Project: Weld County, CO
Site: S10-T10N-R58W
Well: Razor #10E-1504B
Wellbore: HZ
Design: Plan #1

WHITING PETROLEUM CORPORATION

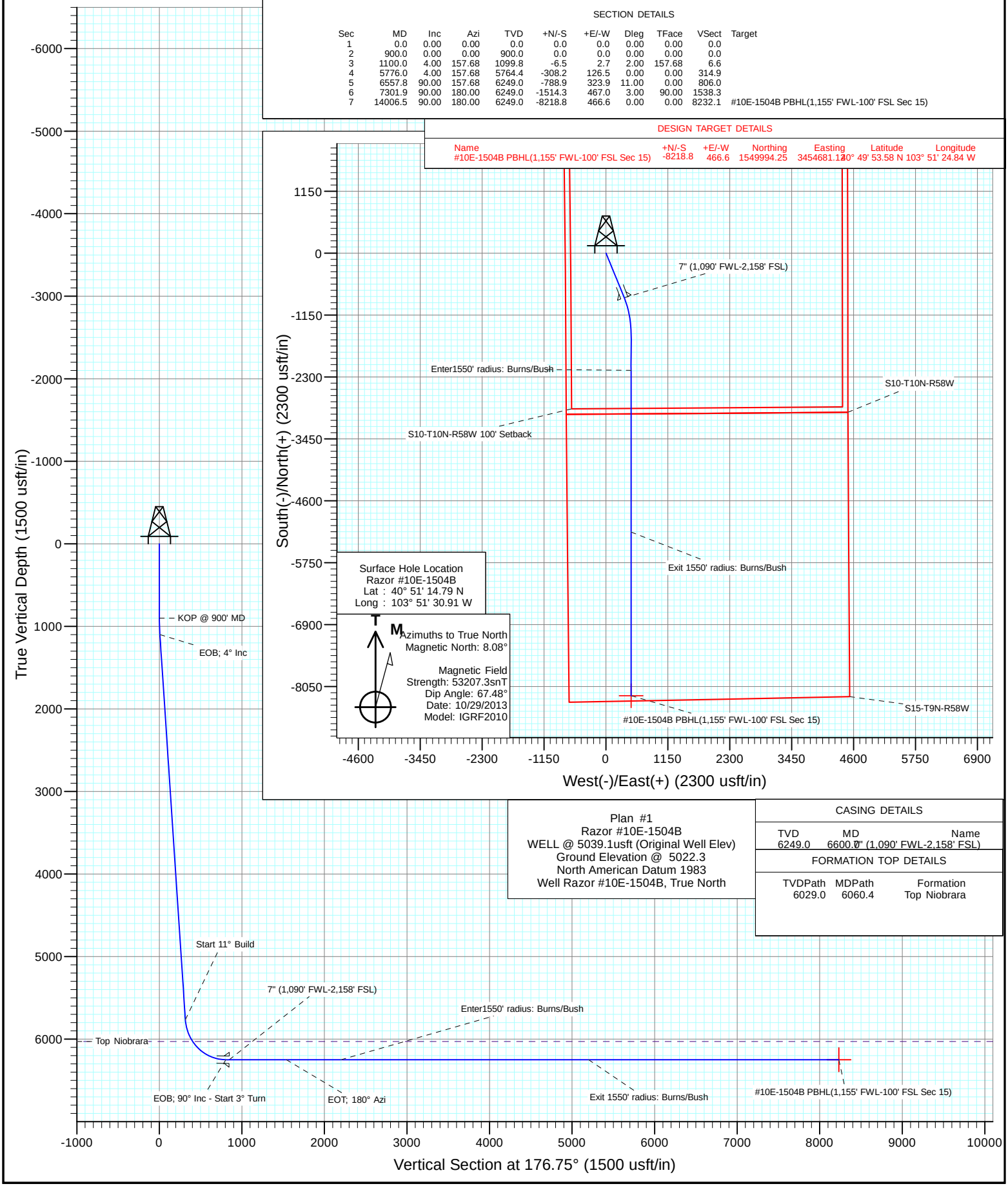
CATHEDRAL

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	900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.0	
3	1100.0	4.00	157.68	1099.8	-6.5	2.7	2.00	157.68	6.6	
4	5776.0	4.00	157.68	5764.4	-308.2	126.5	0.00	0.00	314.9	
5	6557.8	90.00	157.68	6249.0	-788.9	323.9	11.00	0.00	806.0	
6	7301.9	90.00	180.00	6249.0	-1514.3	467.0	3.00	90.00	1538.3	
7	14006.5	90.00	180.00	6249.0	-8218.8	466.6	0.00	0.00	8232.1	#10E-1504B PBHL(1,155' FWL-100' FSL Sec 15)

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
#10E-1504B PBHL(1,155' FWL-100' FSL Sec 15)	-8218.8	466.6	1549994.25	3454681.12	40° 49' 53.58 N	103° 51' 24.84 W



Plan #1
Razor #10E-1504B
WELL @ 5039.1usft (Original Well Elev)
Ground Elevation @ 5022.3
North American Datum 1983
Well Razor #10E-1504B, True North

CASING DETAILS

TVD	MD	Name
6249.0	6600.7	7" (1,090' FWL-2,158' FSL)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6029.0	6060.4	Top Niobrara

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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-1504B

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,558,203.05 usft	**Latitude:**	40° 51' 14.79 N
	+E/-W	0.0 usft	**Easting:**	3,454,062.49 usft	**Longitude:**	103° 51' 30.91 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	176.75

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	
900.0	0.00	0.00	900.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	4.00	157.68	1,099.8	-6.5	2.7	2.00	2.00	0.00	157.68	
5,776.0	4.00	157.68	5,764.4	-308.2	126.5	0.00	0.00	0.00	0.00	
6,557.8	90.00	157.68	6,249.0	-788.9	323.9	11.00	11.00	0.00	0.00	
7,301.9	90.00	180.00	6,249.0	-1,514.3	467.0	3.00	0.00	3.00	90.00	
14,006.5	90.00	180.00	6,249.0	-8,218.8	466.6	0.00	0.00	0.00	0.00	#10E-1504B PBHL(1,

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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Project:	Weld County, CO	**MD Reference:**	WELL @ 5039.1usft (Original Well Elev)
Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1504B	**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	KOP @ 900' MD
1,000.0	2.00	157.68	1,000.0	-1.6	0.7	1.6	2.00	2.00	
1,100.0	4.00	157.68	1,099.8	-6.5	2.7	6.6	2.00	2.00	EOB; 4° Inc
1,200.0	4.00	157.68	1,199.6	-12.9	5.3	13.2	0.00	0.00	
1,300.0	4.00	157.68	1,299.4	-19.4	7.9	19.8	0.00	0.00	
1,400.0	4.00	157.68	1,399.1	-25.8	10.6	26.4	0.00	0.00	
1,500.0	4.00	157.68	1,498.9	-32.3	13.2	33.0	0.00	0.00	
1,600.0	4.00	157.68	1,598.6	-38.7	15.9	39.6	0.00	0.00	
1,700.0	4.00	157.68	1,698.4	-45.2	18.5	46.2	0.00	0.00	
1,800.0	4.00	157.68	1,798.1	-51.6	21.2	52.7	0.00	0.00	
1,900.0	4.00	157.68	1,897.9	-58.1	23.8	59.3	0.00	0.00	
2,000.0	4.00	157.68	1,997.6	-64.5	26.5	65.9	0.00	0.00	
2,100.0	4.00	157.68	2,097.4	-71.0	29.1	72.5	0.00	0.00	
2,200.0	4.00	157.68	2,197.2	-77.4	31.8	79.1	0.00	0.00	
2,300.0	4.00	157.68	2,296.9	-83.9	34.4	85.7	0.00	0.00	
2,400.0	4.00	157.68	2,396.7	-90.3	37.1	92.3	0.00	0.00	
2,500.0	4.00	157.68	2,496.4	-96.8	39.7	98.9	0.00	0.00	
2,600.0	4.00	157.68	2,596.2	-103.3	42.4	105.5	0.00	0.00	
2,700.0	4.00	157.68	2,695.9	-109.7	45.0	112.1	0.00	0.00	
2,800.0	4.00	157.68	2,795.7	-116.2	47.7	118.7	0.00	0.00	
2,900.0	4.00	157.68	2,895.5	-122.6	50.3	125.3	0.00	0.00	
3,000.0	4.00	157.68	2,995.2	-129.1	53.0	131.9	0.00	0.00	
3,100.0	4.00	157.68	3,095.0	-135.5	55.6	138.5	0.00	0.00	
3,200.0	4.00	157.68	3,194.7	-142.0	58.3	145.0	0.00	0.00	
3,300.0	4.00	157.68	3,294.5	-148.4	60.9	151.6	0.00	0.00	
3,400.0	4.00	157.68	3,394.2	-154.9	63.6	158.2	0.00	0.00	
3,500.0	4.00	157.68	3,494.0	-161.3	66.2	164.8	0.00	0.00	
3,600.0	4.00	157.68	3,593.7	-167.8	68.9	171.4	0.00	0.00	
3,700.0	4.00	157.68	3,693.5	-174.2	71.5	178.0	0.00	0.00	
3,800.0	4.00	157.68	3,793.3	-180.7	74.2	184.6	0.00	0.00	
3,900.0	4.00	157.68	3,893.0	-187.1	76.8	191.2	0.00	0.00	
4,000.0	4.00	157.68	3,992.8	-193.6	79.5	197.8	0.00	0.00	
4,100.0	4.00	157.68	4,092.5	-200.0	82.1	204.4	0.00	0.00	
4,200.0	4.00	157.68	4,192.3	-206.5	84.8	211.0	0.00	0.00	
4,300.0	4.00	157.68	4,292.0	-213.0	87.4	217.6	0.00	0.00	
4,400.0	4.00	157.68	4,391.8	-219.4	90.1	224.2	0.00	0.00	
4,500.0	4.00	157.68	4,491.6	-225.9	92.7	230.8	0.00	0.00	
4,600.0	4.00	157.68	4,591.3	-232.3	95.4	237.3	0.00	0.00	
4,700.0	4.00	157.68	4,691.1	-238.8	98.0	243.9	0.00	0.00	
4,800.0	4.00	157.68	4,790.8	-245.2	100.7	250.5	0.00	0.00	
4,900.0	4.00	157.68	4,890.6	-251.7	103.3	257.1	0.00	0.00	
5,000.0	4.00	157.68	4,990.3	-258.1	106.0	263.7	0.00	0.00	
5,100.0	4.00	157.68	5,090.1	-264.6	108.6	270.3	0.00	0.00	

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Site:	S10-T10N-R58W	**North Reference:**	True
Well:	Razor #10E-1504B	**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	157.68	5,189.9	-271.0	111.3	276.9	0.00	0.00	
5,300.0	4.00	157.68	5,289.6	-277.5	113.9	283.5	0.00	0.00	
5,400.0	4.00	157.68	5,389.4	-283.9	116.6	290.1	0.00	0.00	
5,500.0	4.00	157.68	5,489.1	-290.4	119.2	296.7	0.00	0.00	
5,600.0	4.00	157.68	5,588.9	-296.8	121.9	303.3	0.00	0.00	
5,700.0	4.00	157.68	5,688.6	-303.3	124.5	309.9	0.00	0.00	
5,776.0	4.00	157.68	5,764.4	-308.2	126.5	314.9	0.00	0.00	Start 11° Build
5,800.0	6.64	157.68	5,788.3	-310.3	127.4	317.0	10.99	10.99	
5,850.0	12.14	157.68	5,837.7	-317.8	130.5	324.7	11.00	11.00	
5,900.0	17.64	157.68	5,886.0	-329.7	135.3	336.8	11.00	11.00	
5,950.0	23.14	157.68	5,932.8	-345.8	142.0	353.3	11.00	11.00	
6,000.0	28.64	157.68	5,977.8	-366.0	150.2	373.9	11.00	11.00	
6,050.0	34.14	157.68	6,020.4	-390.1	160.1	398.5	11.00	11.00	
6,060.4	35.28	157.68	6,029.0	-395.5	162.4	404.1	11.00	11.00	Top Niobrara
6,100.0	39.64	157.68	6,060.4	-417.8	171.5	426.9	11.00	11.00	
6,150.0	45.14	157.68	6,097.3	-449.0	184.3	458.7	11.00	11.00	
6,200.0	50.64	157.68	6,130.8	-483.3	198.4	493.8	11.00	11.00	
6,250.0	56.14	157.68	6,160.6	-520.4	213.6	531.7	11.00	11.00	
6,300.0	61.64	157.68	6,186.5	-560.0	229.9	572.1	11.00	11.00	
6,350.0	67.14	157.68	6,208.1	-601.7	247.0	614.7	11.00	11.00	
6,400.0	72.64	157.68	6,225.3	-645.1	264.8	659.1	11.00	11.00	
6,450.0	78.14	157.68	6,237.9	-689.8	283.2	704.8	11.00	11.00	
6,500.0	83.64	157.68	6,245.8	-735.5	301.9	751.4	11.00	11.00	
6,550.0	89.14	157.68	6,248.9	-781.6	320.9	798.6	11.00	11.00	
6,557.8	90.00	157.68	6,249.0	-788.8	323.8	805.9	11.00	11.00	EOB; 90° Inc - Start 3° Turn
6,600.0	90.00	158.95	6,249.0	-828.1	339.4	846.0	3.00	0.01	7" (1,090' FWL-2,158' FSL)
6,700.0	90.00	161.95	6,249.0	-922.3	372.9	941.9	3.00	0.00	
6,800.0	90.00	164.95	6,249.0	-1,018.1	401.4	1,039.2	3.00	0.00	
6,900.0	90.00	167.95	6,249.0	-1,115.3	424.8	1,137.6	3.00	0.00	
7,000.0	90.00	170.95	6,249.0	-1,213.6	443.2	1,236.8	3.00	0.00	
7,100.0	90.00	173.95	6,249.0	-1,312.8	456.3	1,336.5	3.00	0.00	
7,200.0	90.00	176.95	6,249.0	-1,412.4	464.2	1,436.5	3.00	0.00	
7,301.9	90.00	180.00	6,249.0	-1,514.3	467.0	1,538.3	3.00	0.00	EOT; 180° Azi
7,400.0	90.00	180.00	6,249.0	-1,612.4	466.9	1,636.3	0.00	0.00	
7,500.0	90.00	180.00	6,249.0	-1,712.4	466.9	1,736.1	0.00	0.00	
7,600.0	90.00	180.00	6,249.0	-1,812.4	466.9	1,835.9	0.00	0.00	
7,700.0	90.00	180.00	6,249.0	-1,912.4	466.9	1,935.8	0.00	0.00	
7,800.0	90.00	180.00	6,249.0	-2,012.4	466.9	2,035.6	0.00	0.00	
7,900.0	90.00	180.00	6,249.0	-2,112.4	466.9	2,135.4	0.00	0.00	
7,964.6	90.00	180.00	6,249.0	-2,177.0	466.9	2,199.9	0.00	0.00	Enter1550' radius: Burns/Bush
8,000.0	90.00	180.00	6,249.0	-2,212.4	466.9	2,235.3	0.00	0.00	
8,100.0	90.00	180.00	6,249.0	-2,312.4	466.9	2,335.1	0.00	0.00	
8,200.0	90.00	180.00	6,249.0	-2,412.4	466.9	2,435.0	0.00	0.00	
8,300.0	90.00	180.00	6,249.0	-2,512.4	466.9	2,534.8	0.00	0.00	
8,400.0	90.00	180.00	6,249.0	-2,612.4	466.9	2,634.6	0.00	0.00	
8,500.0	90.00	180.00	6,249.0	-2,712.4	466.9	2,734.5	0.00	0.00	
8,600.0	90.00	180.00	6,249.0	-2,812.4	466.9	2,834.3	0.00	0.00	
8,700.0	90.00	180.00	6,249.0	-2,912.4	466.9	2,934.2	0.00	0.00	
8,800.0	90.00	180.00	6,249.0	-3,012.4	466.9	3,034.0	0.00	0.00	
8,900.0	90.00	180.00	6,249.0	-3,112.4	466.9	3,133.8	0.00	0.00	
9,000.0	90.00	180.00	6,249.0	-3,212.4	466.9	3,233.7	0.00	0.00	
9,100.0	90.00	180.00	6,249.0	-3,312.4	466.9	3,333.5	0.00	0.00	

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Well:	Razor #10E-1504B	**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
9,200.0	90.00	180.00	6,249.0	-3,412.4	466.8	3,433.4	0.00	0.00	
9,300.0	90.00	180.00	6,249.0	-3,512.4	466.8	3,533.2	0.00	0.00	
9,400.0	90.00	180.00	6,249.0	-3,612.4	466.8	3,633.0	0.00	0.00	
9,500.0	90.00	180.00	6,249.0	-3,712.4	466.8	3,732.9	0.00	0.00	
9,600.0	90.00	180.00	6,249.0	-3,812.4	466.8	3,832.7	0.00	0.00	
9,700.0	90.00	180.00	6,249.0	-3,912.4	466.8	3,932.5	0.00	0.00	
9,800.0	90.00	180.00	6,249.0	-4,012.4	466.8	4,032.4	0.00	0.00	
9,900.0	90.00	180.00	6,249.0	-4,112.4	466.8	4,132.2	0.00	0.00	
10,000.0	90.00	180.00	6,249.0	-4,212.4	466.8	4,232.1	0.00	0.00	
10,100.0	90.00	180.00	6,249.0	-4,312.4	466.8	4,331.9	0.00	0.00	
10,200.0	90.00	180.00	6,249.0	-4,412.4	466.8	4,431.7	0.00	0.00	
10,300.0	90.00	180.00	6,249.0	-4,512.4	466.8	4,531.6	0.00	0.00	
10,400.0	90.00	180.00	6,249.0	-4,612.4	466.8	4,631.4	0.00	0.00	
10,500.0	90.00	180.00	6,249.0	-4,712.4	466.8	4,731.3	0.00	0.00	
10,600.0	90.00	180.00	6,249.0	-4,812.4	466.8	4,831.1	0.00	0.00	
10,700.0	90.00	180.00	6,249.0	-4,912.4	466.8	4,930.9	0.00	0.00	
10,800.0	90.00	180.00	6,249.0	-5,012.4	466.8	5,030.8	0.00	0.00	
10,900.0	90.00	180.00	6,249.0	-5,112.4	466.8	5,130.6	0.00	0.00	
10,969.6	90.00	180.00	6,249.0	-5,182.0	466.7	5,200.1	0.00	0.00	Exit 1550' radius: Burns/Bush
11,000.0	90.00	180.00	6,249.0	-5,212.4	466.7	5,230.5	0.00	0.00	
11,100.0	90.00	180.00	6,249.0	-5,312.4	466.7	5,330.3	0.00	0.00	
11,200.0	90.00	180.00	6,249.0	-5,412.4	466.7	5,430.1	0.00	0.00	
11,300.0	90.00	180.00	6,249.0	-5,512.4	466.7	5,530.0	0.00	0.00	
11,400.0	90.00	180.00	6,249.0	-5,612.4	466.7	5,629.8	0.00	0.00	
11,500.0	90.00	180.00	6,249.0	-5,712.4	466.7	5,729.6	0.00	0.00	
11,600.0	90.00	180.00	6,249.0	-5,812.4	466.7	5,829.5	0.00	0.00	
11,700.0	90.00	180.00	6,249.0	-5,912.4	466.7	5,929.3	0.00	0.00	
11,800.0	90.00	180.00	6,249.0	-6,012.4	466.7	6,029.2	0.00	0.00	
11,900.0	90.00	180.00	6,249.0	-6,112.4	466.7	6,129.0	0.00	0.00	
12,000.0	90.00	180.00	6,249.0	-6,212.4	466.7	6,228.8	0.00	0.00	
12,100.0	90.00	180.00	6,249.0	-6,312.4	466.7	6,328.7	0.00	0.00	
12,200.0	90.00	180.00	6,249.0	-6,412.4	466.7	6,428.5	0.00	0.00	
12,300.0	90.00	180.00	6,249.0	-6,512.4	466.7	6,528.4	0.00	0.00	
12,400.0	90.00	180.00	6,249.0	-6,612.4	466.7	6,628.2	0.00	0.00	
12,500.0	90.00	180.00	6,249.0	-6,712.4	466.7	6,728.0	0.00	0.00	
12,600.0	90.00	180.00	6,249.0	-6,812.4	466.7	6,827.9	0.00	0.00	
12,700.0	90.00	180.00	6,249.0	-6,912.4	466.7	6,927.7	0.00	0.00	
12,800.0	90.00	180.00	6,249.0	-7,012.4	466.6	7,027.6	0.00	0.00	
12,900.0	90.00	180.00	6,249.0	-7,112.4	466.6	7,127.4	0.00	0.00	
13,000.0	90.00	180.00	6,249.0	-7,212.4	466.6	7,227.2	0.00	0.00	
13,100.0	90.00	180.00	6,249.0	-7,312.4	466.6	7,327.1	0.00	0.00	
13,200.0	90.00	180.00	6,249.0	-7,412.4	466.6	7,426.9	0.00	0.00	
13,300.0	90.00	180.00	6,249.0	-7,512.4	466.6	7,526.7	0.00	0.00	
13,400.0	90.00	180.00	6,249.0	-7,612.4	466.6	7,626.6	0.00	0.00	
13,500.0	90.00	180.00	6,249.0	-7,712.4	466.6	7,726.4	0.00	0.00	
13,600.0	90.00	180.00	6,249.0	-7,812.4	466.6	7,826.3	0.00	0.00	
13,700.0	90.00	180.00	6,249.0	-7,912.4	466.6	7,926.1	0.00	0.00	
13,800.0	90.00	180.00	6,249.0	-8,012.4	466.6	8,025.9	0.00	0.00	
13,900.0	90.00	180.00	6,249.0	-8,112.4	466.6	8,125.8	0.00	0.00	
14,006.5	90.00	180.00	6,249.0	-8,218.8	466.6	8,232.1	0.00	0.00	PBHL @ 14,006' MD

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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-1504B PBHL(1,15 - plan hits target center - Point	0.00	0.00	6,249.0	-8,218.8	466.6	1,549,994.25	3,454,681.12	40° 49' 53.58 N	103° 51' 24.84 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,600.0	6,249.0	7" (1,090' FWL-2,158' FSL)	7	7-1/2

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,060.4	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
900.0	900.0	0.0	0.0	KOP @ 900' MD
1,100.0	1,099.8	-6.5	2.7	EOB; 4° Inc
5,776.0	5,764.4	-308.2	126.5	Start 11° Build
6,557.8	6,249.0	-788.8	323.8	EOB; 90° Inc - Start 3° Turn
7,301.9	6,249.0	-1,514.3	467.0	EOT; 180° Azi
7,964.6	6,249.0	-2,177.0	466.9	Enter1550' radius: Burns/Bush
10,969.6	6,249.0	-5,182.0	466.7	Exit 1550' radius: Burns/Bush
14,006.5	6,249.0	-8,218.8	466.6	PBHL @ 14,006' MD

Whiting Petroleum Corporation

Weld County, CO
S10-T10N-R58W
Razor #10E-1504B
HZ
Plan #1

Anticollision Report

06 November, 2013

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	14,006.5	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	9,466.8	6,145.9	379.4	297.6	4.640	CC, ES
BUSH 1 (EXISTING) - BURNS WELL - NO SURVEYS	9,500.0	6,145.9	380.8	298.5	4.623	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	124.3	120.5	32.846	CC, ES
Razor #10E-0301A - HZ - Plan #1	1,100.0	1,091.7	136.4	131.8	29.701	SF
Razor #10E-0302B - HZ - Plan #1	900.0	900.0	100.0	96.2	26.439	CC, ES
Razor #10E-0302B - HZ - Plan #1	1,100.0	1,096.6	108.1	103.5	23.514	SF
Razor #10E-0303A - HZ - Plan #1	900.0	900.0	82.1	78.3	21.693	CC, ES
Razor #10E-0303A - HZ - Plan #1	1,100.0	1,099.8	89.0	84.4	19.335	SF
Razor #10E-0304B - HZ - Plan #1	900.0	900.0	75.1	71.3	19.839	CC, ES
Razor #10E-0304B - HZ - Plan #1	1,200.0	1,199.6	88.1	83.1	17.562	SF
Razor #10E-1501A - HZ - Plan #1	900.0	900.0	98.5	94.7	26.032	CC, ES
Razor #10E-1501A - HZ - Plan #1	14,006.5	13,904.2	996.5	682.6	3.175	SF
Razor #10E-1502B - HZ - Plan #1	900.0	900.0	65.3	61.5	17.257	CC, ES
Razor #10E-1502B - HZ - Plan #1	14,006.5	13,945.0	659.5	342.9	2.083	SF
Razor #10E-1503A - HZ - Plan #1	900.0	900.0	33.2	29.4	8.775	CC, ES
Razor #10E-1503A - HZ - Plan #1	14,006.5	13,833.0	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-1504B
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-1504B	**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
8,200.0	6,249.0	6,145.9	6,145.9	48.4	6.9	90.00	-3,679.1	87.4	1,322.4	1,265.2	57.22	23.109	
8,300.0	6,249.0	6,145.9	6,145.9	50.2	6.9	90.00	-3,679.1	87.4	1,226.9	1,167.8	59.13	20.750	
8,400.0	6,249.0	6,145.9	6,145.9	52.0	6.9	90.00	-3,679.1	87.4	1,132.3	1,071.2	61.04	18.549	
8,500.0	6,249.0	6,145.9	6,145.9	53.8	6.9	90.00	-3,679.1	87.4	1,038.6	975.6	62.96	16.496	
8,600.0	6,249.0	6,145.9	6,145.9	55.6	6.9	90.00	-3,679.1	87.4	946.2	881.3	64.88	14.583	
8,700.0	6,249.0	6,145.9	6,145.9	57.4	6.9	90.00	-3,679.1	87.4	855.5	788.7	66.81	12.805	
8,800.0	6,249.0	6,145.9	6,145.9	59.3	6.9	90.00	-3,679.1	87.4	767.2	698.4	68.74	11.160	
8,900.0	6,249.0	6,145.9	6,145.9	61.1	6.9	90.00	-3,679.1	87.4	682.1	611.4	70.68	9.650	
9,000.0	6,249.0	6,145.9	6,145.9	62.9	6.9	90.00	-3,679.1	87.4	601.5	528.9	72.62	8.283	
9,100.0	6,249.0	6,145.9	6,145.9	64.8	6.9	90.00	-3,679.1	87.4	527.7	453.2	74.57	7.077	
9,200.0	6,249.0	6,145.9	6,145.9	66.6	6.9	90.00	-3,679.1	87.4	463.8	387.3	76.52	6.062	
9,300.0	6,249.0	6,145.9	6,145.9	68.5	6.9	90.00	-3,679.1	87.4	414.5	336.0	78.47	5.282	
9,400.0	6,249.0	6,145.9	6,145.9	70.4	6.9	90.00	-3,679.1	87.4	385.2	304.8	80.43	4.790	
9,466.8	6,249.0	6,145.9	6,145.9	71.6	6.9	90.00	-3,679.1	87.4	379.4	297.6	81.76	4.640	CC, ES
9,500.0	6,249.0	6,145.9	6,145.9	72.2	6.9	90.00	-3,679.1	87.4	380.8	298.5	82.38	4.623	SF
9,600.0	6,249.0	6,145.9	6,145.9	74.1	6.9	90.00	-3,679.1	87.4	402.1	317.8	84.34	4.768	
9,700.0	6,249.0	6,145.9	6,145.9	75.9	6.9	90.00	-3,679.1	87.4	445.3	359.0	86.30	5.160	
9,800.0	6,249.0	6,145.9	6,145.9	77.8	6.9	90.00	-3,679.1	87.4	504.9	416.7	88.27	5.721	
9,900.0	6,249.0	6,145.9	6,145.9	79.7	6.9	90.00	-3,679.1	87.4	575.8	485.6	90.23	6.382	
10,000.0	6,249.0	6,145.9	6,145.9	81.6	6.9	90.00	-3,679.1	87.4	654.4	562.2	92.20	7.098	
10,100.0	6,249.0	6,145.9	6,145.9	83.4	6.9	90.00	-3,679.1	87.4	738.2	644.0	94.17	7.839	
10,200.0	6,249.0	6,145.9	6,145.9	85.3	6.9	90.00	-3,679.1	87.4	825.5	729.4	96.14	8.587	
10,300.0	6,249.0	6,145.9	6,145.9	87.2	6.9	90.00	-3,679.1	87.4	915.5	817.4	98.11	9.331	
10,400.0	6,249.0	6,145.9	6,145.9	89.1	6.9	90.00	-3,679.1	87.4	1,007.4	907.3	100.08	10.065	
10,500.0	6,249.0	6,145.9	6,145.9	91.0	6.9	90.00	-3,679.1	87.4	1,100.6	998.6	102.06	10.785	
10,600.0	6,249.0	6,145.9	6,145.9	92.9	6.9	90.00	-3,679.1	87.4	1,195.0	1,091.0	104.03	11.487	
10,700.0	6,249.0	6,145.9	6,145.9	94.7	6.9	90.00	-3,679.1	87.4	1,290.2	1,184.2	106.01	12.171	

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-1504B
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-1504B	**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	-52.84	75.1	-99.0	124.3				
100.0	100.0	100.0	100.0	0.1	0.1	-52.84	75.1	-99.0	124.3	124.1	0.19	664.503	
200.0	200.0	200.0	200.0	0.3	0.3	-52.84	75.1	-99.0	124.3	123.6	0.64	195.221	
300.0	300.0	300.0	300.0	0.5	0.5	-52.84	75.1	-99.0	124.3	123.2	1.09	114.418	
400.0	400.0	400.0	400.0	0.8	0.8	-52.84	75.1	-99.0	124.3	122.7	1.54	80.923	
500.0	500.0	500.0	500.0	1.0	1.0	-52.84	75.1	-99.0	124.3	122.3	1.99	62.598	
600.0	600.0	600.0	600.0	1.2	1.2	-52.84	75.1	-99.0	124.3	121.8	2.43	51.040	
700.0	700.0	700.0	700.0	1.4	1.4	-52.84	75.1	-99.0	124.3	121.4	2.88	43.085	
800.0	800.0	800.0	800.0	1.7	1.7	-52.84	75.1	-99.0	124.3	120.9	3.33	37.275	
900.0	900.0	900.0	900.0	1.9	1.9	-52.84	75.1	-99.0	124.3	120.5	3.78	32.846	CC, ES
1,000.0	1,000.0	996.2	996.2	2.1	2.1	150.17	76.5	-99.7	127.3	123.1	4.20	30.328	
1,100.0	1,099.8	1,091.7	1,091.6	2.3	2.3	152.06	80.9	-101.7	136.4	131.8	4.59	29.701	SF
1,200.0	1,199.6	1,190.4	1,190.0	2.5	2.5	154.45	87.1	-104.6	148.9	143.9	5.00	29.784	
1,300.0	1,299.3	1,289.4	1,288.8	2.7	2.8	156.47	93.4	-107.6	161.7	156.3	5.41	29.869	
1,400.0	1,399.1	1,388.4	1,387.6	2.9	3.0	158.19	99.6	-110.5	174.7	168.9	5.84	29.937	
1,500.0	1,498.9	1,487.5	1,486.4	3.1	3.3	159.68	105.9	-113.4	187.8	181.6	6.26	29.992	
1,600.0	1,598.6	1,586.5	1,585.2	3.3	3.5	160.97	112.2	-116.3	201.0	194.3	6.69	30.038	
1,700.0	1,698.4	1,685.5	1,683.9	3.6	3.7	162.10	118.4	-119.2	214.3	207.2	7.13	30.077	
1,800.0	1,798.1	1,784.6	1,782.7	3.8	4.0	163.10	124.7	-122.1	227.7	220.2	7.56	30.111	
1,900.0	1,897.9	1,883.6	1,881.5	4.1	4.2	163.98	130.9	-125.0	241.2	233.2	8.00	30.141	
2,000.0	1,997.6	1,982.6	1,980.3	4.3	4.5	164.78	137.2	-127.9	254.7	246.2	8.44	30.167	
2,100.0	2,097.4	2,081.6	2,079.1	4.5	4.7	165.49	143.5	-130.9	268.2	259.3	8.88	30.190	
2,200.0	2,197.2	2,180.7	2,177.9	4.8	5.0	166.14	149.7	-133.8	281.8	272.4	9.33	30.210	
2,300.0	2,296.9	2,279.7	2,276.7	5.0	5.2	166.72	156.0	-136.7	295.4	285.6	9.77	30.228	
2,400.0	2,396.7	2,378.7	2,375.4	5.3	5.5	167.26	162.3	-139.6	309.0	298.8	10.22	30.245	
2,500.0	2,496.4	2,477.7	2,474.2	5.5	5.7	167.75	168.5	-142.5	322.7	312.0	10.66	30.260	
2,600.0	2,596.2	2,576.8	2,573.0	5.8	6.0	168.20	174.8	-145.4	336.3	325.2	11.11	30.273	
2,700.0	2,695.9	2,675.8	2,671.8	6.1	6.2	168.61	181.1	-148.3	350.0	338.5	11.56	30.286	
2,800.0	2,795.7	2,774.8	2,770.6	6.3	6.5	169.00	187.3	-151.2	363.7	351.7	12.01	30.297	
2,900.0	2,895.4	2,873.9	2,869.4	6.6	6.7	169.35	193.6	-154.2	377.5	365.0	12.45	30.307	
3,000.0	2,995.2	2,972.9	2,968.2	6.8	7.0	169.68	199.8	-157.1	391.2	378.3	12.90	30.317	
3,100.0	3,095.0	3,071.9	3,066.9	7.1	7.2	169.99	206.1	-160.0	404.9	391.6	13.35	30.325	
3,200.0	3,194.7	3,170.9	3,165.7	7.3	7.5	170.28	212.4	-162.9	418.7	404.9	13.80	30.334	
3,300.0	3,294.5	3,270.0	3,264.5	7.6	7.7	170.55	218.6	-165.8	432.5	418.2	14.25	30.341	
3,400.0	3,394.2	3,369.0	3,363.3	7.9	8.0	170.80	224.9	-168.7	446.3	431.6	14.70	30.348	
3,500.0	3,494.0	3,468.0	3,462.1	8.1	8.2	171.04	231.2	-171.6	460.1	444.9	15.16	30.354	
3,600.0	3,593.7	3,567.0	3,560.9	8.4	8.5	171.26	237.4	-174.5	473.8	458.2	15.61	30.360	
3,700.0	3,693.5	3,666.1	3,659.7	8.6	8.7	171.47	243.7	-177.5	487.6	471.6	16.06	30.366	
3,800.0	3,793.3	3,765.1	3,758.4	8.9	9.0	171.67	250.0	-180.4	501.5	484.9	16.51	30.371	
3,900.0	3,893.0	3,864.1	3,857.2	9.2	9.2	171.86	256.2	-183.3	515.3	498.3	16.96	30.376	
4,000.0	3,992.8	3,963.2	3,956.0	9.4	9.5	172.04	262.5	-186.2	529.1	511.7	17.42	30.381	
4,100.0	4,092.5	4,062.2	4,054.8	9.7	9.7	172.21	268.7	-189.1	542.9	525.0	17.87	30.385	
4,200.0	4,192.3	4,161.2	4,153.6	9.9	10.0	172.37	275.0	-192.0	556.7	538.4	18.32	30.389	
4,300.0	4,292.0	4,260.2	4,252.4	10.2	10.3	172.53	281.3	-194.9	570.6	551.8	18.77	30.393	
4,400.0	4,391.8	4,359.3	4,351.2	10.5	10.5	172.67	287.5	-197.8	584.4	565.2	19.23	30.396	
4,500.0	4,491.5	4,458.3	4,449.9	10.7	10.8	172.81	293.8	-200.8	598.3	578.6	19.68	30.400	
4,600.0	4,591.3	4,557.3	4,548.7	11.0	11.0	172.94	300.1	-203.7	612.1	592.0	20.13	30.403	
4,700.0	4,691.1	4,656.3	4,647.5	11.3	11.3	173.07	306.3	-206.6	625.9	605.4	20.59	30.406	
4,800.0	4,790.8	4,755.4	4,746.3	11.5	11.5	173.19	312.6	-209.5	639.8	618.8	21.04	30.409	
4,900.0	4,890.6	4,854.4	4,845.1	11.8	11.8	173.31	318.9	-212.4	653.6	632.2	21.49	30.412	
5,000.0	4,990.3	4,953.4	4,943.9	12.0	12.0	173.42	325.1	-215.3	667.5	645.6	21.95	30.414	
5,100.0	5,090.1	5,052.4	5,042.7	12.3	12.3	173.53	331.4	-218.2	681.4	659.0	22.40	30.417	

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-1504B
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-1504B	**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	5,189.8	5,151.5	5,141.4	12.6	12.5	173.63	337.6	-221.2	695.2	672.4	22.85	30.419	
5,300.0	5,289.6	5,250.5	5,240.2	12.8	12.8	173.73	343.9	-224.1	709.1	685.8	23.31	30.421	
5,400.0	5,389.4	5,349.5	5,339.0	13.1	13.0	173.83	350.2	-227.0	722.9	699.2	23.76	30.423	
5,500.0	5,489.1	5,448.6	5,437.8	13.4	13.3	173.92	356.4	-229.9	736.8	712.6	24.22	30.425	
5,600.0	5,588.9	5,547.6	5,536.6	13.6	13.6	174.01	362.7	-232.8	750.7	726.0	24.67	30.427	
5,700.0	5,688.6	5,646.6	5,635.4	13.9	13.8	174.09	369.0	-235.7	764.5	739.4	25.13	30.429	
5,800.0	5,788.3	5,700.0	5,688.4	14.1	14.0	174.09	373.9	-238.0	782.1	756.7	25.38	30.810	
5,900.0	5,885.9	5,729.0	5,717.0	14.5	14.1	173.69	378.7	-240.2	819.3	794.6	24.77	33.081	
6,000.0	5,977.8	5,750.0	5,737.4	15.1	14.1	172.81	383.0	-242.2	879.0	855.7	23.34	37.661	
6,100.0	6,060.4	5,782.4	5,768.6	15.9	14.3	171.23	391.1	-246.0	955.9	934.6	21.27	44.948	
6,200.0	6,130.8	5,800.0	5,785.2	16.8	14.4	167.46	396.2	-248.4	1,045.2	1,026.3	18.93	55.223	
6,300.0	6,186.5	5,800.0	5,785.2	18.0	14.4	152.66	396.2	-248.4	1,141.9	1,121.9	20.03	57.005	
6,400.0	6,225.3	5,800.0	5,785.2	19.3	14.4	46.83	396.2	-248.4	1,241.5	1,215.4	26.12	47.535	
6,500.0	6,245.8	5,800.0	5,785.2	20.8	14.4	13.98	396.2	-248.4	1,340.0	1,327.9	12.07	111.001	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	-41.38	75.1	-66.1	100.0				
100.0	100.0	100.0	100.0	0.1	0.1	-41.38	75.1	-66.1	100.0	99.8	0.19	534.874	
200.0	200.0	200.0	200.0	0.3	0.3	-41.38	75.1	-66.1	100.0	99.4	0.64	157.138	
300.0	300.0	300.0	300.0	0.5	0.5	-41.38	75.1	-66.1	100.0	98.9	1.09	92.098	
400.0	400.0	400.0	400.0	0.8	0.8	-41.38	75.1	-66.1	100.0	98.5	1.54	65.137	
500.0	500.0	500.0	500.0	1.0	1.0	-41.38	75.1	-66.1	100.0	98.0	1.99	50.387	
600.0	600.0	600.0	600.0	1.2	1.2	-41.38	75.1	-66.1	100.0	97.6	2.43	41.083	
700.0	700.0	700.0	700.0	1.4	1.4	-41.38	75.1	-66.1	100.0	97.1	2.88	34.680	
800.0	800.0	800.0	800.0	1.7	1.7	-41.38	75.1	-66.1	100.0	96.7	3.33	30.004	
900.0	900.0	900.0	900.0	1.9	1.9	-41.38	75.1	-66.1	100.0	96.2	3.78	26.439	CC, ES
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	161.25	75.1	-66.1	101.7	97.5	4.21	24.179	
1,100.0	1,099.8	1,096.6	1,096.6	2.3	2.3	162.49	76.6	-66.5	108.1	103.5	4.60	23.514	SF
1,200.0	1,199.6	1,192.5	1,192.3	2.5	2.6	164.52	81.4	-67.6	119.4	114.4	5.00	23.849	
1,300.0	1,299.3	1,291.2	1,290.8	2.7	2.8	166.58	88.1	-69.1	132.5	127.0	5.42	24.432	
1,400.0	1,399.1	1,390.2	1,389.6	2.9	3.0	168.27	94.8	-70.6	145.7	139.9	5.84	24.944	
1,500.0	1,498.9	1,489.3	1,488.4	3.1	3.2	169.69	101.5	-72.2	159.1	152.8	6.27	25.384	
1,600.0	1,598.6	1,588.3	1,587.2	3.3	3.5	170.88	108.3	-73.7	172.5	165.8	6.70	25.764	
1,700.0	1,698.4	1,687.3	1,686.0	3.6	3.7	171.90	115.0	-75.3	186.0	178.9	7.13	26.094	
1,800.0	1,798.1	1,786.4	1,784.8	3.8	4.0	172.78	121.7	-76.8	199.6	192.0	7.56	26.383	
1,900.0	1,897.9	1,885.4	1,883.6	4.1	4.2	173.55	128.5	-78.4	213.2	205.2	8.00	26.639	
2,000.0	1,997.6	1,984.4	1,982.4	4.3	4.4	174.23	135.2	-79.9	226.8	218.4	8.44	26.866	
2,100.0	2,097.4	2,083.5	2,081.2	4.5	4.7	174.83	141.9	-81.5	240.5	231.6	8.88	27.069	
2,200.0	2,197.2	2,182.5	2,179.9	4.8	4.9	175.37	148.7	-83.0	254.2	244.8	9.33	27.251	
2,300.0	2,296.9	2,281.5	2,278.7	5.0	5.2	175.85	155.4	-84.5	267.9	258.1	9.77	27.415	
2,400.0	2,396.7	2,380.6	2,377.5	5.3	5.4	176.29	162.1	-86.1	281.6	271.4	10.22	27.563	
2,500.0	2,496.4	2,479.6	2,476.3	5.5	5.7	176.68	168.9	-87.6	295.3	284.6	10.66	27.698	
2,600.0	2,596.2	2,578.6	2,575.1	5.8	5.9	177.04	175.6	-89.2	309.0	297.9	11.11	27.821	
2,700.0	2,695.9	2,677.7	2,673.9	6.1	6.2	177.37	182.3	-90.7	322.8	311.2	11.56	27.934	
2,800.0	2,795.7	2,776.7	2,772.7	6.3	6.4	177.67	189.1	-92.3	336.6	324.6	12.00	28.038	
2,900.0	2,895.4	2,875.7	2,871.5	6.6	6.7	177.95	195.8	-93.8	350.3	337.9	12.45	28.134	
3,000.0	2,995.2	2,974.8	2,970.3	6.8	6.9	178.20	202.5	-95.4	364.1	351.2	12.90	28.222	
3,100.0	3,095.0	3,073.8	3,069.1	7.1	7.2	178.44	209.3	-96.9	377.9	364.5	13.35	28.304	
3,200.0	3,194.7	3,172.8	3,167.9	7.3	7.4	178.66	216.0	-98.4	391.7	377.9	13.80	28.380	
3,300.0	3,294.5	3,271.9	3,266.7	7.6	7.7	178.87	222.7	-100.0	405.5	391.2	14.25	28.452	
3,400.0	3,394.2	3,370.9	3,365.5	7.9	7.9	179.06	229.5	-101.5	419.3	404.6	14.70	28.518	
3,500.0	3,494.0	3,469.9	3,464.2	8.1	8.2	179.24	236.2	-103.1	433.1	417.9	15.15	28.580	
3,600.0	3,593.7	3,569.0	3,563.0	8.4	8.4	179.41	242.9	-104.6	446.9	431.3	15.61	28.638	
3,700.0	3,693.5	3,668.0	3,661.8	8.6	8.7	179.57	249.7	-106.2	460.7	444.7	16.06	28.693	
3,800.0	3,793.3	3,767.0	3,760.6	8.9	8.9	179.72	256.4	-107.7	474.5	458.0	16.51	28.745	
3,900.0	3,893.0	3,866.1	3,859.4	9.2	9.2	179.86	263.1	-109.3	488.4	471.4	16.96	28.793	
4,000.0	3,992.8	3,965.1	3,958.2	9.4	9.4	180.00	269.9	-110.8	502.2	484.8	17.41	28.839	
4,100.0	4,092.5	4,064.1	4,057.0	9.7	9.7	-179.88	276.6	-112.3	516.0	498.1	17.87	28.882	
4,200.0	4,192.3	4,163.2	4,155.8	9.9	9.9	-179.76	283.3	-113.9	529.8	511.5	18.32	28.923	
4,300.0	4,292.0	4,262.2	4,254.6	10.2	10.2	-179.64	290.1	-115.4	543.7	524.9	18.77	28.962	
4,400.0	4,391.8	4,361.2	4,353.4	10.5	10.4	-179.53	296.8	-117.0	557.5	538.3	19.22	28.999	
4,500.0	4,491.5	4,460.3	4,452.2	10.7	10.7	-179.43	303.5	-118.5	571.3	551.7	19.68	29.035	
4,600.0	4,591.3	4,559.3	4,551.0	11.0	11.0	-179.33	310.3	-120.1	585.2	565.0	20.13	29.068	
4,700.0	4,691.1	4,658.3	4,649.7	11.3	11.2	-179.24	317.0	-121.6	599.0	578.4	20.58	29.100	
4,800.0	4,790.8	4,757.4	4,748.5	11.5	11.5	-179.15	323.7	-123.2	612.8	591.8	21.04	29.131	
4,900.0	4,890.6	4,856.4	4,847.3	11.8	11.7	-179.06	330.5	-124.7	626.7	605.2	21.49	29.160	
5,000.0	4,990.3	4,955.4	4,946.1	12.0	12.0	-178.98	337.2	-126.3	640.5	618.6	21.95	29.187	
5,100.0	5,090.1	5,054.5	5,044.9	12.3	12.2	-178.90	343.9	-127.8	654.4	632.0	22.40	29.214	

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-1504B
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-1504B	**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
5,200.0	5,189.8	5,153.5	5,143.7	12.6	12.5	-178.83	350.7	-129.3	668.2	645.4	22.85	29.240	
5,300.0	5,289.6	5,252.5	5,242.5	12.8	12.7	-178.76	357.4	-130.9	682.1	658.8	23.31	29.264	
5,400.0	5,389.4	5,351.6	5,341.3	13.1	13.0	-178.69	364.1	-132.4	695.9	672.1	23.76	29.287	
5,500.0	5,489.1	5,450.6	5,440.1	13.4	13.2	-178.62	370.9	-134.0	709.8	685.5	24.22	29.310	
5,600.0	5,588.9	5,549.6	5,538.9	13.6	13.5	-178.56	377.6	-135.5	723.6	698.9	24.67	29.332	
5,700.0	5,688.6	5,648.7	5,637.7	13.9	13.7	-178.50	384.3	-137.1	737.5	712.3	25.12	29.352	
5,800.0	5,788.3	5,747.6	5,736.4	14.1	14.0	-178.43	391.1	-138.6	751.8	726.4	25.48	29.508	
5,900.0	5,885.9	5,800.0	5,788.6	14.5	14.1	-178.31	395.1	-139.5	781.3	756.4	24.89	31.395	
6,000.0	5,977.8	5,850.0	5,837.9	15.1	14.3	-178.05	403.1	-141.4	834.3	810.9	23.46	35.566	
6,100.0	6,060.4	5,850.0	5,837.9	15.9	14.3	-177.61	403.1	-141.4	906.3	885.1	21.16	42.834	
6,200.0	6,130.8	5,880.7	5,867.7	16.8	14.4	-176.66	410.3	-143.0	992.1	973.8	18.30	54.213	
6,300.0	6,186.5	5,900.0	5,886.2	18.0	14.5	-173.99	415.6	-144.2	1,087.2	1,072.0	15.16	71.706	
6,400.0	6,225.3	5,900.0	5,886.2	19.3	14.5	-122.48	415.6	-144.2	1,186.3	1,157.3	29.05	40.845	
6,500.0	6,245.8	5,900.0	5,886.2	20.8	14.5	-6.31	415.6	-144.2	1,285.8	1,276.1	9.73	132.173	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	-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	CC, ES
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	178.49	75.1	-33.2	83.8	79.6	4.21	19.930	
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	178.58	75.1	-33.2	89.0	84.4	4.61	19.335	SF
1,200.0	1,199.6	1,196.7	1,196.7	2.5	2.6	179.12	76.7	-33.1	97.5	92.5	5.01	19.463	
1,300.0	1,299.3	1,292.9	1,292.7	2.7	2.8	-179.65	81.5	-32.8	109.0	103.6	5.42	20.095	
1,400.0	1,399.1	1,391.7	1,391.3	2.9	3.0	-178.26	88.4	-32.3	122.3	116.4	5.85	20.907	
1,500.0	1,498.9	1,490.8	1,490.2	3.1	3.2	-177.13	95.3	-31.8	135.6	129.3	6.27	21.613	
1,600.0	1,598.6	1,589.9	1,589.0	3.3	3.5	-176.20	102.2	-31.4	148.9	142.2	6.70	22.221	
1,700.0	1,698.4	1,689.0	1,687.8	3.6	3.7	-175.43	109.1	-30.9	162.3	155.2	7.14	22.748	
1,800.0	1,798.1	1,788.0	1,786.7	3.8	3.9	-174.77	116.0	-30.5	175.8	168.2	7.57	23.209	
1,900.0	1,897.9	1,887.1	1,885.5	4.1	4.2	-174.21	122.9	-30.0	189.2	181.2	8.01	23.614	
2,000.0	1,997.6	1,986.2	1,984.3	4.3	4.4	-173.72	129.8	-29.5	202.7	194.2	8.45	23.974	
2,100.0	2,097.4	2,085.3	2,083.2	4.5	4.7	-173.29	136.7	-29.1	216.1	207.2	8.90	24.294	
2,200.0	2,197.2	2,184.3	2,182.0	4.8	4.9	-172.92	143.6	-28.6	229.6	220.3	9.34	24.581	
2,300.0	2,296.9	2,283.4	2,280.9	5.0	5.1	-172.58	150.5	-28.1	243.1	233.3	9.79	24.839	
2,400.0	2,396.7	2,382.5	2,379.7	5.3	5.4	-172.28	157.4	-27.7	256.6	246.4	10.23	25.072	
2,500.0	2,496.4	2,481.6	2,478.5	5.5	5.6	-172.01	164.3	-27.2	270.1	259.4	10.68	25.285	
2,600.0	2,596.2	2,580.6	2,577.4	5.8	5.9	-171.77	171.2	-26.8	283.6	272.5	11.13	25.478	
2,700.0	2,695.9	2,679.7	2,676.2	6.1	6.1	-171.54	178.0	-26.3	297.1	285.5	11.58	25.655	
2,800.0	2,795.7	2,778.8	2,775.0	6.3	6.4	-171.34	184.9	-25.8	310.6	298.6	12.03	25.818	
2,900.0	2,895.4	2,877.9	2,873.9	6.6	6.6	-171.16	191.8	-25.4	324.2	311.7	12.48	25.968	
3,000.0	2,995.2	2,976.9	2,972.7	6.8	6.9	-170.99	198.7	-24.9	337.7	324.7	12.93	26.107	
3,100.0	3,095.0	3,076.0	3,071.5	7.1	7.1	-170.83	205.6	-24.5	351.2	337.8	13.39	26.235	
3,200.0	3,194.7	3,175.1	3,170.4	7.3	7.4	-170.68	212.5	-24.0	364.7	350.9	13.84	26.355	
3,300.0	3,294.5	3,274.2	3,269.2	7.6	7.6	-170.55	219.4	-23.5	378.3	364.0	14.29	26.466	
3,400.0	3,394.2	3,373.2	3,368.0	7.9	7.9	-170.42	226.3	-23.1	391.8	377.0	14.75	26.570	
3,500.0	3,494.0	3,472.3	3,466.9	8.1	8.1	-170.30	233.2	-22.6	405.3	390.1	15.20	26.667	
3,600.0	3,593.7	3,571.4	3,565.7	8.4	8.4	-170.19	240.1	-22.1	418.9	403.2	15.65	26.759	
3,700.0	3,693.5	3,670.5	3,664.5	8.6	8.6	-170.09	247.0	-21.7	432.4	416.3	16.11	26.844	
3,800.0	3,793.3	3,769.6	3,763.4	8.9	8.9	-169.99	253.9	-21.2	445.9	429.4	16.56	26.925	
3,900.0	3,893.0	3,868.6	3,862.2	9.2	9.1	-169.90	260.8	-20.8	459.5	442.5	17.02	27.001	
4,000.0	3,992.8	3,967.7	3,961.0	9.4	9.4	-169.81	267.7	-20.3	473.0	455.5	17.47	27.073	
4,100.0	4,092.5	4,066.8	4,059.9	9.7	9.6	-169.73	274.6	-19.8	486.6	468.6	17.93	27.141	
4,200.0	4,192.3	4,165.9	4,158.7	9.9	9.9	-169.66	281.5	-19.4	500.1	481.7	18.38	27.205	
4,300.0	4,292.0	4,264.9	4,257.6	10.2	10.1	-169.58	288.4	-18.9	513.6	494.8	18.84	27.266	
4,400.0	4,391.8	4,364.0	4,356.4	10.5	10.4	-169.51	295.3	-18.5	527.2	507.9	19.29	27.324	
4,500.0	4,491.5	4,463.1	4,455.2	10.7	10.6	-169.45	302.2	-18.0	540.7	521.0	19.75	27.379	
4,600.0	4,591.3	4,562.2	4,554.1	11.0	10.9	-169.39	309.1	-17.5	554.3	534.1	20.21	27.431	
4,700.0	4,691.1	4,661.2	4,652.9	11.3	11.1	-169.33	316.0	-17.1	567.8	547.2	20.66	27.481	
4,800.0	4,790.8	4,760.3	4,751.7	11.5	11.4	-169.27	322.9	-16.6	581.4	560.3	21.12	27.529	
4,900.0	4,890.6	4,859.4	4,850.6	11.8	11.7	-169.21	329.8	-16.1	594.9	573.3	21.57	27.575	
5,000.0	4,990.3	4,958.5	4,949.4	12.0	11.9	-169.16	336.7	-15.7	608.5	586.4	22.03	27.618	
5,100.0	5,090.1	5,057.5	5,048.2	12.3	12.2	-169.11	343.5	-15.2	622.0	599.5	22.49	27.660	

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-1504B
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-1504B	**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	5,189.8	5,156.6	5,147.1	12.6	12.4	-169.07	350.4	-14.8	635.6	612.6	22.94	27.700	
5,300.0	5,289.6	5,255.7	5,245.9	12.8	12.7	-169.02	357.3	-14.3	649.1	625.7	23.40	27.738	
5,400.0	5,389.4	5,354.8	5,344.7	13.1	12.9	-168.98	364.2	-13.8	662.7	638.8	23.86	27.775	
5,500.0	5,489.1	5,453.9	5,443.6	13.4	13.2	-168.94	371.1	-13.4	676.2	651.9	24.32	27.810	
5,600.0	5,588.9	5,552.9	5,542.4	13.6	13.4	-168.90	378.0	-12.9	689.8	665.0	24.77	27.844	
5,700.0	5,688.6	5,652.0	5,641.2	13.9	13.7	-168.86	384.9	-12.5	703.3	678.1	25.23	27.877	
5,800.0	5,788.3	5,700.0	5,688.9	14.1	13.8	-168.69	390.1	-12.1	721.0	695.5	25.48	28.296	
5,900.0	5,885.9	5,750.0	5,737.9	14.5	14.0	-167.76	400.1	-11.4	759.0	734.0	24.95	30.415	
6,000.0	5,977.8	5,768.2	5,755.4	15.1	14.1	-165.94	404.9	-11.1	818.4	794.8	23.62	34.651	
6,100.0	6,060.4	5,800.0	5,785.7	15.9	14.2	-162.57	414.8	-10.5	895.4	873.6	21.85	40.976	
6,200.0	6,130.8	5,800.0	5,785.7	16.8	14.2	-154.52	414.8	-10.5	984.5	963.8	20.75	47.443	
6,300.0	6,186.5	5,817.5	5,802.0	18.0	14.3	-132.10	421.0	-10.0	1,080.6	1,055.2	25.37	42.594	
6,400.0	6,225.3	5,819.2	5,803.6	19.3	14.3	-63.02	421.6	-10.0	1,179.5	1,149.0	30.48	38.698	
6,500.0	6,245.8	5,800.0	5,785.7	20.8	14.2	-24.38	414.8	-10.5	1,277.7	1,260.9	16.80	76.065	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	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	CC, ES
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-158.16	75.1	0.0	76.7	72.5	4.21	18.230	
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	-159.50	75.1	0.0	81.6	76.9	4.61	17.703	
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	-161.08	75.1	0.0	88.1	83.1	5.02	17.562	SF
1,300.0	1,299.3	1,296.4	1,296.4	2.7	2.8	-162.04	76.6	0.5	96.3	90.9	5.43	17.731	
1,400.0	1,399.1	1,392.6	1,392.4	2.9	3.0	-162.14	81.2	2.0	107.6	101.7	5.85	18.384	
1,500.0	1,498.9	1,491.5	1,491.1	3.1	3.2	-161.88	87.7	4.2	120.6	114.3	6.28	19.204	
1,600.0	1,598.6	1,590.6	1,590.0	3.3	3.4	-161.66	94.3	6.3	133.7	126.9	6.71	19.914	
1,700.0	1,698.4	1,689.8	1,688.9	3.6	3.7	-161.49	100.9	8.5	146.7	139.6	7.15	20.528	
1,800.0	1,798.1	1,788.9	1,787.8	3.8	3.9	-161.34	107.4	10.7	159.8	152.2	7.59	21.062	
1,900.0	1,897.9	1,888.0	1,886.7	4.1	4.2	-161.21	114.0	12.8	172.8	164.8	8.03	21.530	
2,000.0	1,997.6	1,987.2	1,985.6	4.3	4.4	-161.10	120.6	15.0	185.9	177.4	8.47	21.943	
2,100.0	2,097.4	2,086.3	2,084.5	4.5	4.6	-161.01	127.2	17.2	198.9	190.0	8.92	22.310	
2,200.0	2,197.2	2,185.5	2,183.4	4.8	4.9	-160.93	133.7	19.3	212.0	202.6	9.36	22.637	
2,300.0	2,296.9	2,284.6	2,282.3	5.0	5.1	-160.86	140.3	21.5	225.0	215.2	9.81	22.932	
2,400.0	2,396.7	2,383.8	2,381.2	5.3	5.4	-160.79	146.9	23.7	238.1	227.8	10.26	23.197	
2,500.0	2,496.4	2,482.9	2,480.1	5.5	5.6	-160.73	153.4	25.8	251.1	240.4	10.72	23.438	
2,600.0	2,596.2	2,582.1	2,579.0	5.8	5.9	-160.68	160.0	28.0	264.2	253.0	11.17	23.657	
2,700.0	2,695.9	2,681.2	2,677.9	6.1	6.1	-160.63	166.6	30.2	277.3	265.6	11.62	23.857	
2,800.0	2,795.7	2,780.3	2,776.8	6.3	6.3	-160.59	173.1	32.3	290.3	278.2	12.08	24.041	
2,900.0	2,895.4	2,879.5	2,875.7	6.6	6.6	-160.55	179.7	34.5	303.4	290.8	12.53	24.210	
3,000.0	2,995.2	2,978.6	2,974.6	6.8	6.8	-160.51	186.3	36.7	316.4	303.4	12.99	24.366	
3,100.0	3,095.0	3,077.8	3,073.5	7.1	7.1	-160.48	192.8	38.8	329.5	316.0	13.44	24.510	
3,200.0	3,194.7	3,176.9	3,172.4	7.3	7.3	-160.45	199.4	41.0	342.5	328.6	13.90	24.645	
3,300.0	3,294.5	3,276.1	3,271.3	7.6	7.6	-160.42	206.0	43.1	355.6	341.2	14.36	24.769	
3,400.0	3,394.2	3,375.2	3,370.2	7.9	7.8	-160.40	212.5	45.3	368.7	353.8	14.81	24.886	
3,500.0	3,494.0	3,474.3	3,469.1	8.1	8.1	-160.37	219.1	47.5	381.7	366.4	15.27	24.994	
3,600.0	3,593.7	3,573.5	3,568.0	8.4	8.3	-160.35	225.7	49.6	394.8	379.0	15.73	25.096	
3,700.0	3,693.5	3,672.6	3,666.9	8.6	8.6	-160.33	232.2	51.8	407.8	391.6	16.19	25.192	
3,800.0	3,793.3	3,771.8	3,765.8	8.9	8.8	-160.31	238.8	54.0	420.9	404.2	16.65	25.282	
3,900.0	3,893.0	3,870.9	3,864.7	9.2	9.1	-160.29	245.4	56.1	433.9	416.8	17.11	25.367	
4,000.0	3,992.8	3,970.1	3,963.6	9.4	9.3	-160.27	252.0	58.3	447.0	429.4	17.57	25.447	
4,100.0	4,092.5	4,069.2	4,062.5	9.7	9.6	-160.25	258.5	60.5	460.1	442.0	18.03	25.522	
4,200.0	4,192.3	4,168.3	4,161.4	9.9	9.8	-160.24	265.1	62.6	473.1	454.6	18.49	25.594	
4,300.0	4,292.0	4,267.5	4,260.3	10.2	10.1	-160.22	271.7	64.8	486.2	467.2	18.95	25.661	
4,400.0	4,391.8	4,366.6	4,359.2	10.5	10.3	-160.21	278.2	67.0	499.2	479.8	19.41	25.726	
4,500.0	4,491.5	4,465.8	4,458.1	10.7	10.6	-160.19	284.8	69.1	512.3	492.4	19.87	25.787	
4,600.0	4,591.3	4,564.9	4,557.1	11.0	10.8	-160.18	291.4	71.3	525.3	505.0	20.33	25.845	
4,700.0	4,691.1	4,664.1	4,656.0	11.3	11.1	-160.17	297.9	73.5	538.4	517.6	20.79	25.900	
4,800.0	4,790.8	4,763.2	4,754.9	11.5	11.4	-160.16	304.5	75.6	551.5	530.2	21.25	25.953	
4,900.0	4,890.6	4,862.4	4,853.8	11.8	11.6	-160.15	311.1	77.8	564.5	542.8	21.71	26.004	
5,000.0	4,990.3	4,961.5	4,952.7	12.0	11.9	-160.13	317.6	79.9	577.6	555.4	22.17	26.052	
5,100.0	5,090.1	5,060.6	5,051.6	12.3	12.1	-160.12	324.2	82.1	590.6	568.0	22.63	26.098	

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-1504B
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-1504B	**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	5,189.8	5,159.8	5,150.5	12.6	12.4	-160.11	330.8	84.3	603.7	580.6	23.09	26.142	
5,300.0	5,289.6	5,258.9	5,249.4	12.8	12.6	-160.11	337.3	86.4	616.8	593.2	23.55	26.185	
5,400.0	5,389.4	5,358.1	5,348.3	13.1	12.9	-160.10	343.9	88.6	629.8	605.8	24.02	26.225	
5,500.0	5,489.1	5,457.2	5,447.2	13.4	13.1	-160.09	350.5	90.8	642.9	618.4	24.48	26.264	
5,600.0	5,588.9	5,556.4	5,546.1	13.6	13.4	-160.08	357.0	92.9	655.9	631.0	24.94	26.302	
5,700.0	5,688.6	5,655.5	5,645.0	13.9	13.6	-160.07	363.6	95.1	669.0	643.6	25.40	26.338	
5,800.0	5,788.3	5,754.6	5,743.8	14.1	13.9	-159.94	370.2	97.3	682.6	656.8	25.78	26.481	
5,900.0	5,885.9	5,800.0	5,789.1	14.5	14.0	-158.91	373.8	98.4	711.0	685.7	25.31	28.088	
6,000.0	5,977.8	5,850.0	5,838.4	15.1	14.2	-156.81	381.6	101.0	762.0	737.8	24.27	31.394	
6,100.0	6,060.4	5,874.5	5,862.1	15.9	14.3	-152.60	387.1	102.8	831.8	808.8	23.01	36.146	
6,200.0	6,130.8	5,900.0	5,886.6	16.8	14.4	-144.68	393.9	105.1	915.3	892.5	22.77	40.198	
6,300.0	6,186.5	5,900.0	5,886.6	18.0	14.4	-125.78	393.9	105.1	1,007.6	980.8	26.85	37.535	
6,400.0	6,225.3	5,900.0	5,886.6	19.3	14.4	-85.76	393.9	105.1	1,104.4	1,071.2	33.19	33.271	
6,500.0	6,245.8	5,900.0	5,886.6	20.8	14.4	-46.66	393.9	105.1	1,201.3	1,175.0	26.35	45.600	
6,600.0	6,249.0	5,900.0	5,886.6	22.3	14.4	-31.29	393.9	105.1	1,295.9	1,275.3	20.54	63.080	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	-98.5	98.5				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-98.5	98.5	98.3	0.19	526.646	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-98.5	98.5	97.8	0.64	154.721	
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-98.5	98.5	97.4	1.09	90.681	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-98.5	98.5	96.9	1.54	64.135	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-98.5	98.5	96.5	1.99	49.612	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-98.5	98.5	96.1	2.43	40.451	
700.0	700.0	700.0	700.0	1.4	1.4	-90.00	0.0	-98.5	98.5	95.6	2.88	34.147	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-98.5	98.5	95.2	3.33	29.542	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-98.5	98.5	94.7	3.78	26.032	CC, ES
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	113.24	0.0	-98.5	99.2	95.0	4.20	23.583	
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	115.92	0.0	-98.5	101.3	96.7	4.61	21.996	
1,200.0	1,199.6	1,199.6	1,199.6	2.5	2.6	119.35	0.0	-98.5	104.6	99.6	5.02	20.822	
1,300.0	1,299.3	1,298.6	1,298.6	2.7	2.8	121.66	-1.6	-99.1	108.5	103.1	5.42	20.025	
1,400.0	1,399.1	1,397.7	1,397.6	2.9	2.9	122.10	-6.4	-100.9	113.2	107.4	5.80	19.510	
1,500.0	1,498.9	1,497.6	1,497.2	3.1	3.1	121.65	-12.9	-103.4	118.3	112.1	6.21	19.058	
1,600.0	1,598.6	1,597.5	1,596.8	3.3	3.3	121.24	-19.4	-106.0	123.4	116.8	6.63	18.616	
1,700.0	1,698.4	1,697.3	1,696.4	3.6	3.5	120.85	-25.9	-108.5	128.5	121.4	7.06	18.194	
1,800.0	1,798.1	1,797.2	1,796.1	3.8	3.7	120.50	-32.4	-111.0	133.6	126.1	7.51	17.794	
1,900.0	1,897.9	1,897.1	1,895.7	4.1	4.0	120.17	-38.9	-113.5	138.7	130.7	7.96	17.420	
2,000.0	1,997.6	1,996.9	1,995.3	4.3	4.2	119.87	-45.4	-116.0	143.8	135.4	8.42	17.071	
2,100.0	2,097.4	2,096.8	2,094.9	4.5	4.4	119.58	-51.9	-118.5	148.9	140.0	8.89	16.746	
2,200.0	2,197.2	2,196.7	2,194.6	4.8	4.6	119.32	-58.4	-121.0	154.0	144.6	9.37	16.444	
2,300.0	2,296.9	2,296.5	2,294.2	5.0	4.9	119.07	-64.9	-123.5	159.1	149.3	9.84	16.163	
2,400.0	2,396.7	2,396.4	2,393.8	5.3	5.1	118.84	-71.4	-126.0	164.2	153.9	10.33	15.903	
2,500.0	2,496.4	2,496.3	2,493.4	5.5	5.4	118.62	-77.9	-128.5	169.4	158.5	10.81	15.661	
2,600.0	2,596.2	2,596.1	2,593.0	5.8	5.6	118.42	-84.4	-131.0	174.5	163.2	11.30	15.435	
2,700.0	2,695.9	2,696.0	2,692.7	6.1	5.8	118.22	-90.9	-133.5	179.6	167.8	11.80	15.225	
2,800.0	2,795.7	2,795.9	2,792.3	6.3	6.1	118.04	-97.4	-136.1	184.7	172.4	12.29	15.029	
2,900.0	2,895.4	2,895.7	2,891.9	6.6	6.3	117.87	-103.9	-138.6	189.9	177.1	12.79	14.846	
3,000.0	2,995.2	2,995.6	2,991.5	6.8	6.6	117.70	-110.4	-141.1	195.0	181.7	13.29	14.675	
3,100.0	3,095.0	3,095.5	3,091.2	7.1	6.8	117.55	-116.8	-143.6	200.1	186.3	13.79	14.514	
3,200.0	3,194.7	3,195.3	3,190.8	7.3	7.1	117.40	-123.3	-146.1	205.3	191.0	14.29	14.363	
3,300.0	3,294.5	3,295.2	3,290.4	7.6	7.3	117.26	-129.8	-148.6	210.4	195.6	14.79	14.222	
3,400.0	3,394.2	3,395.1	3,390.0	7.9	7.6	117.13	-136.3	-151.1	215.5	200.2	15.30	14.088	
3,500.0	3,494.0	3,494.9	3,489.7	8.1	7.9	117.00	-142.8	-153.6	220.7	204.9	15.80	13.962	
3,600.0	3,593.7	3,594.8	3,589.3	8.4	8.1	116.88	-149.3	-156.1	225.8	209.5	16.31	13.843	
3,700.0	3,693.5	3,694.7	3,688.9	8.6	8.4	116.76	-155.8	-158.6	230.9	214.1	16.82	13.731	
3,800.0	3,793.3	3,794.5	3,788.5	8.9	8.6	116.65	-162.3	-161.1	236.1	218.7	17.33	13.625	
3,900.0	3,893.0	3,894.4	3,888.1	9.2	8.9	116.54	-168.8	-163.6	241.2	223.4	17.84	13.524	
4,000.0	3,992.8	3,994.3	3,987.8	9.4	9.1	116.44	-175.3	-166.1	246.4	228.0	18.35	13.428	
4,100.0	4,092.5	4,094.1	4,087.4	9.7	9.4	116.34	-181.8	-168.7	251.5	232.6	18.86	13.337	
4,200.0	4,192.3	4,194.0	4,187.0	9.9	9.7	116.25	-188.3	-171.2	256.6	237.3	19.37	13.251	
4,300.0	4,292.0	4,293.9	4,286.6	10.2	9.9	116.16	-194.8	-173.7	261.8	241.9	19.88	13.169	
4,400.0	4,391.8	4,393.7	4,386.3	10.5	10.2	116.07	-201.3	-176.2	266.9	246.5	20.39	13.090	
4,500.0	4,491.5	4,493.6	4,485.9	10.7	10.4	115.99	-207.8	-178.7	272.1	251.2	20.90	13.015	
4,600.0	4,591.3	4,593.5	4,585.5	11.0	10.7	115.91	-214.3	-181.2	277.2	255.8	21.42	12.944	
4,700.0	4,691.1	4,693.3	4,685.1	11.3	10.9	115.83	-220.8	-183.7	282.4	260.4	21.93	12.875	
4,800.0	4,790.8	4,793.2	4,784.8	11.5	11.2	115.76	-227.3	-186.2	287.5	265.1	22.44	12.810	
4,900.0	4,890.6	4,893.1	4,884.4	11.8	11.5	115.68	-233.8	-188.7	292.6	269.7	22.96	12.747	
5,000.0	4,990.3	4,992.9	4,984.0	12.0	11.7	115.61	-240.3	-191.2	297.8	274.3	23.47	12.687	
5,100.0	5,090.1	5,092.8	5,083.6	12.3	12.0	115.55	-246.8	-193.7	302.9	279.0	23.99	12.629	

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-1504B
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-1504B	**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	5,189.8	5,192.7	5,183.3	12.6	12.2	115.48	-253.3	-196.2	308.1	283.6	24.50	12.574	
5,300.0	5,289.6	5,292.5	5,282.9	12.8	12.5	115.42	-259.8	-198.7	313.2	288.2	25.02	12.521	
5,400.0	5,389.4	5,392.4	5,382.5	13.1	12.8	115.36	-266.3	-201.3	318.4	292.8	25.53	12.470	
5,500.0	5,489.1	5,492.3	5,482.1	13.4	13.0	115.30	-272.8	-203.8	323.5	297.5	26.05	12.420	
5,600.0	5,588.9	5,592.1	5,581.7	13.6	13.3	115.24	-279.3	-206.3	328.7	302.1	26.56	12.373	
5,700.0	5,688.6	5,686.0	5,675.3	13.9	13.5	115.05	-286.2	-208.9	334.2	307.1	27.08	12.341	
5,800.0	5,788.3	5,767.2	5,754.8	14.1	13.9	113.01	-301.7	-214.9	344.0	316.4	27.63	12.452	
5,900.0	5,885.9	5,850.0	5,832.1	14.5	14.3	108.99	-329.1	-225.5	364.8	336.5	28.28	12.902	
6,000.0	5,977.8	5,918.0	5,891.4	15.1	14.7	104.60	-359.9	-237.3	397.1	368.1	29.07	13.659	
6,100.0	6,060.4	5,986.6	5,946.5	15.9	15.2	99.65	-398.0	-252.1	439.1	408.9	30.16	14.558	
6,200.0	6,130.8	6,050.0	5,992.2	16.8	15.8	94.29	-438.9	-267.9	488.5	456.9	31.61	15.453	
6,300.0	6,186.5	6,110.7	6,030.6	18.0	16.4	88.67	-482.7	-284.8	543.3	510.0	33.29	16.318	
6,400.0	6,225.3	6,167.2	6,061.3	19.3	17.1	82.90	-527.0	-301.8	601.6	566.6	35.02	17.180	
6,500.0	6,245.8	6,221.0	6,085.5	20.8	17.7	77.21	-571.8	-319.1	662.0	625.3	36.67	18.052	
6,600.0	6,249.0	6,273.7	6,104.4	22.3	18.4	75.41	-617.6	-336.8	722.9	684.1	38.79	18.633	
6,700.0	6,249.0	6,331.3	6,119.1	23.8	19.2	78.09	-669.5	-356.8	783.1	741.6	41.55	18.848	
6,800.0	6,249.0	6,394.3	6,128.2	25.2	20.1	79.90	-727.7	-379.3	841.7	797.4	44.30	18.999	
6,900.0	6,249.0	6,491.5	6,130.0	26.7	21.5	81.08	-818.6	-413.6	897.3	849.9	47.39	18.933	
7,000.0	6,249.0	6,661.4	6,130.0	28.3	23.8	82.11	-981.1	-463.0	943.1	891.8	51.32	18.378	
7,100.0	6,249.0	6,849.8	6,130.0	29.8	26.5	82.76	-1,165.6	-500.8	975.6	919.9	55.69	17.517	
7,200.0	6,249.0	7,051.4	6,130.0	31.4	29.5	83.09	-1,366.1	-520.9	993.4	933.0	60.39	16.449	
7,300.0	6,249.0	7,197.8	6,130.0	32.9	31.8	83.15	-1,512.4	-523.0	997.1	932.8	64.25	15.518	
7,400.0	6,249.0	7,297.8	6,130.0	34.5	33.4	83.15	-1,612.4	-523.0	997.1	929.5	67.56	14.757	
7,500.0	6,249.0	7,397.8	6,130.0	36.2	35.0	83.15	-1,712.4	-523.0	997.0	926.1	70.97	14.050	
7,600.0	6,249.0	7,497.8	6,130.0	37.9	36.7	83.15	-1,812.4	-523.0	997.0	922.6	74.41	13.399	
7,700.0	6,249.0	7,597.8	6,130.0	39.6	38.4	83.15	-1,912.4	-523.0	997.0	919.1	77.89	12.801	
7,800.0	6,249.0	7,697.8	6,130.0	41.3	40.2	83.15	-2,012.4	-523.0	997.0	915.6	81.40	12.248	
7,900.0	6,249.0	7,797.8	6,130.0	43.1	41.9	83.15	-2,112.4	-523.0	997.0	912.1	84.94	11.738	
8,000.0	6,249.0	7,897.8	6,130.0	44.8	43.7	83.15	-2,212.4	-523.0	997.0	908.5	88.50	11.266	
8,100.0	6,249.0	7,997.8	6,130.0	46.6	45.4	83.15	-2,312.4	-523.0	997.0	904.9	92.08	10.827	
8,200.0	6,249.0	8,097.8	6,130.0	48.4	47.2	83.15	-2,412.4	-523.0	997.0	901.3	95.68	10.419	
8,300.0	6,249.0	8,197.7	6,130.0	50.2	49.0	83.15	-2,512.4	-522.9	997.0	897.7	99.30	10.040	
8,400.0	6,249.0	8,297.7	6,130.0	52.0	50.8	83.15	-2,612.4	-522.9	997.0	894.0	102.94	9.685	
8,500.0	6,249.0	8,397.7	6,130.0	53.8	52.6	83.15	-2,712.4	-522.9	997.0	890.4	106.58	9.354	
8,600.0	6,249.0	8,497.7	6,130.0	55.6	54.4	83.15	-2,812.4	-522.9	996.9	886.7	110.24	9.043	
8,700.0	6,249.0	8,597.7	6,130.0	57.4	56.2	83.15	-2,912.4	-522.9	996.9	883.0	113.91	8.752	
8,800.0	6,249.0	8,697.7	6,130.0	59.3	58.1	83.15	-3,012.4	-522.9	996.9	879.3	117.59	8.478	
8,900.0	6,249.0	8,797.7	6,130.0	61.1	59.9	83.15	-3,112.4	-522.9	996.9	875.6	121.28	8.220	
9,000.0	6,249.0	8,897.7	6,130.0	62.9	61.8	83.15	-3,212.4	-522.9	996.9	871.9	124.97	7.977	
9,100.0	6,249.0	8,997.7	6,130.0	64.8	63.6	83.15	-3,312.4	-522.9	996.9	868.2	128.68	7.747	
9,200.0	6,249.0	9,097.7	6,130.0	66.6	65.5	83.15	-3,412.4	-522.9	996.9	864.5	132.39	7.530	
9,300.0	6,249.0	9,197.7	6,130.0	68.5	67.3	83.15	-3,512.4	-522.9	996.9	860.8	136.10	7.324	
9,400.0	6,249.0	9,297.7	6,130.0	70.4	69.2	83.14	-3,612.4	-522.9	996.9	857.0	139.83	7.129	
9,500.0	6,249.0	9,397.7	6,130.0	72.2	71.0	83.14	-3,712.4	-522.9	996.9	853.3	143.55	6.944	
9,600.0	6,249.0	9,497.7	6,130.0	74.1	72.9	83.14	-3,812.4	-522.9	996.9	849.6	147.29	6.768	
9,700.0	6,249.0	9,597.7	6,130.0	75.9	74.8	83.14	-3,912.4	-522.9	996.8	845.8	151.02	6.601	
9,800.0	6,249.0	9,697.7	6,130.0	77.8	76.6	83.14	-4,012.4	-522.9	996.8	842.1	154.76	6.441	
9,900.0	6,249.0	9,797.7	6,130.0	79.7	78.5	83.14	-4,112.4	-522.9	996.8	838.3	158.51	6.289	
10,000.0	6,249.0	9,897.7	6,130.0	81.6	80.4	83.14	-4,212.4	-522.9	996.8	834.6	162.25	6.144	
10,100.0	6,249.0	9,997.7	6,130.0	83.4	82.3	83.14	-4,312.4	-522.9	996.8	830.8	166.01	6.005	
10,200.0	6,249.0	10,097.7	6,130.0	85.3	84.1	83.14	-4,412.4	-522.9	996.8	827.0	169.76	5.872	
10,300.0	6,249.0	10,197.7	6,130.0	87.2	86.0	83.14	-4,512.4	-522.9	996.8	823.3	173.52	5.745	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	6,249.0	10,297.7	6,130.0	89.1	87.9	83.14	-4,612.4	-522.9	996.8	819.5	177.28	5.623	
10,500.0	6,249.0	10,397.7	6,130.0	91.0	89.8	83.14	-4,712.4	-522.9	996.8	815.7	181.04	5.506	
10,600.0	6,249.0	10,497.7	6,130.0	92.9	91.7	83.14	-4,812.4	-522.9	996.8	812.0	184.80	5.394	
10,700.0	6,249.0	10,597.7	6,130.0	94.7	93.6	83.14	-4,912.4	-522.9	996.8	808.2	188.57	5.286	
10,800.0	6,249.0	10,697.7	6,130.0	96.6	95.4	83.14	-5,012.4	-522.9	996.8	804.4	192.34	5.182	
10,900.0	6,249.0	10,797.7	6,130.0	98.5	97.3	83.14	-5,112.4	-522.9	996.7	800.6	196.11	5.083	
11,000.0	6,249.0	10,897.7	6,130.0	100.4	99.2	83.14	-5,212.4	-522.9	996.7	796.9	199.88	4.987	
11,100.0	6,249.0	10,997.7	6,130.0	102.3	101.1	83.14	-5,312.4	-522.9	996.7	793.1	203.66	4.894	
11,200.0	6,249.0	11,097.7	6,130.0	104.2	103.0	83.14	-5,412.4	-522.9	996.7	789.3	207.43	4.805	
11,300.0	6,249.0	11,197.7	6,130.0	106.1	104.9	83.14	-5,512.4	-522.8	996.7	785.5	211.21	4.719	
11,400.0	6,249.0	11,297.7	6,130.0	108.0	106.8	83.14	-5,612.4	-522.8	996.7	781.7	214.99	4.636	
11,500.0	6,249.0	11,397.7	6,130.0	109.9	108.7	83.14	-5,712.4	-522.8	996.7	777.9	218.77	4.556	
11,600.0	6,249.0	11,497.7	6,130.0	111.8	110.6	83.14	-5,812.4	-522.8	996.7	774.1	222.55	4.478	
11,700.0	6,249.0	11,597.7	6,130.0	113.7	112.5	83.14	-5,912.4	-522.8	996.7	770.3	226.34	4.404	
11,800.0	6,249.0	11,697.7	6,130.0	115.6	114.4	83.14	-6,012.4	-522.8	996.7	766.5	230.12	4.331	
11,900.0	6,249.0	11,797.7	6,130.0	117.5	116.3	83.14	-6,112.4	-522.8	996.7	762.7	233.91	4.261	
12,000.0	6,249.0	11,897.7	6,130.0	119.4	118.2	83.14	-6,212.4	-522.8	996.6	759.0	237.69	4.193	
12,100.0	6,249.0	11,997.7	6,130.0	121.3	120.1	83.14	-6,312.4	-522.8	996.6	755.2	241.48	4.127	
12,200.0	6,249.0	12,097.7	6,130.0	123.2	122.0	83.14	-6,412.4	-522.8	996.6	751.4	245.27	4.063	
12,300.0	6,249.0	12,197.7	6,130.0	125.1	123.9	83.14	-6,512.4	-522.8	996.6	747.6	249.06	4.002	
12,400.0	6,249.0	12,297.7	6,130.0	127.0	125.8	83.14	-6,612.4	-522.8	996.6	743.8	252.85	3.942	
12,500.0	6,249.0	12,397.7	6,130.0	128.9	127.7	83.14	-6,712.4	-522.8	996.6	740.0	256.64	3.883	
12,600.0	6,249.0	12,497.7	6,130.0	130.8	129.6	83.14	-6,812.4	-522.8	996.6	736.2	260.43	3.827	
12,700.0	6,249.0	12,597.7	6,130.0	132.7	131.5	83.14	-6,912.4	-522.8	996.6	732.4	264.23	3.772	
12,800.0	6,249.0	12,697.7	6,130.0	134.6	133.4	83.14	-7,012.4	-522.8	996.6	728.6	268.02	3.718	
12,900.0	6,249.0	12,797.7	6,130.0	136.5	135.3	83.14	-7,112.4	-522.8	996.6	724.8	271.81	3.666	
13,000.0	6,249.0	12,897.7	6,130.0	138.4	137.2	83.14	-7,212.4	-522.8	996.6	720.9	275.61	3.616	
13,100.0	6,249.0	12,997.7	6,130.0	140.3	139.1	83.14	-7,312.4	-522.8	996.5	717.1	279.41	3.567	
13,200.0	6,249.0	13,097.7	6,130.0	142.2	141.1	83.14	-7,412.4	-522.8	996.5	713.3	283.20	3.519	
13,300.0	6,249.0	13,197.7	6,130.0	144.1	143.0	83.14	-7,512.4	-522.8	996.5	709.5	287.00	3.472	
13,400.0	6,249.0	13,297.7	6,130.0	146.0	144.9	83.14	-7,612.4	-522.8	996.5	705.7	290.80	3.427	
13,500.0	6,249.0	13,397.7	6,130.0	147.9	146.8	83.14	-7,712.4	-522.8	996.5	701.9	294.59	3.383	
13,600.0	6,249.0	13,497.7	6,130.0	149.8	148.7	83.14	-7,812.4	-522.8	996.5	698.1	298.39	3.340	
13,700.0	6,249.0	13,597.7	6,130.0	151.8	150.6	83.14	-7,912.4	-522.8	996.5	694.3	302.19	3.298	
13,800.0	6,249.0	13,697.7	6,130.0	153.7	152.5	83.14	-8,012.4	-522.8	996.5	690.5	305.99	3.257	
13,900.0	6,249.0	13,797.7	6,130.0	155.6	154.4	83.14	-8,112.4	-522.8	996.5	686.7	309.79	3.217	
14,000.0	6,249.0	13,897.7	6,130.0	157.5	156.3	83.14	-8,212.4	-522.8	996.5	682.9	313.59	3.178	
14,006.5	6,249.0	13,904.2	6,130.0	157.6	156.4	83.14	-8,218.9	-522.8	996.5	682.6	313.84	3.175	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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	-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	CC, ES
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	113.71	0.0	-65.3	66.0	61.8	4.20	15.689	
1,100.0	1,099.8	1,099.8	1,099.8	2.3	2.3	117.69	0.0	-65.3	68.2	63.6	4.61	14.813	
1,200.0	1,199.6	1,199.7	1,199.7	2.5	2.5	121.24	-1.7	-65.5	71.7	66.7	4.99	14.359	
1,300.0	1,299.3	1,299.7	1,299.5	2.7	2.7	121.81	-6.9	-66.2	75.2	69.8	5.37	14.005	
1,400.0	1,399.1	1,399.6	1,399.2	2.9	2.9	121.05	-13.8	-67.1	78.7	72.9	5.77	13.636	
1,500.0	1,498.9	1,499.6	1,498.9	3.1	3.1	120.35	-20.7	-68.1	82.1	75.9	6.18	13.277	
1,600.0	1,598.6	1,599.5	1,598.6	3.3	3.3	119.71	-27.6	-69.0	85.6	79.0	6.62	12.935	
1,700.0	1,698.4	1,699.4	1,698.3	3.6	3.5	119.12	-34.5	-69.9	89.1	82.0	7.06	12.614	
1,800.0	1,798.1	1,799.4	1,798.0	3.8	3.7	118.57	-41.4	-70.8	92.6	85.1	7.52	12.315	
1,900.0	1,897.9	1,899.3	1,897.7	4.1	4.0	118.06	-48.4	-71.7	96.1	88.1	7.98	12.038	
2,000.0	1,997.6	1,999.2	1,997.4	4.3	4.2	117.59	-55.3	-72.7	99.6	91.1	8.45	11.782	
2,100.0	2,097.4	2,099.2	2,097.1	4.5	4.4	117.15	-62.2	-73.6	103.1	94.2	8.93	11.546	
2,200.0	2,197.2	2,199.1	2,196.7	4.8	4.7	116.74	-69.1	-74.5	106.6	97.2	9.41	11.328	
2,300.0	2,296.9	2,299.0	2,296.4	5.0	4.9	116.36	-76.0	-75.4	110.2	100.3	9.90	11.127	
2,400.0	2,396.7	2,399.0	2,396.1	5.3	5.2	116.00	-82.9	-76.4	113.7	103.3	10.39	10.941	
2,500.0	2,496.4	2,498.9	2,495.8	5.5	5.4	115.66	-89.8	-77.3	117.2	106.3	10.88	10.770	
2,600.0	2,596.2	2,598.8	2,595.5	5.8	5.6	115.34	-96.7	-78.2	120.8	109.4	11.38	10.610	
2,700.0	2,695.9	2,698.8	2,695.2	6.1	5.9	115.04	-103.6	-79.1	124.3	112.4	11.88	10.462	
2,800.0	2,795.7	2,798.7	2,794.9	6.3	6.1	114.76	-110.5	-80.0	127.9	115.5	12.38	10.325	
2,900.0	2,895.4	2,898.6	2,894.6	6.6	6.4	114.49	-117.5	-81.0	131.4	118.5	12.89	10.197	
3,000.0	2,995.2	2,998.6	2,994.3	6.8	6.7	114.24	-124.4	-81.9	135.0	121.6	13.39	10.077	
3,100.0	3,095.0	3,098.5	3,094.0	7.1	6.9	114.00	-131.3	-82.8	138.5	124.6	13.90	9.965	
3,200.0	3,194.7	3,198.5	3,193.7	7.3	7.2	113.77	-138.2	-83.7	142.1	127.7	14.41	9.861	
3,300.0	3,294.5	3,298.4	3,293.4	7.6	7.4	113.55	-145.1	-84.6	145.6	130.7	14.92	9.762	
3,400.0	3,394.2	3,398.3	3,393.0	7.9	7.7	113.34	-152.0	-85.6	149.2	133.8	15.43	9.670	
3,500.0	3,494.0	3,498.3	3,492.7	8.1	7.9	113.15	-158.9	-86.5	152.7	136.8	15.94	9.583	
3,600.0	3,593.7	3,598.2	3,592.4	8.4	8.2	112.96	-165.8	-87.4	156.3	139.9	16.45	9.501	
3,700.0	3,693.5	3,698.1	3,692.1	8.6	8.4	112.78	-172.7	-88.3	159.9	142.9	16.97	9.424	
3,800.0	3,793.3	3,798.1	3,791.8	8.9	8.7	112.60	-179.6	-89.3	163.4	146.0	17.48	9.351	
3,900.0	3,893.0	3,898.0	3,891.5	9.2	9.0	112.44	-186.6	-90.2	167.0	149.0	17.99	9.282	
4,000.0	3,992.8	3,997.9	3,991.2	9.4	9.2	112.28	-193.5	-91.1	170.6	152.1	18.51	9.216	
4,100.0	4,092.5	4,097.9	4,090.9	9.7	9.5	112.13	-200.4	-92.0	174.2	155.1	19.03	9.154	
4,200.0	4,192.3	4,197.8	4,190.6	9.9	9.7	111.98	-207.3	-92.9	177.7	158.2	19.54	9.095	
4,300.0	4,292.0	4,297.7	4,290.3	10.2	10.0	111.84	-214.2	-93.9	181.3	161.2	20.06	9.038	
4,400.0	4,391.8	4,397.7	4,390.0	10.5	10.2	111.71	-221.1	-94.8	184.9	164.3	20.58	8.985	
4,500.0	4,491.5	4,497.6	4,489.7	10.7	10.5	111.58	-228.0	-95.7	188.5	167.4	21.09	8.934	
4,600.0	4,591.3	4,597.5	4,589.3	11.0	10.8	111.46	-234.9	-96.6	192.0	170.4	21.61	8.885	
4,700.0	4,691.1	4,697.5	4,689.0	11.3	11.0	111.34	-241.8	-97.6	195.6	173.5	22.13	8.838	
4,800.0	4,790.8	4,797.4	4,788.7	11.5	11.3	111.22	-248.7	-98.5	199.2	176.5	22.65	8.794	
4,900.0	4,890.6	4,897.3	4,888.4	11.8	11.5	111.11	-255.7	-99.4	202.8	179.6	23.17	8.751	
5,000.0	4,990.3	4,997.3	4,988.1	12.0	11.8	111.00	-262.6	-100.3	206.4	182.7	23.69	8.711	
5,100.0	5,090.1	5,097.2	5,087.8	12.3	12.1	110.90	-269.5	-101.2	209.9	185.7	24.21	8.671	

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-1504B
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-1504B	**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	5,189.8	5,197.2	5,187.5	12.6	12.3	110.80	-276.4	-102.2	213.5	188.8	24.73	8.634	
5,300.0	5,289.6	5,297.1	5,287.2	12.8	12.6	110.70	-283.3	-103.1	217.1	191.8	25.25	8.598	
5,400.0	5,389.4	5,397.0	5,386.9	13.1	12.9	110.60	-290.2	-104.0	220.7	194.9	25.77	8.563	
5,500.0	5,489.1	5,497.0	5,486.6	13.4	13.1	110.51	-297.1	-104.9	224.3	198.0	26.29	8.530	
5,600.0	5,588.9	5,596.9	5,586.3	13.6	13.4	110.43	-304.0	-105.9	227.8	201.0	26.81	8.498	
5,700.0	5,688.6	5,696.8	5,686.0	13.9	13.6	110.34	-310.9	-106.8	231.4	204.1	27.33	8.467	
5,800.0	5,788.3	5,795.2	5,784.1	14.1	13.9	110.17	-318.1	-107.7	235.3	207.4	27.85	8.448	
5,900.0	5,885.9	5,887.6	5,874.5	14.5	14.2	109.17	-336.0	-110.1	245.8	217.3	28.47	8.634	
6,000.0	5,977.8	5,978.4	5,959.0	15.1	14.7	107.37	-368.8	-114.5	265.4	236.1	29.33	9.048	
6,100.0	6,060.4	6,067.1	6,034.7	15.9	15.3	104.89	-414.4	-120.6	293.3	262.7	30.51	9.611	
6,200.0	6,130.8	6,153.4	6,099.9	16.8	16.1	101.85	-470.3	-128.0	328.2	296.0	32.15	10.208	
6,300.0	6,186.5	6,237.6	6,153.7	18.0	16.9	98.38	-534.4	-136.6	368.8	334.6	34.22	10.778	
6,400.0	6,225.3	6,320.2	6,195.7	19.3	17.8	94.61	-604.8	-146.0	413.9	377.2	36.64	11.296	
6,500.0	6,245.8	6,402.4	6,225.7	20.8	18.9	90.71	-680.5	-156.1	461.8	422.5	39.28	11.756	
6,600.0	6,249.0	6,485.8	6,243.6	22.3	20.1	89.32	-761.2	-166.9	510.7	468.6	42.10	12.132	
6,700.0	6,249.0	6,581.5	6,248.5	23.8	21.4	89.94	-855.8	-179.3	556.2	511.1	45.08	12.337	
6,800.0	6,249.0	6,714.6	6,248.5	25.2	23.2	89.95	-988.5	-190.6	592.8	544.3	48.47	12.228	
6,900.0	6,249.0	6,841.5	6,248.5	26.7	25.0	89.95	-1,115.3	-193.0	617.8	565.9	51.94	11.894	
7,000.0	6,249.0	6,939.8	6,248.5	28.3	26.6	89.96	-1,213.6	-193.0	636.1	581.0	55.16	11.532	
7,100.0	6,249.0	7,038.9	6,248.5	29.8	28.2	89.96	-1,312.7	-193.0	649.3	590.9	58.40	11.118	
7,200.0	6,249.0	7,138.6	6,248.5	31.4	29.9	89.96	-1,412.4	-193.0	657.2	595.7	61.57	10.675	
7,300.0	6,249.0	7,238.6	6,248.5	32.9	31.6	89.96	-1,512.4	-193.0	659.9	595.3	64.62	10.212	
7,400.0	6,249.0	7,338.6	6,248.5	34.5	33.3	89.96	-1,612.4	-193.0	659.9	591.9	68.02	9.703	
7,500.0	6,249.0	7,438.6	6,248.5	36.2	35.1	89.96	-1,712.4	-193.0	659.9	588.4	71.49	9.231	
7,600.0	6,249.0	7,538.6	6,248.5	37.9	36.8	89.96	-1,812.4	-193.0	659.9	584.9	75.01	8.798	
7,700.0	6,249.0	7,638.6	6,248.5	39.6	38.6	89.96	-1,912.4	-193.0	659.9	581.4	78.55	8.401	
7,800.0	6,249.0	7,738.6	6,248.5	41.3	40.4	89.96	-2,012.4	-193.0	659.9	577.8	82.12	8.035	
7,900.0	6,249.0	7,838.6	6,248.6	43.1	42.2	89.96	-2,112.4	-193.0	659.9	574.2	85.72	7.698	
8,000.0	6,249.0	7,938.6	6,248.6	44.8	44.0	89.96	-2,212.4	-193.0	659.9	570.6	89.34	7.387	
8,100.0	6,249.0	8,038.6	6,248.6	46.6	45.9	89.96	-2,312.4	-193.0	659.9	566.9	92.97	7.098	
8,200.0	6,249.0	8,138.6	6,248.6	48.4	47.7	89.96	-2,412.4	-193.0	659.9	563.3	96.63	6.829	
8,300.0	6,249.0	8,238.6	6,248.6	50.2	49.5	89.97	-2,512.4	-193.0	659.9	559.6	100.29	6.580	
8,400.0	6,249.0	8,338.6	6,248.6	52.0	51.4	89.97	-2,612.4	-193.0	659.9	555.9	103.97	6.347	
8,500.0	6,249.0	8,438.6	6,248.6	53.8	53.2	89.97	-2,712.4	-193.0	659.9	552.2	107.66	6.129	
8,600.0	6,249.0	8,538.6	6,248.6	55.6	55.1	89.97	-2,812.4	-193.0	659.9	548.5	111.36	5.925	
8,700.0	6,249.0	8,638.6	6,248.6	57.4	57.0	89.97	-2,912.4	-193.0	659.8	544.8	115.07	5.734	
8,800.0	6,249.0	8,738.6	6,248.6	59.3	58.8	89.97	-3,012.4	-193.0	659.8	541.0	118.79	5.554	
8,900.0	6,249.0	8,838.6	6,248.6	61.1	60.7	89.97	-3,112.4	-193.0	659.8	537.3	122.52	5.385	
9,000.0	6,249.0	8,938.6	6,248.6	62.9	62.6	89.97	-3,212.4	-193.0	659.8	533.6	126.25	5.226	
9,100.0	6,249.0	9,038.6	6,248.6	64.8	64.4	89.97	-3,312.4	-193.0	659.8	529.8	130.00	5.076	
9,200.0	6,249.0	9,138.6	6,248.7	66.6	66.3	89.97	-3,412.4	-193.0	659.8	526.1	133.74	4.933	
9,300.0	6,249.0	9,238.6	6,248.7	68.5	68.2	89.97	-3,512.4	-193.0	659.8	522.3	137.49	4.799	
9,400.0	6,249.0	9,338.6	6,248.7	70.4	70.1	89.97	-3,612.4	-193.0	659.8	518.5	141.25	4.671	
9,500.0	6,249.0	9,438.6	6,248.7	72.2	72.0	89.97	-3,712.4	-193.0	659.8	514.8	145.01	4.550	
9,600.0	6,249.0	9,538.6	6,248.7	74.1	73.8	89.97	-3,812.4	-193.0	659.8	511.0	148.78	4.435	
9,700.0	6,249.0	9,638.6	6,248.7	75.9	75.7	89.97	-3,912.4	-193.0	659.8	507.2	152.55	4.325	
9,800.0	6,249.0	9,738.6	6,248.7	77.8	77.6	89.97	-4,012.4	-193.0	659.8	503.4	156.32	4.221	
9,900.0	6,249.0	9,838.6	6,248.7	79.7	79.5	89.97	-4,112.4	-192.9	659.8	499.7	160.10	4.121	
10,000.0	6,249.0	9,938.6	6,248.7	81.6	81.4	89.98	-4,212.4	-192.9	659.8	495.9	163.88	4.026	
10,100.0	6,249.0	10,038.6	6,248.7	83.4	83.3	89.98	-4,312.4	-192.9	659.7	492.1	167.66	3.935	
10,200.0	6,249.0	10,138.6	6,248.7	85.3	85.2	89.98	-4,412.4	-192.9	659.7	488.3	171.44	3.848	
10,300.0	6,249.0	10,238.6	6,248.7	87.2	87.1	89.98	-4,512.4	-192.9	659.7	484.5	175.23	3.765	

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-1504B
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-1504B	**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	6,249.0	10,338.6	6,248.7	89.1	89.0	89.98	-4,612.4	-192.9	659.7	480.7	179.02	3.685	
10,500.0	6,249.0	10,438.6	6,248.7	91.0	90.9	89.98	-4,712.4	-192.9	659.7	476.9	182.81	3.609	
10,600.0	6,249.0	10,538.6	6,248.8	92.9	92.8	89.98	-4,812.4	-192.9	659.7	473.1	186.61	3.535	
10,700.0	6,249.0	10,638.6	6,248.8	94.7	94.7	89.98	-4,912.4	-192.9	659.7	469.3	190.40	3.465	
10,800.0	6,249.0	10,738.6	6,248.8	96.6	96.6	89.98	-5,012.4	-192.9	659.7	465.5	194.20	3.397	
10,900.0	6,249.0	10,838.6	6,248.8	98.5	98.5	89.98	-5,112.4	-192.9	659.7	461.7	198.00	3.332	
11,000.0	6,249.0	10,938.6	6,248.8	100.4	100.4	89.98	-5,212.4	-192.9	659.7	457.9	201.80	3.269	
11,100.0	6,249.0	11,038.6	6,248.8	102.3	102.3	89.98	-5,312.4	-192.9	659.7	454.1	205.61	3.208	
11,200.0	6,249.0	11,138.6	6,248.8	104.2	104.2	89.98	-5,412.4	-192.9	659.7	450.3	209.41	3.150	
11,300.0	6,249.0	11,238.6	6,248.8	106.1	106.1	89.98	-5,512.4	-192.9	659.7	446.4	213.22	3.094	
11,400.0	6,249.0	11,338.6	6,248.8	108.0	108.0	89.98	-5,612.4	-192.9	659.7	442.6	217.03	3.040	
11,500.0	6,249.0	11,438.6	6,248.8	109.9	109.9	89.98	-5,712.4	-192.9	659.6	438.8	220.83	2.987	
11,600.0	6,249.0	11,538.6	6,248.8	111.8	111.8	89.99	-5,812.4	-192.9	659.6	435.0	224.64	2.936	
11,700.0	6,249.0	11,638.6	6,248.8	113.7	113.7	89.99	-5,912.4	-192.9	659.6	431.2	228.46	2.887	
11,800.0	6,249.0	11,738.6	6,248.8	115.6	115.6	89.99	-6,012.4	-192.9	659.6	427.4	232.27	2.840	
11,900.0	6,249.0	11,838.6	6,248.8	117.5	117.5	89.99	-6,112.4	-192.9	659.6	423.5	236.08	2.794	
12,000.0	6,249.0	11,938.6	6,248.9	119.4	119.5	89.99	-6,212.4	-192.9	659.6	419.7	239.89	2.750	
12,100.0	6,249.0	12,038.6	6,248.9	121.3	121.4	89.99	-6,312.4	-192.9	659.6	415.9	243.71	2.707	
12,200.0	6,249.0	12,138.6	6,248.9	123.2	123.3	89.99	-6,412.4	-192.9	659.6	412.1	247.53	2.665	
12,300.0	6,249.0	12,238.6	6,248.9	125.1	125.2	89.99	-6,512.4	-192.9	659.6	408.2	251.34	2.624	
12,400.0	6,249.0	12,338.6	6,248.9	127.0	127.1	89.99	-6,612.4	-192.9	659.6	404.4	255.16	2.585	
12,500.0	6,249.0	12,438.6	6,248.9	128.9	129.0	89.99	-6,712.4	-192.9	659.6	400.6	258.98	2.547	
12,600.0	6,249.0	12,538.6	6,248.9	130.8	130.9	89.99	-6,812.4	-192.9	659.6	396.8	262.80	2.510	
12,700.0	6,249.0	12,638.5	6,248.9	132.7	132.8	89.99	-6,912.4	-192.9	659.6	392.9	266.62	2.474	
12,800.0	6,249.0	12,738.5	6,248.9	134.6	134.7	89.99	-7,012.4	-192.9	659.6	389.1	270.44	2.439	
12,900.0	6,249.0	12,838.5	6,248.9	136.5	136.6	89.99	-7,112.4	-192.9	659.5	385.3	274.26	2.405	
13,000.0	6,249.0	12,938.5	6,248.9	138.4	138.6	89.99	-7,212.4	-192.9	659.5	381.5	278.08	2.372	
13,100.0	6,249.0	13,038.5	6,248.9	140.3	140.5	89.99	-7,312.4	-192.9	659.5	377.6	281.90	2.340	
13,200.0	6,249.0	13,138.5	6,248.9	142.2	142.4	90.00	-7,412.4	-192.9	659.5	373.8	285.72	2.308	
13,300.0	6,249.0	13,238.5	6,248.9	144.1	144.3	90.00	-7,512.4	-192.9	659.5	370.0	289.55	2.278	
13,400.0	6,249.0	13,338.5	6,249.0	146.0	146.2	90.00	-7,612.4	-192.9	659.5	366.1	293.37	2.248	
13,500.0	6,249.0	13,438.5	6,249.0	147.9	148.1	90.00	-7,712.4	-192.9	659.5	362.3	297.19	2.219	
13,600.0	6,249.0	13,538.5	6,249.0	149.8	150.0	90.00	-7,812.4	-192.9	659.5	358.5	301.02	2.191	
13,700.0	6,249.0	13,638.5	6,249.0	151.8	151.9	90.00	-7,912.4	-192.9	659.5	354.6	304.84	2.163	
13,800.0	6,249.0	13,738.5	6,249.0	153.7	153.9	90.00	-8,012.4	-192.9	659.5	350.8	308.67	2.137	
13,900.0	6,249.0	13,838.5	6,249.0	155.6	155.8	90.00	-8,112.4	-192.9	659.5	347.0	312.50	2.110	
14,000.0	6,249.0	13,938.5	6,249.0	157.5	157.7	90.00	-8,212.4	-192.9	659.5	343.1	316.32	2.085	
14,006.5	6,249.0	13,945.0	6,249.0	157.6	157.8	90.00	-8,218.8	-192.9	659.5	342.9	316.57	2.083	SF

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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-1503A - 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	1,000.0	1,000.0	2.1	2.1	115.04	0.0	-33.2	33.9	29.7	4.20	8.062	
1,100.0	1,099.8	1,100.2	1,100.2	2.3	2.3	119.87	-1.7	-32.9	35.9	31.3	4.58	7.833	
1,200.0	1,199.6	1,200.6	1,200.4	2.5	2.5	121.46	-6.9	-32.0	37.8	32.8	4.95	7.642	
1,300.0	1,299.3	1,300.6	1,300.2	2.7	2.7	120.51	-13.8	-30.8	39.2	33.8	5.34	7.340	
1,400.0	1,399.1	1,400.6	1,399.9	2.9	2.9	119.63	-20.7	-29.6	40.6	34.8	5.75	7.055	
1,500.0	1,498.9	1,500.6	1,499.7	3.1	3.1	118.80	-27.5	-28.4	42.0	35.8	6.18	6.791	
1,600.0	1,598.6	1,600.6	1,599.4	3.3	3.3	118.03	-34.4	-27.3	43.4	36.7	6.62	6.549	
1,700.0	1,698.4	1,700.6	1,699.2	3.6	3.5	117.31	-41.3	-26.1	44.8	37.7	7.08	6.329	
1,800.0	1,798.1	1,800.5	1,798.9	3.8	3.8	116.63	-48.2	-24.9	46.2	38.7	7.54	6.128	
1,900.0	1,897.9	1,900.5	1,898.7	4.1	4.0	115.99	-55.0	-23.7	47.6	39.6	8.01	5.945	
2,000.0	1,997.6	2,000.5	1,998.4	4.3	4.2	115.39	-61.9	-22.5	49.1	40.6	8.49	5.779	
2,100.0	2,097.4	2,100.5	2,098.2	4.5	4.5	114.83	-68.8	-21.3	50.5	41.5	8.98	5.627	
2,200.0	2,197.2	2,200.5	2,197.9	4.8	4.7	114.29	-75.6	-20.1	52.0	42.5	9.47	5.489	
2,300.0	2,296.9	2,300.5	2,297.6	5.0	5.0	113.79	-82.5	-18.9	53.4	43.4	9.96	5.362	
2,400.0	2,396.7	2,400.5	2,397.4	5.3	5.2	113.31	-89.4	-17.8	54.9	44.4	10.46	5.246	
2,500.0	2,496.4	2,500.5	2,497.1	5.5	5.5	112.85	-96.3	-16.6	56.3	45.4	10.96	5.140	
2,600.0	2,596.2	2,600.4	2,596.9	5.8	5.7	112.42	-103.1	-15.4	57.8	46.3	11.46	5.042	
2,700.0	2,695.9	2,700.4	2,696.6	6.1	6.0	112.01	-110.0	-14.2	59.2	47.3	11.96	4.951	
2,800.0	2,795.7	2,800.4	2,796.4	6.3	6.2	111.62	-116.9	-13.0	60.7	48.2	12.47	4.867	
2,900.0	2,895.4	2,900.4	2,896.1	6.6	6.5	111.25	-123.8	-11.8	62.2	49.2	12.98	4.789	
3,000.0	2,995.2	3,000.4	2,995.9	6.8	6.7	110.90	-130.6	-10.6	63.6	50.1	13.49	4.717	
3,100.0	3,095.0	3,100.4	3,095.6	7.1	7.0	110.56	-137.5	-9.4	65.1	51.1	14.00	4.650	
3,200.0	3,194.7	3,200.4	3,195.3	7.3	7.2	110.23	-144.4	-8.3	66.6	52.1	14.52	4.587	
3,300.0	3,294.5	3,300.4	3,295.1	7.6	7.5	109.93	-151.3	-7.1	68.1	53.0	15.03	4.528	
3,400.0	3,394.2	3,400.4	3,394.8	7.9	7.8	109.63	-158.1	-5.9	69.5	54.0	15.55	4.473	
3,500.0	3,494.0	3,500.3	3,494.6	8.1	8.0	109.34	-165.0	-4.7	71.0	55.0	16.06	4.422	
3,600.0	3,593.7	3,600.3	3,594.3	8.4	8.3	109.07	-171.9	-3.5	72.5	55.9	16.58	4.373	
3,700.0	3,693.5	3,700.3	3,694.1	8.6	8.5	108.81	-178.7	-2.3	74.0	56.9	17.10	4.327	
3,800.0	3,793.3	3,800.3	3,793.8	8.9	8.8	108.56	-185.6	-1.1	75.5	57.9	17.62	4.284	
3,900.0	3,893.0	3,900.3	3,893.6	9.2	9.1	108.32	-192.5	0.1	77.0	58.8	18.14	4.243	
4,000.0	3,992.8	4,000.3	3,993.3	9.4	9.3	108.09	-199.4	1.2	78.5	59.8	18.66	4.205	
4,100.0	4,092.5	4,100.3	4,093.0	9.7	9.6	107.86	-206.2	2.4	79.9	60.8	19.18	4.168	
4,200.0	4,192.3	4,200.3	4,192.8	9.9	9.8	107.65	-213.1	3.6	81.4	61.7	19.70	4.134	
4,300.0	4,292.0	4,300.2	4,292.5	10.2	10.1	107.44	-220.0	4.8	82.9	62.7	20.22	4.101	
4,400.0	4,391.8	4,400.2	4,392.3	10.5	10.4	107.24	-226.9	6.0	84.4	63.7	20.74	4.070	
4,500.0	4,491.5	4,500.2	4,492.0	10.7	10.6	107.04	-233.7	7.2	85.9	64.6	21.27	4.040	
4,600.0	4,591.3	4,600.2	4,591.8	11.0	10.9	106.86	-240.6	8.4	87.4	65.6	21.79	4.012	
4,700.0	4,691.1	4,700.2	4,691.5	11.3	11.1	106.68	-247.5	9.5	88.9	66.6	22.31	3.985	
4,800.0	4,790.8	4,800.2	4,791.3	11.5	11.4	106.50	-254.3	10.7	90.4	67.6	22.83	3.959	
4,900.0	4,890.6	4,900.2	4,891.0	11.8	11.7	106.33	-261.2	11.9	91.9	68.5	23.36	3.934	
5,000.0	4,990.3	5,000.2	4,990.7	12.0	11.9	106.17	-268.1	13.1	93.4	69.5	23.88	3.911	
5,100.0	5,090.1	5,100.2	5,090.5	12.3	12.2	106.01	-275.0	14.3	94.9	70.5	24.41	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-1504B
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-1504B	**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-1503A - 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	5,189.8	5,200.1	5,190.2	12.6	12.4	105.86	-281.8	15.5	96.4	71.5	24.93	3.866	
5,300.0	5,289.6	5,300.1	5,290.0	12.8	12.7	105.71	-288.7	16.7	97.9	72.4	25.46	3.846	
5,400.0	5,389.4	5,400.1	5,389.7	13.1	13.0	105.57	-295.6	17.9	99.4	73.4	25.98	3.826	
5,500.0	5,489.1	5,500.1	5,489.5	13.4	13.2	105.43	-302.5	19.0	100.9	74.4	26.51	3.806	
5,600.0	5,588.9	5,600.1	5,589.2	13.6	13.5	105.29	-309.3	20.2	102.4	75.4	27.03	3.788	
5,700.0	5,688.6	5,700.4	5,689.1	13.9	13.8	104.12	-318.1	21.7	103.8	76.2	27.59	3.764	
5,800.0	5,788.3	5,797.9	5,783.5	14.1	14.2	94.78	-341.7	25.8	106.4	78.1	28.29	3.761	
5,900.0	5,885.9	5,890.7	5,867.6	14.5	14.7	83.74	-379.9	32.4	116.0	86.9	29.04	3.993	
6,000.0	5,977.8	5,980.0	5,940.9	15.1	15.4	75.16	-429.9	41.1	131.8	102.0	29.81	4.421	
6,100.0	6,060.4	6,066.3	6,002.5	15.9	16.2	69.14	-489.4	51.3	151.4	120.8	30.56	4.953	
6,200.0	6,130.8	6,150.0	6,052.0	16.8	17.1	65.16	-555.8	62.8	172.8	141.4	31.39	5.504	
6,300.0	6,186.5	6,232.1	6,089.4	18.0	18.1	62.67	-627.7	75.2	194.7	162.3	32.49	5.995	
6,400.0	6,225.3	6,312.7	6,114.6	19.3	19.2	61.26	-703.1	88.2	216.3	182.3	34.02	6.359	
6,500.0	6,245.8	6,392.5	6,127.5	20.8	20.4	60.68	-780.6	101.6	236.9	200.8	36.14	6.556	
6,600.0	6,249.0	6,475.3	6,129.5	22.3	21.6	61.65	-862.2	115.4	256.2	217.2	39.03	6.565	
6,700.0	6,249.0	6,562.3	6,129.5	23.8	22.8	63.76	-948.5	126.5	275.1	232.9	42.19	6.521	
6,800.0	6,249.0	6,648.5	6,129.5	25.2	24.0	65.55	-1,034.4	133.7	293.6	248.3	45.27	6.486	
6,900.0	6,249.0	6,734.1	6,129.5	26.7	25.2	67.08	-1,119.9	137.0	311.7	263.4	48.29	6.455	
7,000.0	6,249.0	6,827.8	6,129.5	28.3	26.6	68.43	-1,213.6	137.2	328.4	277.0	51.42	6.388	
7,100.0	6,249.0	6,926.9	6,129.5	29.8	28.3	69.37	-1,312.7	137.2	340.7	286.2	54.52	6.249	
7,200.0	6,249.0	7,026.6	6,129.5	31.4	30.0	69.91	-1,412.4	137.2	348.2	290.7	57.43	6.062	
7,300.0	6,249.0	7,126.6	6,129.6	32.9	31.7	70.09	-1,512.3	137.2	350.7	290.6	60.12	5.834	
7,400.0	6,249.0	7,226.6	6,129.6	34.5	33.4	70.09	-1,612.3	137.2	350.7	287.4	63.34	5.537	
7,500.0	6,249.0	7,326.6	6,129.6	36.2	35.2	70.09	-1,712.3	137.2	350.7	284.1	66.65	5.262	
7,600.0	6,249.0	7,426.6	6,129.6	37.9	37.0	70.09	-1,812.3	137.2	350.7	280.7	69.99	5.011	
7,700.0	6,249.0	7,526.6	6,129.6	39.6	38.8	70.10	-1,912.3	137.2	350.7	277.4	73.37	4.781	
7,800.0	6,249.0	7,626.6	6,129.6	41.3	40.6	70.10	-2,012.3	137.1	350.7	274.0	76.76	4.569	
7,900.0	6,249.0	7,726.6	6,129.6	43.1	42.4	70.10	-2,112.3	137.1	350.7	270.5	80.19	4.374	
8,000.0	6,249.0	7,826.6	6,129.6	44.8	44.2	70.10	-2,212.3	137.1	350.7	267.1	83.63	4.194	
8,100.0	6,249.0	7,926.6	6,129.6	46.6	46.0	70.10	-2,312.3	137.1	350.7	263.6	87.08	4.028	
8,200.0	6,249.0	8,026.6	6,129.6	48.4	47.9	70.10	-2,412.3	137.1	350.7	260.2	90.55	3.873	
8,300.0	6,249.0	8,126.6	6,129.6	50.2	49.7	70.10	-2,512.3	137.1	350.7	256.7	94.04	3.730	
8,400.0	6,249.0	8,226.6	6,129.6	52.0	51.6	70.10	-2,612.3	137.1	350.7	253.2	97.54	3.596	
8,500.0	6,249.0	8,326.6	6,129.6	53.8	53.4	70.10	-2,712.3	137.1	350.7	249.7	101.05	3.471	
8,600.0	6,249.0	8,426.6	6,129.6	55.6	55.3	70.11	-2,812.3	137.1	350.7	246.2	104.56	3.354	
8,700.0	6,249.0	8,526.6	6,129.6	57.4	57.2	70.11	-2,912.3	137.1	350.7	242.6	108.09	3.245	
8,800.0	6,249.0	8,626.6	6,129.7	59.3	59.0	70.11	-3,012.3	137.1	350.7	239.1	111.63	3.142	
8,900.0	6,249.0	8,726.6	6,129.7	61.1	60.9	70.11	-3,112.3	137.1	350.7	235.6	115.17	3.045	
9,000.0	6,249.0	8,826.6	6,129.7	62.9	62.8	70.11	-3,212.3	137.1	350.7	232.0	118.72	2.954	
9,100.0	6,249.0	8,926.6	6,129.7	64.8	64.6	70.11	-3,312.3	137.1	350.7	228.4	122.27	2.868	
9,200.0	6,249.0	9,026.6	6,129.7	66.6	66.5	70.11	-3,412.3	137.0	350.7	224.9	125.83	2.787	
9,300.0	6,249.0	9,126.6	6,129.7	68.5	68.4	70.11	-3,512.3	137.0	350.7	221.3	129.39	2.710	
9,400.0	6,249.0	9,226.6	6,129.7	70.4	70.3	70.11	-3,612.3	137.0	350.7	217.8	132.96	2.638	
9,500.0	6,249.0	9,326.6	6,129.7	72.2	72.2	70.12	-3,712.3	137.0	350.7	214.2	136.54	2.569	
9,600.0	6,249.0	9,426.6	6,129.7	74.1	74.1	70.12	-3,812.3	137.0	350.7	210.6	140.11	2.503	
9,700.0	6,249.0	9,526.6	6,129.7	75.9	76.0	70.12	-3,912.3	137.0	350.7	207.0	143.69	2.441	
9,800.0	6,249.0	9,626.6	6,129.7	77.8	77.8	70.12	-4,012.3	137.0	350.7	203.4	147.28	2.381	
9,900.0	6,249.0	9,726.6	6,129.7	79.7	79.7	70.12	-4,112.3	137.0	350.7	199.8	150.87	2.325	
10,000.0	6,249.0	9,826.6	6,129.7	81.6	81.6	70.12	-4,212.3	137.0	350.7	196.3	154.46	2.271	
10,100.0	6,249.0	9,926.6	6,129.7	83.4	83.5	70.12	-4,312.3	137.0	350.7	192.7	158.05	2.219	
10,200.0	6,249.0	10,026.6	6,129.7	85.3	85.4	70.12	-4,412.3	137.0	350.7	189.1	161.65	2.170	
10,300.0	6,249.0	10,126.6	6,129.8	87.2	87.3	70.12	-4,512.3	137.0	350.7	185.5	165.24	2.122	

Cathedral Energy Services

Anticollision Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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-1503A - 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	6,249.0	10,226.6	6,129.8	89.1	89.2	70.12	-4,612.3	137.0	350.7	181.9	168.84	2.077	
10,500.0	6,249.0	10,326.6	6,129.8	91.0	91.1	70.13	-4,712.3	137.0	350.7	178.3	172.45	2.034	
10,600.0	6,249.0	10,426.6	6,129.8	92.9	93.0	70.13	-4,812.3	136.9	350.7	174.7	176.05	1.992	
10,700.0	6,249.0	10,526.6	6,129.8	94.7	94.9	70.13	-4,912.3	136.9	350.7	171.0	179.66	1.952	
10,800.0	6,249.0	10,626.6	6,129.8	96.6	96.8	70.13	-5,012.3	136.9	350.7	167.4	183.26	1.914	
10,900.0	6,249.0	10,726.6	6,129.8	98.5	98.7	70.13	-5,112.3	136.9	350.7	163.8	186.87	1.877	
11,000.0	6,249.0	10,826.6	6,129.8	100.4	100.6	70.13	-5,212.3	136.9	350.7	160.2	190.49	1.841	
11,100.0	6,249.0	10,926.6	6,129.8	102.3	102.5	70.13	-5,312.3	136.9	350.7	156.6	194.10	1.807	
11,200.0	6,249.0	11,026.6	6,129.8	104.2	104.4	70.13	-5,412.3	136.9	350.7	153.0	197.71	1.774	
11,300.0	6,249.0	11,126.6	6,129.8	106.1	106.3	70.13	-5,512.3	136.9	350.7	149.4	201.33	1.742	
11,400.0	6,249.0	11,226.6	6,129.8	108.0	108.2	70.14	-5,612.3	136.9	350.7	145.8	204.94	1.711	
11,500.0	6,249.0	11,326.6	6,129.8	109.9	110.1	70.14	-5,712.3	136.9	350.7	142.1	208.56	1.682	
11,600.0	6,249.0	11,426.6	6,129.8	111.8	112.1	70.14	-5,812.3	136.9	350.7	138.5	212.18	1.653	
11,700.0	6,249.0	11,526.6	6,129.8	113.7	114.0	70.14	-5,912.3	136.9	350.7	134.9	215.80	1.625	
11,800.0	6,249.0	11,626.6	6,129.9	115.6	115.9	70.14	-6,012.3	136.9	350.7	131.3	219.42	1.598	
11,900.0	6,249.0	11,726.6	6,129.9	117.5	117.8	70.14	-6,112.3	136.9	350.7	127.7	223.04	1.572	
12,000.0	6,249.0	11,826.6	6,129.9	119.4	119.7	70.14	-6,212.3	136.8	350.7	124.0	226.66	1.547	
12,100.0	6,249.0	11,926.6	6,129.9	121.3	121.6	70.14	-6,312.3	136.8	350.7	120.4	230.29	1.523	
12,200.0	6,249.0	12,026.6	6,129.9	123.2	123.5	70.14	-6,412.3	136.8	350.7	116.8	233.91	1.499	Level 3
12,300.0	6,249.0	12,126.5	6,129.9	125.1	125.4	70.14	-6,512.3	136.8	350.7	113.2	237.54	1.476	Level 3
12,400.0	6,249.0	12,226.5	6,129.9	127.0	127.3	70.15	-6,612.3	136.8	350.7	109.5	241.16	1.454	Level 3
12,500.0	6,249.0	12,326.5	6,129.9	128.9	129.2	70.15	-6,712.3	136.8	350.7	105.9	244.79	1.433	Level 3
12,600.0	6,249.0	12,426.5	6,129.9	130.8	131.1	70.15	-6,812.3	136.8	350.7	102.3	248.42	1.412	Level 3
12,700.0	6,249.0	12,526.5	6,129.9	132.7	133.1	70.15	-6,912.3	136.8	350.7	98.6	252.05	1.391	Level 3
12,800.0	6,249.0	12,626.5	6,129.9	134.6	135.0	70.15	-7,012.3	136.8	350.7	95.0	255.68	1.372	Level 3
12,900.0	6,249.0	12,726.5	6,129.9	136.5	136.9	70.15	-7,112.3	136.8	350.7	91.4	259.30	1.352	Level 3
13,000.0	6,249.0	12,826.5	6,129.9	138.4	138.8	70.15	-7,212.3	136.8	350.7	87.8	262.93	1.334	Level 3
13,100.0	6,249.0	12,926.5	6,129.9	140.3	140.7	70.15	-7,312.3	136.8	350.7	84.1	266.57	1.316	Level 3
13,200.0	6,249.0	13,026.5	6,129.9	142.2	142.6	70.15	-7,412.3	136.8	350.7	80.5	270.20	1.298	Level 3
13,300.0	6,249.0	13,126.5	6,130.0	144.1	144.5	70.16	-7,512.3	136.8	350.7	76.9	273.83	1.281	Level 3
13,400.0	6,249.0	13,226.5	6,130.0	146.0	146.4	70.16	-7,612.3	136.8	350.7	73.2	277.46	1.264	Level 3
13,500.0	6,249.0	13,326.5	6,130.0	147.9	148.4	70.16	-7,712.3	136.7	350.7	69.6	281.09	1.248	Level 2
13,600.0	6,249.0	13,426.5	6,130.0	149.8	150.3	70.16	-7,812.3	136.7	350.7	66.0	284.73	1.232	Level 2
13,700.0	6,249.0	13,526.5	6,130.0	151.8	152.2	70.16	-7,912.3	136.7	350.7	62.3	288.36	1.216	Level 2
13,800.0	6,249.0	13,626.5	6,130.0	153.7	154.1	70.16	-8,012.3	136.7	350.7	58.7	291.99	1.201	Level 2
13,900.0	6,249.0	13,726.5	6,130.0	155.6	156.0	70.16	-8,112.3	136.7	350.7	55.1	295.63	1.186	Level 2
14,000.0	6,249.0	13,826.5	6,130.0	157.5	157.8	70.16	-8,212.3	136.7	350.7	51.5	299.17	1.172	Level 2
14,006.5	6,249.0	13,833.0	6,130.0	157.6	157.9	70.16	-8,218.8	136.7	350.7	51.3	299.38	1.171	Level 2, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #10E-1504B
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-1504B	**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-1504B
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.06°