944	
3,200.0	3,195.0	3,174.0	3,169.0	7.2	7.4	175.72	216.1	-65.3	372.4	358.7	13.76	27.076	
3,300.0	3,294.7	3,273.0	3,267.8	7.5	7.7	175.82	222.8	-66.8	386.3	372.1	14.20	27.198	
3,400.0	3,394.5	3,372.0	3,366.6	7.8	7.9	175.91	229.5	-68.4	400.2	385.6	14.65	27.312	
3,500.0	3,494.2	3,471.0	3,465.3	8.0	8.2	175.99	236.3	-69.9	414.1	399.0	15.10	27.418	
3,600.0	3,594.0	3,570.1	3,564.1	8.3	8.4	176.07	243.0	-71.4	428.0	412.5	15.55	27.518	
3,700.0	3,693.7	3,669.1	3,662.9	8.5	8.7	176.15	249.7	-73.0	441.9	425.9	16.01	27.611	
3,800.0	3,793.5	3,768.1	3,761.7	8.8	8.9	176.22	256.5	-74.5	455.8	439.4	16.46	27.699	
3,900.0	3,893.3	3,867.1	3,860.5	9.1	9.2	176.28	263.2	-76.1	469.7	452.8	16.91	27.782	
4,000.0	3,993.0	3,966.2	3,959.3	9.3	9.4	176.34	269.9	-77.6	483.6	466.3	17.36	27.860	
4,100.0	4,092.8	4,065.2	4,058.1	9.6	9.7	176.40	276.7	-79.2	497.5	479.7	17.81	27.934	
4,200.0	4,192.5	4,164.2	4,156.8	9.8	9.9	176.46	283.4	-80.7	511.5	493.2	18.26	28.004	
4,300.0	4,292.3	4,263.3	4,255.6	10.1	10.2	176.51	290.1	-82.3	525.4	506.6	18.72	28.071	
4,400.0	4,392.0	4,362.3	4,354.4	10.4	10.5	176.56	296.9	-83.8	539.3	520.1	19.17	28.133	
4,500.0	4,491.8	4,461.3	4,453.2	10.6	10.7	176.61	303.6	-85.3	553.2	533.5	19.62	28.193	
4,600.0	4,591.5	4,560.3	4,552.0	10.9	11.0	176.65	310.3	-86.9	567.1	547.0	20.07	28.250	
4,700.0	4,691.3	4,659.4	4,650.8	11.1	11.2	176.69	317.1	-88.4	581.0	560.5	20.53	28.304	
4,800.0	4,791.1	4,758.4	4,749.6	11.4	11.5	176.73	323.8	-90.0	594.9	573.9	20.98	28.356	
4,900.0	4,890.8	4,857.4	4,848.3	11.7	11.7	176.77	330.5	-91.5	608.8	587.4	21.43	28.405	
5,000.0	4,990.6	4,956.4	4,947.1	11.9	12.0	176.81	337.3	-93.1	622.7	600.8	21.89	28.452	
5,100.0	5,090.3	5,055.5	5,045.9	12.2	12.2	176.85	344.0	-94.6	636.6	614.3	22.34	28.497	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0302B - HZ - Plan #1

Survey Program: 0-ISCWSA MWD

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,154.5	5,144.7	12.4	12.5	176.88	350.7	-96.2	650.5	627.7	22.79	28.540	
5,300.0	5,289.8	5,253.5	5,243.5	12.7	12.7	176.91	357.5	-97.7	664.4	641.2	23.25	28.582	
5,400.0	5,389.6	5,352.6	5,342.3	13.0	13.0	176.94	364.2	-99.2	678.3	654.6	23.70	28.621	
5,500.0	5,489.4	5,451.6	5,441.1	13.2	13.2	176.97	370.9	-100.8	692.2	668.1	24.15	28.659	
5,600.0	5,589.1	5,550.6	5,539.9	13.5	13.5	177.00	377.7	-102.3	706.1	681.5	24.61	28.696	
5,700.0	5,688.7	5,649.3	5,638.3	13.8	13.7	176.99	384.4	-103.9	721.9	697.0	24.85	29.054	
5,800.0	5,785.4	5,744.1	5,732.9	14.2	14.0	176.90	390.8	-105.4	753.3	729.1	24.19	31.135	
5,900.0	5,875.7	5,800.0	5,788.6	14.8	14.1	176.64	395.1	-106.3	803.3	780.6	22.65	35.472	
6,000.0	5,956.1	5,825.1	5,813.5	15.6	14.2	176.05	398.6	-107.1	872.9	852.6	20.32	42.954	
6,100.0	6,023.8	5,850.0	5,837.9	16.5	14.3	174.82	403.1	-108.2	957.4	939.9	17.46	54.820	
6,200.0	6,076.2	5,850.0	5,837.9	17.7	14.3	170.91	403.1	-108.2	1,051.4	1,036.8	14.67	71.650	
6,300.0	6,111.4	5,850.0	5,837.9	19.0	14.3	126.50	403.1	-108.2	1,150.4	1,122.5	27.91	41.223	
6,400.0	6,128.1	5,850.0	5,837.9	20.5	14.3	10.68	403.1	-108.2	1,250.0	1,239.4	10.58	118.161	
6,500.0	6,129.5	5,850.0	5,837.9	21.9	14.3	15.30	403.1	-108.2	1,347.7	1,335.0	12.63	106.735	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0303A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	75.1	0.0	75.1				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	75.1	0.0	75.1	74.9	0.19	401.353	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	75.1	0.0	75.1	74.4	0.64	117.912	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	75.1	0.0	75.1	74.0	1.09	69.107	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	75.1	0.0	75.1	73.5	1.54	48.877	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	75.1	0.0	75.1	73.1	1.99	37.809	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	75.1	0.0	75.1	72.6	2.43	30.828	
700.0	700.0	700.0	700.0	1.4	1.4	0.00	75.1	0.0	75.1	72.2	2.88	26.023	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	75.1	0.0	75.1	71.7	3.33	22.514	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	75.1	0.0	75.1	71.3	3.78	19.839	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	75.1	0.0	75.1	70.8	4.23	17.732	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-170.42	75.1	0.0	76.8	72.1	4.65	16.498	SF
1,200.0	1,199.8	1,197.0	1,197.0	2.5	2.6	-170.90	76.7	0.1	83.6	78.6	5.05	16.571	
1,300.0	1,299.6	1,293.3	1,293.2	2.7	2.8	-171.30	81.6	0.4	95.5	90.1	5.45	17.525	
1,400.0	1,399.3	1,392.1	1,391.8	2.9	3.0	-171.54	88.4	0.9	109.4	103.5	5.87	18.640	
1,500.0	1,499.1	1,491.2	1,490.6	3.1	3.2	-171.72	95.3	1.4	123.2	116.9	6.28	19.601	
1,600.0	1,598.9	1,590.2	1,589.3	3.3	3.5	-171.87	102.2	1.8	137.0	130.3	6.71	20.428	
1,700.0	1,698.6	1,689.3	1,688.1	3.5	3.7	-171.99	109.1	2.3	150.8	143.7	7.13	21.144	
1,800.0	1,798.4	1,788.3	1,786.9	3.8	3.9	-172.09	116.0	2.7	164.6	157.1	7.56	21.769	
1,900.0	1,898.1	1,887.3	1,885.7	4.0	4.2	-172.17	122.9	3.2	178.4	170.4	7.99	22.318	
2,000.0	1,997.9	1,986.4	1,984.5	4.2	4.4	-172.24	129.8	3.7	192.2	183.8	8.43	22.805	
2,100.0	2,097.6	2,085.4	2,083.3	4.5	4.7	-172.30	136.7	4.1	206.1	197.2	8.87	23.237	
2,200.0	2,197.4	2,184.5	2,182.1	4.7	4.9	-172.36	143.6	4.6	219.9	210.6	9.31	23.625	
2,300.0	2,297.2	2,283.5	2,280.9	5.0	5.1	-172.41	150.5	5.0	233.7	224.0	9.75	23.973	
2,400.0	2,396.9	2,382.5	2,379.7	5.2	5.4	-172.45	157.4	5.5	247.5	237.3	10.19	24.288	
2,500.0	2,496.7	2,481.6	2,478.5	5.5	5.6	-172.49	164.3	6.0	261.3	250.7	10.63	24.574	
2,600.0	2,596.4	2,580.6	2,577.3	5.7	5.9	-172.52	171.2	6.4	275.2	264.1	11.08	24.835	
2,700.0	2,696.2	2,679.7	2,676.1	6.0	6.1	-172.55	178.0	6.9	289.0	277.5	11.53	25.073	
2,800.0	2,795.9	2,778.7	2,774.9	6.2	6.4	-172.58	184.9	7.4	302.8	290.8	11.97	25.292	
2,900.0	2,895.7	2,877.7	2,873.7	6.5	6.6	-172.61	191.8	7.8	316.6	304.2	12.42	25.494	
3,000.0	2,995.4	2,976.8	2,972.5	6.7	6.9	-172.63	198.7	8.3	330.4	317.6	12.87	25.680	
3,100.0	3,095.2	3,075.8	3,071.3	7.0	7.1	-172.65	205.6	8.7	344.3	330.9	13.32	25.852	
3,200.0	3,195.0	3,174.9	3,170.1	7.2	7.4	-172.67	212.5	9.2	358.1	344.3	13.77	26.013	
3,300.0	3,294.7	3,273.9	3,268.9	7.5	7.6	-172.69	219.4	9.7	371.9	357.7	14.21	26.162	
3,400.0	3,394.5	3,372.9	3,367.7	7.8	7.9	-172.71	226.3	10.1	385.7	371.0	14.67	26.301	
3,500.0	3,494.2	3,472.0	3,466.5	8.0	8.1	-172.72	233.2	10.6	399.5	384.4	15.12	26.431	
3,600.0	3,594.0	3,571.0	3,565.3	8.3	8.4	-172.74	240.1	11.0	413.3	397.8	15.57	26.554	
3,700.0	3,693.7	3,670.1	3,664.1	8.5	8.6	-172.75	247.0	11.5	427.2	411.1	16.02	26.668	
3,800.0	3,793.5	3,769.1	3,762.9	8.8	8.9	-172.76	253.9	12.0	441.0	424.5	16.47	26.776	
3,900.0	3,893.3	3,868.1	3,861.7	9.1	9.1	-172.78	260.8	12.4	454.8	437.9	16.92	26.878	
4,000.0	3,993.0	3,967.2	3,960.5	9.3	9.4	-172.79	267.7	12.9	468.6	451.3	17.37	26.974	
4,100.0	4,092.8	4,066.2	4,059.3	9.6	9.6	-172.80	274.5	13.4	482.4	464.6	17.83	27.065	
4,200.0	4,192.5	4,165.3	4,158.1	9.8	9.9	-172.81	281.4	13.8	496.3	478.0	18.28	27.150	
4,300.0	4,292.3	4,264.3	4,256.9	10.1	10.1	-172.82	288.3	14.3	510.1	491.4	18.73	27.232	
4,400.0	4,392.0	4,363.3	4,355.7	10.4	10.4	-172.83	295.2	14.7	523.9	504.7	19.18	27.309	
4,500.0	4,491.8	4,462.4	4,454.5	10.6	10.6	-172.84	302.1	15.2	537.7	518.1	19.64	27.383	
4,600.0	4,591.5	4,561.4	4,553.3	10.9	10.9	-172.85	309.0	15.7	551.5	531.4	20.09	27.453	
4,700.0	4,691.3	4,660.5	4,652.1	11.1	11.1	-172.85	315.9	16.1	565.4	544.8	20.54	27.520	
4,800.0	4,791.1	4,759.5	4,750.9	11.4	11.4	-172.86	322.8	16.6	579.2	558.2	21.00	27.583	
4,900.0	4,890.8	4,858.5	4,849.7	11.7	11.6	-172.87	329.7	17.0	593.0	571.5	21.45	27.644	
5,000.0	4,990.6	4,957.6	4,948.5	11.9	11.9	-172.88	336.6	17.5	606.8	584.9	21.91	27.702	
5,100.0	5,090.3	5,056.6	5,047.3	12.2	12.2	-172.88	343.5	18.0	620.6	598.3	22.36	27.758	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0303A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,155.7	5,146.1	12.4	12.4	-172.89	350.4	18.4	634.5	611.6	22.81	27.811	
5,300.0	5,289.8	5,254.7	5,244.9	12.7	12.7	-172.89	357.3	18.9	648.3	625.0	23.27	27.862	
5,400.0	5,389.6	5,353.8	5,343.7	13.0	12.9	-172.90	364.2	19.4	662.1	638.4	23.72	27.911	
5,500.0	5,489.4	5,452.8	5,442.5	13.2	13.2	-172.91	371.1	19.8	675.9	651.7	24.18	27.958	
5,600.0	5,589.1	5,551.8	5,541.3	13.5	13.4	-172.91	377.9	20.3	689.7	665.1	24.63	28.003	
5,700.0	5,688.7	5,650.6	5,639.8	13.8	13.7	-172.82	384.8	20.7	705.4	680.5	24.87	28.359	
5,800.0	5,785.4	5,700.0	5,688.9	14.2	13.8	-172.39	390.1	21.1	739.8	715.6	24.15	30.628	
5,900.0	5,875.7	5,726.3	5,714.8	14.8	13.9	-171.40	394.8	21.4	797.0	774.4	22.62	35.228	
6,000.0	5,956.1	5,750.0	5,737.9	15.6	14.0	-169.44	400.1	21.8	872.4	851.9	20.49	42.585	
6,100.0	6,023.8	5,768.3	5,755.6	16.5	14.1	-165.10	405.0	22.1	960.7	942.4	18.28	52.552	
6,200.0	6,076.2	5,777.3	5,764.2	17.7	14.1	-150.80	407.6	22.3	1,056.8	1,037.4	19.46	54.317	
6,300.0	6,111.4	5,779.4	5,766.1	19.0	14.1	-63.48	408.2	22.3	1,156.2	1,126.0	30.12	38.392	
6,400.0	6,128.1	5,775.6	5,762.5	20.5	14.1	-18.17	407.0	22.2	1,254.9	1,241.3	13.59	92.311	
6,500.0	6,129.5	5,750.0	5,737.9	21.9	14.0	-7.06	400.1	21.8	1,351.3	1,341.7	9.62	140.430	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0304B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	23.86	75.1	33.2	82.1				
100.0	100.0	100.0	100.0	0.1	0.1	23.86	75.1	33.2	82.1	81.9	0.19	438.859	
200.0	200.0	200.0	200.0	0.3	0.3	23.86	75.1	33.2	82.1	81.4	0.64	128.931	
300.0	300.0	300.0	300.0	0.5	0.5	23.86	75.1	33.2	82.1	81.0	1.09	75.565	
400.0	400.0	400.0	400.0	0.8	0.8	23.86	75.1	33.2	82.1	80.5	1.54	53.444	
500.0	500.0	500.0	500.0	1.0	1.0	23.86	75.1	33.2	82.1	80.1	1.99	41.342	
600.0	600.0	600.0	600.0	1.2	1.2	23.86	75.1	33.2	82.1	79.6	2.43	33.709	
700.0	700.0	700.0	700.0	1.4	1.4	23.86	75.1	33.2	82.1	79.2	2.88	28.455	
800.0	800.0	800.0	800.0	1.7	1.7	23.86	75.1	33.2	82.1	78.7	3.33	24.618	
900.0	900.0	900.0	900.0	1.9	1.9	23.86	75.1	33.2	82.1	78.3	3.78	21.693	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	23.86	75.1	33.2	82.1	77.8	4.23	19.389	CC, ES
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	-146.99	75.1	33.2	83.5	78.9	4.65	17.948	
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-148.80	75.1	33.2	88.0	82.9	5.05	17.413	SF
1,300.0	1,299.6	1,296.4	1,296.4	2.7	2.8	-150.95	76.6	33.7	95.7	90.2	5.45	17.540	
1,400.0	1,399.3	1,392.3	1,392.2	2.9	3.0	-152.75	81.2	35.2	106.9	101.0	5.87	18.214	
1,500.0	1,499.1	1,491.1	1,490.7	3.1	3.2	-154.22	87.7	37.4	120.0	113.8	6.29	19.090	
1,600.0	1,598.9	1,590.2	1,589.6	3.3	3.4	-155.40	94.3	39.5	133.3	126.6	6.71	19.860	
1,700.0	1,698.6	1,689.3	1,688.4	3.5	3.7	-156.36	100.8	41.7	146.6	139.5	7.14	20.533	
1,800.0	1,798.4	1,788.4	1,787.3	3.8	3.9	-157.17	107.4	43.9	159.9	152.4	7.57	21.124	
1,900.0	1,898.1	1,887.5	1,886.1	4.0	4.2	-157.85	114.0	46.0	173.3	165.3	8.01	21.646	
2,000.0	1,997.9	1,986.5	1,984.9	4.2	4.4	-158.43	120.5	48.2	186.7	178.2	8.44	22.110	
2,100.0	2,097.6	2,085.6	2,083.8	4.5	4.6	-158.94	127.1	50.4	200.1	191.2	8.88	22.524	
2,200.0	2,197.4	2,184.7	2,182.6	4.7	4.9	-159.38	133.7	52.5	213.5	204.2	9.32	22.896	
2,300.0	2,297.2	2,283.8	2,281.5	5.0	5.1	-159.77	140.2	54.7	226.9	217.1	9.77	23.232	
2,400.0	2,396.9	2,382.9	2,380.3	5.2	5.4	-160.12	146.8	56.8	240.3	230.1	10.21	23.536	
2,500.0	2,496.7	2,482.0	2,479.2	5.5	5.6	-160.43	153.4	59.0	253.8	243.1	10.66	23.812	
2,600.0	2,596.4	2,581.0	2,578.0	5.7	5.8	-160.71	159.9	61.2	267.2	256.1	11.10	24.064	
2,700.0	2,696.2	2,680.1	2,676.8	6.0	6.1	-160.96	166.5	63.3	280.7	269.1	11.55	24.295	
2,800.0	2,795.9	2,779.2	2,775.7	6.2	6.3	-161.19	173.1	65.5	294.1	282.1	12.00	24.507	
2,900.0	2,895.7	2,878.3	2,874.5	6.5	6.6	-161.39	179.6	67.7	307.6	295.1	12.45	24.703	
3,000.0	2,995.4	2,977.4	2,973.4	6.7	6.8	-161.59	186.2	69.8	321.1	308.2	12.90	24.884	
3,100.0	3,095.2	3,076.5	3,072.2	7.0	7.1	-161.76	192.8	72.0	334.5	321.2	13.35	25.052	
3,200.0	3,195.0	3,175.5	3,171.1	7.2	7.3	-161.92	199.3	74.1	348.0	334.2	13.80	25.208	
3,300.0	3,294.7	3,274.6	3,269.9	7.5	7.6	-162.07	205.9	76.3	361.5	347.2	14.26	25.354	
3,400.0	3,394.5	3,373.7	3,368.7	7.8	7.8	-162.21	212.4	78.5	374.9	360.2	14.71	25.490	
3,500.0	3,494.2	3,472.8	3,467.6	8.0	8.1	-162.34	219.0	80.6	388.4	373.3	15.16	25.617	
3,600.0	3,594.0	3,571.9	3,566.4	8.3	8.3	-162.46	225.6	82.8	401.9	386.3	15.62	25.736	
3,700.0	3,693.7	3,671.0	3,665.3	8.5	8.6	-162.58	232.1	85.0	415.4	399.3	16.07	25.848	
3,800.0	3,793.5	3,770.0	3,764.1	8.8	8.8	-162.68	238.7	87.1	428.9	412.3	16.52	25.953	
3,900.0	3,893.3	3,869.1	3,863.0	9.1	9.1	-162.78	245.3	89.3	442.3	425.4	16.98	26.053	
4,000.0	3,993.0	3,968.2	3,961.8	9.3	9.3	-162.88	251.8	91.5	455.8	438.4	17.43	26.147	
4,100.0	4,092.8	4,067.3	4,060.6	9.6	9.6	-162.97	258.4	93.6	469.3	451.4	17.89	26.235	
4,200.0	4,192.5	4,166.4	4,159.5	9.8	9.8	-163.05	265.0	95.8	482.8	464.5	18.34	26.319	
4,300.0	4,292.3	4,265.5	4,258.3	10.1	10.1	-163.13	271.5	97.9	496.3	477.5	18.80	26.399	
4,400.0	4,392.0	4,364.6	4,357.2	10.4	10.3	-163.20	278.1	100.1	509.8	490.5	19.26	26.475	
4,500.0	4,491.8	4,463.6	4,456.0	10.6	10.6	-163.27	284.7	102.3	523.3	503.6	19.71	26.547	
4,600.0	4,591.5	4,562.7	4,554.9	10.9	10.8	-163.34	291.2	104.4	536.8	516.6	20.17	26.615	
4,700.0	4,691.3	4,661.8	4,653.7	11.1	11.1	-163.40	297.8	106.6	550.3	529.6	20.62	26.681	
4,800.0	4,791.1	4,760.9	4,752.5	11.4	11.3	-163.46	304.3	108.8	563.7	542.7	21.08	26.743	
4,900.0	4,890.8	4,860.0	4,851.4	11.7	11.6	-163.52	310.9	110.9	577.2	555.7	21.54	26.803	
5,000.0	4,990.6	4,959.1	4,950.2	11.9	11.9	-163.58	317.5	113.1	590.7	568.7	21.99	26.859	
5,100.0	5,090.3	5,058.1	5,049.1	12.2	12.1	-163.63	324.0	115.3	604.2	581.8	22.45	26.914	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-0304B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,157.2	5,147.9	12.4	12.4	-163.68	330.6	117.4	617.7	594.8	22.91	26.966	
5,300.0	5,289.8	5,256.3	5,246.7	12.7	12.6	-163.73	337.2	119.6	631.2	607.9	23.36	27.016	
5,400.0	5,389.6	5,355.4	5,345.6	13.0	12.9	-163.78	343.7	121.7	644.7	620.9	23.82	27.064	
5,500.0	5,489.4	5,454.5	5,444.4	13.2	13.1	-163.82	350.3	123.9	658.2	633.9	24.28	27.110	
5,600.0	5,589.1	5,553.6	5,543.3	13.5	13.4	-163.86	356.9	126.1	671.7	647.0	24.74	27.154	
5,700.0	5,688.7	5,652.3	5,641.8	13.8	13.6	-163.71	363.4	128.2	687.0	662.0	25.00	27.482	
5,800.0	5,785.4	5,747.3	5,736.6	14.2	13.9	-163.16	369.7	130.3	717.3	692.8	24.46	29.329	
5,900.0	5,875.7	5,800.0	5,789.1	14.8	14.0	-161.79	373.8	131.6	766.0	742.8	23.17	33.063	
6,000.0	5,956.1	5,828.5	5,817.2	15.6	14.1	-158.77	377.7	132.9	834.0	812.5	21.51	38.778	
6,100.0	6,023.8	5,850.0	5,838.4	16.5	14.2	-152.66	381.6	134.2	916.8	896.3	20.48	44.766	
6,200.0	6,076.2	5,850.0	5,838.4	17.7	14.2	-136.83	381.6	134.2	1,009.4	985.8	23.54	42.884	
6,300.0	6,111.4	5,850.0	5,838.4	19.0	14.2	-93.55	381.6	134.2	1,106.9	1,074.0	32.87	33.671	
6,400.0	6,128.1	5,850.0	5,838.4	20.5	14.2	-43.84	381.6	134.2	1,204.9	1,180.0	24.87	48.444	
6,500.0	6,129.5	5,850.0	5,838.4	21.9	14.2	-28.39	381.6	134.2	1,301.3	1,282.4	18.92	68.793	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1501A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-65.3	65.3				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-65.3	65.3	65.1	0.19	349.125	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-65.3	65.3	64.7	0.64	102.568	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-65.3	65.3	64.2	1.09	60.114	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-65.3	65.3	63.8	1.54	42.516	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-65.3	65.3	63.3	1.99	32.889	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-65.3	65.3	62.9	2.43	26.816	
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-65.3	65.3	62.4	2.88	22.637	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-65.3	65.3	62.0	3.33	19.584	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-65.3	65.3	61.5	3.78	17.257	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-65.3	65.3	61.1	4.23	15.424	CC
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	101.30	0.0	-65.3	65.6	61.0	4.65	14.099	ES
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	105.67	0.0	-65.3	66.8	61.8	5.05	13.226	
1,300.0	1,299.6	1,299.2	1,299.1	2.7	2.8	109.82	-1.6	-65.9	69.4	63.9	5.44	12.758	
1,400.0	1,399.3	1,398.6	1,398.5	2.9	2.9	110.97	-6.4	-67.8	72.7	66.9	5.81	12.517	
1,500.0	1,499.1	1,498.6	1,498.2	3.1	3.1	110.70	-12.9	-70.3	76.4	70.2	6.21	12.316	
1,600.0	1,598.9	1,598.5	1,597.9	3.3	3.3	110.46	-19.4	-72.8	80.1	73.5	6.62	12.105	
1,700.0	1,698.6	1,698.4	1,697.5	3.5	3.5	110.23	-25.9	-75.3	83.8	76.8	7.05	11.895	
1,800.0	1,798.4	1,798.4	1,797.2	3.8	3.7	110.03	-32.4	-77.8	87.5	80.1	7.49	11.690	
1,900.0	1,898.1	1,898.3	1,896.9	4.0	4.0	109.84	-38.9	-80.3	91.2	83.3	7.94	11.492	
2,000.0	1,997.9	1,998.2	1,996.6	4.2	4.2	109.67	-45.4	-82.8	94.9	86.6	8.40	11.304	
2,100.0	2,097.6	2,098.2	2,096.3	4.5	4.4	109.51	-51.9	-85.3	98.7	89.8	8.87	11.127	
2,200.0	2,197.4	2,198.1	2,196.0	4.7	4.6	109.36	-58.4	-87.8	102.4	93.0	9.34	10.960	
2,300.0	2,297.2	2,298.0	2,295.7	5.0	4.9	109.22	-65.0	-90.4	106.1	96.3	9.82	10.804	
2,400.0	2,396.9	2,397.9	2,395.4	5.2	5.1	109.09	-71.5	-92.9	109.8	99.5	10.30	10.657	
2,500.0	2,496.7	2,497.9	2,495.0	5.5	5.4	108.97	-78.0	-95.4	113.5	102.7	10.79	10.520	
2,600.0	2,596.4	2,597.8	2,594.7	5.7	5.6	108.86	-84.5	-97.9	117.2	105.9	11.28	10.391	
2,700.0	2,696.2	2,697.7	2,694.4	6.0	5.9	108.75	-91.0	-100.4	120.9	109.1	11.77	10.271	
2,800.0	2,795.9	2,797.7	2,794.1	6.2	6.1	108.65	-97.5	-102.9	124.6	112.3	12.27	10.158	
2,900.0	2,895.7	2,897.6	2,893.8	6.5	6.3	108.56	-104.0	-105.4	128.3	115.6	12.77	10.052	
3,000.0	2,995.4	2,997.5	2,993.5	6.7	6.6	108.47	-110.5	-107.9	132.0	118.8	13.27	9.952	
3,100.0	3,095.2	3,097.5	3,093.2	7.0	6.9	108.39	-117.0	-110.4	135.7	122.0	13.77	9.858	
3,200.0	3,195.0	3,197.4	3,192.9	7.2	7.1	108.31	-123.5	-112.9	139.5	125.2	14.27	9.770	
3,300.0	3,294.7	3,297.3	3,292.5	7.5	7.4	108.23	-130.0	-115.4	143.2	128.4	14.78	9.687	
3,400.0	3,394.5	3,397.3	3,392.2	7.8	7.6	108.16	-136.5	-118.0	146.9	131.6	15.29	9.609	
3,500.0	3,494.2	3,497.2	3,491.9	8.0	7.9	108.09	-143.0	-120.5	150.6	134.8	15.79	9.534	
3,600.0	3,594.0	3,597.1	3,591.6	8.3	8.1	108.03	-149.5	-123.0	154.3	138.0	16.30	9.464	
3,700.0	3,693.7	3,697.0	3,691.3	8.5	8.4	107.97	-156.0	-125.5	158.0	141.2	16.81	9.398	
3,800.0	3,793.5	3,797.0	3,791.0	8.8	8.6	107.91	-162.5	-128.0	161.7	144.4	17.33	9.335	
3,900.0	3,893.3	3,896.9	3,890.7	9.1	8.9	107.85	-169.0	-130.5	165.4	147.6	17.84	9.275	
4,000.0	3,993.0	3,996.8	3,990.3	9.3	9.1	107.80	-175.5	-133.0	169.2	150.8	18.35	9.218	
4,100.0	4,092.8	4,096.8	4,090.0	9.6	9.4	107.75	-182.0	-135.5	172.9	154.0	18.86	9.164	
4,200.0	4,192.5	4,196.7	4,189.7	9.8	9.7	107.70	-188.5	-138.0	176.6	157.2	19.38	9.113	
4,300.0	4,292.3	4,296.6	4,289.4	10.1	9.9	107.65	-195.0	-140.5	180.3	160.4	19.89	9.063	
4,400.0	4,392.0	4,396.6	4,389.1	10.4	10.2	107.61	-201.5	-143.1	184.0	163.6	20.41	9.017	
4,500.0	4,491.8	4,496.5	4,488.8	10.6	10.4	107.56	-208.0	-145.6	187.7	166.8	20.92	8.972	
4,600.0	4,591.5	4,596.4	4,588.5	10.9	10.7	107.52	-214.5	-148.1	191.4	170.0	21.44	8.929	
4,700.0	4,691.3	4,696.4	4,688.2	11.1	11.0	107.48	-221.0	-150.6	195.1	173.2	21.96	8.888	
4,800.0	4,791.1	4,796.3	4,787.8	11.4	11.2	107.44	-227.5	-153.1	198.9	176.4	22.47	8.849	
4,900.0	4,890.8	4,896.2	4,887.5	11.7	11.5	107.41	-234.0	-155.6	202.6	179.6	22.99	8.811	
5,000.0	4,990.6	4,996.1	4,987.2	11.9	11.7	107.37	-240.5	-158.1	206.3	182.8	23.51	8.775	
5,100.0	5,090.3	5,096.1	5,086.9	12.2	12.0	107.34	-247.0	-160.6	210.0	186.0	24.03	8.740	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1501A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,196.0	5,186.6	12.4	12.3	107.30	-253.6	-163.1	213.7	189.2	24.55	8.707	
5,300.0	5,289.8	5,295.9	5,286.3	12.7	12.5	107.27	-260.1	-165.6	217.4	192.4	25.06	8.675	
5,400.0	5,389.6	5,395.9	5,386.0	13.0	12.8	107.24	-266.6	-168.1	221.1	195.6	25.58	8.644	
5,500.0	5,489.4	5,495.8	5,485.7	13.2	13.0	107.21	-273.1	-170.7	224.9	198.8	26.10	8.614	
5,600.0	5,589.1	5,595.7	5,585.3	13.5	13.3	107.18	-279.6	-173.2	228.6	201.9	26.62	8.586	
5,700.0	5,688.7	5,691.9	5,681.1	13.8	13.6	106.99	-287.0	-176.0	233.2	206.0	27.14	8.591	
5,800.0	5,785.4	5,781.5	5,768.4	14.2	13.9	106.11	-305.6	-183.2	245.7	217.9	27.81	8.837	
5,900.0	5,875.7	5,869.6	5,849.6	14.8	14.4	104.56	-337.2	-195.4	267.3	238.6	28.72	9.308	
6,000.0	5,956.1	5,955.5	5,922.2	15.6	15.0	102.41	-379.9	-211.9	297.1	267.1	29.93	9.924	
6,100.0	6,023.8	6,039.1	5,984.7	16.5	15.7	99.71	-431.6	-231.8	333.8	302.2	31.58	10.569	
6,200.0	6,076.2	6,120.8	6,036.5	17.7	16.5	96.55	-490.4	-254.5	376.1	342.5	33.61	11.191	
6,300.0	6,111.4	6,200.0	6,076.6	19.0	17.4	93.02	-554.0	-279.1	422.7	386.8	35.92	11.770	
6,400.0	6,128.1	6,281.3	6,106.7	20.5	18.5	89.40	-624.4	-306.2	472.1	433.6	38.45	12.277	
6,500.0	6,129.5	6,363.7	6,124.7	21.9	19.6	89.40	-699.3	-335.1	522.0	480.8	41.19	12.672	
6,600.0	6,129.5	6,457.9	6,130.0	23.3	21.0	90.06	-787.0	-368.9	568.2	524.1	44.11	12.882	
6,700.0	6,129.5	6,591.8	6,130.0	24.7	22.8	90.05	-914.0	-411.3	605.5	558.0	47.50	12.748	
6,800.0	6,129.5	6,734.7	6,130.0	26.2	24.8	90.04	-1,052.4	-446.7	631.3	580.2	51.12	12.350	
6,900.0	6,129.5	6,882.9	6,130.0	27.8	27.0	90.04	-1,198.3	-472.4	648.7	593.7	54.99	11.797	
7,000.0	6,129.5	7,034.2	6,130.0	29.5	29.2	90.04	-1,348.9	-486.8	658.2	599.2	59.00	11.156	
7,100.0	6,129.6	7,171.2	6,130.0	31.2	31.3	90.04	-1,485.8	-489.8	660.2	597.3	62.87	10.501	
7,200.0	6,129.6	7,271.2	6,130.0	33.0	33.0	90.04	-1,585.8	-489.8	660.2	593.9	66.28	9.960	
7,300.0	6,129.6	7,371.2	6,130.0	34.7	34.6	90.04	-1,685.8	-489.8	660.1	590.4	69.74	9.466	
7,400.0	6,129.6	7,471.2	6,130.0	36.5	36.3	90.04	-1,785.8	-489.8	660.1	586.9	73.24	9.013	
7,500.0	6,129.6	7,571.2	6,130.0	38.3	38.0	90.04	-1,885.8	-489.8	660.1	583.3	76.78	8.598	
7,600.0	6,129.6	7,671.2	6,130.0	40.1	39.7	90.04	-1,985.8	-489.8	660.1	579.8	80.34	8.216	
7,700.0	6,129.6	7,771.2	6,130.0	41.9	41.4	90.04	-2,085.8	-489.8	660.1	576.2	83.93	7.865	
7,800.0	6,129.6	7,871.2	6,130.0	43.7	43.2	90.04	-2,185.8	-489.8	660.1	572.6	87.54	7.540	
7,900.0	6,129.6	7,971.2	6,130.0	45.6	44.9	90.03	-2,285.8	-489.8	660.1	568.9	91.17	7.240	
8,000.0	6,129.6	8,071.1	6,130.0	47.4	46.7	90.03	-2,385.8	-489.8	660.1	565.3	94.82	6.961	
8,100.0	6,129.6	8,171.1	6,130.0	49.2	48.5	90.03	-2,485.8	-489.7	660.1	561.6	98.48	6.703	
8,200.0	6,129.6	8,271.1	6,130.0	51.1	50.3	90.03	-2,585.8	-489.7	660.1	557.9	102.16	6.461	
8,300.0	6,129.6	8,371.1	6,130.0	52.9	52.1	90.03	-2,685.8	-489.7	660.0	554.2	105.84	6.236	
8,400.0	6,129.6	8,471.1	6,130.0	54.8	53.9	90.03	-2,785.8	-489.7	660.0	550.5	109.54	6.025	
8,500.0	6,129.6	8,571.1	6,130.0	56.7	55.8	90.03	-2,885.8	-489.7	660.0	546.8	113.25	5.828	
8,600.0	6,129.7	8,671.1	6,130.0	58.5	57.6	90.03	-2,985.8	-489.7	660.0	543.0	116.97	5.643	
8,700.0	6,129.7	8,771.1	6,130.0	60.4	59.4	90.03	-3,085.8	-489.7	660.0	539.3	120.69	5.468	
8,800.0	6,129.7	8,871.1	6,130.0	62.3	61.3	90.03	-3,185.8	-489.7	660.0	535.6	124.43	5.304	
8,900.0	6,129.7	8,971.1	6,130.0	64.1	63.1	90.03	-3,285.8	-489.7	660.0	531.8	128.17	5.149	
9,000.0	6,129.7	9,071.1	6,130.0	66.0	65.0	90.03	-3,385.8	-489.7	660.0	528.1	131.91	5.003	
9,100.0	6,129.7	9,171.1	6,130.0	67.9	66.8	90.03	-3,485.8	-489.7	660.0	524.3	135.66	4.865	
9,200.0	6,129.7	9,271.1	6,130.0	69.8	68.7	90.03	-3,585.8	-489.7	659.9	520.5	139.42	4.734	
9,300.0	6,129.7	9,371.1	6,130.0	71.7	70.5	90.03	-3,685.8	-489.7	659.9	516.8	143.18	4.609	
9,400.0	6,129.7	9,471.1	6,130.0	73.6	72.4	90.03	-3,785.8	-489.7	659.9	513.0	146.94	4.491	
9,500.0	6,129.7	9,571.1	6,130.0	75.4	74.3	90.03	-3,885.8	-489.7	659.9	509.2	150.71	4.379	
9,600.0	6,129.7	9,671.1	6,130.0	77.3	76.1	90.02	-3,985.8	-489.7	659.9	505.4	154.48	4.272	
9,700.0	6,129.7	9,771.1	6,130.0	79.2	78.0	90.02	-4,085.8	-489.7	659.9	501.6	158.26	4.170	
9,800.0	6,129.7	9,871.1	6,130.0	81.1	79.9	90.02	-4,185.8	-489.7	659.9	497.8	162.04	4.072	
9,900.0	6,129.7	9,971.1	6,130.0	83.0	81.8	90.02	-4,285.8	-489.7	659.9	494.1	165.82	3.979	
10,000.0	6,129.7	10,071.1	6,130.0	84.9	83.6	90.02	-4,385.8	-489.7	659.9	490.3	169.61	3.891	
10,100.0	6,129.8	10,171.1	6,130.0	86.8	85.5	90.02	-4,485.8	-489.7	659.9	486.5	173.39	3.806	
10,200.0	6,129.8	10,271.1	6,130.0	88.7	87.4	90.02	-4,585.8	-489.7	659.8	482.7	177.18	3.724	
10,300.0	6,129.8	10,371.1	6,130.0	90.6	89.3	90.02	-4,685.8	-489.7	659.8	478.9	180.98	3.646	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1501A - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	6,129.8	10,471.1	6,130.0	92.5	91.2	90.02	-4,785.8	-489.7	659.8	475.1	184.77	3.571	
10,500.0	6,129.8	10,571.1	6,130.0	94.4	93.1	90.02	-4,885.8	-489.7	659.8	471.2	188.57	3.499	
10,600.0	6,129.8	10,671.1	6,130.0	96.3	94.9	90.02	-4,985.8	-489.7	659.8	467.4	192.37	3.430	
10,700.0	6,129.8	10,771.1	6,130.0	98.2	96.8	90.02	-5,085.8	-489.7	659.8	463.6	196.17	3.363	
10,800.0	6,129.8	10,871.1	6,130.0	100.1	98.7	90.02	-5,185.8	-489.7	659.8	459.8	199.97	3.299	
10,900.0	6,129.8	10,971.1	6,130.0	102.0	100.6	90.02	-5,285.8	-489.7	659.8	456.0	203.77	3.238	
11,000.0	6,129.8	11,071.1	6,130.0	103.9	102.5	90.02	-5,385.8	-489.6	659.8	452.2	207.58	3.178	
11,100.0	6,129.8	11,171.1	6,130.0	105.8	104.4	90.02	-5,485.8	-489.6	659.8	448.4	211.38	3.121	
11,200.0	6,129.8	11,271.1	6,130.0	107.7	106.3	90.02	-5,585.8	-489.6	659.7	444.6	215.19	3.066	
11,300.0	6,129.8	11,371.1	6,130.0	109.6	108.2	90.01	-5,685.8	-489.6	659.7	440.7	219.00	3.012	
11,400.0	6,129.8	11,471.1	6,130.0	111.5	110.1	90.01	-5,785.8	-489.6	659.7	436.9	222.81	2.961	
11,500.0	6,129.8	11,571.1	6,130.0	113.5	112.0	90.01	-5,885.8	-489.6	659.7	433.1	226.62	2.911	
11,600.0	6,129.9	11,671.1	6,130.0	115.4	113.9	90.01	-5,985.8	-489.6	659.7	429.3	230.43	2.863	
11,700.0	6,129.9	11,771.1	6,130.0	117.3	115.8	90.01	-6,085.8	-489.6	659.7	425.4	234.24	2.816	
11,800.0	6,129.9	11,871.1	6,130.0	119.2	117.7	90.01	-6,185.8	-489.6	659.7	421.6	238.06	2.771	
11,900.0	6,129.9	11,971.1	6,130.0	121.1	119.6	90.01	-6,285.8	-489.6	659.7	417.8	241.87	2.727	
12,000.0	6,129.9	12,071.1	6,130.0	123.0	121.5	90.01	-6,385.8	-489.6	659.7	414.0	245.69	2.685	
12,100.0	6,129.9	12,171.1	6,130.0	124.9	123.4	90.01	-6,485.8	-489.6	659.6	410.1	249.51	2.644	
12,200.0	6,129.9	12,271.1	6,130.0	126.8	125.3	90.01	-6,585.8	-489.6	659.6	406.3	253.32	2.604	
12,300.0	6,129.9	12,371.1	6,130.0	128.7	127.2	90.01	-6,685.8	-489.6	659.6	402.5	257.14	2.565	
12,400.0	6,129.9	12,471.1	6,130.0	130.6	129.1	90.01	-6,785.8	-489.6	659.6	398.7	260.96	2.528	
12,500.0	6,129.9	12,571.1	6,130.0	132.6	131.0	90.01	-6,885.8	-489.6	659.6	394.8	264.78	2.491	
12,600.0	6,129.9	12,671.1	6,130.0	134.5	132.9	90.01	-6,985.8	-489.6	659.6	391.0	268.60	2.456	
12,700.0	6,129.9	12,771.1	6,130.0	136.4	134.8	90.01	-7,085.8	-489.6	659.6	387.2	272.42	2.421	
12,800.0	6,129.9	12,871.1	6,130.0	138.3	136.7	90.01	-7,185.8	-489.6	659.6	383.3	276.24	2.388	
12,900.0	6,129.9	12,971.1	6,130.0	140.2	138.6	90.01	-7,285.8	-489.6	659.6	379.5	280.07	2.355	
13,000.0	6,129.9	13,071.1	6,130.0	142.1	140.5	90.00	-7,385.8	-489.6	659.6	375.7	283.89	2.323	
13,100.0	6,130.0	13,171.1	6,130.0	144.0	142.5	90.00	-7,485.8	-489.6	659.5	371.8	287.71	2.292	
13,200.0	6,130.0	13,271.1	6,130.0	145.9	144.4	90.00	-7,585.8	-489.6	659.5	368.0	291.54	2.262	
13,300.0	6,130.0	13,371.1	6,130.0	147.9	146.3	90.00	-7,685.8	-489.6	659.5	364.2	295.36	2.233	
13,400.0	6,130.0	13,471.1	6,130.0	149.8	148.2	90.00	-7,785.8	-489.6	659.5	360.3	299.18	2.204	
13,500.0	6,130.0	13,571.1	6,130.0	151.7	150.1	90.00	-7,885.8	-489.6	659.5	356.5	303.01	2.177	
13,600.0	6,130.0	13,671.1	6,130.0	153.6	152.0	90.00	-7,985.8	-489.6	659.5	352.7	306.84	2.149	
13,700.0	6,130.0	13,771.1	6,130.0	155.5	153.9	90.00	-8,085.8	-489.6	659.5	348.8	310.66	2.123	
13,800.0	6,130.0	13,871.1	6,130.0	157.4	155.8	90.00	-8,185.8	-489.6	659.5	345.0	314.49	2.097	
13,839.3	6,130.0	13,910.4	6,130.0	158.0	156.6	90.00	-8,225.1	-489.5	659.5	343.6	315.85	2.088	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1502B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-32.1	32.1				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-32.1	32.1	31.9	0.19	171.604	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-32.1	32.1	31.5	0.64	50.415	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-32.1	32.1	31.0	1.09	29.548	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-32.1	32.1	30.6	1.54	20.898	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-32.1	32.1	30.1	1.99	16.166	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-32.1	32.1	29.7	2.43	13.181	
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-32.1	32.1	29.2	2.88	11.126	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-32.1	32.1	28.8	3.33	9.626	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-32.1	32.1	28.3	3.78	8.482	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-32.1	32.1	27.9	4.23	7.581	CC
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	102.83	0.0	-32.1	32.4	27.8	4.65	6.970	ES
1,200.0	1,199.8	1,199.9	1,199.9	2.5	2.5	108.50	-1.7	-32.3	33.9	28.9	5.02	6.749	
1,300.0	1,299.6	1,299.9	1,299.7	2.7	2.7	110.71	-6.9	-33.0	36.0	30.7	5.39	6.692	
1,400.0	1,399.3	1,399.9	1,399.5	2.9	2.9	110.05	-13.8	-33.9	38.1	32.3	5.77	6.601	
1,500.0	1,499.1	1,499.9	1,499.2	3.1	3.1	109.45	-20.7	-34.9	40.2	34.0	6.18	6.500	
1,600.0	1,598.9	1,599.8	1,598.9	3.3	3.3	108.92	-27.6	-35.8	42.3	35.6	6.61	6.396	
1,700.0	1,698.6	1,699.8	1,698.7	3.5	3.5	108.43	-34.6	-36.7	44.3	37.3	7.04	6.293	
1,800.0	1,798.4	1,799.8	1,798.4	3.8	3.7	107.99	-41.5	-37.6	46.4	38.9	7.50	6.193	
1,900.0	1,898.1	1,899.8	1,898.1	4.0	4.0	107.59	-48.4	-38.5	48.5	40.5	7.96	6.096	
2,000.0	1,997.9	1,999.7	1,997.9	4.2	4.2	107.22	-55.3	-39.5	50.6	42.2	8.42	6.005	
2,100.0	2,097.6	2,099.7	2,097.6	4.5	4.4	106.88	-62.2	-40.4	52.7	43.8	8.90	5.919	
2,200.0	2,197.4	2,199.7	2,197.3	4.7	4.7	106.56	-69.1	-41.3	54.8	45.4	9.38	5.839	
2,300.0	2,297.2	2,299.7	2,297.1	5.0	4.9	106.27	-76.0	-42.2	56.9	47.0	9.86	5.764	
2,400.0	2,396.9	2,399.7	2,396.8	5.2	5.2	106.00	-83.0	-43.2	58.9	48.6	10.35	5.693	
2,500.0	2,496.7	2,499.6	2,496.5	5.5	5.4	105.75	-89.9	-44.1	61.0	50.2	10.85	5.627	
2,600.0	2,596.4	2,599.6	2,596.3	5.7	5.7	105.51	-96.8	-45.0	63.1	51.8	11.34	5.565	
2,700.0	2,696.2	2,699.6	2,696.0	6.0	5.9	105.29	-103.7	-45.9	65.2	53.4	11.84	5.508	
2,800.0	2,795.9	2,799.6	2,795.7	6.2	6.1	105.09	-110.6	-46.8	67.3	55.0	12.34	5.454	
2,900.0	2,895.7	2,899.5	2,895.5	6.5	6.4	104.89	-117.5	-47.8	69.4	56.6	12.85	5.403	
3,000.0	2,995.4	2,999.5	2,995.2	6.7	6.7	104.71	-124.4	-48.7	71.5	58.2	13.35	5.356	
3,100.0	3,095.2	3,099.5	3,095.0	7.0	6.9	104.54	-131.3	-49.6	73.6	59.8	13.86	5.311	
3,200.0	3,195.0	3,199.5	3,194.7	7.2	7.2	104.37	-138.3	-50.5	75.7	61.3	14.37	5.269	
3,300.0	3,294.7	3,299.5	3,294.4	7.5	7.4	104.22	-145.2	-51.5	77.8	62.9	14.88	5.229	
3,400.0	3,394.5	3,399.4	3,394.2	7.8	7.7	104.07	-152.1	-52.4	79.9	64.5	15.39	5.192	
3,500.0	3,494.2	3,499.4	3,493.9	8.0	7.9	103.93	-159.0	-53.3	82.0	66.1	15.91	5.157	
3,600.0	3,594.0	3,599.4	3,593.6	8.3	8.2	103.80	-165.9	-54.2	84.1	67.7	16.42	5.123	
3,700.0	3,693.7	3,699.4	3,693.4	8.5	8.4	103.68	-172.8	-55.1	86.2	69.3	16.93	5.092	
3,800.0	3,793.5	3,799.3	3,793.1	8.8	8.7	103.56	-179.7	-56.1	88.3	70.9	17.45	5.062	
3,900.0	3,893.3	3,899.3	3,892.8	9.1	9.0	103.44	-186.6	-57.0	90.4	72.5	17.97	5.033	
4,000.0	3,993.0	3,999.3	3,992.6	9.3	9.2	103.34	-193.6	-57.9	92.5	74.0	18.48	5.006	
4,100.0	4,092.8	4,099.3	4,092.3	9.6	9.5	103.23	-200.5	-58.8	94.6	75.6	19.00	4.981	
4,200.0	4,192.5	4,199.2	4,192.0	9.8	9.7	103.13	-207.4	-59.8	96.7	77.2	19.52	4.956	
4,300.0	4,292.3	4,299.2	4,291.8	10.1	10.0	103.04	-214.3	-60.7	98.8	78.8	20.04	4.933	
4,400.0	4,392.0	4,399.2	4,391.5	10.4	10.3	102.95	-221.2	-61.6	100.9	80.4	20.56	4.911	
4,500.0	4,491.8	4,499.2	4,491.2	10.6	10.5	102.86	-228.1	-62.5	103.1	82.0	21.08	4.889	
4,600.0	4,591.5	4,599.2	4,591.0	10.9	10.8	102.78	-235.0	-63.5	105.2	83.6	21.60	4.869	
4,700.0	4,691.3	4,699.1	4,690.7	11.1	11.0	102.70	-241.9	-64.4	107.3	85.1	22.12	4.850	
4,800.0	4,791.1	4,799.1	4,790.4	11.4	11.3	102.62	-248.9	-65.3	109.4	86.7	22.64	4.831	
4,900.0	4,890.8	4,899.1	4,890.2	11.7	11.6	102.54	-255.8	-66.2	111.5	88.3	23.16	4.813	
5,000.0	4,990.6	4,999.1	4,989.9	11.9	11.8	102.47	-262.7	-67.1	113.6	89.9	23.68	4.796	
5,100.0	5,090.3	5,099.0	5,089.6	12.2	12.1	102.40	-269.6	-68.1	115.7	91.5	24.20	4.780	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1502B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,199.0	5,189.4	12.4	12.3	102.34	-276.5	-69.0	117.8	93.1	24.72	4.764	
5,300.0	5,289.8	5,299.0	5,289.1	12.7	12.6	102.27	-283.4	-69.9	119.9	94.6	25.25	4.749	
5,400.0	5,389.6	5,399.0	5,388.8	13.0	12.9	102.21	-290.3	-70.8	122.0	96.2	25.77	4.734	
5,500.0	5,489.4	5,499.0	5,488.6	13.2	13.1	102.15	-297.2	-71.8	124.1	97.8	26.29	4.720	
5,600.0	5,589.1	5,598.9	5,588.3	13.5	13.4	102.09	-304.2	-72.7	126.2	99.4	26.82	4.707	
5,700.0	5,688.7	5,698.9	5,688.0	13.8	13.6	102.70	-311.1	-73.6	128.7	101.4	27.34	4.708	
5,800.0	5,785.4	5,797.3	5,786.1	14.2	13.9	108.99	-318.3	-74.6	135.9	108.0	27.83	4.881	
5,900.0	5,875.7	5,897.4	5,883.9	14.8	14.3	115.49	-338.9	-77.3	151.0	122.8	28.23	5.350	
6,000.0	5,956.1	6,001.2	5,979.2	15.6	14.9	119.38	-379.3	-82.7	172.9	144.3	28.65	6.036	
6,100.0	6,023.8	6,108.8	6,067.4	16.5	15.7	120.79	-440.0	-90.8	199.7	170.3	29.40	6.792	
6,200.0	6,076.2	6,220.1	6,143.4	17.7	16.7	120.21	-520.4	-101.5	229.6	198.7	30.86	7.438	
6,300.0	6,111.4	6,335.2	6,202.0	19.0	18.0	118.13	-618.3	-114.6	261.2	228.0	33.21	7.865	
6,400.0	6,128.1	6,454.2	6,238.4	20.5	19.6	114.98	-730.3	-129.5	293.3	256.9	36.41	8.056	
6,500.0	6,129.5	6,575.5	6,248.5	21.9	21.3	112.33	-849.9	-145.4	322.5	282.4	40.11	8.041	
6,600.0	6,129.5	6,692.4	6,248.5	23.3	22.9	110.59	-966.2	-156.2	341.5	298.0	43.51	7.849	
6,700.0	6,129.5	6,812.0	6,248.5	24.7	24.6	109.88	-1,085.8	-159.8	350.0	303.2	46.74	7.488	
6,800.0	6,129.5	6,912.0	6,248.5	26.2	26.1	109.81	-1,185.8	-159.8	351.0	301.3	49.67	7.066	
6,900.0	6,129.5	7,012.0	6,248.5	27.8	27.7	109.81	-1,285.8	-159.8	351.0	298.1	52.82	6.644	
7,000.0	6,129.5	7,112.0	6,248.5	29.5	29.4	109.81	-1,385.8	-159.8	351.0	294.9	56.03	6.263	
7,100.0	6,129.6	7,212.0	6,248.5	31.2	31.1	109.81	-1,485.8	-159.8	350.9	291.7	59.30	5.919	
7,200.0	6,129.6	7,312.0	6,248.5	33.0	32.8	109.81	-1,585.8	-159.8	350.9	288.3	62.60	5.606	
7,300.0	6,129.6	7,412.0	6,248.5	34.7	34.6	109.81	-1,685.8	-159.8	350.9	285.0	65.94	5.322	
7,400.0	6,129.6	7,512.0	6,248.5	36.5	36.4	109.82	-1,785.8	-159.8	350.9	281.6	69.32	5.063	
7,500.0	6,129.6	7,612.0	6,248.5	38.3	38.1	109.82	-1,885.8	-159.8	350.9	278.2	72.72	4.826	
7,600.0	6,129.6	7,712.0	6,248.5	40.1	39.9	109.82	-1,985.8	-159.8	350.9	274.8	76.14	4.609	
7,700.0	6,129.6	7,812.0	6,248.6	41.9	41.7	109.82	-2,085.8	-159.8	350.9	271.3	79.58	4.409	
7,800.0	6,129.6	7,912.0	6,248.6	43.7	43.6	109.82	-2,185.8	-159.8	350.9	267.8	83.05	4.225	
7,900.0	6,129.6	8,012.0	6,248.6	45.6	45.4	109.82	-2,285.8	-159.8	350.9	264.4	86.52	4.055	
8,000.0	6,129.6	8,112.0	6,248.6	47.4	47.2	109.82	-2,385.8	-159.8	350.9	260.9	90.01	3.898	
8,100.0	6,129.6	8,212.0	6,248.6	49.2	49.1	109.82	-2,485.8	-159.8	350.9	257.4	93.52	3.752	
8,200.0	6,129.6	8,312.0	6,248.6	51.1	50.9	109.82	-2,585.8	-159.8	350.9	253.8	97.03	3.616	
8,300.0	6,129.6	8,412.0	6,248.6	52.9	52.7	109.82	-2,685.8	-159.8	350.9	250.3	100.56	3.489	
8,400.0	6,129.6	8,512.0	6,248.6	54.8	54.6	109.82	-2,785.8	-159.8	350.8	246.8	104.09	3.371	
8,500.0	6,129.6	8,612.0	6,248.6	56.7	56.5	109.82	-2,885.8	-159.8	350.8	243.2	107.63	3.260	
8,600.0	6,129.7	8,712.0	6,248.6	58.5	58.3	109.82	-2,985.8	-159.8	350.8	239.7	111.18	3.156	
8,700.0	6,129.7	8,812.0	6,248.6	60.4	60.2	109.82	-3,085.8	-159.8	350.8	236.1	114.73	3.058	
8,800.0	6,129.7	8,912.0	6,248.6	62.3	62.1	109.82	-3,185.8	-159.8	350.8	232.5	118.29	2.966	
8,900.0	6,129.7	9,012.0	6,248.6	64.1	63.9	109.82	-3,285.8	-159.8	350.8	229.0	121.85	2.879	
9,000.0	6,129.7	9,112.0	6,248.6	66.0	65.8	109.82	-3,385.8	-159.8	350.8	225.4	125.42	2.797	
9,100.0	6,129.7	9,212.0	6,248.7	67.9	67.7	109.83	-3,485.8	-159.8	350.8	221.8	129.00	2.719	
9,200.0	6,129.7	9,312.0	6,248.7	69.8	69.6	109.83	-3,585.8	-159.8	350.8	218.2	132.58	2.646	
9,300.0	6,129.7	9,412.0	6,248.7	71.7	71.5	109.83	-3,685.8	-159.8	350.8	214.6	136.16	2.576	
9,400.0	6,129.7	9,512.0	6,248.7	73.6	73.3	109.83	-3,785.8	-159.8	350.8	211.0	139.75	2.510	
9,500.0	6,129.7	9,612.0	6,248.7	75.4	75.2	109.83	-3,885.8	-159.8	350.8	207.4	143.33	2.447	
9,600.0	6,129.7	9,712.0	6,248.7	77.3	77.1	109.83	-3,985.8	-159.7	350.8	203.8	146.93	2.387	
9,700.0	6,129.7	9,812.0	6,248.7	79.2	79.0	109.83	-4,085.8	-159.7	350.7	200.2	150.52	2.330	
9,800.0	6,129.7	9,912.0	6,248.7	81.1	80.9	109.83	-4,185.8	-159.7	350.7	196.6	154.12	2.276	
9,900.0	6,129.7	10,012.0	6,248.7	83.0	82.8	109.83	-4,285.8	-159.7	350.7	193.0	157.72	2.224	
10,000.0	6,129.7	10,112.0	6,248.7	84.9	84.7	109.83	-4,385.8	-159.7	350.7	189.4	161.32	2.174	
10,100.0	6,129.8	10,212.0	6,248.7	86.8	86.6	109.83	-4,485.8	-159.7	350.7	185.8	164.92	2.127	
10,200.0	6,129.8	10,312.0	6,248.7	88.7	88.5	109.83	-4,585.8	-159.7	350.7	182.2	168.53	2.081	
10,300.0	6,129.8	10,412.0	6,248.7	90.6	90.4	109.83	-4,685.8	-159.7	350.7	178.6	172.14	2.037	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1502B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	6,129.8	10,512.0	6,248.8	92.5	92.3	109.83	-4,785.8	-159.7	350.7	174.9	175.75	1.995	
10,500.0	6,129.8	10,612.0	6,248.8	94.4	94.2	109.83	-4,885.8	-159.7	350.7	171.3	179.36	1.955	
10,600.0	6,129.8	10,712.0	6,248.8	96.3	96.1	109.83	-4,985.8	-159.7	350.7	167.7	182.97	1.917	
10,700.0	6,129.8	10,812.0	6,248.8	98.2	98.0	109.83	-5,085.8	-159.7	350.7	164.1	186.59	1.879	
10,800.0	6,129.8	10,912.0	6,248.8	100.1	99.9	109.83	-5,185.8	-159.7	350.7	160.5	190.20	1.844	
10,900.0	6,129.8	11,011.9	6,248.8	102.0	101.8	109.84	-5,285.8	-159.7	350.7	156.8	193.82	1.809	
11,000.0	6,129.8	11,111.9	6,248.8	103.9	103.7	109.84	-5,385.8	-159.7	350.6	153.2	197.44	1.776	
11,100.0	6,129.8	11,211.9	6,248.8	105.8	105.6	109.84	-5,485.8	-159.7	350.6	149.6	201.05	1.744	
11,200.0	6,129.8	11,311.9	6,248.8	107.7	107.5	109.84	-5,585.8	-159.7	350.6	146.0	204.67	1.713	
11,300.0	6,129.8	11,411.9	6,248.8	109.6	109.4	109.84	-5,685.8	-159.7	350.6	142.3	208.30	1.683	
11,400.0	6,129.8	11,511.9	6,248.8	111.5	111.3	109.84	-5,785.8	-159.7	350.6	138.7	211.92	1.654	
11,500.0	6,129.8	11,611.9	6,248.8	113.5	113.2	109.84	-5,885.8	-159.7	350.6	135.1	215.54	1.627	
11,600.0	6,129.9	11,711.9	6,248.8	115.4	115.1	109.84	-5,985.8	-159.7	350.6	131.4	219.16	1.600	
11,700.0	6,129.9	11,811.9	6,248.8	117.3	117.0	109.84	-6,085.8	-159.7	350.6	127.8	222.79	1.574	
11,800.0	6,129.9	11,911.9	6,248.9	119.2	118.9	109.84	-6,185.8	-159.7	350.6	124.2	226.41	1.548	
11,900.0	6,129.9	12,011.9	6,248.9	121.1	120.9	109.84	-6,285.8	-159.7	350.6	120.5	230.04	1.524	
12,000.0	6,129.9	12,111.9	6,248.9	123.0	122.8	109.84	-6,385.8	-159.7	350.6	116.9	233.67	1.500	
12,100.0	6,129.9	12,211.9	6,248.9	124.9	124.7	109.84	-6,485.8	-159.7	350.6	113.3	237.29	1.477	Level 3
12,200.0	6,129.9	12,311.9	6,248.9	126.8	126.6	109.84	-6,585.8	-159.7	350.5	109.6	240.92	1.455	Level 3
12,300.0	6,129.9	12,411.9	6,248.9	128.7	128.5	109.84	-6,685.8	-159.7	350.5	106.0	244.55	1.433	Level 3
12,400.0	6,129.9	12,511.9	6,248.9	130.6	130.4	109.84	-6,785.8	-159.7	350.5	102.4	248.18	1.412	Level 3
12,500.0	6,129.9	12,611.9	6,248.9	132.6	132.3	109.84	-6,885.8	-159.7	350.5	98.7	251.81	1.392	Level 3
12,600.0	6,129.9	12,711.9	6,248.9	134.5	134.2	109.84	-6,985.8	-159.7	350.5	95.1	255.44	1.372	Level 3
12,700.0	6,129.9	12,811.9	6,248.9	136.4	136.1	109.85	-7,085.8	-159.7	350.5	91.4	259.07	1.353	Level 3
12,800.0	6,129.9	12,911.9	6,248.9	138.3	138.0	109.85	-7,185.8	-159.7	350.5	87.8	262.70	1.334	Level 3
12,900.0	6,129.9	13,011.9	6,248.9	140.2	140.0	109.85	-7,285.8	-159.7	350.5	84.2	266.33	1.316	Level 3
13,000.0	6,129.9	13,111.9	6,248.9	142.1	141.9	109.85	-7,385.8	-159.7	350.5	80.5	269.97	1.298	Level 3
13,100.0	6,130.0	13,211.9	6,248.9	144.0	143.8	109.85	-7,485.8	-159.7	350.5	76.9	273.60	1.281	Level 3
13,200.0	6,130.0	13,311.9	6,249.0	145.9	145.7	109.85	-7,585.8	-159.7	350.5	73.2	277.23	1.264	Level 3
13,300.0	6,130.0	13,411.9	6,249.0	147.9	147.6	109.85	-7,685.8	-159.7	350.5	69.6	280.87	1.248	Level 2
13,400.0	6,130.0	13,511.9	6,249.0	149.8	149.5	109.85	-7,785.8	-159.7	350.5	66.0	284.50	1.232	Level 2
13,500.0	6,130.0	13,611.9	6,249.0	151.7	151.4	109.85	-7,885.8	-159.7	350.4	62.3	288.13	1.216	Level 2
13,600.0	6,130.0	13,711.9	6,249.0	153.6	153.4	109.85	-7,985.8	-159.7	350.4	58.7	291.77	1.201	Level 2
13,700.0	6,130.0	13,811.9	6,249.0	155.5	155.3	109.85	-8,085.8	-159.7	350.4	55.0	295.40	1.186	Level 2
13,800.0	6,130.0	13,911.9	6,249.0	157.4	157.2	109.85	-8,185.8	-159.7	350.4	51.4	299.04	1.172	Level 2
13,839.3	6,130.0	13,951.2	6,249.0	158.0	157.9	109.85	-8,225.0	-159.7	350.4	50.1	300.33	1.167	Level 2, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1504B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	33.2	33.2				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	33.2	33.2	33.0	0.19	177.521	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	33.2	33.2	32.6	0.64	52.153	
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	33.2	33.2	32.1	1.09	30.567	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	33.2	33.2	31.7	1.54	21.619	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	33.2	33.2	31.2	1.99	16.723	
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	33.2	33.2	30.8	2.43	13.635	
700.0	700.0	700.0	700.0	1.4	1.4	90.00	0.0	33.2	33.2	30.3	2.88	11.510	
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	33.2	33.2	29.9	3.33	9.958	
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	33.2	33.2	29.4	3.78	8.775	CC, ES
1,000.0	1,000.0	999.5	999.5	2.1	2.1	92.70	-1.6	33.9	33.9	29.7	4.20	8.062	
1,100.0	1,100.0	1,098.9	1,098.7	2.3	2.3	-72.66	-6.4	35.8	35.8	31.3	4.58	7.832	
1,200.0	1,199.8	1,198.9	1,198.5	2.5	2.5	-71.02	-12.8	38.5	37.8	32.8	4.94	7.642	
1,300.0	1,299.6	1,298.9	1,298.2	2.7	2.7	-71.97	-19.3	41.1	39.2	33.8	5.33	7.340	
1,400.0	1,399.3	1,398.8	1,397.9	2.9	2.9	-72.86	-25.7	43.8	40.6	34.8	5.75	7.056	
1,500.0	1,499.1	1,498.8	1,497.7	3.1	3.1	-73.68	-32.2	46.4	42.0	35.8	6.18	6.792	
1,600.0	1,598.9	1,598.8	1,597.4	3.3	3.3	-74.45	-38.6	49.1	43.4	36.7	6.62	6.550	
1,700.0	1,698.6	1,698.8	1,697.2	3.5	3.6	-75.17	-45.1	51.7	44.8	37.7	7.07	6.329	
1,800.0	1,798.4	1,798.8	1,796.9	3.8	3.8	-75.85	-51.5	54.4	46.2	38.7	7.54	6.128	
1,900.0	1,898.1	1,898.8	1,896.7	4.0	4.1	-76.49	-58.0	57.0	47.6	39.6	8.01	5.946	
2,000.0	1,997.9	1,998.8	1,996.4	4.2	4.3	-77.09	-64.5	59.7	49.1	40.6	8.49	5.779	
2,100.0	2,097.6	2,098.8	2,096.2	4.5	4.5	-77.66	-70.9	62.3	50.5	41.5	8.97	5.628	
2,200.0	2,197.4	2,198.7	2,195.9	4.7	4.8	-78.19	-77.4	65.0	51.9	42.5	9.46	5.489	
2,300.0	2,297.2	2,298.7	2,295.7	5.0	5.0	-78.70	-83.8	67.6	53.4	43.4	9.96	5.363	
2,400.0	2,396.9	2,398.7	2,395.4	5.2	5.3	-79.18	-90.3	70.3	54.8	44.4	10.45	5.247	
2,500.0	2,496.7	2,498.7	2,495.1	5.5	5.5	-79.63	-96.7	72.9	56.3	45.3	10.95	5.140	
2,600.0	2,596.4	2,598.7	2,594.9	5.7	5.8	-80.06	-103.2	75.6	57.8	46.3	11.46	5.042	
2,700.0	2,696.2	2,698.7	2,694.6	6.0	6.1	-80.47	-109.6	78.2	59.2	47.3	11.96	4.951	
2,800.0	2,795.9	2,798.7	2,794.4	6.2	6.3	-80.86	-116.1	80.8	60.7	48.2	12.47	4.868	
2,900.0	2,895.7	2,898.7	2,894.1	6.5	6.6	-81.24	-122.5	83.5	62.2	49.2	12.98	4.790	
3,000.0	2,995.4	2,998.7	2,993.9	6.7	6.8	-81.59	-129.0	86.1	63.6	50.1	13.49	4.718	
3,100.0	3,095.2	3,098.6	3,093.6	7.0	7.1	-81.93	-135.4	88.8	65.1	51.1	14.00	4.650	
3,200.0	3,195.0	3,198.6	3,193.4	7.2	7.3	-82.25	-141.9	91.4	66.6	52.1	14.51	4.587	
3,300.0	3,294.7	3,298.6	3,293.1	7.5	7.6	-82.56	-148.3	94.1	68.1	53.0	15.03	4.529	
3,400.0	3,394.5	3,398.6	3,392.8	7.8	7.9	-82.86	-154.8	96.7	69.5	54.0	15.54	4.474	
3,500.0	3,494.2	3,498.6	3,492.6	8.0	8.1	-83.14	-161.2	99.4	71.0	55.0	16.06	4.422	
3,600.0	3,594.0	3,598.6	3,592.3	8.3	8.4	-83.42	-167.7	102.0	72.5	55.9	16.58	4.373	
3,700.0	3,693.7	3,698.6	3,692.1	8.5	8.6	-83.68	-174.1	104.7	74.0	56.9	17.10	4.328	
3,800.0	3,793.5	3,798.6	3,791.8	8.8	8.9	-83.93	-180.6	107.3	75.5	57.9	17.61	4.284	
3,900.0	3,893.3	3,898.5	3,891.6	9.1	9.2	-84.17	-187.0	110.0	77.0	58.8	18.13	4.244	
4,000.0	3,993.0	3,998.5	3,991.3	9.3	9.4	-84.40	-193.5	112.6	78.4	59.8	18.65	4.205	
4,100.0	4,092.8	4,098.5	4,091.1	9.6	9.7	-84.63	-200.0	115.3	79.9	60.8	19.17	4.169	
4,200.0	4,192.5	4,198.5	4,190.8	9.8	9.9	-84.84	-206.4	117.9	81.4	61.7	19.70	4.134	
4,300.0	4,292.3	4,298.5	4,290.5	10.1	10.2	-85.05	-212.9	120.6	82.9	62.7	20.22	4.101	
4,400.0	4,392.0	4,398.5	4,390.3	10.4	10.5	-85.25	-219.3	123.2	84.4	63.7	20.74	4.070	
4,500.0	4,491.8	4,498.5	4,490.0	10.6	10.7	-85.44	-225.8	125.9	85.9	64.6	21.26	4.040	
4,600.0	4,591.5	4,598.5	4,589.8	10.9	11.0	-85.63	-232.2	128.5	87.4	65.6	21.78	4.012	
4,700.0	4,691.3	4,698.5	4,689.5	11.1	11.2	-85.81	-238.7	131.2	88.9	66.6	22.31	3.985	
4,800.0	4,791.1	4,798.4	4,789.3	11.4	11.5	-85.99	-245.1	133.8	90.4	67.6	22.83	3.959	
4,900.0	4,890.8	4,898.4	4,889.0	11.7	11.8	-86.15	-251.6	136.5	91.9	68.5	23.35	3.934	
5,000.0	4,990.6	4,998.4	4,988.8	11.9	12.0	-86.32	-258.0	139.1	93.4	69.5	23.88	3.911	
5,100.0	5,090.3	5,098.4	5,088.5	12.2	12.3	-86.48	-264.5	141.8	94.9	70.5	24.40	3.888	

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 #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1504B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,190.1	5,198.4	5,188.2	12.4	12.6	-86.63	-270.9	144.4	96.4	71.5	24.93	3.866	
5,300.0	5,289.8	5,298.4	5,288.0	12.7	12.8	-86.78	-277.4	147.1	97.9	72.4	25.45	3.846	
5,400.0	5,389.6	5,398.4	5,387.7	13.0	13.1	-86.92	-283.8	149.7	99.4	73.4	25.98	3.826	
5,500.0	5,489.4	5,498.4	5,487.5	13.2	13.3	-87.06	-290.3	152.4	100.9	74.4	26.50	3.807	
5,600.0	5,589.1	5,598.3	5,587.2	13.5	13.6	-87.20	-296.7	155.0	102.4	75.4	27.03	3.788	
5,700.0	5,688.7	5,698.3	5,686.9	13.8	13.9	-88.29	-303.2	157.7	103.8	76.2	27.58	3.764	
5,800.0	5,785.4	5,796.1	5,784.5	14.2	14.1	-97.37	-309.9	160.4	106.4	78.1	28.27	3.763	
5,900.0	5,875.7	5,893.6	5,879.9	14.8	14.5	-107.81	-327.9	167.8	116.2	87.4	28.84	4.029	
6,000.0	5,956.1	5,995.2	5,973.6	15.6	15.1	-115.45	-363.9	182.6	133.4	104.2	29.22	4.565	
6,100.0	6,023.8	6,101.3	6,061.4	16.5	15.9	-120.01	-418.6	205.0	155.6	125.9	29.66	5.247	
6,200.0	6,076.2	6,212.2	6,138.5	17.7	17.0	-121.98	-492.1	235.2	180.7	150.1	30.57	5.911	
6,300.0	6,111.4	6,328.2	6,199.2	19.0	18.3	-121.96	-583.2	272.6	206.9	174.6	32.30	6.405	
6,400.0	6,128.1	6,449.1	6,237.7	20.5	20.0	-120.44	-689.0	316.1	232.7	197.7	35.00	6.650	
6,500.0	6,129.5	6,572.1	6,249.0	21.9	21.9	-118.51	-802.1	362.4	256.2	217.9	38.35	6.681	
6,600.0	6,129.5	6,683.1	6,249.0	23.3	23.5	-116.14	-906.2	400.8	277.5	236.0	41.57	6.676	
6,700.0	6,129.5	6,795.8	6,249.0	24.7	25.2	-114.15	-1,014.1	433.5	298.7	254.0	44.71	6.680	
6,800.0	6,129.5	6,910.4	6,249.0	26.2	26.9	-112.40	-1,125.5	460.2	319.2	271.1	48.04	6.644	
6,900.0	6,129.5	7,027.6	6,249.0	27.8	28.7	-111.07	-1,240.9	480.5	335.3	283.5	51.83	6.470	
7,000.0	6,129.5	7,146.9	6,249.0	29.5	30.6	-110.27	-1,359.5	493.9	345.8	290.3	55.54	6.227	
7,100.0	6,129.6	7,267.5	6,249.0	31.2	32.4	-109.93	-1,479.8	499.8	350.5	291.3	59.15	5.925	
7,200.0	6,129.6	7,373.4	6,249.0	33.0	34.1	-109.91	-1,585.8	500.1	350.7	288.3	62.48	5.614	
7,300.0	6,129.6	7,473.4	6,249.0	34.7	35.8	-109.91	-1,685.8	500.1	350.7	285.0	65.77	5.333	
7,400.0	6,129.6	7,573.4	6,249.0	36.5	37.5	-109.91	-1,785.8	500.1	350.7	281.6	69.10	5.076	
7,500.0	6,129.6	7,673.4	6,249.0	38.3	39.2	-109.90	-1,885.8	500.1	350.7	278.3	72.47	4.840	
7,600.0	6,129.6	7,773.4	6,249.0	40.1	40.9	-109.90	-1,985.8	500.1	350.7	274.9	75.86	4.623	
7,700.0	6,129.6	7,873.4	6,249.0	41.9	42.6	-109.90	-2,085.8	500.1	350.7	271.5	79.27	4.424	
7,800.0	6,129.6	7,973.4	6,249.0	43.7	44.4	-109.90	-2,185.8	500.1	350.7	268.0	82.71	4.240	
7,900.0	6,129.6	8,073.4	6,249.0	45.6	46.1	-109.90	-2,285.8	500.1	350.7	264.6	86.16	4.071	
8,000.0	6,129.6	8,173.4	6,249.0	47.4	47.9	-109.90	-2,385.8	500.1	350.7	261.1	89.63	3.913	
8,100.0	6,129.6	8,273.4	6,249.0	49.2	49.7	-109.90	-2,485.8	500.1	350.7	257.6	93.11	3.767	
8,200.0	6,129.6	8,373.4	6,249.0	51.1	51.5	-109.90	-2,585.8	500.1	350.7	254.1	96.61	3.630	
8,300.0	6,129.6	8,473.4	6,249.0	52.9	53.3	-109.90	-2,685.8	500.1	350.7	250.6	100.11	3.503	
8,400.0	6,129.6	8,573.4	6,249.0	54.8	55.1	-109.89	-2,785.8	500.1	350.7	247.1	103.63	3.384	
8,500.0	6,129.6	8,673.4	6,249.0	56.7	57.0	-109.89	-2,885.8	500.1	350.7	243.6	107.15	3.273	
8,600.0	6,129.7	8,773.4	6,249.0	58.5	58.8	-109.89	-2,985.8	500.1	350.7	240.0	110.69	3.169	
8,700.0	6,129.7	8,873.4	6,249.0	60.4	60.6	-109.89	-3,085.8	500.1	350.7	236.5	114.23	3.070	
8,800.0	6,129.7	8,973.4	6,249.0	62.3	62.5	-109.89	-3,185.8	500.1	350.7	232.9	117.77	2.978	
8,900.0	6,129.7	9,073.4	6,249.0	64.1	64.3	-109.89	-3,285.8	500.1	350.7	229.4	121.32	2.891	
9,000.0	6,129.7	9,173.4	6,249.0	66.0	66.2	-109.89	-3,385.8	500.1	350.7	225.8	124.88	2.808	
9,100.0	6,129.7	9,273.4	6,249.0	67.9	68.0	-109.89	-3,485.8	500.0	350.7	222.3	128.45	2.730	
9,200.0	6,129.7	9,373.4	6,249.0	69.8	69.9	-109.89	-3,585.8	500.0	350.7	218.7	132.01	2.657	
9,300.0	6,129.7	9,473.4	6,249.0	71.7	71.7	-109.89	-3,685.8	500.0	350.7	215.1	135.59	2.587	
9,400.0	6,129.7	9,573.4	6,249.0	73.6	73.6	-109.88	-3,785.8	500.0	350.7	211.6	139.16	2.520	
9,500.0	6,129.7	9,673.4	6,249.0	75.4	75.5	-109.88	-3,885.8	500.0	350.7	208.0	142.74	2.457	
9,600.0	6,129.7	9,773.4	6,249.0	77.3	77.3	-109.88	-3,985.8	500.0	350.7	204.4	146.33	2.397	
9,700.0	6,129.7	9,873.4	6,249.0	79.2	79.2	-109.88	-4,085.8	500.0	350.7	200.8	149.91	2.339	
9,800.0	6,129.7	9,973.4	6,249.0	81.1	81.1	-109.88	-4,185.8	500.0	350.7	197.2	153.50	2.285	
9,900.0	6,129.7	10,073.4	6,249.0	83.0	82.9	-109.88	-4,285.8	500.0	350.7	193.6	157.10	2.232	
10,000.0	6,129.7	10,173.4	6,249.0	84.9	84.8	-109.88	-4,385.8	500.0	350.7	190.0	160.69	2.183	
10,100.0	6,129.8	10,273.4	6,249.0	86.8	86.7	-109.88	-4,485.8	500.0	350.7	186.4	164.29	2.135	
10,200.0	6,129.8	10,373.4	6,249.0	88.7	88.6	-109.88	-4,585.8	500.0	350.7	182.8	167.89	2.089	
10,300.0	6,129.8	10,473.4	6,249.0	90.6	90.5	-109.87	-4,685.8	500.0	350.7	179.2	171.49	2.045	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Offset Design S10-T10N-R58W - Razor #10E-1504B - HZ - Plan #1

Offset Site Error: 0.0 usft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,400.0	6,129.8	10,573.4	6,249.0	92.5	92.4	-109.87	-4,785.8	500.0	350.7	175.6	175.09	2.003	
10,500.0	6,129.8	10,673.4	6,249.0	94.4	94.2	-109.87	-4,885.8	500.0	350.7	172.0	178.70	1.963	
10,600.0	6,129.8	10,773.4	6,249.0	96.3	96.1	-109.87	-4,985.8	500.0	350.7	168.4	182.31	1.924	
10,700.0	6,129.8	10,873.4	6,249.0	98.2	98.0	-109.87	-5,085.8	500.0	350.7	164.8	185.91	1.886	
10,800.0	6,129.8	10,973.4	6,249.0	100.1	99.9	-109.87	-5,185.8	500.0	350.7	161.2	189.53	1.850	
10,900.0	6,129.8	11,073.4	6,249.0	102.0	101.8	-109.87	-5,285.8	499.9	350.7	157.6	193.14	1.816	
11,000.0	6,129.8	11,173.4	6,249.0	103.9	103.7	-109.87	-5,385.8	499.9	350.7	154.0	196.75	1.782	
11,100.0	6,129.8	11,273.4	6,249.0	105.8	105.6	-109.87	-5,485.8	499.9	350.7	150.3	200.37	1.750	
11,200.0	6,129.8	11,373.4	6,249.0	107.7	107.5	-109.86	-5,585.8	499.9	350.7	146.7	203.98	1.719	
11,300.0	6,129.8	11,473.4	6,249.0	109.6	109.4	-109.86	-5,685.8	499.9	350.7	143.1	207.60	1.689	
11,400.0	6,129.8	11,573.4	6,249.0	111.5	111.3	-109.86	-5,785.8	499.9	350.7	139.5	211.22	1.660	
11,500.0	6,129.8	11,673.4	6,249.0	113.5	113.2	-109.86	-5,885.8	499.9	350.7	135.9	214.84	1.632	
11,600.0	6,129.9	11,773.4	6,249.0	115.4	115.1	-109.86	-5,985.8	499.9	350.7	132.2	218.46	1.605	
11,700.0	6,129.9	11,873.4	6,249.0	117.3	117.0	-109.86	-6,085.8	499.9	350.7	128.6	222.08	1.579	
11,800.0	6,129.9	11,973.4	6,249.0	119.2	118.9	-109.86	-6,185.8	499.9	350.7	125.0	225.70	1.554	
11,900.0	6,129.9	12,073.4	6,249.0	121.1	120.8	-109.86	-6,285.8	499.9	350.7	121.4	229.33	1.529	
12,000.0	6,129.9	12,173.4	6,249.0	123.0	122.7	-109.86	-6,385.8	499.9	350.7	117.7	232.95	1.505	
12,100.0	6,129.9	12,273.4	6,249.0	124.9	124.6	-109.86	-6,485.8	499.9	350.7	114.1	236.57	1.482	Level 3
12,200.0	6,129.9	12,373.4	6,249.0	126.8	126.5	-109.85	-6,585.8	499.9	350.7	110.5	240.20	1.460	Level 3
12,300.0	6,129.9	12,473.4	6,249.0	128.7	128.4	-109.85	-6,685.8	499.9	350.7	106.9	243.83	1.438	Level 3
12,400.0	6,129.9	12,573.4	6,249.0	130.6	130.3	-109.85	-6,785.8	499.9	350.7	103.2	247.45	1.417	Level 3
12,500.0	6,129.9	12,673.4	6,249.0	132.6	132.2	-109.85	-6,885.8	499.9	350.7	99.6	251.08	1.397	Level 3
12,600.0	6,129.9	12,773.4	6,249.0	134.5	134.1	-109.85	-6,985.8	499.9	350.7	96.0	254.71	1.377	Level 3
12,700.0	6,129.9	12,873.4	6,249.0	136.4	136.0	-109.85	-7,085.8	499.8	350.7	92.3	258.34	1.357	Level 3
12,800.0	6,129.9	12,973.4	6,249.0	138.3	137.9	-109.85	-7,185.8	499.8	350.7	88.7	261.97	1.339	Level 3
12,900.0	6,129.9	13,073.4	6,249.0	140.2	139.8	-109.85	-7,285.8	499.8	350.7	85.1	265.60	1.320	Level 3
13,000.0	6,129.9	13,173.4	6,249.0	142.1	141.7	-109.85	-7,385.8	499.8	350.7	81.5	269.23	1.303	Level 3
13,100.0	6,130.0	13,273.4	6,249.0	144.0	143.6	-109.84	-7,485.8	499.8	350.7	77.8	272.86	1.285	Level 3
13,200.0	6,130.0	13,373.4	6,249.0	145.9	145.5	-109.84	-7,585.8	499.8	350.7	74.2	276.50	1.268	Level 3
13,300.0	6,130.0	13,473.4	6,249.0	147.9	147.4	-109.84	-7,685.8	499.8	350.7	70.6	280.13	1.252	Level 3
13,400.0	6,130.0	13,573.4	6,249.0	149.8	149.3	-109.84	-7,785.8	499.8	350.7	66.9	283.76	1.236	Level 2
13,500.0	6,130.0	13,673.4	6,249.0	151.7	151.2	-109.84	-7,885.8	499.8	350.7	63.3	287.39	1.220	Level 2
13,600.0	6,130.0	13,773.4	6,249.0	153.6	153.2	-109.84	-7,985.8	499.8	350.7	59.7	291.03	1.205	Level 2
13,700.0	6,130.0	13,873.4	6,249.0	155.5	155.1	-109.84	-8,085.8	499.8	350.7	56.0	294.66	1.190	Level 2
13,800.0	6,130.0	13,973.4	6,249.0	157.4	157.0	-109.84	-8,185.8	499.8	350.7	52.4	298.30	1.176	Level 2
13,828.7	6,130.0	14,002.1	6,249.0	157.9	157.5	-109.84	-8,214.5	499.8	350.7	51.4	299.23	1.172	Level 2
13,839.3	6,130.0	14,006.5	6,249.0	158.0	157.6	-109.84	-8,218.8	499.8	350.7	51.3	299.47	1.171	Level 2, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1503A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Reference Site:	S10-T10N-R58W	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site Error:	0.0usft	**North Reference:**	True
Reference Well:	Razor #10E-1503A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0usft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 5039.1usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #10E-1503A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.06°