

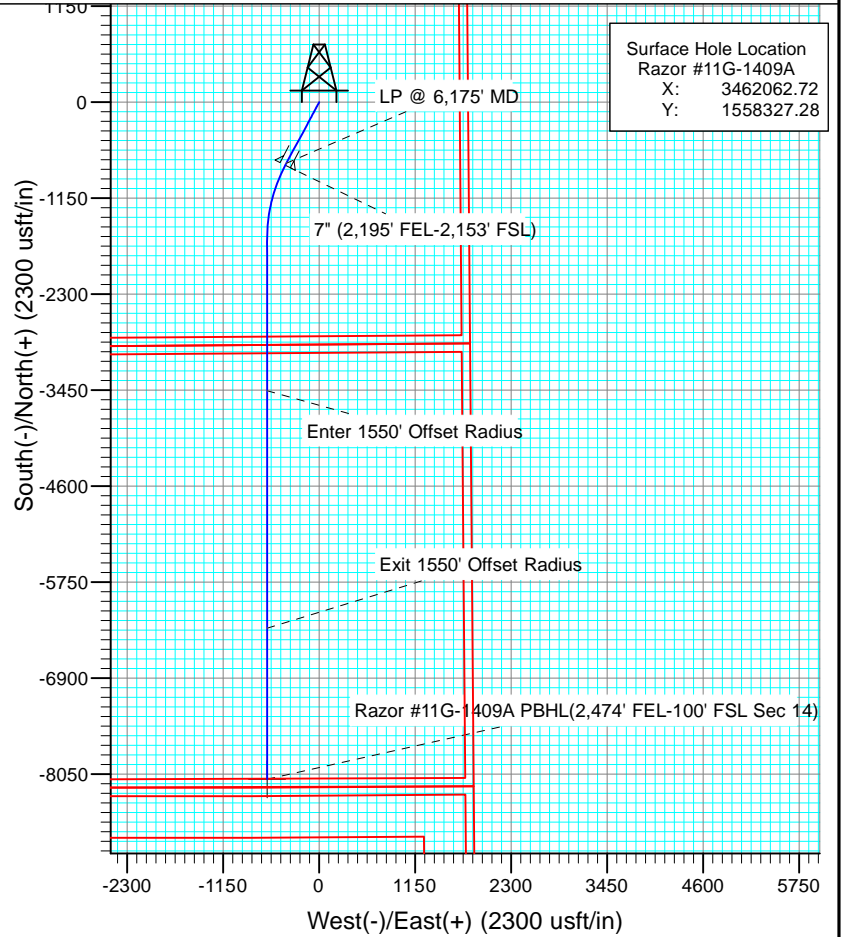
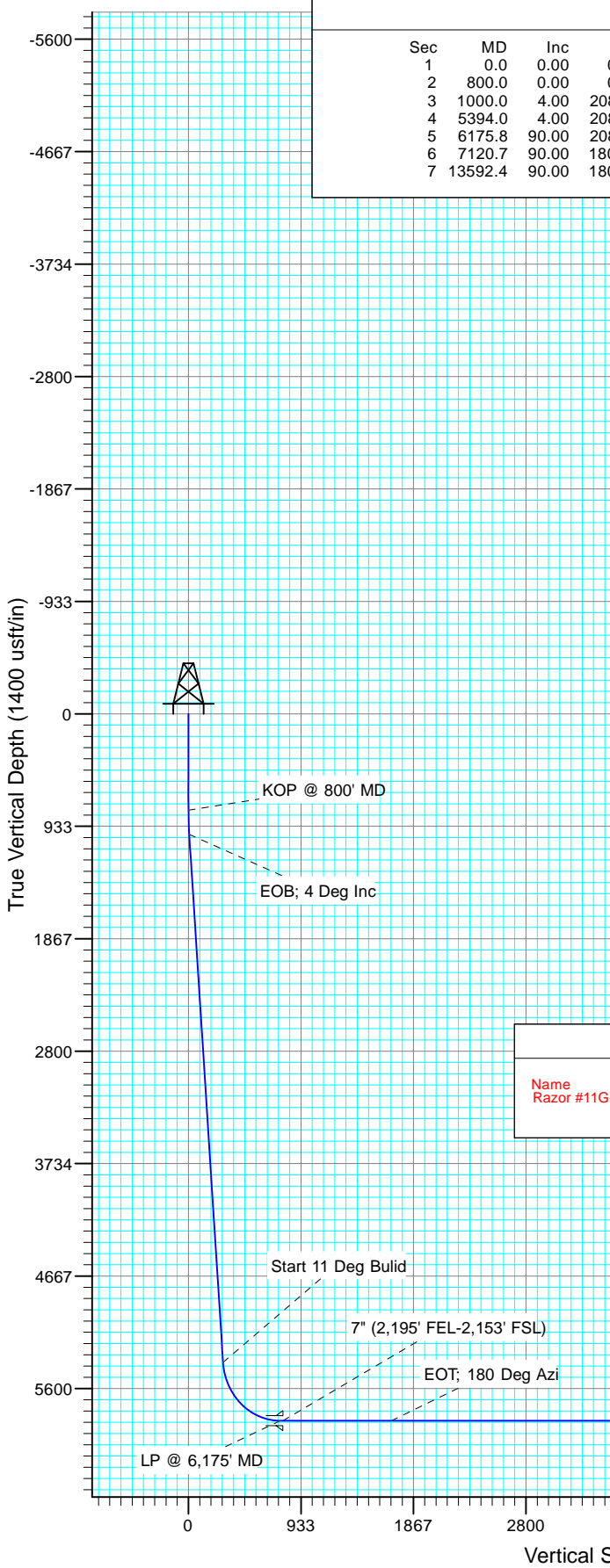


Project: Weld County, CO  
Site: S11-T10N-R58W  
Well: Razor #11G-1409A  
Wellbore: HZ  
Design: Plan #1



#### SECTION DETAILS

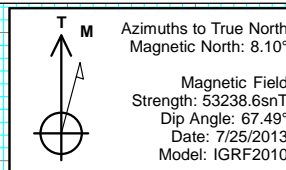
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	KOP @ 800' MD
3	1000.0	4.00	208.35	999.8	-6.1	-3.3	2.00	208.35	6.4	EOB; 4 Deg Inc
4	5394.0	4.00	208.35	5383.1	-275.9	-148.9	0.00	0.00	286.5	Start 11 Deg Bulid
5	6175.8	90.00	208.35	5867.7	-733.2	-395.6	11.00	0.00	761.4	LP @ 6,175' MD
6	7120.7	90.00	180.00	5867.7	-1640.0	-624.7	3.00	-90.01	1683.1	EOT; 180 Deg Azi
7	13592.4	90.00	180.00	5868.0	-8111.7	-625.0	0.00	0.00	8135.7	PBHL @ 13,592' MD



Surface Hole Location  
Razor #11G-1409A  
X: 3462062.72  
Y: 1558327.28

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor #11G-1409A PBHL(2,474' FEL-100' FSL Sec 14)	5868.0	-8111.7	-625.0	1550205.26	3461590.65



Plan #1  
Razor #11G-1409A  
WELL @ 4989.7usft (Original Well Elev)  
Ground Elevation @ 4972.9  
North American Datum 1983  
Well Razor #11G-1409A, True North

Vertical Section at 184.41° (1400 usft/in)

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		S11-T10N-R58W			
Site Position:		Northing:	1,558,620.57 usft	Latitude:	40° 51' 17.19 N
From:	Lat/Long	Easting:	3,463,389.92 usft	Longitude:	103° 49' 29.45 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.08 °

Well	Razor #11G-1409A					
Well Position	+N/-S	0.0 usft	Northing:	1,558,327.28 usft	Latitude:	40° 51' 14.54 N
	+E/-W	0.0 usft	Easting:	3,462,062.72 usft	Longitude:	103° 49' 46.79 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,972.9 usft

<b>Wellbore</b>	HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	7/25/2013	8.10	67.49	53,239

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	184.41	

<b>Plan Sections</b>										
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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	4.00	208.35	999.8	-6.1	-3.3	2.00	2.00	0.00	208.35	
5,394.0	4.00	208.35	5,383.1	-275.9	-148.9	0.00	0.00	0.00	0.00	
6,175.8	90.00	208.35	5,867.7	-733.2	-395.6	11.00	11.00	0.00	0.00	
7,120.7	90.00	180.00	5,867.7	-1,640.0	-624.7	3.00	0.00	-3.00	-90.01	
13,592.4	90.00	180.00	5,868.0	-8,111.7	-625.0	0.00	0.00	0.00	0.00	Razor #11G-1409A PI

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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	KOP @ 800' MD
900.0	2.00	208.35	900.0	-1.5	-0.8	1.6	2.00	2.00	
1,000.0	4.00	208.35	999.8	-6.1	-3.3	6.4	2.00	2.00	EOB; 4 Deg Inc
1,100.0	4.00	208.35	1,099.6	-12.3	-6.6	12.8	0.00	0.00	
1,200.0	4.00	208.35	1,199.4	-18.4	-9.9	19.1	0.00	0.00	
1,300.0	4.00	208.35	1,299.1	-24.6	-13.3	25.5	0.00	0.00	
1,400.0	4.00	208.35	1,398.9	-30.7	-16.6	31.9	0.00	0.00	
1,500.0	4.00	208.35	1,498.6	-36.8	-19.9	38.3	0.00	0.00	
1,600.0	4.00	208.35	1,598.4	-43.0	-23.2	44.6	0.00	0.00	
1,700.0	4.00	208.35	1,698.1	-49.1	-26.5	51.0	0.00	0.00	
1,800.0	4.00	208.35	1,797.9	-55.3	-29.8	57.4	0.00	0.00	
1,900.0	4.00	208.35	1,897.6	-61.4	-33.1	63.8	0.00	0.00	
2,000.0	4.00	208.35	1,997.4	-67.5	-36.4	70.1	0.00	0.00	
2,100.0	4.00	208.35	2,097.2	-73.7	-39.8	76.5	0.00	0.00	
2,200.0	4.00	208.35	2,196.9	-79.8	-43.1	82.9	0.00	0.00	
2,300.0	4.00	208.35	2,296.7	-85.9	-46.4	89.3	0.00	0.00	
2,400.0	4.00	208.35	2,396.4	-92.1	-49.7	95.6	0.00	0.00	
2,500.0	4.00	208.35	2,496.2	-98.2	-53.0	102.0	0.00	0.00	
2,600.0	4.00	208.35	2,595.9	-104.4	-56.3	108.4	0.00	0.00	
2,700.0	4.00	208.35	2,695.7	-110.5	-59.6	114.8	0.00	0.00	
2,800.0	4.00	208.35	2,795.5	-116.6	-62.9	121.1	0.00	0.00	
2,900.0	4.00	208.35	2,895.2	-122.8	-66.2	127.5	0.00	0.00	
3,000.0	4.00	208.35	2,995.0	-128.9	-69.6	133.9	0.00	0.00	
3,100.0	4.00	208.35	3,094.7	-135.1	-72.9	140.3	0.00	0.00	
3,200.0	4.00	208.35	3,194.5	-141.2	-76.2	146.6	0.00	0.00	
3,300.0	4.00	208.35	3,294.2	-147.3	-79.5	153.0	0.00	0.00	
3,400.0	4.00	208.35	3,394.0	-153.5	-82.8	159.4	0.00	0.00	
3,500.0	4.00	208.35	3,493.7	-159.6	-86.1	165.8	0.00	0.00	
3,600.0	4.00	208.35	3,593.5	-165.8	-89.4	172.1	0.00	0.00	
3,700.0	4.00	208.35	3,693.3	-171.9	-92.7	178.5	0.00	0.00	
3,800.0	4.00	208.35	3,793.0	-178.0	-96.1	184.9	0.00	0.00	
3,900.0	4.00	208.35	3,892.8	-184.2	-99.4	191.3	0.00	0.00	
4,000.0	4.00	208.35	3,992.5	-190.3	-102.7	197.6	0.00	0.00	
4,100.0	4.00	208.35	4,092.3	-196.5	-106.0	204.0	0.00	0.00	
4,200.0	4.00	208.35	4,192.0	-202.6	-109.3	210.4	0.00	0.00	
4,300.0	4.00	208.35	4,291.8	-208.7	-112.6	216.8	0.00	0.00	
4,400.0	4.00	208.35	4,391.6	-214.9	-115.9	223.1	0.00	0.00	
4,500.0	4.00	208.35	4,491.3	-221.0	-119.2	229.5	0.00	0.00	
4,600.0	4.00	208.35	4,591.1	-227.1	-122.6	235.9	0.00	0.00	
4,700.0	4.00	208.35	4,690.8	-233.3	-125.9	242.3	0.00	0.00	
4,800.0	4.00	208.35	4,790.6	-239.4	-129.2	248.6	0.00	0.00	
4,900.0	4.00	208.35	4,890.3	-245.6	-132.5	255.0	0.00	0.00	
5,000.0	4.00	208.35	4,990.1	-251.7	-135.8	261.4	0.00	0.00	
5,100.0	4.00	208.35	5,089.9	-257.8	-139.1	267.8	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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	208.35	5,189.6	-264.0	-142.4	274.1	0.00	0.00	
5,300.0	4.00	208.35	5,289.4	-270.1	-145.7	280.5	0.00	0.00	
5,394.0	4.00	208.35	5,383.1	-275.9	-148.9	286.5	0.00	0.00	Start 11 Deg Build
5,400.0	4.66	208.35	5,389.1	-276.3	-149.1	286.9	11.00	11.00	
5,450.0	10.16	208.35	5,438.7	-282.0	-152.1	292.8	11.00	11.00	
5,500.0	15.66	208.35	5,487.4	-291.8	-157.4	303.0	11.00	11.00	
5,550.0	21.16	208.35	5,534.8	-305.7	-164.9	317.4	11.00	11.00	
5,600.0	26.66	208.35	5,580.5	-323.5	-174.6	336.0	11.00	11.00	
5,650.0	32.16	208.35	5,624.1	-345.1	-186.2	358.4	11.00	11.00	
5,700.0	37.66	208.35	5,665.0	-370.3	-199.8	384.5	11.00	11.00	
5,750.0	43.16	208.35	5,703.1	-398.8	-215.2	414.1	11.00	11.00	
5,800.0	48.66	208.35	5,737.9	-430.4	-232.2	447.0	11.00	11.00	
5,850.0	54.16	208.35	5,769.0	-464.8	-250.8	482.7	11.00	11.00	
5,900.0	59.66	208.35	5,796.3	-501.6	-270.7	520.9	11.00	11.00	
5,930.6	63.02	208.35	5,811.0	-525.2	-283.4	545.5	11.00	11.00	Top Niobrara
5,950.0	65.16	208.35	5,819.5	-540.6	-291.7	561.4	11.00	11.00	
6,000.0	70.66	208.35	5,838.3	-581.4	-313.7	603.7	11.00	11.00	
6,050.0	76.16	208.35	5,852.5	-623.5	-336.4	647.5	11.00	11.00	
6,100.0	81.66	208.35	5,862.2	-666.7	-359.7	692.3	11.00	11.00	
6,150.0	87.16	208.35	5,867.0	-710.5	-383.3	737.8	11.00	11.00	
6,175.8	90.00	208.35	5,867.7	-733.2	-395.6	761.4	11.00	11.00	LP @ 6,175' MD
6,200.0	90.00	207.62	5,867.7	-754.5	-406.9	783.6	3.00	0.00	7" (2,195' FEL-2,153' FSL)
6,300.0	90.00	204.62	5,867.7	-844.3	-451.0	876.4	3.00	0.00	
6,400.0	90.00	201.62	5,867.7	-936.3	-490.2	971.1	3.00	0.00	
6,500.0	90.00	198.62	5,867.7	-1,030.1	-524.6	1,067.4	3.00	0.00	
6,600.0	90.00	195.62	5,867.7	-1,125.7	-554.1	1,164.9	3.00	0.00	
6,700.0	90.00	192.62	5,867.7	-1,222.7	-578.5	1,263.5	3.00	0.00	
6,800.0	90.00	189.62	5,867.7	-1,320.8	-597.8	1,362.8	3.00	0.00	
6,900.0	90.00	186.62	5,867.7	-1,419.8	-611.9	1,462.6	3.00	0.00	
7,000.0	90.00	183.62	5,867.7	-1,519.3	-620.8	1,562.5	3.00	0.00	
7,100.0	90.00	180.62	5,867.7	-1,619.3	-624.5	1,662.5	3.00	0.00	
7,120.7	90.00	180.00	5,867.7	-1,640.0	-624.7	1,683.1	3.00	0.00	EOT; 180 Deg Azi
7,200.0	90.00	180.00	5,867.7	-1,719.3	-624.7	1,762.2	0.00	0.00	
7,300.0	90.00	180.00	5,867.7	-1,819.3	-624.7	1,861.9	0.00	0.00	
7,400.0	90.00	180.00	5,867.7	-1,919.3	-624.7	1,961.6	0.00	0.00	
7,500.0	90.00	180.00	5,867.7	-2,019.3	-624.7	2,061.3	0.00	0.00	
7,600.0	90.00	180.00	5,867.7	-2,119.3	-624.7	2,161.0	0.00	0.00	
7,700.0	90.00	180.00	5,867.7	-2,219.3	-624.7	2,260.7	0.00	0.00	
7,800.0	90.00	180.00	5,867.7	-2,319.3	-624.7	2,360.4	0.00	0.00	
7,900.0	90.00	180.00	5,867.7	-2,419.3	-624.7	2,460.1	0.00	0.00	
8,000.0	90.00	180.00	5,867.7	-2,519.3	-624.7	2,559.8	0.00	0.00	
8,100.0	90.00	180.00	5,867.7	-2,619.3	-624.7	2,659.5	0.00	0.00	
8,200.0	90.00	180.00	5,867.7	-2,719.3	-624.7	2,759.2	0.00	0.00	
8,300.0	90.00	180.00	5,867.7	-2,819.3	-624.7	2,858.9	0.00	0.00	
8,400.0	90.00	180.00	5,867.8	-2,919.3	-624.7	2,958.6	0.00	0.00	
8,500.0	90.00	180.00	5,867.8	-3,019.3	-624.7	3,058.3	0.00	0.00	
8,600.0	90.00	180.00	5,867.8	-3,119.3	-624.7	3,158.0	0.00	0.00	
8,700.0	90.00	180.00	5,867.8	-3,219.3	-624.7	3,257.7	0.00	0.00	
8,800.0	90.00	180.00	5,867.8	-3,319.3	-624.7	3,357.4	0.00	0.00	
8,900.0	90.00	180.00	5,867.8	-3,419.3	-624.7	3,457.2	0.00	0.00	
8,935.7	90.00	180.00	5,867.8	-3,454.9	-624.7	3,492.7	0.00	0.00	Enter 1550' Offset Radius
9,000.0	90.00	180.00	5,867.8	-3,519.3	-624.7	3,556.9	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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
9,100.0	90.00	180.00	5,867.8	-3,619.3	-624.8	3,656.6	0.00	0.00	
9,200.0	90.00	180.00	5,867.8	-3,719.3	-624.8	3,756.3	0.00	0.00	
9,300.0	90.00	180.00	5,867.8	-3,819.3	-624.8	3,856.0	0.00	0.00	
9,400.0	90.00	180.00	5,867.8	-3,919.3	-624.8	3,955.7	0.00	0.00	
9,500.0	90.00	180.00	5,867.8	-4,019.3	-624.8	4,055.4	0.00	0.00	
9,600.0	90.00	180.00	5,867.8	-4,119.3	-624.8	4,155.1	0.00	0.00	
9,700.0	90.00	180.00	5,867.8	-4,219.3	-624.8	4,254.8	0.00	0.00	
9,800.0	90.00	180.00	5,867.8	-4,319.3	-624.8	4,354.5	0.00	0.00	
9,900.0	90.00	180.00	5,867.8	-4,419.3	-624.8	4,454.2	0.00	0.00	
10,000.0	90.00	180.00	5,867.8	-4,519.3	-624.8	4,553.9	0.00	0.00	
10,100.0	90.00	180.00	5,867.8	-4,619.3	-624.8	4,653.6	0.00	0.00	
10,200.0	90.00	180.00	5,867.8	-4,719.3	-624.8	4,753.3	0.00	0.00	
10,300.0	90.00	180.00	5,867.8	-4,819.3	-624.8	4,853.0	0.00	0.00	
10,400.0	90.00	180.00	5,867.8	-4,919.3	-624.8	4,952.7	0.00	0.00	
10,500.0	90.00	180.00	5,867.9	-5,019.3	-624.8	5,052.4	0.00	0.00	
10,600.0	90.00	180.00	5,867.9	-5,119.3	-624.8	5,152.1	0.00	0.00	
10,700.0	90.00	180.00	5,867.9	-5,219.3	-624.8	5,251.8	0.00	0.00	
10,800.0	90.00	180.00	5,867.9	-5,319.3	-624.8	5,351.5	0.00	0.00	
10,900.0	90.00	180.00	5,867.9	-5,419.3	-624.8	5,451.2	0.00	0.00	
11,000.0	90.00	180.00	5,867.9	-5,519.3	-624.8	5,551.0	0.00	0.00	
11,100.0	90.00	180.00	5,867.9	-5,619.3	-624.8	5,650.7	0.00	0.00	
11,200.0	90.00	180.00	5,867.9	-5,719.3	-624.9	5,750.4	0.00	0.00	
11,300.0	90.00	180.00	5,867.9	-5,819.3	-624.9	5,850.1	0.00	0.00	
11,400.0	90.00	180.00	5,867.9	-5,919.3	-624.9	5,949.8	0.00	0.00	
11,500.0	90.00	180.00	5,867.9	-6,019.3	-624.9	6,049.5	0.00	0.00	
11,600.0	90.00	180.00	5,867.9	-6,119.3	-624.9	6,149.2	0.00	0.00	
11,700.0	90.00	180.00	5,867.9	-6,219.3	-624.9	6,248.9	0.00	0.00	
11,780.7	90.00	180.00	5,867.9	-6,299.9	-624.9	6,329.3	0.00	0.00	Exit 1550' Offset Radius
11,800.0	90.00	180.00	5,867.9	-6,319.3	-624.9	6,348.6	0.00	0.00	
11,900.0	90.00	180.00	5,867.9	-6,419.3	-624.9	6,448.3	0.00	0.00	
12,000.0	90.00	180.00	5,867.9	-6,519.3	-624.9	6,548.0	0.00	0.00	
12,100.0	90.00	180.00	5,867.9	-6,619.3	-624.9	6,647.7	0.00	0.00	
12,200.0	90.00	180.00	5,867.9	-6,719.3	-624.9	6,747.4	0.00	0.00	
12,300.0	90.00	180.00	5,867.9	-6,819.3	-624.9	6,847.1	0.00	0.00	
12,400.0	90.00	180.00	5,867.9	-6,919.3	-624.9	6,946.8	0.00	0.00	
12,500.0	90.00	180.00	5,867.9	-7,019.3	-624.9	7,046.5	0.00	0.00	
12,600.0	90.00	180.00	5,868.0	-7,119.3	-624.9	7,146.2	0.00	0.00	
12,700.0	90.00	180.00	5,868.0	-7,219.3	-624.9	7,245.9	0.00	0.00	
12,800.0	90.00	180.00	5,868.0	-7,319.3	-624.9	7,345.6	0.00	0.00	
12,900.0	90.00	180.00	5,868.0	-7,419.3	-624.9	7,445.3	0.00	0.00	
13,000.0	90.00	180.00	5,868.0	-7,519.3	-624.9	7,545.1	0.00	0.00	
13,100.0	90.00	180.00	5,868.0	-7,619.3	-624.9	7,644.8	0.00	0.00	
13,200.0	90.00	180.00	5,868.0	-7,719.3	-624.9	7,744.5	0.00	0.00	
13,300.0	90.00	180.00	5,868.0	-7,819.3	-624.9	7,844.2	0.00	0.00	
13,400.0	90.00	180.00	5,868.0	-7,919.3	-625.0	7,943.9	0.00	0.00	
13,500.0	90.00	180.00	5,868.0	-8,019.3	-625.0	8,043.6	0.00	0.00	
13,592.4	90.00	180.00	5,868.0	-8,111.7	-625.0	8,135.7	0.00	0.00	PBHL @ 13,592' MD

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site:</b>	S11-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Razor #11G-1409A PBH	0.00	0.00	5,868.0	-8,111.7	-625.0	1,550,205.26	3,461,590.65	40° 49' 54.39 N	103° 49' 54.92 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(")	(")
6,200.0	5,867.7	7" (2,195' FEL-2,153' FSL)		7	7-1/2

Formations					
Measured Depth	Vertical Depth	Name		Dip	Dip Direction
(usft)	(usft)			(°)	(°)
5,930.6	5,811.0	Top Niobrara		0.00	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
(usft)	(usft)	(usft)	(usft)		
800.0	800.0	0.0	0.0	KOP @ 800' MD	
1,000.0	999.8	-6.1	-3.3	EOB; 4 Deg Inc	
5,394.0	5,383.1	-275.9	-148.9	Start 11 Deg Bulid	
6,175.8	5,867.7	-733.2	-395.6	LP @ 6,175' MD	
7,120.7	5,867.7	-1,640.0	-624.7	EOT; 180 Deg Azi	
8,935.7	5,867.8	-3,454.9	-624.7	Enter 1550' Offset Radius	
11,780.7	5,867.9	-6,299.9	-624.9	Exit 1550' Offset Radius	
13,592.4	5,868.0	-8,111.7	-625.0	PBHL @ 13,592' MD	

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S11-T10N-R58W**

**Razor #11G-1409A**

**HZ**

**Plan #1**

## **Anticollision Report**

**26 July, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	7/26/2013		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	13,592.4	Plan #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S11-T10N-R58W						
Razor #11G-0209A - HZ - Plan #1	500.0	500.0	74.9	72.9	37.725	CC, ES
Razor #11G-0209A - HZ - Plan #1	900.0	894.7	94.6	90.8	25.144	SF
Razor #11G-0210B - HZ - Plan #1	600.0	600.0	81.8	79.4	33.618	CC, ES
Razor #11G-0210B - HZ - Plan #1	900.0	895.3	93.8	90.0	24.937	SF
Razor #11G-0211A - HZ - Plan #1	700.0	700.0	99.9	97.0	34.626	CC, ES
Razor #11G-0211A - HZ - Plan #1	1,000.0	994.6	115.9	111.7	27.830	SF
Razor #11G-0212B - HZ - Plan #1	800.0	800.0	124.2	120.9	37.262	CC, ES
Razor #11G-0212B - HZ - Plan #1	5,300.0	5,252.2	709.0	685.6	30.230	SF
Razor #11G-1410B - HZ - Plan #1	880.7	881.1	32.2	28.6	8.924	CC
Razor #11G-1410B - HZ - Plan #1	900.0	900.4	32.3	28.6	8.752	ES
Razor #11G-1410B - HZ - Plan #1	13,592.4	13,585.0	344.9	47.7	1.161	Level 2, SF
Razor #11G-1411A - HZ - Plan #1	716.8	716.9	66.0	63.1	22.578	CC
Razor #11G-1411A - HZ - Plan #1	800.0	799.8	66.2	62.9	20.283	ES
Razor #11G-1411A - HZ - Plan #1	13,592.4	13,437.9	659.6	348.3	2.119	SF
Razor #11G-1412B - HZ - Plan #1	500.0	500.0	99.1	97.1	49.937	CC, ES
Razor #11G-1412B - HZ - Plan #1	13,592.4	13,561.1	994.5	684.0	3.203	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0209A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: O-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	74.9	0.0	74.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	74.9	0.0	74.9	74.7	0.19	400.465		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	74.9	0.0	74.9	74.3	0.64	117.651		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	74.9	0.0	74.9	73.8	1.09	68.954		
400.0	400.0	400.0	400.0	0.8	0.8	0.00	74.9	0.0	74.9	73.4	1.54	48.769		
500.0	500.0	500.0	500.0	1.0	1.0	0.00	74.9	0.0	74.9	72.9	1.99	37.725 CC, ES		
600.0	600.0	597.8	597.8	1.2	1.2	-0.66	76.3	-0.9	76.3	73.9	2.43	31.426		
700.0	700.0	695.4	695.2	1.4	1.4	-2.51	80.5	-3.5	80.8	77.9	2.88	28.063		
800.0	800.0	795.0	794.6	1.7	1.7	-4.77	86.4	-7.2	86.9	83.6	3.33	26.097		
900.0	900.0	894.7	894.0	1.9	1.9	145.43	92.3	-10.9	94.6	90.8	3.76	25.144 SF		
1,000.0	999.8	994.1	993.2	2.1	2.1	145.27	98.2	-14.6	105.2	101.0	4.17	25.198		
1,100.0	1,099.6	1,093.4	1,092.3	2.2	2.4	145.73	104.1	-18.3	117.2	112.6	4.59	25.504		
1,200.0	1,199.4	1,192.7	1,191.3	2.5	2.6	146.11	109.9	-21.9	129.2	124.1	5.02	25.710		
1,300.0	1,299.1	1,291.9	1,290.3	2.7	2.9	146.42	115.8	-25.6	141.2	135.7	5.46	25.849		
1,400.0	1,398.9	1,391.2	1,389.4	2.9	3.1	146.68	121.7	-29.3	153.2	147.3	5.91	25.943		
1,500.0	1,498.6	1,490.5	1,488.4	3.1	3.4	146.90	127.5	-33.0	165.2	158.9	6.35	26.005		
1,600.0	1,598.4	1,589.8	1,587.4	3.4	3.6	147.09	133.4	-36.6	177.2	170.4	6.81	26.046		
1,700.0	1,698.1	1,689.0	1,686.5	3.6	3.9	147.26	139.3	-40.3	189.3	182.0	7.26	26.071		
1,800.0	1,797.9	1,788.3	1,785.5	3.9	4.1	147.41	145.2	-44.0	201.3	193.6	7.72	26.085		
1,900.0	1,897.6	1,887.6	1,884.5	4.1	4.4	147.54	151.0	-47.7	213.3	205.1	8.18	26.091		
2,000.0	1,997.4	1,986.8	1,983.5	4.4	4.7	147.66	156.9	-51.3	225.3	216.7	8.64	26.092		
2,100.0	2,097.2	2,086.1	2,082.6	4.6	4.9	147.77	162.8	-55.0	237.4	228.3	9.10	26.089		
2,200.0	2,196.9	2,185.4	2,181.6	4.9	5.2	147.86	168.6	-58.7	249.4	239.8	9.56	26.082		
2,300.0	2,296.7	2,284.7	2,280.6	5.1	5.4	147.95	174.5	-62.3	261.4	251.4	10.03	26.074		
2,400.0	2,396.4	2,383.9	2,379.7	5.4	5.7	148.03	180.4	-66.0	273.5	263.0	10.49	26.064		
2,500.0	2,496.2	2,483.2	2,478.7	5.6	5.9	148.10	186.2	-69.7	285.5	274.5	10.96	26.054		
2,600.0	2,595.9	2,582.5	2,577.7	5.9	6.2	148.17	192.1	-73.4	297.5	286.1	11.42	26.042		
2,700.0	2,695.7	2,681.8	2,676.8	6.1	6.4	148.23	198.0	-77.0	309.6	297.7	11.89	26.031		
2,800.0	2,795.5	2,781.0	2,775.8	6.4	6.7	148.28	203.9	-80.7	321.6	309.2	12.36	26.019		
2,900.0	2,895.2	2,880.3	2,874.8	6.7	6.9	148.34	209.7	-84.4	333.6	320.8	12.83	26.007		
3,000.0	2,995.0	2,979.6	2,973.9	6.9	7.2	148.39	215.6	-88.1	345.7	332.4	13.30	25.995		
3,100.0	3,094.7	3,078.8	3,072.9	7.2	7.5	148.43	221.5	-91.7	357.7	343.9	13.77	25.983		
3,200.0	3,194.5	3,178.1	3,171.9	7.4	7.7	148.47	227.3	-95.4	369.7	355.5	14.24	25.971		
3,300.0	3,294.2	3,277.4	3,271.0	7.7	8.0	148.51	233.2	-99.1	381.8	367.1	14.71	25.960		
3,400.0	3,394.0	3,376.7	3,370.0	8.0	8.2	148.55	239.1	-102.8	393.8	378.6	15.18	25.948		
3,500.0	3,493.7	3,475.9	3,469.0	8.2	8.5	148.59	244.9	-106.4	405.8	390.2	15.65	25.937		
3,600.0	3,593.5	3,575.2	3,568.0	8.5	8.7	148.62	250.8	-110.1	417.9	401.7	16.12	25.927		
3,700.0	3,693.3	3,674.5	3,667.1	8.7	9.0	148.65	256.7	-113.8	429.9	413.3	16.59	25.916		
3,800.0	3,793.0	3,773.8	3,766.1	9.0	9.2	148.68	262.6	-117.5	441.9	424.9	17.06	25.906		
3,900.0	3,892.8	3,873.0	3,865.1	9.3	9.5	148.71	268.4	-121.1	454.0	436.4	17.53	25.896		
4,000.0	3,992.5	3,972.3	3,964.2	9.5	9.7	148.74	274.3	-124.8	466.0	448.0	18.00	25.887		
4,100.0	4,092.3	4,071.6	4,063.2	9.8	10.0	148.76	280.2	-128.5	478.0	459.6	18.47	25.878		
4,200.0	4,192.0	4,170.8	4,162.2	10.1	10.3	148.79	286.0	-132.1	490.1	471.1	18.94	25.869		
4,300.0	4,291.8	4,270.1	4,261.3	10.3	10.5	148.81	291.9	-135.8	502.1	482.7	19.42	25.860		
4,400.0	4,391.6	4,369.4	4,360.3	10.6	10.8	148.83	297.8	-139.5	514.1	494.3	19.89	25.852		
4,500.0	4,491.3	4,468.7	4,459.3	10.8	11.0	148.85	303.6	-143.2	526.2	505.8	20.36	25.843		
4,600.0	4,591.1	4,567.9	4,558.4	11.1	11.3	148.87	309.5	-146.8	538.2	517.4	20.83	25.835		
4,700.0	4,690.8	4,667.2	4,657.4	11.4	11.5	148.89	315.4	-150.5	550.2	528.9	21.30	25.828		
4,800.0	4,790.6	4,766.5	4,756.4	11.6	11.8	148.91	321.3	-154.2	562.3	540.5	21.78	25.820		
4,900.0	4,890.3	4,865.8	4,855.4	11.9	12.0	148.93	327.1	-157.9	574.3	552.1	22.25	25.813		
5,000.0	4,990.1	4,965.0	4,954.5	12.2	12.3	148.94	333.0	-161.5	586.4	563.6	22.72	25.806		
5,100.0	5,089.9	5,064.3	5,053.5	12.4	12.6	148.96	338.9	-165.2	598.4	575.2	23.19	25.799		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0209A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.6	5,163.6	5,152.5	12.7	12.8	148.98	344.7	-168.9	610.4	586.8	23.67	25.793		
5,300.0	5,289.4	5,262.9	5,251.6	12.9	13.1	148.99	350.6	-172.6	622.5	598.3	24.14	25.786		
5,400.0	5,389.1	5,362.1	5,350.6	13.2	13.3	148.96	356.5	-176.2	634.5	609.9	24.60	25.797		
5,500.0	5,487.4	5,425.9	5,414.1	13.6	13.5	147.85	361.0	-179.1	657.3	632.8	24.46	26.866		
5,600.0	5,580.5	5,467.6	5,455.3	14.1	13.6	145.26	367.0	-182.8	701.8	677.9	23.90	29.369		
5,700.0	5,665.0	5,500.0	5,486.7	14.8	13.8	140.46	373.5	-186.9	765.0	741.6	23.38	32.725		
5,800.0	5,737.9	5,528.0	5,513.5	15.7	13.9	132.14	380.5	-191.3	842.3	818.5	23.90	35.249		
5,900.0	5,796.3	5,550.0	5,534.2	16.8	14.0	117.72	386.8	-195.2	929.4	902.6	26.76	34.727		
6,000.0	5,838.3	5,550.0	5,534.2	18.1	14.0	92.23	386.8	-195.2	1,021.7	990.8	30.96	33.003		
6,100.0	5,862.2	5,550.0	5,534.2	19.6	14.0	63.31	386.8	-195.2	1,115.6	1,085.9	29.63	37.650		
6,200.0	5,867.7	5,550.0	5,534.2	21.1	14.0	45.69	386.8	-195.2	1,207.8	1,182.4	25.39	47.572		
6,300.0	5,867.7	5,550.0	5,534.2	22.4	14.0	40.06	386.8	-195.2	1,300.9	1,276.7	24.20	53.755		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0210B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	23.81	74.9	33.0	81.8					
100.0	100.0	100.0	100.0	0.1	0.1	23.81	74.9	33.0	81.8	81.7	0.19	437.677		
200.0	200.0	200.0	200.0	0.3	0.3	23.81	74.9	33.0	81.8	81.2	0.64	128.583		
300.0	300.0	300.0	300.0	0.5	0.5	23.81	74.9	33.0	81.8	80.8	1.09	75.362		
400.0	400.0	400.0	400.0	0.8	0.8	23.81	74.9	33.0	81.8	80.3	1.54	53.300		
500.0	500.0	500.0	500.0	1.0	1.0	23.81	74.9	33.0	81.8	79.9	1.99	41.230		
600.0	600.0	600.0	600.0	1.2	1.2	23.81	74.9	33.0	81.8	79.4	2.43	33.618 CC, ES		
700.0	700.0	698.0	698.0	1.4	1.4	22.99	76.4	32.4	83.1	80.2	2.88	28.838		
800.0	800.0	795.8	795.6	1.7	1.7	20.66	81.1	30.6	86.8	83.5	3.33	26.064		
900.0	900.0	895.3	894.9	1.9	1.9	169.58	87.6	28.0	93.8	90.0	3.76	24.937 SF		
1,000.0	999.8	994.7	994.1	2.1	2.1	167.62	94.0	25.5	104.4	100.2	4.17	25.009		
1,100.0	1,099.6	1,093.9	1,093.0	2.2	2.4	166.27	100.4	22.9	116.7	112.1	4.59	25.424		
1,200.0	1,199.4	1,193.1	1,192.0	2.5	2.6	165.17	106.9	20.4	129.1	124.1	5.02	25.735		
1,300.0	1,299.1	1,292.3	1,290.9	2.7	2.9	164.27	113.3	17.9	141.6	136.1	5.45	25.973		
1,400.0	1,398.9	1,391.5	1,389.9	2.9	3.1	163.51	119.7	15.3	154.0	148.2	5.89	26.158		
1,500.0	1,498.6	1,490.7	1,488.9	3.1	3.3	162.87	126.2	12.8	166.5	160.2	6.33	26.302		
1,600.0	1,598.4	1,589.9	1,587.8	3.4	3.6	162.32	132.6	10.2	179.1	172.3	6.78	26.418		
1,700.0	1,698.1	1,689.1	1,686.8	3.6	3.8	161.84	139.1	7.7	191.6	184.4	7.23	26.511		
1,800.0	1,797.9	1,788.3	1,785.7	3.9	4.1	161.41	145.5	5.2	204.1	196.5	7.68	26.586		
1,900.0	1,897.6	1,887.5	1,884.7	4.1	4.4	161.04	151.9	2.6	216.7	208.6	8.13	26.648		
2,000.0	1,997.4	1,986.7	1,983.6	4.4	4.6	160.71	158.4	0.1	229.2	220.7	8.59	26.699		
2,100.0	2,097.2	2,085.9	2,082.6	4.6	4.9	160.41	164.8	-2.5	241.8	232.8	9.04	26.741		
2,200.0	2,196.9	2,185.1	2,181.6	4.9	5.1	160.14	171.2	-5.0	254.4	244.9	9.50	26.777		
2,300.0	2,296.7	2,284.3	2,280.5	5.1	5.4	159.90	177.7	-7.6	267.0	257.0	9.96	26.807		
2,400.0	2,396.4	2,383.5	2,379.5	5.4	5.6	159.68	184.1	-10.1	279.5	269.1	10.42	26.833		
2,500.0	2,496.2	2,482.7	2,478.4	5.6	5.9	159.48	190.5	-12.6	292.1	281.2	10.88	26.855		
2,600.0	2,595.9	2,581.9	2,577.4	5.9	6.1	159.29	197.0	-15.2	304.7	293.4	11.34	26.873		
2,700.0	2,695.7	2,681.1	2,676.4	6.1	6.4	159.12	203.4	-17.7	317.3	305.5	11.80	26.890		
2,800.0	2,795.5	2,780.3	2,775.3	6.4	6.6	158.96	209.9	-20.3	329.9	317.6	12.26	26.903		
2,900.0	2,895.2	2,879.5	2,874.3	6.7	6.9	158.82	216.3	-22.8	342.5	329.8	12.72	26.915		
3,000.0	2,995.0	2,978.7	2,973.2	6.9	7.1	158.68	222.7	-25.3	355.1	341.9	13.19	26.926		
3,100.0	3,094.7	3,077.9	3,072.2	7.2	7.4	158.55	229.2	-27.9	367.7	354.0	13.65	26.935		
3,200.0	3,194.5	3,177.1	3,171.1	7.4	7.6	158.44	235.6	-30.4	380.3	366.2	14.11	26.943		
3,300.0	3,294.2	3,276.3	3,270.1	7.7	7.9	158.33	242.0	-33.0	392.9	378.3	14.58	26.950		
3,400.0	3,394.0	3,375.5	3,369.1	8.0	8.1	158.22	248.5	-35.5	405.5	390.4	15.04	26.956		
3,500.0	3,493.7	3,474.7	3,468.0	8.2	8.4	158.12	254.9	-38.1	418.1	402.6	15.51	26.962		
3,600.0	3,593.5	3,573.9	3,567.0	8.5	8.7	158.03	261.3	-40.6	430.7	414.7	15.97	26.966		
3,700.0	3,693.3	3,673.1	3,665.9	8.7	8.9	157.95	267.8	-43.1	443.3	426.9	16.44	26.970		
3,800.0	3,793.0	3,772.3	3,764.9	9.0	9.2	157.87	274.2	-45.7	455.9	439.0	16.90	26.974		
3,900.0	3,892.8	3,871.5	3,863.9	9.3	9.4	157.79	280.7	-48.2	468.5	451.2	17.37	26.977		
4,000.0	3,992.5	3,970.7	3,962.8	9.5	9.7	157.71	287.1	-50.8	481.1	463.3	17.83	26.980		
4,100.0	4,092.3	4,069.9	4,061.8	9.8	9.9	157.65	293.5	-53.3	493.7	475.4	18.30	26.983		
4,200.0	4,192.0	4,169.1	4,160.7	10.1	10.2	157.58	300.0	-55.8	506.4	487.6	18.76	26.985		
4,300.0	4,291.8	4,268.3	4,259.7	10.3	10.4	157.52	306.4	-58.4	519.0	499.7	19.23	26.987		
4,400.0	4,391.6	4,367.5	4,358.6	10.6	10.7	157.46	312.8	-60.9	531.6	511.9	19.70	26.989		
4,500.0	4,491.3	4,466.7	4,457.6	10.8	10.9	157.40	319.3	-63.5	544.2	524.0	20.16	26.990		
4,600.0	4,591.1	4,565.9	4,556.6	11.1	11.2	157.35	325.7	-66.0	556.8	536.2	20.63	26.991		
4,700.0	4,690.8	4,665.1	4,655.5	11.4	11.5	157.29	332.1	-68.6	569.4	548.3	21.10	26.993		
4,800.0	4,790.6	4,764.3	4,754.5	11.6	11.7	157.24	338.6	-71.1	582.0	560.5	21.56	26.994		
4,900.0	4,890.3	4,863.5	4,853.4	11.9	12.0	157.20	345.0	-73.6	594.6	572.6	22.03	26.995		
5,000.0	4,990.1	4,962.7	4,952.4	12.2	12.2	157.15	351.4	-76.2	607.3	584.8	22.50	26.995		
5,100.0	5,089.9	5,061.9	5,051.4	12.4	12.5	157.11	357.9	-78.7	619.9	596.9	22.96	26.996		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0210B - HZ - Plan #1												Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD												Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	
5,200.0	5,189.6	5,161.1	5,150.3	12.7	12.7	157.06	364.3	-81.3	632.5	609.1	23.43	26.997	
5,300.0	5,289.4	5,260.3	5,249.3	12.9	13.0	157.02	370.8	-83.8	645.1	621.2	23.90	26.997	
5,400.0	5,389.1	5,359.5	5,348.2	13.2	13.2	156.95	377.2	-86.3	657.8	633.4	24.35	27.017	
5,500.0	5,487.4	5,456.7	5,445.2	13.6	13.5	156.27	383.5	-88.8	680.1	655.9	24.18	28.122	
5,600.0	5,580.5	5,519.4	5,507.7	14.1	13.7	154.86	388.1	-90.6	720.2	696.8	23.35	30.838	
5,700.0	5,665.0	5,550.0	5,538.0	14.8	13.8	151.57	392.1	-92.2	780.4	758.2	22.19	35.163	
5,800.0	5,737.9	5,580.5	5,567.8	15.7	13.9	145.57	397.8	-94.5	856.7	835.1	21.59	39.683	
5,900.0	5,796.3	5,600.0	5,586.7	16.8	13.9	133.62	402.4	-96.3	944.2	920.7	23.46	40.248	
6,000.0	5,838.3	5,600.0	5,586.7	18.1	13.9	106.85	402.4	-96.3	1,038.4	1,008.5	29.89	34.745	
6,100.0	5,862.2	5,600.0	5,586.7	19.6	13.9	66.85	402.4	-96.3	1,134.9	1,104.4	30.59	37.100	
6,200.0	5,867.7	5,600.0	5,586.7	21.1	13.9	42.91	402.4	-96.3	1,230.4	1,205.9	24.47	50.287	
6,300.0	5,867.7	5,600.0	5,586.7	22.4	13.9	35.04	402.4	-96.3	1,326.2	1,304.1	22.13	59.929	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0211A - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance					Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	41.43	74.9	66.1	99.9					
100.0	100.0	100.0	100.0	0.1	0.1	41.43	74.9	66.1	99.9	99.7	0.19	534.036		
200.0	200.0	200.0	200.0	0.3	0.3	41.43	74.9	66.1	99.9	99.2	0.64	156.892		
300.0	300.0	300.0	300.0	0.5	0.5	41.43	74.9	66.1	99.9	98.8	1.09	91.953		
400.0	400.0	400.0	400.0	0.8	0.8	41.43	74.9	66.1	99.9	98.3	1.54	65.035		
500.0	500.0	500.0	500.0	1.0	1.0	41.43	74.9	66.1	99.9	97.9	1.99	50.308		
600.0	600.0	600.0	600.0	1.2	1.2	41.43	74.9	66.1	99.9	97.4	2.43	41.019		
700.0	700.0	700.0	700.0	1.4	1.4	41.43	74.9	66.1	99.9	97.0	2.88	34.626 CC, ES		
800.0	800.0	797.8	797.8	1.7	1.7	40.69	76.5	65.8	100.9	97.6	3.33	30.314		
900.0	900.0	895.3	895.2	1.9	1.9	-169.93	81.4	64.9	106.0	102.2	3.75	28.239		
1,000.0	999.8	994.6	994.2	2.1	2.1	-172.93	88.2	63.7	115.9	111.7	4.16	27.830 SF		
1,100.0	1,099.6	1,093.7	1,093.1	2.2	2.3	-175.54	95.0	62.5	127.8	123.2	4.58	27.905		
1,200.0	1,199.4	1,192.8	1,191.9	2.5	2.6	-177.71	101.9	61.3	140.0	135.0	5.01	27.965		
1,300.0	1,299.1	1,292.0	1,290.8	2.7	2.8	-179.53	108.7	60.1	152.3	146.8	5.44	28.013		
1,400.0	1,398.9	1,391.1	1,389.7	2.9	3.1	178.93	115.5	58.8	164.7	158.8	5.87	28.054		
1,500.0	1,498.6	1,490.2	1,488.6	3.1	3.3	177.60	122.3	57.6	177.3	170.9	6.31	28.088		
1,600.0	1,598.4	1,589.4	1,587.5	3.4	3.6	176.45	129.1	56.4	189.9	183.1	6.75	28.116		
1,700.0	1,698.1	1,688.5	1,686.4	3.6	3.8	175.44	135.9	55.2	202.6	195.4	7.20	28.142		
1,800.0	1,797.9	1,787.6	1,785.3	3.9	4.1	174.56	142.7	54.0	215.3	207.7	7.65	28.163		
1,900.0	1,897.6	1,886.8	1,884.2	4.1	4.3	173.77	149.5	52.8	228.1	220.0	8.09	28.182		
2,000.0	1,997.4	1,985.9	1,983.1	4.4	4.6	173.06	156.3	51.5	240.9	232.4	8.54	28.198		
2,100.0	2,097.2	2,085.0	2,082.0	4.6	4.8	172.43	163.1	50.3	253.8	244.8	9.00	28.212		
2,200.0	2,196.9	2,184.1	2,180.9	4.9	5.1	171.85	169.9	49.1	266.7	257.2	9.45	28.225		
2,300.0	2,296.7	2,283.3	2,279.7	5.1	5.3	171.33	176.7	47.9	279.6	269.7	9.90	28.236		
2,400.0	2,396.4	2,382.4	2,378.6	5.4	5.6	170.86	183.5	46.7	292.5	282.2	10.36	28.246		
2,500.0	2,496.2	2,481.5	2,477.5	5.6	5.8	170.43	190.3	45.5	305.5	294.7	10.81	28.255		
2,600.0	2,595.9	2,580.7	2,576.4	5.9	6.1	170.03	197.2	44.2	318.4	307.2	11.27	28.263		
2,700.0	2,695.7	2,679.8	2,675.3	6.1	6.3	169.66	204.0	43.0	331.4	319.7	11.72	28.270		
2,800.0	2,795.5	2,778.9	2,774.2	6.4	6.6	169.32	210.8	41.8	344.4	332.2	12.18	28.276		
2,900.0	2,895.2	2,878.1	2,873.1	6.7	6.8	169.00	217.6	40.6	357.4	344.8	12.64	28.282		
3,000.0	2,995.0	2,977.2	2,972.0	6.9	7.1	168.71	224.4	39.4	370.4	357.3	13.10	28.287		
3,100.0	3,094.7	3,076.3	3,070.9	7.2	7.3	168.44	231.2	38.2	383.5	369.9	13.55	28.292		
3,200.0	3,194.5	3,175.5	3,169.8	7.4	7.6	168.18	238.0	36.9	396.5	382.5	14.01	28.296		
3,300.0	3,294.2	3,274.6	3,268.7	7.7	7.8	167.94	244.8	35.7	409.5	395.1	14.47	28.300		
3,400.0	3,394.0	3,373.7	3,367.5	8.0	8.1	167.72	251.6	34.5	422.6	407.6	14.93	28.304		
3,500.0	3,493.7	3,472.9	3,466.4	8.2	8.3	167.51	258.4	33.3	435.6	420.2	15.39	28.307		
3,600.0	3,593.5	3,572.0	3,565.3	8.5	8.6	167.31	265.2	32.1	448.7	432.8	15.85	28.310		
3,700.0	3,693.3	3,671.1	3,664.2	8.7	8.8	167.12	272.0	30.9	461.7	445.4	16.31	28.313		
3,800.0	3,793.0	3,770.3	3,763.1	9.0	9.1	166.95	278.8	29.6	474.8	458.0	16.77	28.316		
3,900.0	3,892.8	3,869.4	3,862.0	9.3	9.3	166.78	285.6	28.4	487.9	470.6	17.23	28.318		
4,000.0	3,992.5	3,968.5	3,960.9	9.5	9.6	166.62	292.5	27.2	500.9	483.3	17.69	28.321		
4,100.0	4,092.3	4,067.7	4,059.8	9.8	9.9	166.47	299.3	26.0	514.0	495.9	18.15	28.323		
4,200.0	4,192.0	4,166.8	4,158.7	10.1	10.1	166.33	306.1	24.8	527.1	508.5	18.61	28.325		
4,300.0	4,291.8	4,265.9	4,257.6	10.3	10.4	166.19	312.9	23.6	540.2	521.1	19.07	28.326		
4,400.0	4,391.6	4,365.1	4,356.5	10.6	10.6	166.06	319.7	22.3	553.3	533.7	19.53	28.328		
4,500.0	4,491.3	4,464.2	4,455.4	10.8	10.9	165.94	326.5	21.1	566.4	546.4	19.99	28.330		
4,600.0	4,591.1	4,563.3	4,554.2	11.1	11.1	165.82	333.3	19.9	579.4	559.0	20.45	28.331		
4,700.0	4,690.8	4,662.5	4,653.1	11.4	11.4	165.70	340.1	18.7	592.5	571.6	20.91	28.332		
4,800.0	4,790.6	4,761.6	4,752.0	11.6	11.6	165.60	346.9	17.5	605.6	584.3	21.38	28.334		
4,900.0	4,890.3	4,860.7	4,850.9	11.9	11.9	165.49	353.7	16.3	618.7	596.9	21.84	28.335		
5,000.0	4,990.1	4,959.9	4,949.8	12.2	12.1	165.39	360.5	15.0	631.8	609.5	22.30	28.336		
5,100.0	5,089.9	5,059.0	5,048.7	12.4	12.4	165.30	367.3	13.8	644.9	622.2	22.76	28.337		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		S11-T10N-R58W - Razor #11G-0211A - HZ - Plan #1											Offset Site Error:		0.0 usft	
Survey Program:		0-ISCSWA MWD											Offset Well Error:		0.0 usft	
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning			
5,200.0	5,189.6	5,158.1	5,147.6	12.7	12.6	165.21	374.1	12.6	658.0	634.8	23.22	28.338				
5,300.0	5,289.4	5,257.3	5,246.5	12.9	12.9	165.12	381.0	11.4	671.1	647.5	23.68	28.339				
5,400.0	5,389.1	5,356.4	5,345.4	13.2	13.2	165.01	387.8	10.2	684.3	660.2	24.13	28.362				
5,500.0	5,487.4	5,421.0	5,409.8	13.6	13.3	164.32	392.8	9.3	708.9	685.1	23.82	29.755				
5,600.0	5,580.5	5,450.0	5,438.4	14.1	13.4	162.68	397.0	8.5	756.9	734.1	22.76	33.251				
5,700.0	5,665.0	5,500.0	5,487.2	14.8	13.6	159.81	407.9	6.6	824.5	803.2	21.30	38.702				
5,800.0	5,737.9	5,500.0	5,487.2	15.7	13.6	153.32	407.9	6.6	907.0	886.9	20.14	45.041				
5,900.0	5,796.3	5,526.0	5,512.0	16.8	13.7	139.86	415.4	5.2	998.9	977.1	21.88	45.650				
6,000.0	5,838.3	5,532.0	5,517.8	18.1	13.7	101.30	417.3	4.9	1,096.2	1,065.4	30.72	35.683				
6,100.0	5,862.2	5,531.3	5,517.1	19.6	13.7	47.42	417.1	4.9	1,194.4	1,169.1	25.31	47.194				
6,200.0	5,867.7	5,524.9	5,511.0	21.1	13.7	26.40	415.1	5.3	1,290.4	1,273.1	17.26	74.777				

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-0212B - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: O-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	52.94	74.9	99.1	124.2					
100.0	100.0	100.0	100.0	0.1	0.1	52.94	74.9	99.1	124.2	124.0	0.19	664.258		
200.0	200.0	200.0	200.0	0.3	0.3	52.94	74.9	99.1	124.2	123.6	0.64	195.150		
300.0	300.0	300.0	300.0	0.5	0.5	52.94	74.9	99.1	124.2	123.1	1.09	114.376		
400.0	400.0	400.0	400.0	0.8	0.8	52.94	74.9	99.1	124.2	122.7	1.54	80.893		
500.0	500.0	500.0	500.0	1.0	1.0	52.94	74.9	99.1	124.2	122.2	1.99	62.575		
600.0	600.0	600.0	600.0	1.2	1.2	52.94	74.9	99.1	124.2	121.8	2.43	51.021		
700.0	700.0	700.0	700.0	1.4	1.4	52.94	74.9	99.1	124.2	121.3	2.88	43.069		
800.0	800.0	800.0	800.0	1.7	1.7	52.94	74.9	99.1	124.2	120.9	3.33	37.262 CC, ES		
900.0	900.0	896.9	896.9	1.9	1.9	-156.22	76.5	99.4	127.0	123.3	3.75	33.870		
1,000.0	999.8	993.1	993.0	2.1	2.1	-158.44	81.3	100.1	135.6	131.4	4.15	32.660		
1,100.0	1,099.6	1,091.9	1,091.5	2.2	2.3	-161.21	88.1	101.1	147.5	142.9	4.57	32.295		
1,200.0	1,199.4	1,191.0	1,190.3	2.5	2.6	-163.57	94.9	102.2	159.7	154.7	4.99	32.010		
1,300.0	1,299.1	1,290.0	1,289.2	2.7	2.8	-165.59	101.8	103.2	172.1	166.7	5.42	31.776		
1,400.0	1,398.9	1,389.1	1,388.0	2.9	3.0	-167.34	108.6	104.2	184.7	178.8	5.85	31.582		
1,500.0	1,498.6	1,488.1	1,486.8	3.1	3.3	-168.87	115.4	105.2	197.4	191.1	6.28	31.419		
1,600.0	1,598.4	1,587.2	1,585.6	3.4	3.5	-170.21	122.3	106.3	210.3	203.6	6.72	31.283		
1,700.0	1,698.1	1,686.2	1,684.4	3.6	3.8	-171.39	129.1	107.3	223.3	216.1	7.16	31.166		
1,800.0	1,797.9	1,785.3	1,783.2	3.9	4.0	-172.45	135.9	108.3	236.3	228.7	7.61	31.068		
1,900.0	1,897.6	1,884.4	1,882.0	4.1	4.3	-173.39	142.8	109.4	249.4	241.4	8.05	30.983		
2,000.0	1,997.4	1,983.4	1,980.9	4.4	4.5	-174.24	149.6	110.4	262.6	254.1	8.50	30.909		
2,100.0	2,097.2	2,082.5	2,079.7	4.6	4.7	-175.01	156.4	111.4	275.9	266.9	8.94	30.845		
2,200.0	2,196.9	2,181.5	2,178.5	4.9	5.0	-175.71	163.3	112.5	289.1	279.8	9.39	30.788		
2,300.0	2,296.7	2,280.6	2,277.3	5.1	5.2	-176.35	170.1	113.5	302.5	292.6	9.84	30.738		
2,400.0	2,396.4	2,379.6	2,376.1	5.4	5.5	-176.93	176.9	114.5	315.8	305.5	10.29	30.693		
2,500.0	2,496.2	2,478.7	2,474.9	5.6	5.7	-177.47	183.8	115.5	329.2	318.5	10.74	30.653		
2,600.0	2,595.9	2,577.7	2,573.7	5.9	6.0	-177.96	190.6	116.6	342.6	331.4	11.19	30.617		
2,700.0	2,695.7	2,676.8	2,672.6	6.1	6.2	-178.42	197.4	117.6	356.0	344.4	11.64	30.584		
2,800.0	2,795.5	2,775.9	2,771.4	6.4	6.5	-178.84	204.3	118.6	369.5	357.4	12.09	30.555		
2,900.0	2,895.2	2,874.9	2,870.2	6.7	6.8	-179.23	211.1	119.7	383.0	370.4	12.54	30.528		
3,000.0	2,995.0	2,974.0	2,969.0	6.9	7.0	-179.60	217.9	120.7	396.4	383.4	13.00	30.503		
3,100.0	3,094.7	3,073.0	3,067.8	7.2	7.3	-179.94	224.8	121.7	409.9	396.5	13.45	30.481		
3,200.0	3,194.5	3,172.1	3,166.6	7.4	7.5	-179.73	231.6	122.7	423.5	409.6	13.90	30.460		
3,300.0	3,294.2	3,271.1	3,265.4	7.7	7.8	-179.43	238.4	123.8	437.0	422.6	14.36	30.440		
3,400.0	3,394.0	3,370.2	3,364.3	8.0	8.0	-179.15	245.2	124.8	450.5	435.7	14.81	30.423		
3,500.0	3,493.7	3,469.2	3,463.1	8.2	8.3	-178.88	252.1	125.8	464.1	448.8	15.26	30.406		
3,600.0	3,593.5	3,568.3	3,561.9	8.5	8.5	-178.63	258.9	126.9	477.6	461.9	15.72	30.391		
3,700.0	3,693.3	3,667.4	3,660.7	8.7	8.8	-178.39	265.7	127.9	491.2	475.0	16.17	30.376		
3,800.0	3,793.0	3,766.4	3,759.5	9.0	9.0	-178.17	272.6	128.9	504.8	488.1	16.62	30.363		
3,900.0	3,892.8	3,865.5	3,858.3	9.3	9.3	-177.96	279.4	130.0	518.4	501.3	17.08	30.350		
4,000.0	3,992.5	3,964.5	3,957.1	9.5	9.5	-177.75	286.2	131.0	531.9	514.4	17.53	30.338		
4,100.0	4,092.3	4,063.6	4,056.0	9.8	9.8	-177.56	293.1	132.0	545.5	527.5	17.99	30.327		
4,200.0	4,192.0	4,162.6	4,154.8	10.1	10.0	-177.38	299.9	133.0	559.1	540.7	18.44	30.316		
4,300.0	4,291.8	4,261.7	4,253.6	10.3	10.3	-177.21	306.7	134.1	572.7	553.8	18.90	30.306		
4,400.0	4,391.6	4,360.7	4,352.4	10.6	10.5	-177.04	313.6	135.1	586.4	567.0	19.35	30.297		
4,500.0	4,491.3	4,459.8	4,451.2	10.8	10.8	-176.88	320.4	136.1	600.0	580.2	19.81	30.288		
4,600.0	4,591.1	4,558.9	4,550.0	11.1	11.0	-176.73	327.2	137.2	613.6	593.3	20.26	30.279		
4,700.0	4,690.8	4,657.9	4,648.8	11.4	11.3	-176.58	334.1	138.2	627.2	606.5	20.72	30.271		
4,800.0	4,790.6	4,757.0	4,747.7	11.6	11.5	-176.45	340.9	139.2	640.8	619.7	21.18	30.264		
4,900.0	4,890.3	4,856.0	4,846.5	11.9	11.8	-176.31	347.7	140.3	654.5	632.8	21.63	30.256		
5,000.0	4,990.1	4,955.1	4,945.3	12.2	12.1	-176.19	354.6	141.3	668.1	646.0	22.09	30.249		
5,100.0	5,089.9	5,054.1	5,044.1	12.4	12.3	-176.06	361.4	142.3	681.7	659.2	22.54	30.243		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> S11-T10N-R58W - Razor #11G-0212B - HZ - Plan #1												<b>Offset Site Error:</b>	0.0 usft
Survey Program: 0-ISCSWA MWD												<b>Offset Well Error:</b>	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,189.6	5,153.2	5,142.9	12.7	12.6	175.95	368.2	143.3	695.4	672.4	23.00	30.236	
5,300.0	5,289.4	5,252.2	5,241.7	12.9	12.8	175.83	375.1	144.4	709.0	685.6	23.45	30.230 SF	
5,400.0	5,389.1	5,351.3	5,340.5	13.2	13.1	175.72	381.9	145.4	722.7	698.8	23.89	30.249	
5,500.0	5,487.4	5,448.2	5,437.2	13.6	13.3	175.47	388.6	146.4	746.8	723.2	23.60	31.640	
5,600.0	5,580.5	5,500.0	5,488.9	14.1	13.4	175.06	392.2	146.9	789.9	767.5	22.42	35.227	
5,700.0	5,665.0	5,550.0	5,538.5	14.8	13.6	174.28	398.4	147.9	853.1	832.5	20.52	41.563	
5,800.0	5,737.9	5,566.6	5,554.8	15.7	13.7	172.65	401.4	148.3	932.9	914.9	18.01	51.803	
5,900.0	5,796.3	5,581.0	5,568.8	16.8	13.7	168.74	404.5	148.8	1,024.1	1,008.7	15.48	66.141	
6,000.0	5,838.3	5,600.0	5,587.2	18.1	13.8	153.29	409.2	149.5	1,122.0	1,104.7	17.32	64.783	
6,100.0	5,862.2	5,600.0	5,587.2	19.6	13.8	32.20	409.2	149.5	1,221.7	1,202.1	19.53	62.569	
6,200.0	5,867.7	5,600.0	5,587.2	21.1	13.8	9.43	409.2	149.5	1,320.1	1,310.1	10.01	131.815	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1410B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	33.0	33.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	33.0	33.0	32.9	0.19	176.699		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	33.0	33.0	32.4	0.64	51.912		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	33.0	33.0	32.0	1.09	30.425		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	33.0	33.0	31.5	1.54	21.518		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	33.0	33.0	31.1	1.99	16.646		
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	33.0	33.0	30.6	2.43	13.572		
700.0	700.0	700.0	700.0	1.4	1.4	90.01	0.0	33.0	33.0	30.2	2.88	11.457		
800.0	800.0	800.3	800.3	1.7	1.6	92.97	-1.7	32.5	32.6	29.3	3.31	9.852		
880.7	880.7	881.1	881.0	1.8	1.8	-110.36	-5.5	31.4	32.2	28.6	3.61	8.924 CC		
900.0	900.0	900.4	900.3	1.9	1.8	-109.12	-6.7	31.0	32.3	28.6	3.69	8.752 ES		
1,000.0	999.8	1,000.4	1,000.0	2.1	2.0	-105.69	-13.4	29.0	33.1	29.0	4.07	8.139		
1,100.0	1,099.6	1,100.4	1,099.8	2.2	2.2	-105.29	-20.1	27.0	34.5	30.0	4.48	7.700		
1,200.0	1,199.4	1,200.4	1,199.5	2.5	2.5	-104.92	-26.7	24.9	35.8	30.9	4.91	7.301		
1,300.0	1,299.1	1,300.4	1,299.2	2.7	2.7	-104.57	-33.4	22.9	37.2	31.9	5.36	6.945		
1,400.0	1,398.9	1,400.4	1,399.0	2.9	2.9	-104.26	-40.1	20.9	38.6	32.8	5.82	6.629		
1,500.0	1,498.6	1,500.4	1,498.7	3.1	3.2	-103.96	-46.8	18.8	40.0	33.7	6.30	6.349		
1,600.0	1,598.4	1,600.4	1,598.5	3.4	3.4	-103.68	-53.4	16.8	41.3	34.6	6.78	6.101		
1,700.0	1,698.1	1,700.3	1,698.2	3.6	3.7	-103.42	-60.1	14.8	42.7	35.5	7.27	5.881		
1,800.0	1,797.9	1,800.3	1,798.0	3.9	3.9	-103.18	-66.8	12.8	44.1	36.3	7.76	5.684		
1,900.0	1,897.6	1,900.3	1,897.7	4.1	4.2	-102.95	-73.5	10.7	45.5	37.2	8.26	5.508		
2,000.0	1,997.4	2,000.3	1,997.5	4.4	4.4	-102.74	-80.1	8.7	46.9	38.1	8.76	5.351		
2,100.0	2,097.2	2,100.3	2,097.2	4.6	4.7	-102.54	-86.8	6.7	48.2	39.0	9.26	5.208		
2,200.0	2,196.9	2,200.3	2,197.0	4.9	4.9	-102.35	-93.5	4.6	49.6	39.9	9.77	5.079		
2,300.0	2,296.7	2,300.3	2,296.7	5.1	5.2	-102.16	-100.1	2.6	51.0	40.7	10.28	4.962		
2,400.0	2,396.4	2,400.3	2,396.5	5.4	5.4	-101.99	-106.8	0.6	52.4	41.6	10.79	4.855		
2,500.0	2,496.2	2,500.3	2,496.2	5.6	5.7	-101.83	-113.5	-1.4	53.8	42.5	11.31	4.757		
2,600.0	2,595.9	2,600.3	2,596.0	5.9	6.0	-101.68	-120.2	-3.5	55.2	43.3	11.82	4.667		
2,700.0	2,695.7	2,700.3	2,695.7	6.1	6.2	-101.53	-126.8	-5.5	56.5	44.2	12.34	4.584		
2,800.0	2,795.5	2,800.2	2,795.5	6.4	6.5	-101.39	-133.5	-7.5	57.9	45.1	12.85	4.507		
2,900.0	2,895.2	2,900.2	2,895.2	6.7	6.7	-101.26	-140.2	-9.5	59.3	45.9	13.37	4.436		
3,000.0	2,995.0	3,000.2	2,994.9	6.9	7.0	-101.13	-146.9	-11.6	60.7	46.8	13.89	4.370		
3,100.0	3,094.7	3,100.2	3,094.7	7.2	7.3	-101.01	-153.5	-13.6	62.1	47.7	14.41	4.309		
3,200.0	3,194.5	3,200.2	3,194.4	7.4	7.5	-100.89	-160.2	-15.6	63.5	48.5	14.93	4.252		
3,300.0	3,294.2	3,300.2	3,294.2	7.7	7.8	-100.78	-166.9	-17.7	64.9	49.4	15.45	4.198		
3,400.0	3,394.0	3,400.2	3,393.9	8.0	8.0	-100.68	-173.6	-19.7	66.2	50.3	15.97	4.148		
3,500.0	3,493.7	3,500.2	3,493.7	8.2	8.3	-100.57	-180.2	-21.7	67.6	51.1	16.49	4.100		
3,600.0	3,593.5	3,600.2	3,593.4	8.5	8.6	-100.48	-186.9	-23.7	69.0	52.0	17.02	4.056		
3,700.0	3,693.3	3,700.2	3,693.2	8.7	8.8	-100.38	-193.6	-25.8	70.4	52.9	17.54	4.014		
3,800.0	3,793.0	3,800.1	3,792.9	9.0	9.1	-100.29	-200.3	-27.8	71.8	53.7	18.06	3.975		
3,900.0	3,892.8	3,900.1	3,892.7	9.3	9.3	-100.20	-206.9	-29.8	73.2	54.6	18.59	3.937		
4,000.0	3,992.5	4,000.1	3,992.4	9.5	9.6	-100.12	-213.6	-31.9	74.6	55.5	19.11	3.902		
4,100.0	4,092.3	4,100.1	4,092.2	9.8	9.9	-100.04	-220.3	-33.9	76.0	56.3	19.63	3.869		
4,200.0	4,192.0	4,200.1	4,191.9	10.1	10.1	-99.96	-226.9	-35.9	77.3	57.2	20.16	3.837		
4,300.0	4,291.8	4,300.1	4,291.7	10.3	10.4	-99.89	-233.6	-37.9	78.7	58.0	20.68	3.807		
4,400.0	4,391.6	4,400.1	4,391.4	10.6	10.7	-99.81	-240.3	-40.0	80.1	58.9	21.21	3.778		
4,500.0	4,491.3	4,500.1	4,491.1	10.8	10.9	-99.74	-247.0	-42.0	81.5	59.8	21.73	3.750		
4,600.0	4,591.1	4,600.1	4,590.9	11.1	11.2	-99.68	-253.6	-44.0	82.9	60.6	22.26	3.724		
4,700.0	4,690.8	4,700.1	4,690.6	11.4	11.4	-99.61	-260.3	-46.0	84.3	61.5	22.78	3.699		
4,800.0	4,790.6	4,800.0	4,790.4	11.6	11.7	-99.55	-267.0	-48.1	85.7	62.4	23.31	3.675		
4,900.0	4,890.3	4,900.0	4,890.1	11.9	12.0	-99.49	-273.7	-50.1	87.1	63.2	23.83	3.653		
5,000.0	4,990.1	5,000.0	4,989.9	12.2	12.2	-99.43	-280.3	-52.1	88.4	64.1	24.36	3.631		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1410B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,089.9	5,100.0	5,089.6	12.4	12.5	-99.37	-287.0	-54.2	89.8	65.0	24.89	3.610		
5,200.0	5,189.6	5,200.0	5,189.4	12.7	12.8	-99.31	-293.7	-56.2	91.2	65.8	25.41	3.590		
5,300.0	5,289.4	5,300.0	5,289.1	12.9	13.0	-99.26	-300.4	-58.2	92.6	66.7	25.94	3.570		
5,400.0	5,389.1	5,400.0	5,388.9	13.2	13.3	-99.22	-307.0	-60.2	94.0	67.5	26.47	3.552		
5,500.0	5,487.4	5,499.3	5,487.9	13.6	13.6	-104.94	-313.7	-62.3	97.7	70.7	26.99	3.619		
5,600.0	5,580.5	5,600.4	5,587.3	14.1	13.9	-113.89	-330.3	-67.3	107.7	80.3	27.39	3.932		
5,700.0	5,665.0	5,705.2	5,684.8	14.8	14.5	-119.85	-366.6	-78.3	123.1	95.4	27.72	4.441		
5,800.0	5,737.9	5,813.7	5,775.7	15.7	15.3	-122.91	-423.0	-95.5	142.1	113.9	28.22	5.034		
5,900.0	5,796.3	5,925.9	5,854.7	16.8	16.3	-123.60	-498.9	-118.5	163.0	133.7	29.28	5.566		
6,000.0	5,838.3	6,041.5	5,916.5	18.1	17.7	-122.52	-592.2	-146.9	184.6	153.4	31.18	5.919		
6,100.0	5,862.2	6,160.1	5,955.9	19.6	19.3	-120.14	-699.0	-179.3	205.9	171.8	34.04	6.048		
6,200.0	5,867.7	6,280.2	5,969.2	21.1	21.0	-117.13	-812.9	-213.9	225.8	188.1	37.68	5.991		
6,300.0	5,867.7	6,368.7	5,969.2	22.4	22.2	-115.13	-898.2	-237.6	242.4	201.5	40.83	5.936		
6,400.0	5,867.7	6,456.6	5,969.2	23.9	23.4	-113.43	-983.8	-257.1	258.7	214.8	43.91	5.890		
6,500.0	5,867.7	6,543.8	5,969.2	25.3	24.6	-111.98	-1,069.7	-272.6	274.6	227.6	46.95	5.848		
6,600.0	5,867.7	6,630.5	5,969.2	26.8	25.9	-110.74	-1,155.6	-284.1	290.0	240.1	49.91	5.810		
6,700.0	5,867.7	6,716.6	5,969.2	28.3	27.2	-109.67	-1,241.4	-291.7	304.8	252.1	52.78	5.775		
6,800.0	5,867.7	6,800.0	5,969.2	29.9	28.4	-108.76	-1,324.7	-295.3	319.1	263.6	55.51	5.749		
6,900.0	5,867.7	6,895.1	5,969.2	31.4	29.9	-107.91	-1,419.7	-295.7	332.1	273.7	58.36	5.691		
7,000.0	5,867.7	6,994.7	5,969.2	32.9	31.5	-107.37	-1,519.3	-295.7	340.6	279.5	61.15	5.570		
7,100.0	5,867.7	7,094.6	5,969.2	34.5	33.2	-107.15	-1,619.2	-295.7	344.2	280.4	63.75	5.398		
7,200.0	5,867.7	7,194.6	5,969.2	36.0	34.9	-107.14	-1,719.2	-295.7	344.3	277.4	66.84	5.150		
7,300.0	5,867.7	7,294.6	5,969.2	37.6	36.6	-107.14	-1,819.2	-295.7	344.3	274.1	70.15	4.908		
7,400.0	5,867.7	7,394.6	5,969.2	39.2	38.4	-107.14	-1,919.2	-295.7	344.3	270.8	73.49	4.685		
7,500.0	5,867.7	7,494.6	5,969.2	40.9	40.1	-107.14	-2,019.2	-295.7	344.3	267.4	76.87	4.479		
7,600.0	5,867.7	7,594.6	5,969.2	42.5	41.9	-107.13	-2,119.2	-295.7	344.3	264.0	80.28	4.289		
7,700.0	5,867.7	7,694.6	5,969.1	44.2	43.7	-107.13	-2,219.2	-295.6	344.3	260.6	83.71	4.113		
7,800.0	5,867.7	7,794.6	5,969.1	45.9	45.5	-107.13	-2,319.2	-295.6	344.3	257.2	87.16	3.951		
7,900.0	5,867.7	7,894.6	5,969.1	47.7	47.3	-107.13	-2,419.2	-295.6	344.3	253.7	90.63	3.799		
8,000.0	5,867.7	7,994.6	5,969.1	49.4	49.1	-107.13	-2,519.2	-295.6	344.3	250.2	94.12	3.659		
8,100.0	5,867.7	8,094.6	5,969.1	51.2	51.0	-107.13	-2,619.2	-295.6	344.4	246.7	97.63	3.527		
8,200.0	5,867.7	8,194.6	5,969.1	52.9	52.8	-107.12	-2,719.2	-295.6	344.4	243.2	101.15	3.405		
8,300.0	5,867.7	8,294.6	5,969.1	54.7	54.6	-107.12	-2,819.2	-295.6	344.4	239.7	104.68	3.290		
8,400.0	5,867.8	8,394.6	5,969.1	56.5	56.5	-107.12	-2,919.2	-295.6	344.4	236.2	108.22	3.182		
8,500.0	5,867.8	8,494.6	5,969.1	58.3	58.3	-107.12	-3,019.2	-295.6	344.4	232.6	111.77	3.081		
8,600.0	5,867.8	8,594.6	5,969.1	60.1	60.2	-107.12	-3,119.2	-295.6	344.4	229.1	115.34	2.986		
8,700.0	5,867.8	8,694.6	5,969.1	61.9	62.0	-107.11	-3,219.2	-295.6	344.4	225.5	118.91	2.897		
8,800.0	5,867.8	8,794.6	5,969.1	63.7	63.9	-107.11	-3,319.2	-295.6	344.4	221.9	122.48	2.812		
8,900.0	5,867.8	8,894.6	5,969.1	65.5	65.7	-107.11	-3,419.2	-295.6	344.4	218.4	126.07	2.732		
9,000.0	5,867.8	8,994.6	5,969.1	67.3	67.6	-107.11	-3,519.2	-295.5	344.4	214.8	129.66	2.656		
9,100.0	5,867.8	9,094.6	5,969.1	69.2	69.5	-107.11	-3,619.2	-295.5	344.5	211.2	133.26	2.585		
9,200.0	5,867.8	9,194.6	5,969.1	71.0	71.4	-107.11	-3,719.2	-295.5	344.5	207.6	136.86	2.517		
9,300.0	5,867.8	9,294.6	5,969.1	72.8	73.2	-107.10	-3,819.2	-295.5	344.5	204.0	140.47	2.452		
9,400.0	5,867.8	9,394.6	5,969.1	74.7	75.1	-107.10	-3,919.2	-295.5	344.5	200.4	144.09	2.391		
9,500.0	5,867.8	9,494.6	5,969.1	76.5	77.0	-107.10	-4,019.2	-295.5	344.5	196.8	147.70	2.332		
9,600.0	5,867.8	9,594.6	5,969.1	78.4	78.9	-107.10	-4,119.2	-295.5	344.5	193.2	151.32	2.277		
9,700.0	5,867.8	9,694.6	5,969.1	80.2	80.8	-107.10	-4,219.2	-295.5	344.5	189.6	154.95	2.223		
9,800.0	5,867.8	9,794.6	5,969.1	82.1	82.6	-107.10	-4,319.2	-295.5	344.5	185.9	158.58	2.173		
9,900.0	5,867.8	9,894.6	5,969.1	84.0	84.5	-107.09	-4,419.2	-295.5	344.5	182.3	162.21	2.124		
10,000.0	5,867.8	9,994.6	5,969.1	85.8	86.4	-107.09	-4,519.2	-295.5	344.5	178.7	165.85	2.078		
10,100.0	5,867.8	10,094.6	5,969.1	87.7	88.3	-107.09	-4,619.2	-295.5	344.6	175.1	169.48	2.033		
10,200.0	5,867.8	10,194.6	5,969.1	89.6	90.2	-107.09	-4,719.2	-295.5	344.6	171.4	173.12	1.990		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1410B - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	5,867.8	10,294.6	5,969.1	91.4	92.1	-107.09	-4,819.2	-295.4	344.6	167.8	176.77	1.949	
10,400.0	5,867.8	10,394.6	5,969.1	93.3	94.0	-107.08	-4,919.2	-295.4	344.6	164.2	180.41	1.910	
10,500.0	5,867.9	10,494.6	5,969.1	95.2	95.9	-107.08	-5,019.2	-295.4	344.6	160.5	184.06	1.872	
10,600.0	5,867.9	10,594.6	5,969.1	97.1	97.8	-107.08	-5,119.2	-295.4	344.6	156.9	187.71	1.836	
10,700.0	5,867.9	10,694.6	5,969.1	98.9	99.7	-107.08	-5,219.2	-295.4	344.6	153.3	191.36	1.801	
10,800.0	5,867.9	10,794.6	5,969.1	100.8	101.6	-107.08	-5,319.2	-295.4	344.6	149.6	195.02	1.767	
10,900.0	5,867.9	10,894.6	5,969.1	102.7	103.5	-107.08	-5,419.2	-295.4	344.6	146.0	198.67	1.735	
11,000.0	5,867.9	10,994.6	5,969.1	104.6	105.4	-107.07	-5,519.2	-295.4	344.6	142.3	202.33	1.703	
11,100.0	5,867.9	11,094.6	5,969.1	106.5	107.3	-107.07	-5,619.2	-295.4	344.7	138.7	205.99	1.673	
11,200.0	5,867.9	11,194.6	5,969.1	108.4	109.2	-107.07	-5,719.2	-295.4	344.7	135.0	209.65	1.644	
11,300.0	5,867.9	11,294.6	5,969.1	110.2	111.1	-107.07	-5,819.2	-295.4	344.7	131.4	213.31	1.616	
11,400.0	5,867.9	11,394.6	5,969.1	112.1	113.0	-107.07	-5,919.2	-295.4	344.7	127.7	216.97	1.589	
11,500.0	5,867.9	11,494.6	5,969.1	114.0	114.9	-107.06	-6,019.2	-295.3	344.7	124.1	220.64	1.562	
11,600.0	5,867.9	11,594.6	5,969.1	115.9	116.8	-107.06	-6,119.2	-295.3	344.7	120.4	224.30	1.537	
11,700.0	5,867.9	11,694.6	5,969.0	117.8	118.7	-107.06	-6,219.2	-295.3	344.7	116.7	227.97	1.512	
11,800.0	5,867.9	11,794.6	5,969.0	119.7	120.6	-107.06	-6,319.2	-295.3	344.7	113.1	231.64	1.488 Level 3	
11,900.0	5,867.9	11,894.6	5,969.0	121.6	122.5	-107.06	-6,419.2	-295.3	344.7	109.4	235.31	1.465 Level 3	
12,000.0	5,867.9	11,994.6	5,969.0	123.5	124.4	-107.06	-6,519.2	-295.3	344.7	105.8	238.98	1.443 Level 3	
12,100.0	5,867.9	12,094.6	5,969.0	125.4	126.3	-107.05	-6,619.2	-295.3	344.8	102.1	242.65	1.421 Level 3	
12,200.0	5,867.9	12,194.6	5,969.0	127.3	128.2	-107.05	-6,719.2	-295.3	344.8	98.4	246.32	1.400 Level 3	
12,300.0	5,867.9	12,294.6	5,969.0	129.2	130.1	-107.05	-6,819.2	-295.3	344.8	94.8	249.99	1.379 Level 3	
12,400.0	5,867.9	12,394.6	5,969.0	131.1	132.0	-107.05	-6,919.2	-295.3	344.8	91.1	253.67	1.359 Level 3	
12,500.0	5,867.9	12,494.6	5,969.0	133.0	133.9	-107.05	-7,019.2	-295.3	344.8	87.4	257.34	1.340 Level 3	
12,600.0	5,868.0	12,594.6	5,969.0	134.9	135.9	-107.05	-7,119.2	-295.3	344.8	83.8	261.02	1.321 Level 3	
12,700.0	5,868.0	12,694.6	5,969.0	136.8	137.8	-107.04	-7,219.2	-295.3	344.8	80.1	264.69	1.303 Level 3	
12,800.0	5,868.0	12,794.6	5,969.0	138.7	139.7	-107.04	-7,319.2	-295.2	344.8	76.4	268.37	1.285 Level 3	
12,900.0	5,868.0	12,894.6	5,969.0	140.6	141.6	-107.04	-7,419.2	-295.2	344.8	72.8	272.05	1.268 Level 3	
13,000.0	5,868.0	12,994.6	5,969.0	142.5	143.5	-107.04	-7,519.2	-295.2	344.8	69.1	275.73	1.251 Level 3	
13,100.0	5,868.0	13,094.6	5,969.0	144.4	145.4	-107.04	-7,619.2	-295.2	344.8	65.4	279.41	1.234 Level 2	
13,200.0	5,868.0	13,194.6	5,969.0	146.3	147.3	-107.04	-7,719.2	-295.2	344.9	61.8	283.08	1.218 Level 2	
13,300.0	5,868.0	13,294.6	5,969.0	148.2	149.2	-107.03	-7,819.2	-295.2	344.9	58.1	286.77	1.203 Level 2	
13,400.0	5,868.0	13,394.6	5,969.0	150.1	151.1	-107.03	-7,919.2	-295.2	344.9	54.4	290.45	1.187 Level 2	
13,500.0	5,868.0	13,494.6	5,969.0	152.0	153.0	-107.03	-8,019.2	-295.2	344.9	50.8	294.13	1.173 Level 2	
13,554.6	5,868.0	13,549.2	5,969.0	153.0	153.9	-107.03	-8,073.8	-295.2	344.9	49.0	295.94	1.165 Level 2	
13,592.4	5,868.0	13,585.0	5,969.0	153.7	154.5	-107.03	-8,109.7	-295.2	344.9	47.7	297.20	1.161 Level 2, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1411A - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCSWA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	66.1	66.1					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	66.1	66.1	65.9	0.19	353.398		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	66.1	66.1	65.5	0.64	103.823		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	66.1	66.1	65.0	1.09	60.850		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	66.1	66.1	64.6	1.54	43.037		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	66.1	66.1	64.1	1.99	33.291		
600.0	600.0	600.0	600.0	1.2	1.2	90.01	0.0	66.1	66.1	63.7	2.43	27.144		
700.0	700.0	700.0	700.0	1.4	1.4	91.53	-1.8	66.0	66.0	63.2	2.86	23.122		
716.8	716.8	716.9	716.8	1.5	1.4	92.08	-2.4	66.0	66.0	63.1	2.93	22.578 CC		
800.0	800.0	799.8	799.7	1.7	1.6	96.05	-7.0	65.8	66.2	62.9	3.26	20.283 ES		
900.0	900.0	899.7	899.3	1.9	1.8	-107.74	-13.9	65.6	67.6	63.9	3.66	18.442		
1,000.0	999.8	999.6	999.0	2.1	2.0	-106.13	-20.9	65.3	70.2	66.2	4.06	17.289		
1,100.0	1,099.6	1,099.6	1,098.7	2.2	2.2	-106.00	-27.9	65.1	73.4	68.9	4.49	16.362		
1,200.0	1,199.4	1,199.5	1,198.4	2.5	2.5	-105.88	-34.8	64.8	76.5	71.6	4.93	15.532		
1,300.0	1,299.1	1,299.5	1,298.1	2.7	2.7	-105.77	-41.8	64.6	79.7	74.3	5.39	14.799		
1,400.0	1,398.9	1,399.4	1,397.8	2.9	3.0	-105.66	-48.8	64.3	82.9	77.0	5.86	14.153		
1,500.0	1,498.6	1,499.4	1,497.5	3.1	3.2	-105.57	-55.7	64.1	86.0	79.7	6.33	13.584		
1,600.0	1,598.4	1,599.3	1,597.2	3.4	3.5	-105.48	-62.7	63.8	89.2	82.4	6.82	13.081		
1,700.0	1,698.1	1,699.3	1,696.9	3.6	3.7	-105.40	-69.7	63.6	92.4	85.1	7.31	12.636		
1,800.0	1,797.9	1,799.2	1,796.6	3.9	4.0	-105.33	-76.6	63.3	95.6	87.7	7.81	12.239		
1,900.0	1,897.6	1,899.2	1,896.3	4.1	4.2	-105.25	-83.6	63.1	98.7	90.4	8.31	11.885		
2,000.0	1,997.4	1,999.1	1,996.0	4.4	4.5	-105.19	-90.6	62.8	101.9	93.1	8.81	11.566		
2,100.0	2,097.2	2,099.1	2,095.7	4.6	4.7	-105.12	-97.5	62.5	105.1	95.7	9.31	11.279		
2,200.0	2,196.9	2,199.0	2,195.5	4.9	5.0	-105.06	-104.5	62.3	108.2	98.4	9.82	11.018		
2,300.0	2,296.7	2,299.0	2,295.2	5.1	5.3	-105.01	-111.5	62.0	111.4	101.1	10.33	10.782		
2,400.0	2,396.4	2,398.9	2,394.9	5.4	5.5	-104.96	-118.5	61.8	114.6	103.7	10.84	10.566		
2,500.0	2,496.2	2,498.9	2,494.6	5.6	5.8	-104.91	-125.4	61.5	117.7	106.4	11.36	10.368		
2,600.0	2,595.9	2,598.8	2,594.3	5.9	6.0	-104.86	-132.4	61.3	120.9	109.0	11.87	10.186		
2,700.0	2,695.7	2,698.8	2,694.0	6.1	6.3	-104.81	-139.4	61.0	124.1	111.7	12.38	10.018		
2,800.0	2,795.5	2,798.7	2,793.7	6.4	6.6	-104.77	-146.3	60.8	127.2	114.3	12.90	9.863		
2,900.0	2,895.2	2,898.7	2,893.4	6.7	6.8	-104.73	-153.3	60.5	130.4	117.0	13.42	9.719		
3,000.0	2,995.0	2,998.6	2,993.1	6.9	7.1	-104.69	-160.3	60.3	133.6	119.6	13.93	9.586		
3,100.0	3,094.7	3,098.6	3,092.8	7.2	7.3	-104.66	-167.2	60.0	136.7	122.3	14.45	9.462		
3,200.0	3,194.5	3,198.5	3,192.5	7.4	7.6	-104.62	-174.2	59.8	139.9	124.9	14.97	9.345		
3,300.0	3,294.2	3,298.5	3,292.2	7.7	7.9	-104.59	-181.2	59.5	143.1	127.6	15.49	9.237		
3,400.0	3,394.0	3,398.4	3,391.9	8.0	8.1	-104.55	-188.1	59.3	146.2	130.2	16.01	9.135		
3,500.0	3,493.7	3,498.4	3,491.6	8.2	8.4	-104.52	-195.1	59.0	149.4	132.9	16.53	9.039		
3,600.0	3,593.5	3,598.3	3,591.3	8.5	8.6	-104.49	-202.1	58.7	152.6	135.5	17.05	8.949		
3,700.0	3,693.3	3,698.3	3,691.0	8.7	8.9	-104.47	-209.0	58.5	155.8	138.2	17.57	8.864		
3,800.0	3,793.0	3,798.2	3,790.8	9.0	9.2	-104.44	-216.0	58.2	158.9	140.8	18.09	8.784		
3,900.0	3,892.8	3,898.2	3,890.5	9.3	9.4	-104.41	-223.0	58.0	162.1	143.5	18.61	8.708		
4,000.0	3,992.5	3,998.1	3,990.2	9.5	9.7	-104.39	-229.9	57.7	165.3	146.1	19.14	8.636		
4,100.0	4,092.3	4,098.1	4,089.9	9.8	10.0	-104.36	-236.9	57.5	168.4	148.8	19.66	8.568		
4,200.0	4,192.0	4,198.0	4,189.6	10.1	10.2	-104.34	-243.9	57.2	171.6	151.4	20.18	8.503		
4,300.0	4,291.8	4,298.0	4,289.3	10.3	10.5	-104.32	-250.8	57.0	174.8	154.1	20.70	8.442		
4,400.0	4,391.6	4,397.9	4,389.0	10.6	10.8	-104.30	-257.8	56.7	177.9	156.7	21.23	8.383		
4,500.0	4,491.3	4,497.9	4,488.7	10.8	11.0	-104.28	-264.8	56.5	181.1	159.4	21.75	8.327		
4,600.0	4,591.1	4,597.8	4,588.4	11.1	11.3	-104.26	-271.7	56.2	184.3	162.0	22.27	8.274		
4,700.0	4,690.8	4,697.8	4,688.1	11.4	11.5	-104.24	-278.7	56.0	187.4	164.7	22.80	8.223		
4,800.0	4,790.6	4,797.7	4,787.8	11.6	11.8	-104.22	-285.7	55.7	190.6	167.3	23.32	8.174		
4,900.0	4,890.3	4,897.7	4,887.5	11.9	12.1	-104.20	-292.6	55.5	193.8	169.9	23.84	8.128		
5,000.0	4,990.1	4,997.6	4,987.2	12.2	12.3	-104.18	-299.6	55.2	197.0	172.6	24.37	8.083		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1411A - HZ - Plan #1												Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,089.9	5,097.6	5,086.9	12.4	12.6	-104.16	-306.6	55.0	200.1	175.2	24.89	8.041	
5,200.0	5,189.6	5,197.5	5,186.6	12.7	12.9	-104.15	-313.5	54.7	203.3	177.9	25.41	7.999	
5,300.0	5,289.4	5,297.5	5,286.3	12.9	13.1	-104.13	-320.5	54.4	206.5	180.5	25.94	7.960	
5,400.0	5,389.1	5,397.2	5,385.9	13.2	13.4	-104.10	-327.5	54.2	209.6	183.2	26.46	7.923	
5,500.0	5,487.4	5,489.1	5,476.4	13.6	13.7	-103.61	-342.3	53.7	217.3	190.2	27.09	8.023	
5,600.0	5,580.5	5,580.1	5,562.1	14.1	14.2	-102.56	-372.4	52.6	233.0	205.1	27.98	8.328	
5,700.0	5,665.0	5,669.6	5,640.1	14.8	14.8	-101.00	-416.1	51.0	256.1	227.0	29.18	8.777	
5,800.0	5,737.9	5,757.5	5,708.3	15.7	15.5	-98.98	-471.3	49.0	285.7	254.9	30.79	9.280	
5,900.0	5,796.3	5,844.0	5,765.4	16.8	16.4	-96.58	-536.1	46.6	320.6	287.9	32.79	9.779	
6,000.0	5,838.3	5,929.5	5,810.6	18.1	17.4	-93.87	-608.6	44.0	359.8	324.6	35.14	10.238	
6,100.0	5,862.2	6,014.9	5,843.2	19.6	18.5	-90.98	-687.3	41.1	401.8	364.1	37.76	10.642	
6,200.0	5,867.7	6,101.3	5,862.7	21.1	19.7	-89.30	-771.4	38.1	445.4	404.8	40.59	10.974	
6,300.0	5,867.7	6,189.1	5,868.2	22.4	21.0	-90.07	-858.8	34.9	486.1	442.7	43.47	11.183	
6,400.0	5,867.7	6,266.5	5,868.2	23.9	22.1	-90.06	-936.2	34.1	524.3	478.1	46.20	11.350	
6,500.0	5,867.7	6,360.4	5,868.2	25.3	23.6	-90.05	-1,030.1	34.1	558.7	509.4	49.29	11.336	
6,600.0	5,867.7	6,455.9	5,868.2	26.8	25.1	-90.05	-1,125.7	34.1	588.2	535.7	52.46	11.212	
6,700.0	5,867.7	6,552.9	5,868.2	28.3	26.7	-90.05	-1,222.6	34.1	612.6	556.9	55.64	11.009	
6,800.0	5,867.7	6,651.0	5,868.2	29.9	28.4	-90.05	-1,320.7	34.1	631.9	573.1	58.80	10.746	
6,900.0	5,867.7	6,750.0	5,868.2	31.4	30.1	-90.04	-1,419.7	34.1	646.0	584.1	61.90	10.437	
7,000.0	5,867.7	6,849.6	5,868.2	32.9	31.9	-90.04	-1,519.3	34.1	655.0	590.1	64.91	10.091	
7,100.0	5,867.7	6,949.5	5,868.2	34.5	33.6	-90.04	-1,619.2	34.1	658.7	590.9	67.79	9.717	
7,200.0	5,867.7	7,049.5	5,868.2	36.0	35.4	-90.04	-1,719.2	34.1	658.8	587.7	71.09	9.268	
7,300.0	5,867.7	7,149.5	5,868.2	37.6	37.2	-90.04	-1,819.2	34.1	658.8	584.3	74.56	8.836	
7,400.0	5,867.7	7,249.5	5,868.2	39.2	39.0	-90.04	-1,919.2	34.2	658.8	580.8	78.08	8.438	
7,500.0	5,867.7	7,349.5	5,868.2	40.9	40.8	-90.04	-2,019.2	34.2	658.8	577.2	81.62	8.072	
7,600.0	5,867.7	7,449.5	5,868.2	42.5	42.7	-90.04	-2,119.2	34.2	658.9	573.7	85.19	7.734	
7,700.0	5,867.7	7,549.5	5,868.1	44.2	44.5	-90.04	-2,219.2	34.2	658.9	570.1	88.78	7.421	
7,800.0	5,867.7	7,649.5	5,868.1	45.9	46.3	-90.04	-2,319.2	34.2	658.9	566.5	92.39	7.131	
7,900.0	5,867.7	7,749.5	5,868.1	47.7	48.2	-90.04	-2,419.2	34.2	658.9	562.9	96.03	6.862	
8,000.0	5,867.7	7,849.5	5,868.1	49.4	50.0	-90.04	-2,519.2	34.2	658.9	559.2	99.67	6.611	
8,100.0	5,867.7	7,949.5	5,868.1	51.2	51.9	-90.03	-2,619.2	34.2	658.9	555.6	103.34	6.376	
8,200.0	5,867.7	8,049.5	5,868.1	52.9	53.8	-90.03	-2,719.2	34.2	658.9	551.9	107.01	6.157	
8,300.0	5,867.7	8,149.5	5,868.1	54.7	55.6	-90.03	-2,819.2	34.2	658.9	548.2	110.70	5.953	
8,400.0	5,867.8	8,249.5	5,868.1	56.5	57.5	-90.03	-2,919.2	34.2	658.9	544.6	114.40	5.760	
8,500.0	5,867.8	8,349.5	5,868.1	58.3	59.4	-90.03	-3,019.2	34.2	659.0	540.9	118.10	5.580	
8,600.0	5,867.8	8,449.5	5,868.1	60.1	61.3	-90.03	-3,119.2	34.2	659.0	537.2	121.82	5.409	
8,700.0	5,867.8	8,549.5	5,868.1	61.9	63.1	-90.03	-3,219.2	34.2	659.0	533.4	125.54	5.249	
8,800.0	5,867.8	8,649.5	5,868.1	63.7	65.0	-90.03	-3,319.2	34.3	659.0	529.7	129.27	5.098	
8,900.0	5,867.8	8,749.5	5,868.1	65.5	66.9	-90.03	-3,419.2	34.3	659.0	526.0	133.01	4.955	
9,000.0	5,867.8	8,849.5	5,868.1	67.3	68.8	-90.03	-3,519.2	34.3	659.0	522.3	136.75	4.819	
9,100.0	5,867.8	8,949.5	5,868.1	69.2	70.7	-90.03	-3,619.2	34.3	659.0	518.5	140.50	4.691	
9,200.0	5,867.8	9,049.5	5,868.1	71.0	72.6	-90.03	-3,719.2	34.3	659.0	514.8	144.25	4.569	
9,300.0	5,867.8	9,149.5	5,868.1	72.8	74.5	-90.03	-3,819.2	34.3	659.1	511.0	148.01	4.453	
9,400.0	5,867.8	9,249.5	5,868.1	74.7	76.4	-90.03	-3,919.2	34.3	659.1	507.3	151.78	4.342	
9,500.0	5,867.8	9,349.5	5,868.1	76.5	78.3	-90.03	-4,019.2	34.3	659.1	503.5	155.54	4.237	
9,600.0	5,867.8	9,449.5	5,868.1	78.4	80.2	-90.03	-4,119.2	34.3	659.1	499.8	159.31	4.137	
9,700.0	5,867.8	9,549.5	5,868.1	80.2	82.0	-90.02	-4,219.2	34.3	659.1	496.0	163.09	4.041	
9,800.0	5,867.8	9,649.5	5,868.1	82.1	83.9	-90.02	-4,319.2	34.3	659.1	492.2	166.86	3.950	
9,900.0	5,867.8	9,749.5	5,868.1	84.0	85.8	-90.02	-4,419.2	34.3	659.1	488.5	170.64	3.863	
10,000.0	5,867.8	9,849.5	5,868.1	85.8	87.7	-90.02	-4,519.2	34.3	659.1	484.7	174.43	3.779	
10,100.0	5,867.8	9,949.5	5,868.1	87.7	89.6	-90.02	-4,619.2	34.3	659.1	480.9	178.21	3.699	
10,200.0	5,867.8	10,049.5	5,868.1	89.6	91.6	-90.02	-4,719.2	34.4	659.2	477.2	182.00	3.622	

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1411A - HZ - Plan #1												Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD												Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis		Separation Factor
10,300.0	5,867.8	10,149.5	5,868.1	91.4	93.5	-90.02	-4,819.2	34.4	659.2	473.4	185.79	3.548	
10,400.0	5,867.8	10,249.5	5,868.1	93.3	95.4	-90.02	-4,919.2	34.4	659.2	469.6	189.58	3.477	
10,500.0	5,867.9	10,349.5	5,868.1	95.2	97.3	-90.02	-5,019.2	34.4	659.2	465.8	193.38	3.409	
10,600.0	5,867.9	10,449.5	5,868.1	97.1	99.2	-90.02	-5,119.2	34.4	659.2	462.0	197.17	3.343	
10,700.0	5,867.9	10,549.5	5,868.1	98.9	101.1	-90.02	-5,219.2	34.4	659.2	458.2	200.97	3.280	
10,800.0	5,867.9	10,649.5	5,868.1	100.8	103.0	-90.02	-5,319.2	34.4	659.2	454.5	204.77	3.219	
10,900.0	5,867.9	10,749.5	5,868.1	102.7	104.9	-90.02	-5,419.2	34.4	659.2	450.7	208.57	3.161	
11,000.0	5,867.9	10,849.5	5,868.1	104.6	106.8	-90.02	-5,519.2	34.4	659.3	446.9	212.38	3.104	
11,100.0	5,867.9	10,949.5	5,868.1	106.5	108.7	-90.02	-5,619.2	34.4	659.3	443.1	216.18	3.050	
11,200.0	5,867.9	11,049.5	5,868.1	108.4	110.6	-90.02	-5,719.2	34.4	659.3	439.3	219.99	2.997	
11,300.0	5,867.9	11,149.5	5,868.1	110.2	112.5	-90.01	-5,819.2	34.4	659.3	435.5	223.79	2.946	
11,400.0	5,867.9	11,249.5	5,868.1	112.1	114.4	-90.01	-5,919.2	34.4	659.3	431.7	227.60	2.897	
11,500.0	5,867.9	11,349.5	5,868.1	114.0	116.3	-90.01	-6,019.2	34.4	659.3	427.9	231.41	2.849	
11,600.0	5,867.9	11,449.5	5,868.0	115.9	118.2	-90.01	-6,119.2	34.5	659.3	424.1	235.22	2.803	
11,700.0	5,867.9	11,549.5	5,868.0	117.8	120.2	-90.01	-6,219.2	34.5	659.3	420.3	239.03	2.758	
11,800.0	5,867.9	11,649.5	5,868.0	119.7	122.1	-90.01	-6,319.2	34.5	659.3	416.5	242.85	2.715	
11,900.0	5,867.9	11,749.5	5,868.0	121.6	124.0	-90.01	-6,419.2	34.5	659.4	412.7	246.66	2.673	
12,000.0	5,867.9	11,849.5	5,868.0	123.5	125.9	-90.01	-6,519.2	34.5	659.4	408.9	250.47	2.632	
12,100.0	5,867.9	11,949.5	5,868.0	125.4	127.8	-90.01	-6,619.2	34.5	659.4	405.1	254.29	2.593	
12,200.0	5,867.9	12,049.5	5,868.0	127.3	129.7	-90.01	-6,719.2	34.5	659.4	401.3	258.11	2.555	
12,300.0	5,867.9	12,149.5	5,868.0	129.2	131.6	-90.01	-6,819.2	34.5	659.4	397.5	261.92	2.518	
12,400.0	5,867.9	12,249.5	5,868.0	131.1	133.5	-90.01	-6,919.2	34.5	659.4	393.7	265.74	2.481	
12,500.0	5,867.9	12,349.5	5,868.0	133.0	135.5	-90.01	-7,019.2	34.5	659.4	389.9	269.56	2.446	
12,600.0	5,868.0	12,449.5	5,868.0	134.9	137.4	-90.01	-7,119.2	34.5	659.4	386.1	273.38	2.412	
12,700.0	5,868.0	12,549.5	5,868.0	136.8	139.3	-90.01	-7,219.2	34.5	659.5	382.3	277.20	2.379	
12,800.0	5,868.0	12,649.5	5,868.0	138.7	141.2	-90.00	-7,319.2	34.5	659.5	378.4	281.02	2.347	
12,900.0	5,868.0	12,749.5	5,868.0	140.6	143.1	-90.00	-7,419.2	34.5	659.5	374.6	284.84	2.315	
13,000.0	5,868.0	12,849.5	5,868.0	142.5	145.0	-90.00	-7,519.2	34.6	659.5	370.8	288.66	2.285	
13,100.0	5,868.0	12,949.5	5,868.0	144.4	146.9	-90.00	-7,619.2	34.6	659.5	367.0	292.49	2.255	
13,200.0	5,868.0	13,049.5	5,868.0	146.3	148.9	-90.00	-7,719.2	34.6	659.5	363.2	296.31	2.226	
13,300.0	5,868.0	13,149.5	5,868.0	148.2	150.8	-90.00	-7,819.2	34.6	659.5	359.4	300.13	2.197	
13,400.0	5,868.0	13,249.5	5,868.0	150.1	152.7	-90.00	-7,919.2	34.6	659.5	355.6	303.96	2.170	
13,500.0	5,868.0	13,349.5	5,868.0	152.0	154.6	-90.00	-8,019.2	34.6	659.5	351.8	307.78	2.143	
13,553.7	5,868.0	13,403.2	5,868.0	153.0	155.6	-90.00	-8,072.9	34.6	659.6	349.7	309.80	2.129	
13,592.4	5,868.0	13,437.9	5,868.0	153.7	156.3	-90.00	-8,107.6	34.6	659.6	348.3	311.24	2.119 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1412B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.01	0.0	99.1	99.1					
100.0	100.0	100.0	100.0	0.1	0.1	90.01	0.0	99.1	99.1	98.9	0.19	530.097		
200.0	200.0	200.0	200.0	0.3	0.3	90.01	0.0	99.1	99.1	98.5	0.64	155.735		
300.0	300.0	300.0	300.0	0.5	0.5	90.01	0.0	99.1	99.1	98.0	1.09	91.275		
400.0	400.0	400.0	400.0	0.8	0.8	90.01	0.0	99.1	99.1	97.6	1.54	64.555		
500.0	500.0	500.0	500.0	1.0	1.0	90.01	0.0	99.1	99.1	97.1	1.99	49.937	CC, ES	
600.0	600.0	598.9	598.9	1.2	1.2	90.95	-1.7	99.6	99.7	97.3	2.41	41.423		
700.0	700.0	697.6	697.5	1.4	1.4	93.69	-6.5	101.2	101.4	98.6	2.82	36.005		
800.0	800.0	797.4	797.0	1.7	1.6	97.27	-13.2	103.2	104.1	100.9	3.25	32.040		
900.0	900.0	897.2	896.6	1.9	1.8	-108.50	-19.8	105.3	107.7	104.1	3.67	29.398		
1,000.0	999.8	997.1	996.2	2.1	2.0	-107.78	-26.5	107.4	112.6	108.5	4.07	27.632		
1,100.0	1,099.6	1,096.9	1,095.8	2.2	2.3	-108.01	-33.1	109.4	118.0	113.5	4.51	26.183		
1,200.0	1,199.4	1,196.8	1,195.4	2.5	2.5	-108.22	-39.8	111.5	123.4	118.4	4.95	24.902		
1,300.0	1,299.1	1,296.6	1,295.0	2.7	2.8	-108.41	-46.4	113.6	128.8	123.4	5.42	23.778		
1,400.0	1,398.9	1,396.5	1,394.6	2.9	3.0	-108.58	-53.1	115.7	134.2	128.3	5.89	22.792		
1,500.0	1,498.6	1,496.3	1,494.2	3.1	3.3	-108.75	-59.7	117.7	139.6	133.2	6.36	21.927		
1,600.0	1,598.4	1,596.2	1,593.8	3.4	3.5	-108.90	-66.4	119.8	145.0	138.1	6.85	21.163		
1,700.0	1,698.1	1,696.0	1,693.5	3.6	3.8	-109.03	-73.0	121.9	150.4	143.0	7.34	20.488		
1,800.0	1,797.9	1,795.9	1,793.1	3.9	4.0	-109.16	-79.7	123.9	155.8	147.9	7.83	19.887		
1,900.0	1,897.6	1,895.7	1,892.7	4.1	4.3	-109.29	-86.3	126.0	161.2	152.8	8.33	19.350		
2,000.0	1,997.4	1,995.6	1,992.3	4.4	4.6	-109.40	-93.0	128.1	166.6	157.7	8.83	18.868		
2,100.0	2,097.2	2,095.5	2,091.9	4.6	4.8	-109.51	-99.6	130.2	172.0	162.6	9.33	18.432		
2,200.0	2,196.9	2,195.3	2,191.5	4.9	5.1	-109.60	-106.3	132.2	177.4	167.5	9.83	18.037		
2,300.0	2,296.7	2,295.2	2,291.1	5.1	5.3	-109.70	-112.9	134.3	182.8	172.4	10.34	17.677		
2,400.0	2,396.4	2,395.0	2,390.7	5.4	5.6	-109.79	-119.6	136.4	188.2	177.3	10.85	17.349		
2,500.0	2,496.2	2,494.9	2,490.3	5.6	5.9	-109.87	-126.2	138.4	193.6	182.2	11.35	17.048		
2,600.0	2,595.9	2,594.7	2,589.9	5.9	6.1	-109.95	-132.9	140.5	199.0	187.1	11.86	16.772		
2,700.0	2,695.7	2,694.6	2,689.6	6.1	6.4	-110.02	-139.5	142.6	204.4	192.0	12.37	16.517		
2,800.0	2,795.5	2,794.4	2,789.2	6.4	6.7	-110.10	-146.2	144.7	209.8	196.9	12.88	16.281		
2,900.0	2,895.2	2,894.3	2,888.8	6.7	6.9	-110.16	-152.8	146.7	215.2	201.8	13.40	16.062		
3,000.0	2,995.0	2,994.1	2,988.4	6.9	7.2	-110.23	-159.5	148.8	220.6	206.7	13.91	15.859		
3,100.0	3,094.7	3,094.0	3,088.0	7.2	7.4	-110.29	-166.1	150.9	226.0	211.6	14.42	15.670		
3,200.0	3,194.5	3,193.8	3,187.6	7.4	7.7	-110.35	-172.8	152.9	231.4	216.5	14.94	15.493		
3,300.0	3,294.2	3,293.7	3,287.2	7.7	8.0	-110.40	-179.4	155.0	236.8	221.3	15.45	15.327		
3,400.0	3,394.0	3,393.6	3,386.8	8.0	8.2	-110.45	-186.1	157.1	242.2	226.2	15.96	15.172		
3,500.0	3,493.7	3,493.4	3,486.4	8.2	8.5	-110.50	-192.7	159.2	247.6	231.1	16.48	15.026		
3,600.0	3,593.5	3,593.3	3,586.0	8.5	8.8	-110.55	-199.4	161.2	253.0	236.0	16.99	14.889		
3,700.0	3,693.3	3,693.1	3,685.7	8.7	9.0	-110.60	-206.0	163.3	258.4	240.9	17.51	14.759		
3,800.0	3,793.0	3,793.0	3,785.3	9.0	9.3	-110.64	-212.7	165.4	263.8	245.8	18.03	14.637		
3,900.0	3,892.8	3,892.8	3,884.9	9.3	9.5	-110.69	-219.3	167.4	269.2	250.7	18.54	14.521		
4,000.0	3,992.5	3,992.7	3,984.5	9.5	9.8	-110.73	-226.0	169.5	274.6	255.6	19.06	14.411		
4,100.0	4,092.3	4,092.5	4,084.1	9.8	10.1	-110.77	-232.6	171.6	280.0	260.5	19.57	14.307		
4,200.0	4,192.0	4,192.4	4,183.7	10.1	10.3	-110.81	-239.3	173.7	285.5	265.4	20.09	14.208		
4,300.0	4,291.8	4,292.2	4,283.3	10.3	10.6	-110.84	-245.9	175.7	290.9	270.3	20.61	14.114		
4,400.0	4,391.6	4,392.1	4,382.9	10.6	10.9	-110.88	-252.6	177.8	296.3	275.1	21.12	14.025		
4,500.0	4,491.3	4,491.9	4,482.5	10.8	11.1	-110.91	-259.2	179.9	301.7	280.0	21.64	13.940		
4,600.0	4,591.1	4,591.8	4,582.2	11.1	11.4	-110.94	-265.9	181.9	307.1	284.9	22.16	13.858		
4,700.0	4,690.8	4,691.6	4,681.8	11.4	11.6	-110.98	-272.5	184.0	312.5	289.8	22.68	13.780		
4,800.0	4,790.6	4,791.5	4,781.4	11.6	11.9	-111.01	-279.2	186.1	317.9	294.7	23.19	13.706		
4,900.0	4,890.3	4,891.4	4,881.0	11.9	12.2	-111.04	-285.8	188.2	323.3	299.6	23.71	13.635		
5,000.0	4,990.1	4,991.2	4,980.6	12.2	12.4	-111.07	-292.5	190.2	328.7	304.5	24.23	13.566		
5,100.0	5,089.9	5,091.1	5,080.2	12.4	12.7	-111.09	-299.1	192.3	334.1	309.4	24.75	13.501		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1412B - HZ - Plan #1													Offset Site Error: 0.0 usft	
Survey Program: 0-ISCWSA MWD													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,189.6	5,190.9	5,179.8	12.7	13.0	-111.12	-305.8	194.4	339.5	314.3	25.27	13.438		
5,300.0	5,289.4	5,290.8	5,279.4	12.9	13.2	-111.15	-312.4	196.4	344.9	319.2	25.78	13.378		
5,400.0	5,389.1	5,390.6	5,379.0	13.2	13.5	-111.14	-319.1	198.5	350.4	324.1	26.30	13.322		
5,500.0	5,487.4	5,489.5	5,477.7	13.6	13.8	-111.79	-325.7	200.6	359.7	332.9	26.78	13.432		
5,600.0	5,580.5	5,567.2	5,554.6	14.1	14.0	-112.39	-335.4	203.6	379.2	352.0	27.27	13.906		
5,700.0	5,665.0	5,641.5	5,626.0	14.8	14.4	-111.74	-354.9	209.7	411.6	383.7	27.93	14.737		
5,800.0	5,737.9	5,712.9	5,691.2	15.7	14.8	-109.74	-382.5	218.3	455.4	426.5	28.92	15.749		
5,900.0	5,796.3	5,780.6	5,748.8	16.8	15.3	-106.30	-416.3	228.8	508.9	478.4	30.47	16.700		
6,000.0	5,838.3	5,844.3	5,798.5	18.1	15.8	-101.45	-454.5	240.7	570.1	537.6	32.53	17.525		
6,100.0	5,862.2	5,904.4	5,840.5	19.6	16.4	-95.32	-495.5	253.4	637.0	602.1	34.89	18.255		
6,200.0	5,867.7	5,961.9	5,875.8	21.1	17.0	-90.94	-538.7	266.9	707.6	670.4	37.21	19.017		
6,300.0	5,867.7	6,027.7	5,909.8	22.4	17.8	-94.28	-592.5	283.7	777.7	738.4	39.32	19.777		
6,400.0	5,867.7	6,107.4	5,941.0	23.9	18.9	-96.55	-662.3	305.4	844.7	803.0	41.67	20.270		
6,500.0	5,867.7	6,486.6	5,968.7	25.3	24.5	-96.84	-1,030.1	364.2	894.5	846.4	48.17	18.570		
6,600.0	5,867.7	6,582.2	5,968.7	26.8	26.0	-96.52	-1,125.7	364.2	923.8	872.2	51.57	17.912		
6,700.0	5,867.7	6,679.1	5,968.7	28.3	27.6	-96.27	-1,222.6	364.2	948.0	893.0	55.01	17.234		
6,800.0	5,867.7	6,777.3	5,968.7	29.9	29.2	-96.08	-1,320.7	364.2	967.2	908.8	58.44	16.552		
6,900.0	5,867.7	6,876.2	5,968.7	31.4	30.9	-95.95	-1,419.7	364.2	981.3	919.5	61.82	15.875		
7,000.0	5,867.7	6,975.8	5,968.7	32.9	32.6	-95.87	-1,519.3	364.2	990.2	925.1	65.11	15.208		
7,100.0	5,867.7	7,075.8	5,968.7	34.5	34.3	-95.83	-1,619.2	364.2	993.9	925.6	68.28	14.555		
7,200.0	5,867.7	7,175.8	5,968.7	36.0	36.1	-95.83	-1,719.2	364.2	994.0	922.4	71.63	13.877		
7,300.0	5,867.7	7,275.8	5,968.7	37.6	37.9	-95.83	-1,819.2	364.2	994.0	918.9	75.08	13.239		
7,400.0	5,867.7	7,375.8	5,968.7	39.2	39.7	-95.83	-1,919.2	364.2	994.0	915.4	78.57	12.651		
7,500.0	5,867.7	7,475.8	5,968.7	40.9	41.5	-95.83	-2,019.2	364.2	994.0	911.9	82.10	12.108		
7,600.0	5,867.7	7,575.8	5,968.7	42.5	43.3	-95.83	-2,119.2	364.2	994.0	908.4	85.64	11.606		
7,700.0	5,867.7	7,675.8	5,968.7	44.2	45.1	-95.83	-2,219.2	364.2	994.0	904.8	89.22	11.142		
7,800.0	5,867.7	7,775.8	5,968.8	45.9	46.9	-95.83	-2,319.2	364.2	994.0	901.2	92.81	10.711		
7,900.0	5,867.7	7,875.8	5,968.8	47.7	48.8	-95.83	-2,419.2	364.2	994.0	897.6	96.42	10.309		
8,000.0	5,867.7	7,975.8	5,968.8	49.4	50.6	-95.83	-2,519.2	364.2	994.0	894.0	100.05	9.936		
8,100.0	5,867.7	8,075.8	5,968.8	51.2	52.4	-95.83	-2,619.2	364.2	994.1	890.4	103.69	9.587		
8,200.0	5,867.7	8,175.8	5,968.8	52.9	54.3	-95.83	-2,719.2	364.2	994.1	886.7	107.35	9.260		
8,300.0	5,867.7	8,275.8	5,968.8	54.7	56.2	-95.83	-2,819.2	364.2	994.1	883.1	111.01	8.954		
8,400.0	5,867.8	8,375.8	5,968.8	56.5	58.0	-95.83	-2,919.2	364.2	994.1	879.4	114.69	8.667		
8,500.0	5,867.8	8,475.8	5,968.8	58.3	59.9	-95.83	-3,019.2	364.2	994.1	875.7	118.38	8.397		
8,600.0	5,867.8	8,575.8	5,968.8	60.1	61.7	-95.83	-3,119.2	364.2	994.1	872.0	122.08	8.143		
8,700.0	5,867.8	8,675.8	5,968.8	61.9	63.6	-95.83	-3,219.2	364.2	994.1	868.3	125.78	7.903		
8,800.0	5,867.8	8,775.8	5,968.8	63.7	65.5	-95.83	-3,319.2	364.2	994.1	864.6	129.49	7.677		
8,900.0	5,867.8	8,875.8	5,968.8	65.5	67.4	-95.83	-3,419.2	364.2	994.1	860.9	133.21	7.463		
9,000.0	5,867.8	8,975.8	5,968.8	67.3	69.3	-95.83	-3,519.2	364.2	994.1	857.2	136.93	7.260		
9,100.0	5,867.8	9,075.8	5,968.8	69.2	71.1	-95.83	-3,619.2	364.2	994.1	853.5	140.66	7.067		
9,200.0	5,867.8	9,175.8	5,968.8	71.0	73.0	-95.83	-3,719.2	364.2	994.1	849.7	144.40	6.885		
9,300.0	5,867.8	9,275.8	5,968.8	72.8	74.9	-95.83	-3,819.2	364.2	994.1	846.0	148.14	6.711		
9,400.0	5,867.8	9,375.8	5,968.8	74.7	76.8	-95.83	-3,919.2	364.2	994.2	842.3	151.88	6.546		
9,500.0	5,867.8	9,475.8	5,968.8	76.5	78.7	-95.83	-4,019.2	364.2	994.2	838.5	155.63	6.388		
9,600.0	5,867.8	9,575.8	5,968.8	78.4	80.6	-95.83	-4,119.2	364.2	994.2	834.8	159.38	6.238		
9,700.0	5,867.8	9,675.8	5,968.8	80.2	82.5	-95.83	-4,219.2	364.3	994.2	831.0	163.14	6.094		
9,800.0	5,867.8	9,775.8	5,968.8	82.1	84.4	-95.83	-4,319.2	364.3	994.2	827.3	166.90	5.957		
9,900.0	5,867.8	9,875.8	5,968.8	84.0	86.3	-95.83	-4,419.2	364.3	994.2	823.5	170.66	5.826		
10,000.0	5,867.8	9,975.8	5,968.8	85.8	88.1	-95.83	-4,519.2	364.3	994.2	819.8	174.42	5.700		
10,100.0	5,867.8	10,075.8	5,968.9	87.7	90.0	-95.83	-4,619.2	364.3	994.2	816.0	178.19	5.579		
10,200.0	5,867.8	10,175.8	5,968.9	89.6	91.9	-95.83	-4,719.2	364.3	994.2	812.3	181.96	5.464		
10,300.0	5,867.8	10,275.8	5,968.9	91.4	93.8	-95.83	-4,819.2	364.3	994.2	808.5	185.73	5.353		

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

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S11-T10N-R58W - Razor #11G-1412B - HZ - Plan #1													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
10,400.0	5,867.8	10,375.8	5,968.9	93.3	95.7	-95.83	-4,919.2	364.3	994.2	804.7	189.51	5.246		
10,500.0	5,867.9	10,475.8	5,968.9	95.2	97.6	-95.83	-5,019.2	364.3	994.2	801.0	193.28	5.144		
10,600.0	5,867.9	10,575.8	5,968.9	97.1	99.5	-95.83	-5,119.2	364.3	994.2	797.2	197.06	5.045		
10,700.0	5,867.9	10,675.8	5,968.9	98.9	101.4	-95.83	-5,219.2	364.3	994.3	793.4	200.84	4.950		
10,800.0	5,867.9	10,775.8	5,968.9	100.8	103.3	-95.83	-5,319.2	364.3	994.3	789.6	204.62	4.859		
10,900.0	5,867.9	10,875.8	5,968.9	102.7	105.3	-95.83	-5,419.2	364.3	994.3	785.9	208.41	4.771		
11,000.0	5,867.9	10,975.8	5,968.9	104.6	107.2	-95.83	-5,519.2	364.3	994.3	782.1	212.19	4.686		
11,100.0	5,867.9	11,075.8	5,968.9	106.5	109.1	-95.83	-5,619.2	364.3	994.3	778.3	215.98	4.604		
11,200.0	5,867.9	11,175.8	5,968.9	108.4	111.0	-95.83	-5,719.2	364.3	994.3	774.5	219.77	4.524		
11,300.0	5,867.9	11,275.8	5,968.9	110.2	112.9	-95.83	-5,819.2	364.3	994.3	770.7	223.56	4.448		
11,400.0	5,867.9	11,375.8	5,968.9	112.1	114.8	-95.83	-5,919.2	364.3	994.3	767.0	227.35	4.374		
11,500.0	5,867.9	11,475.8	5,968.9	114.0	116.7	-95.83	-6,019.2	364.3	994.3	763.2	231.14	4.302		
11,600.0	5,867.9	11,575.8	5,968.9	115.9	118.6	-95.83	-6,119.2	364.3	994.3	759.4	234.93	4.232		
11,700.0	5,867.9	11,675.8	5,968.9	117.8	120.5	-95.83	-6,219.2	364.3	994.3	755.6	238.72	4.165		
11,800.0	5,867.9	11,775.8	5,968.9	119.7	122.4	-95.83	-6,319.2	364.3	994.3	751.8	242.52	4.100		
11,900.0	5,867.9	11,875.8	5,968.9	121.6	124.3	-95.83	-6,419.2	364.3	994.3	748.0	246.32	4.037		
12,000.0	5,867.9	11,975.8	5,968.9	123.5	126.2	-95.83	-6,519.2	364.3	994.4	744.2	250.11	3.976		
12,100.0	5,867.9	12,075.8	5,968.9	125.4	128.1	-95.83	-6,619.2	364.3	994.4	740.5	253.91	3.916		
12,200.0	5,867.9	12,175.8	5,968.9	127.3	130.0	-95.83	-6,719.2	364.3	994.4	736.7	257.71	3.858		
12,300.0	5,867.9	12,275.8	5,968.9	129.2	132.0	-95.83	-6,819.2	364.3	994.4	732.9	261.51	3.802		
12,400.0	5,867.9	12,375.8	5,968.9	131.1	133.9	-95.83	-6,919.2	364.3	994.4	729.1	265.31	3.748		
12,500.0	5,867.9	12,475.8	5,969.0	133.0	135.8	-95.83	-7,019.2	364.3	994.4	725.3	269.11	3.695		
12,600.0	5,868.0	12,575.8	5,969.0	134.9	137.7	-95.83	-7,119.2	364.3	994.4	721.5	272.91	3.644		
12,700.0	5,868.0	12,675.8	5,969.0	136.8	139.6	-95.83	-7,219.2	364.3	994.4	717.7	276.71	3.594		
12,800.0	5,868.0	12,775.8	5,969.0	138.7	141.5	-95.83	-7,319.2	364.3	994.4	713.9	280.52	3.545		
12,900.0	5,868.0	12,875.8	5,969.0	140.6	143.4	-95.83	-7,419.2	364.3	994.4	710.1	284.32	3.498		
13,000.0	5,868.0	12,975.8	5,969.0	142.5	145.3	-95.83	-7,519.2	364.4	994.4	706.3	288.12	3.451		
13,100.0	5,868.0	13,075.8	5,969.0	144.4	147.3	-95.83	-7,619.2	364.4	994.4	702.5	291.93	3.406		
13,200.0	5,868.0	13,175.8	5,969.0	146.3	149.2	-95.83	-7,719.2	364.4	994.4	698.7	295.73	3.363		
13,300.0	5,868.0	13,275.8	5,969.0	148.2	151.1	-95.83	-7,819.2	364.4	994.5	694.9	299.54	3.320		
13,400.0	5,868.0	13,375.8	5,969.0	150.1	153.0	-95.83	-7,919.2	364.4	994.5	691.1	303.35	3.278		
13,500.0	5,868.0	13,475.8	5,969.0	152.0	154.9	-95.83	-8,019.2	364.4	994.5	687.3	307.15	3.238		
13,553.0	5,868.0	13,528.7	5,969.0	153.0	155.9	-95.83	-8,072.2	364.4	994.5	685.3	309.14	3.217		
13,592.4	5,868.0	13,561.1	5,969.0	153.7	156.5	-95.83	-8,104.6	364.4	994.5	684.0	310.53	3.203 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor #11G-1409A
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Reference Site:</b>	S11-T10N-R58W	<b>MD Reference:</b>	WELL @ 4989.7usft (Original Well Elev)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor #11G-1409A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	HZ	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4989.7usft (Original Well Ele  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.00 W °

Coordinates are relative to: Razor #11G-1409A  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.08°

