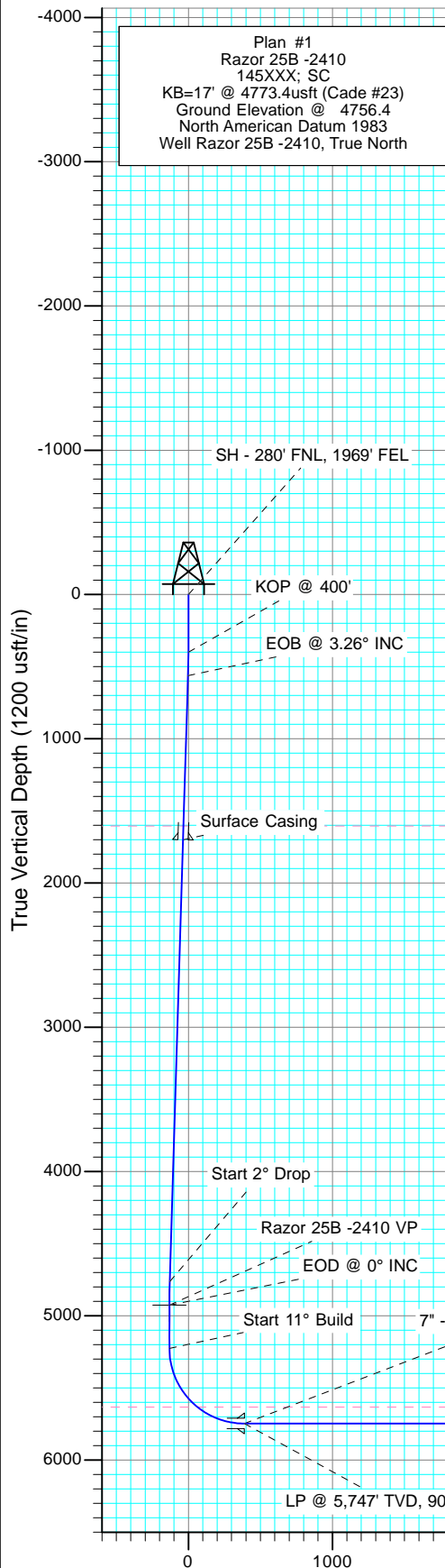
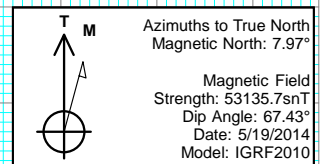
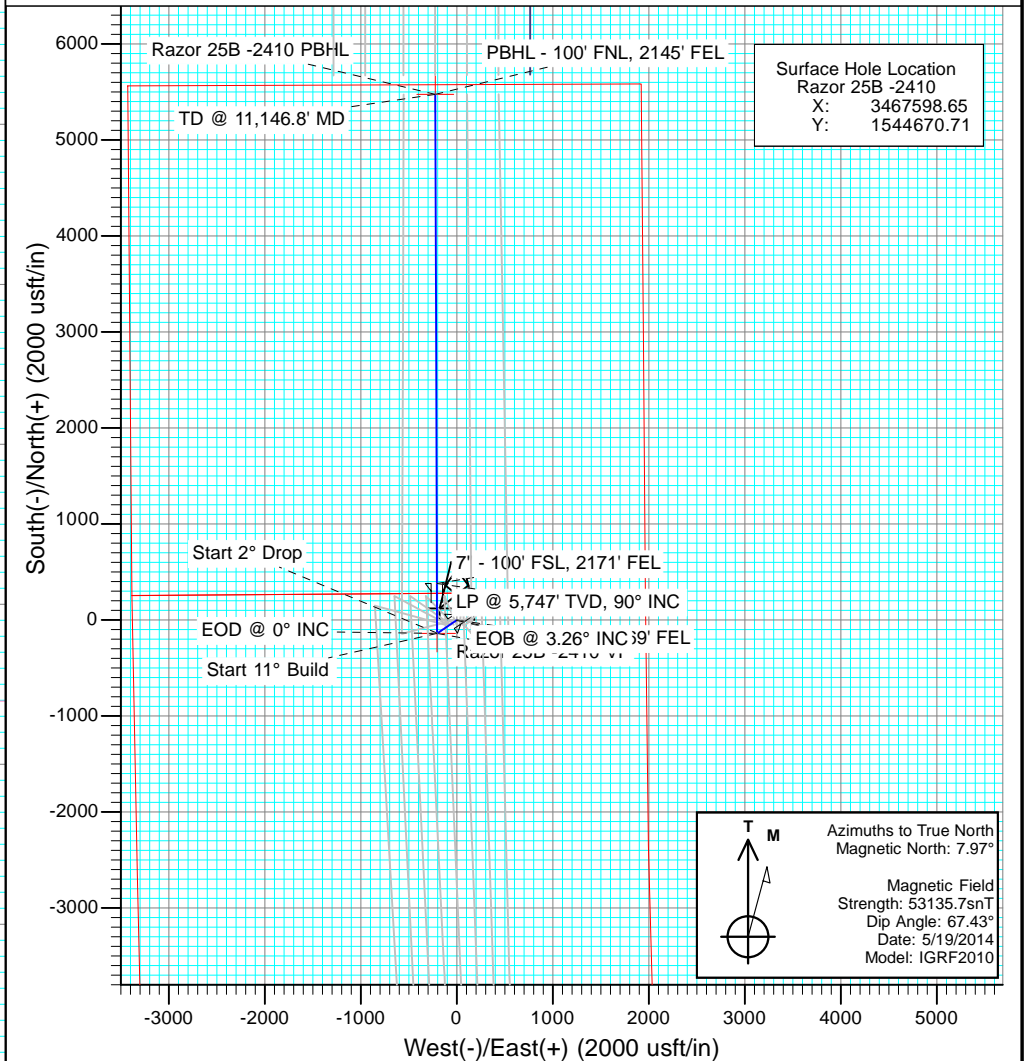




Project: Weld County, CO  
Site: S25-T10N-R58W  
Well: Razor 25B -2410  
Wellbore: HZ  
Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.0	
3	562.8	3.26	235.67	562.7	-2.6	-3.8	2.00	235.67	-2.5	
4	4770.3	3.26	235.67	4763.4	-137.4	-201.2	0.00	0.00	-129.1	
5	4933.1	0.00	0.00	4926.1	-140.0	-205.0	2.00	180.00	-131.6	Razor 25B -2410 VP
6	5233.1	0.00	0.00	5226.1	-140.0	-205.0	0.00	0.00	-131.6	
7	6051.2	90.00	359.82	5747.0	380.9	-206.6	11.00	359.82	388.9	
8	11146.8	90.00	359.82	5747.0	5476.4	-222.2	0.00	0.00	5480.9	Razor 25B -2410 PBHL



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor 25B -2410 VP	4926.1	-140.0	-205.0	1544526.83	3467396.35
Razor 25B -2410 PBHL	5747.0	5476.4	-222.2	1550141.90	3467272.14

Vertical Section at 357.68° (1200 usft/in)

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site:</b>	S25-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor 25B -2410	<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	S25-T10N-R58W				
Site Position:		Northing:	1,544,670.15 usft	Latitude:	40.816275
From:	Lat/Long	Easting:	3,467,568.48 usft	Longitude:	-103.810706
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.09 °

Well	Razor 25B -2410					
Well Position	+N/-S	0.0 usft	Northing:	1,544,670.71 usft	Latitude:	40.816275
	+E/-W	0.0 usft	Easting:	3,467,598.65 usft	Longitude:	-103.810597
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	4,756.4 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</b>
			(°)	(°)	(nT)
	IGRF2010	5/19/2014	7.97	67.43	53,136

<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)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	357.68

<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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
562.8	3.26	235.67	562.7	-2.6	-3.8	2.00	2.00	0.00	235.67	
4,770.3	3.26	235.67	4,763.4	-137.4	-201.2	0.00	0.00	0.00	0.00	
4,933.1	0.00	0.00	4,926.1	-140.0	-205.0	2.00	-2.00	0.00	180.00	Razor 25B -2410 VP
5,233.1	0.00	0.00	5,226.1	-140.0	-205.0	0.00	0.00	0.00	0.00	
6,051.2	90.00	359.82	5,747.0	380.9	-206.6	11.00	11.00	-0.02	359.82	
11,146.8	90.00	359.82	5,747.0	5,476.4	-222.2	0.00	0.00	0.00	0.00	Razor 25B -2410 PB

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site:</b>	S25-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor 25B -2410	<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	
0.5	0.00	0.00	0.5	0.0	0.0	0.0	0.00	0.00	SH - 280' FNL, 1969' FEL
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	KOP @ 400'
500.0	2.00	235.67	500.0	-1.0	-1.4	-0.9	2.00	2.00	
562.8	3.26	235.67	562.7	-2.6	-3.8	-2.5	2.00	2.00	EOB @ 3.26° INC
600.0	3.26	235.67	599.9	-3.8	-5.6	-3.6	0.00	0.00	
700.0	3.26	235.67	699.7	-7.0	-10.3	-6.6	0.00	0.00	
800.0	3.26	235.67	799.5	-10.2	-14.9	-9.6	0.00	0.00	
900.0	3.26	235.67	899.4	-13.4	-19.6	-12.6	0.00	0.00	
1,000.0	3.26	235.67	999.2	-16.6	-24.3	-15.6	0.00	0.00	
1,100.0	3.26	235.67	1,099.0	-19.8	-29.0	-18.6	0.00	0.00	
1,200.0	3.26	235.67	1,198.9	-23.0	-33.7	-21.6	0.00	0.00	
1,300.0	3.26	235.67	1,298.7	-26.2	-38.4	-24.6	0.00	0.00	
1,400.0	3.26	235.67	1,398.6	-29.4	-43.1	-27.7	0.00	0.00	
1,500.0	3.26	235.67	1,498.4	-32.6	-47.8	-30.7	0.00	0.00	
1,600.0	3.26	235.67	1,598.2	-35.8	-52.5	-33.7	0.00	0.00	
1,605.8	3.26	235.67	1,604.0	-36.0	-52.7	-33.9	0.00	0.00	Pierre
1,700.0	3.26	235.67	1,698.1	-39.0	-57.2	-36.7	0.00	0.00	
1,701.9	3.26	235.67	1,700.0	-39.1	-57.3	-36.7	0.00	0.00	Surface Casing
1,800.0	3.26	235.67	1,797.9	-42.2	-61.9	-39.7	0.00	0.00	
1,900.0	3.26	235.67	1,897.8	-45.4	-66.5	-42.7	0.00	0.00	
2,000.0	3.26	235.67	1,997.6	-48.6	-71.2	-45.7	0.00	0.00	
2,100.0	3.26	235.67	2,097.4	-51.9	-75.9	-48.7	0.00	0.00	
2,200.0	3.26	235.67	2,197.3	-55.1	-80.6	-51.7	0.00	0.00	
2,300.0	3.26	235.67	2,297.1	-58.3	-85.3	-54.8	0.00	0.00	
2,400.0	3.26	235.67	2,396.9	-61.5	-90.0	-57.8	0.00	0.00	
2,500.0	3.26	235.67	2,496.8	-64.7	-94.7	-60.8	0.00	0.00	
2,600.0	3.26	235.67	2,596.6	-67.9	-99.4	-63.8	0.00	0.00	
2,700.0	3.26	235.67	2,696.5	-71.1	-104.1	-66.8	0.00	0.00	
2,800.0	3.26	235.67	2,796.3	-74.3	-108.8	-69.8	0.00	0.00	
2,900.0	3.26	235.67	2,896.1	-77.5	-113.5	-72.8	0.00	0.00	
3,000.0	3.26	235.67	2,996.0	-80.7	-118.1	-75.8	0.00	0.00	
3,100.0	3.26	235.67	3,095.8	-83.9	-122.8	-78.8	0.00	0.00	
3,200.0	3.26	235.67	3,195.7	-87.1	-127.5	-81.8	0.00	0.00	
3,300.0	3.26	235.67	3,295.5	-90.3	-132.2	-84.9	0.00	0.00	
3,400.0	3.26	235.67	3,395.3	-93.5	-136.9	-87.9	0.00	0.00	
3,500.0	3.26	235.67	3,495.2	-96.7	-141.6	-90.9	0.00	0.00	
3,600.0	3.26	235.67	3,595.0	-99.9	-146.3	-93.9	0.00	0.00	
3,700.0	3.26	235.67	3,694.8	-103.1	-151.0	-96.9	0.00	0.00	
3,800.0	3.26	235.67	3,794.7	-106.3	-155.7	-99.9	0.00	0.00	
3,900.0	3.26	235.67	3,894.5	-109.5	-160.4	-102.9	0.00	0.00	
4,000.0	3.26	235.67	3,994.4	-112.7	-165.0	-105.9	0.00	0.00	
4,100.0	3.26	235.67	4,094.2	-115.9	-169.7	-108.9	0.00	0.00	
4,200.0	3.26	235.67	4,194.0	-119.1	-174.4	-112.0	0.00	0.00	
4,300.0	3.26	235.67	4,293.9	-122.3	-179.1	-115.0	0.00	0.00	
4,400.0	3.26	235.67	4,393.7	-125.5	-183.8	-118.0	0.00	0.00	
4,500.0	3.26	235.67	4,493.6	-128.7	-188.5	-121.0	0.00	0.00	
4,600.0	3.26	235.67	4,593.4	-131.9	-193.2	-124.0	0.00	0.00	
4,700.0	3.26	235.67	4,693.2	-135.1	-197.9	-127.0	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 25B -2410
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site:</b>	S25-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor 25B -2410	<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
4,770.3	3.26	235.67	4,763.4	-137.4	-201.2	-129.1	0.00	0.00	Start 2° Drop
4,800.0	2.66	235.67	4,793.1	-138.3	-202.4	-129.9	2.00	-2.00	
4,900.0	0.66	235.67	4,893.0	-139.9	-204.8	-131.5	2.00	-2.00	
4,933.1	0.00	0.00	4,926.1	-140.0	-205.0	-131.6	2.00	-2.00	EOD @ 0° INC
5,000.0	0.00	0.00	4,993.0	-140.0	-205.0	-131.6	0.00	0.00	
5,100.0	0.00	0.00	5,093.0	-140.0	-205.0	-131.6	0.00	0.00	
5,200.0	0.00	0.00	5,193.0	-140.0	-205.0	-131.6	0.00	0.00	
5,233.1	0.00	0.00	5,226.1	-140.0	-205.0	-131.6	0.00	0.00	Start 11° Build
5,250.0	1.86	359.82	5,243.0	-139.7	-205.0	-131.3	11.00	11.00	
5,300.0	7.36	359.82	5,292.8	-135.7	-205.0	-127.3	11.00	11.00	
5,350.0	12.86	359.82	5,342.1	-126.9	-205.0	-118.5	11.00	11.00	
5,400.0	18.36	359.82	5,390.2	-113.5	-205.1	-105.1	11.00	11.00	
5,450.0	23.86	359.82	5,436.8	-95.5	-205.1	-87.1	11.00	11.00	
5,500.0	29.36	359.82	5,481.5	-73.1	-205.2	-64.7	11.00	11.00	
5,550.0	34.86	359.82	5,523.8	-46.5	-205.3	-38.2	11.00	11.00	
5,600.0	40.36	359.82	5,563.4	-16.0	-205.4	-7.7	11.00	11.00	
5,650.0	45.86	359.82	5,599.9	18.1	-205.5	26.5	11.00	11.00	
5,700.0	51.36	359.82	5,633.0	55.6	-205.6	63.9	11.00	11.00	
5,700.1	51.36	359.82	5,633.0	55.7	-205.6	64.0	0.00	0.00	Niobrara
5,750.0	56.86	359.82	5,662.3	96.1	-205.7	104.4	11.01	11.01	
5,800.0	62.36	359.82	5,687.5	139.2	-205.9	147.5	11.00	11.00	
5,850.0	67.86	359.82	5,708.6	184.6	-206.0	192.8	11.00	11.00	
5,900.0	73.36	359.82	5,725.2	231.7	-206.1	239.9	11.00	11.00	
5,950.0	78.86	359.82	5,737.2	280.3	-206.3	288.4	11.00	11.00	
6,000.0	84.36	359.82	5,744.5	329.7	-206.4	337.8	11.00	11.00	
6,051.2	89.99	359.82	5,747.0	380.8	-206.6	388.9	11.00	11.00	LP @ 5,747' TVD, 90° INC - 7" - 100' FSL, 217'
6,100.0	90.00	359.82	5,747.0	429.6	-206.7	437.6	0.01	0.01	
6,200.0	90.00	359.82	5,747.0	529.6	-207.1	537.6	0.00	0.00	
6,300.0	90.00	359.82	5,747.0	629.6	-207.4	637.5	0.00	0.00	
6,400.0	90.00	359.82	5,747.0	729.6	-207.7	737.4	0.00	0.00	
6,500.0	90.00	359.82	5,747.0	829.6	-208.0	837.4	0.00	0.00	
6,600.0	90.00	359.82	5,747.0	929.6	-208.3	937.3	0.00	0.00	
6,700.0	90.00	359.82	5,747.0	1,029.6	-208.6	1,037.2	0.00	0.00	
6,800.0	90.00	359.82	5,747.0	1,129.6	-208.9	1,137.2	0.00	0.00	
6,900.0	90.00	359.82	5,747.0	1,229.6	-209.2	1,237.1	0.00	0.00	
7,000.0	90.00	359.82	5,747.0	1,329.6	-209.5	1,337.0	0.00	0.00	
7,100.0	90.00	359.82	5,747.0	1,429.6	-209.8	1,436.9	0.00	0.00	
7,200.0	90.00	359.82	5,747.0	1,529.6	-210.1	1,536.9	0.00	0.00	
7,300.0	90.00	359.82	5,747.0	1,629.6	-210.4	1,636.8	0.00	0.00	
7,400.0	90.00	359.82	5,747.0	1,729.6	-210.7	1,736.7	0.00	0.00	
7,500.0	90.00	359.82	5,747.0	1,829.6	-211.0	1,836.7	0.00	0.00	
7,600.0	90.00	359.82	5,747.0	1,929.6	-211.3	1,936.6	0.00	0.00	
7,700.0	90.00	359.82	5,747.0	2,029.6	-211.7	2,036.5	0.00	0.00	
7,800.0	90.00	359.82	5,747.0	2,129.6	-212.0	2,136.5	0.00	0.00	
7,900.0	90.00	359.82	5,747.0	2,229.6	-212.3	2,236.4	0.00	0.00	
8,000.0	90.00	359.82	5,747.0	2,329.6	-212.6	2,336.3	0.00	0.00	
8,100.0	90.00	359.82	5,747.0	2,429.6	-212.9	2,436.2	0.00	0.00	
8,200.0	90.00	359.82	5,747.0	2,529.6	-213.2	2,536.2	0.00	0.00	
8,300.0	90.00	359.82	5,747.0	2,629.6	-213.5	2,636.1	0.00	0.00	
8,400.0	90.00	359.82	5,747.0	2,729.6	-213.8	2,736.0	0.00	0.00	
8,500.0	90.00	359.82	5,747.0	2,829.6	-214.1	2,836.0	0.00	0.00	
8,600.0	90.00	359.82	5,747.0	2,929.6	-214.4	2,935.9	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 25B -2410
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site:</b>	S25-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor 25B -2410	<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
8,700.0	90.00	359.82	5,747.0	3,029.6	-214.7	3,035.8	0.00	0.00	
8,800.0	90.00	359.82	5,747.0	3,129.6	-215.0	3,135.7	0.00	0.00	
8,900.0	90.00	359.82	5,747.0	3,229.6	-215.3	3,235.7	0.00	0.00	
9,000.0	90.00	359.82	5,747.0	3,329.6	-215.6	3,335.6	0.00	0.00	
9,100.0	90.00	359.82	5,747.0	3,429.6	-215.9	3,435.5	0.00	0.00	
9,200.0	90.00	359.82	5,747.0	3,529.6	-216.3	3,535.5	0.00	0.00	
9,300.0	90.00	359.82	5,747.0	3,629.6	-216.6	3,635.4	0.00	0.00	
9,400.0	90.00	359.82	5,747.0	3,729.6	-216.9	3,735.3	0.00	0.00	
9,500.0	90.00	359.82	5,747.0	3,829.6	-217.2	3,835.3	0.00	0.00	
9,600.0	90.00	359.82	5,747.0	3,929.6	-217.5	3,935.2	0.00	0.00	
9,700.0	90.00	359.82	5,747.0	4,029.6	-217.8	4,035.1	0.00	0.00	
9,800.0	90.00	359.82	5,747.0	4,129.6	-218.1	4,135.0	0.00	0.00	
9,900.0	90.00	359.82	5,747.0	4,229.6	-218.4	4,235.0	0.00	0.00	
10,000.0	90.00	359.82	5,747.0	4,329.6	-218.7	4,334.9	0.00	0.00	
10,100.0	90.00	359.82	5,747.0	4,429.6	-219.0	4,434.8	0.00	0.00	
10,200.0	90.00	359.82	5,747.0	4,529.6	-219.3	4,534.8	0.00	0.00	
10,300.0	90.00	359.82	5,747.0	4,629.6	-219.6	4,634.7	0.00	0.00	
10,400.0	90.00	359.82	5,747.0	4,729.6	-219.9	4,734.6	0.00	0.00	
10,500.0	90.00	359.82	5,747.0	4,829.6	-220.2	4,834.6	0.00	0.00	
10,600.0	90.00	359.82	5,747.0	4,929.6	-220.5	4,934.5	0.00	0.00	
10,700.0	90.00	359.82	5,747.0	5,029.6	-220.9	5,034.4	0.00	0.00	
10,800.0	90.00	359.82	5,747.0	5,129.6	-221.2	5,134.3	0.00	0.00	
10,900.0	90.00	359.82	5,747.0	5,229.6	-221.5	5,234.3	0.00	0.00	
11,000.0	90.00	359.82	5,747.0	5,329.6	-221.8	5,334.2	0.00	0.00	
11,100.0	90.00	359.82	5,747.0	5,429.6	-222.1	5,434.1	0.00	0.00	
11,146.8	90.00	359.82	5,747.0	5,476.4	-222.2	5,480.9	0.00	0.00	PBHL - 100' FNL, 2145' FEL

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Razor 25B -2410 VP	0.00	0.00	4,926.1	-140.0	-205.0	1,544,526.83	3,467,396.35	40.815891	-103.811338
- plan hits target center									
- Point									
Razor 25B -2410 PBHL	0.00	0.00	5,747.0	5,476.4	-222.2	1,550,141.90	3,467,272.14	40.831306	-103.811400
- plan hits target center									
- Point									

### Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,701.9	1,700.0	Surface Casing	0	0
6,051.2	5,747.0	7" - 100' FSL, 2171' FEL	0	0

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Company:</b>	Whiting Petroleum Corporation	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site:</b>	S25-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor 25B -2410	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,605.8	1,604.0	Pierre				
5,700.1	5,633.0	Niobrara				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
0.5	0.5	0.0	0.0	SH - 280' FNL, 1969' FEL	
400.0	400.0	0.0	0.0	KOP @ 400'	
562.8	562.7	-2.6	-3.8	EOB @ 3.26° INC	
4,770.3	4,763.4	-137.4	-201.2	Start 2° Drop	
4,933.1	4,926.1	-140.0	-205.0	EOD @ 0° INC	
5,233.1	5,226.1	-140.0	-205.0	Start 11° Build	
6,051.2	5,747.0	380.9	-206.6	LP @ 5,747' TVD, 90° INC	
11,146.8	5,747.0	5,476.4	-222.2	PBHL - 100' FNL, 2145' FEL	
11,146.8	5,747.0	5,476.4	-222.2	TD @ 11,146.8' MD	

# **Whiting Petroleum Corporation**

**Weld County, CO**

**S25-T10N-R58W**

**Razor 25B -2410**

**HZ**

**Plan #1**

## **Anticollision Report**

**28 May, 2014**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 1,310.5usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	5/28/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,146.8	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						
S12-T10N-R58W						
Razor Federal #12F-1307A - HZ - Plan #3	11,146.8	13,658.4	1,085.1	822.2	4.128	CC, ES, SF
Razor Federal #12F-1308B - HZ - Plan #3	11,146.8	13,925.4	756.6	492.6	2.866	CC, ES, SF
Razor Federal #12G-1309A - HZ - Plan #1	11,146.8	13,221.6	409.1	166.6	1.687	CC, ES, SF
Razor Federal #12G-1310B - HZ - Plan #1	11,146.8	13,293.1	202.3	102.5	2.026	CC, ES, SF
Razor Federal #12G-1311A - HZ - Plan #1	11,146.8	13,250.1	407.0	161.4	1.657	CC, ES, SF
Razor Federal #12G-1312B - HZ - Plan #1	11,146.8	13,435.7	689.2	428.5	2.644	CC, ES, SF
Razor Federal #12H-1313A - HZ - Plan #1	11,146.8	13,552.2	1,018.6	758.3	3.913	CC, ES, SF
S25-T10N-R58W						
Razor 25B -2409 - HZ - Plan #1	920.0	919.3	17.0	13.2	4.434	CC, ES
Razor 25B -2409 - HZ - Plan #1	11,146.8	11,104.5	339.4	130.9	1.627	SF
Razor 25B -2411 - HZ - Plan #1	400.0	400.0	29.9	28.4	19.486	CC, ES
Razor 25B -2411 - HZ - Plan #1	11,146.8	11,064.8	339.4	130.9	1.628	SF
Razor 25B -2412 - HZ - Plan #1	400.0	400.0	59.8	58.3	38.953	CC, ES
Razor 25B -2412 - HZ - Plan #1	11,146.8	11,162.1	659.5	445.5	3.083	SF
Razor 25B -2549 - HZ - Plan #2	698.3	691.3	123.3	120.5	44.354	CC
Razor 25B -2549 - HZ - Plan #2	700.0	693.0	123.3	120.5	44.244	ES
Razor 25B -2549 - HZ - Plan #2	5,700.0	5,727.8	639.1	613.6	25.067	SF
Razor 25B -2550 - HZ - Plan #2	803.8	798.5	91.1	87.9	28.070	CC, ES
Razor 25B -2550 - HZ - Plan #2	5,700.0	5,758.4	433.2	407.8	17.044	SF
Razor 25B -2551 - HZ - Plan #2	924.6	921.2	59.6	55.8	15.690	CC, ES
Razor 25B -2551 - HZ - Plan #2	5,800.0	5,749.2	272.8	246.8	10.511	SF
Razor 25B -2552 - HZ - Plan #2	1,115.4	1,114.6	24.0	19.3	5.114	CC, ES
Razor 25B -2552 - HZ - Plan #2	5,700.0	5,717.9	105.2	80.1	4.194	SF
Razor 25B -2553 - HZ - Plan #1	1,150.9	1,151.8	20.7	15.8	4.224	CC, ES
Razor 25B -2553 - HZ - Plan #1	5,633.3	5,683.2	87.4	62.5	3.513	SF
Razor 25B -2554 - HZ - Plan #2	862.7	864.0	55.4	51.9	15.482	CC, ES
Razor 25B -2554 - HZ - Plan #2	5,700.0	5,695.4	276.2	251.1	11.029	SF
Razor 25B -2555 - HZ - Plan #2	400.0	400.0	77.7	76.1	50.588	CC, ES
Razor 25B -2555 - HZ - Plan #2	5,634.2	5,676.0	468.3	443.5	18.906	SF
Razor 25B -2556 - HZ - Plan #2	400.0	400.0	102.7	101.2	66.908	CC, ES
Razor 25B -2556 - HZ - Plan #2	5,800.0	5,681.3	664.4	638.8	25.988	SF

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S12-T10N-R58W - Razor Federal #12F-1307A - HZ - Plan #3													Offset Site Error:	0.0 usft
Survey Program: 0-ISCWSA MWD													Offset Well Error:	0.0 usft
Reference		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		
10,600.0	5,747.0	13,658.4	5,811.0	96.3	158.1	-83.75	5,672.6	-1,283.0	1,301.7	1,049.2	252.48	5.156		
10,700.0	5,747.0	13,658.4	5,811.0	98.2	158.1	-83.75	5,672.6	-1,283.0	1,247.1	992.7	254.38	4.903		
10,800.0	5,747.0	13,658.4	5,811.0	100.1	158.1	-83.75	5,672.6	-1,283.0	1,198.3	942.1	256.27	4.676		
10,900.0	5,747.0	13,658.4	5,811.0	102.0	158.1	-83.75	5,672.6	-1,283.0	1,156.2	898.0	258.17	4.478		
11,000.0	5,747.0	13,658.4	5,811.0	103.9	158.1	-83.75	5,672.6	-1,283.0	1,121.4	861.3	260.07	4.312		
11,100.0	5,747.0	13,658.4	5,811.0	105.8	158.1	-83.75	5,672.6	-1,283.0	1,094.6	832.7	261.96	4.179		
11,146.8	5,747.0	13,658.4	5,811.0	106.7	158.1	-83.75	5,672.6	-1,283.0	1,085.1	822.2	262.85	4.128	CC, ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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													S12-T10N-R58W - Razor Federal #12F-1308B - HZ - Plan #3		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					
10,300.0	5,747.0	13,925.4	5,912.0	90.6	158.4	-88.81	5,673.6	-952.5	1,275.7	1,027.8	247.83	5.147					
10,400.0	5,747.0	13,925.4	5,912.0	92.5	158.4	-88.81	5,673.6	-952.5	1,195.0	945.3	249.73	4.785					
10,500.0	5,747.0	13,925.4	5,912.0	94.4	158.4	-88.81	5,673.6	-952.5	1,117.5	865.9	251.64	4.441					
10,600.0	5,747.0	13,925.4	5,912.0	96.3	158.4	-88.81	5,673.6	-952.5	1,043.8	790.3	253.54	4.117					
10,700.0	5,747.0	13,925.4	5,912.0	98.2	158.4	-88.81	5,673.6	-952.5	974.8	719.4	255.45	3.816					
10,800.0	5,747.0	13,925.4	5,912.0	100.1	158.4	-88.81	5,673.6	-952.5	911.6	654.3	257.35	3.542					
10,900.0	5,747.0	13,925.4	5,912.0	102.0	158.4	-88.81	5,673.6	-952.5	855.5	596.2	259.26	3.300					
11,000.0	5,747.0	13,925.4	5,912.0	103.9	158.4	-88.81	5,673.6	-952.5	807.8	546.6	261.17	3.093					
11,100.0	5,747.0	13,925.4	5,912.0	105.8	158.4	-88.81	5,673.6	-952.5	770.3	507.2	263.07	2.928					
11,146.8	5,747.0	13,925.4	5,912.0	106.7	158.4	-88.81	5,673.6	-952.5	756.6	492.6	263.97	2.866	CC, ES, SF				

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S12-T10N-R58W - Razor Federal #12G-1309A - 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		
10,100.0	5,747.0	13,221.6	5,812.0	86.8	150.9	-68.30	5,675.6	-554.3	1,297.1	1,073.6	223.46	5.805		
10,200.0	5,747.0	13,221.6	5,812.0	88.7	150.9	-68.30	5,675.6	-554.3	1,201.3	976.0	225.24	5.333		
10,300.0	5,747.0	13,221.6	5,812.0	90.6	150.9	-68.30	5,675.6	-554.3	1,106.2	879.1	227.03	4.872		
10,400.0	5,747.0	13,221.6	5,812.0	92.5	150.9	-68.30	5,675.6	-554.3	1,012.0	783.2	228.82	4.423		
10,500.0	5,747.0	13,221.6	5,812.0	94.4	150.9	-68.30	5,675.6	-554.3	919.1	688.5	230.61	3.986		
10,600.0	5,747.0	13,221.6	5,812.0	96.3	150.9	-68.30	5,675.6	-554.3	827.9	595.5	232.40	3.562		
10,700.0	5,747.0	13,221.6	5,812.0	98.2	150.9	-68.30	5,675.6	-554.3	738.9	504.7	234.19	3.155		
10,800.0	5,747.0	13,221.6	5,812.0	100.1	150.9	-68.30	5,675.6	-554.3	653.1	417.1	236.04	2.767		
10,900.0	5,747.0	13,221.6	5,812.0	102.0	150.9	-68.30	5,675.6	-554.3	572.0	334.0	237.91	2.404		
11,000.0	5,747.0	13,221.6	5,812.0	103.9	150.9	-68.30	5,675.6	-554.3	497.7	257.9	239.78	2.076		
11,100.0	5,747.0	13,221.6	5,812.0	105.8	150.9	-68.30	5,675.6	-554.3	433.9	192.3	241.64	1.796		
11,146.8	5,747.0	13,221.6	5,812.0	106.7	150.9	-68.30	5,675.6	-554.3	409.1	166.6	242.52	1.687	CC, ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S12-T10N-R58W - Razor Federal #12G-1310B - 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		
10,100.0	5,747.0	13,293.1	5,911.0	86.8	151.4	-2.94	5,676.0	-224.5	1,246.9	1,154.8	92.09	13.540		
10,200.0	5,747.0	13,293.1	5,911.0	88.7	151.4	-2.94	5,676.0	-224.5	1,146.9	1,054.1	92.83	12.354		
10,300.0	5,747.0	13,293.1	5,911.0	90.6	151.4	-2.94	5,676.0	-224.5	1,047.0	953.4	93.58	11.188		
10,400.0	5,747.0	13,293.1	5,911.0	92.5	151.4	-2.94	5,676.0	-224.5	947.0	852.7	94.32	10.041		
10,500.0	5,747.0	13,293.1	5,911.0	94.4	151.4	-2.94	5,676.0	-224.5	847.1	752.0	95.06	8.911		
10,600.0	5,747.0	13,293.1	5,911.0	96.3	151.4	-2.94	5,676.0	-224.5	747.2	651.4	95.80	7.799		
10,700.0	5,747.0	13,293.1	5,911.0	98.2	151.4	-2.94	5,676.0	-224.5	647.3	550.7	96.55	6.704		
10,800.0	5,747.0	13,293.1	5,911.0	100.1	151.4	-2.94	5,676.0	-224.5	547.4	450.2	97.29	5.627		
10,900.0	5,747.0	13,293.1	5,911.0	102.0	151.4	-2.94	5,676.0	-224.5	447.7	349.6	98.03	4.566		
11,000.0	5,747.0	13,293.1	5,911.0	103.9	151.4	-2.94	5,676.0	-224.5	348.0	249.2	98.77	3.523		
11,100.0	5,747.0	13,293.1	5,911.0	105.8	151.4	-2.94	5,676.0	-224.5	248.6	149.1	99.52	2.498		
11,146.8	5,747.0	13,293.1	5,911.0	106.7	151.4	-2.94	5,676.0	-224.5	202.3	102.5	99.87	2.026 CC, ES, SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S12-T10N-R58W - Razor Federal #12G-1311A - 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	
10,100.0	5,747.0	13,250.1	5,812.0	86.8	151.1	68.14	5,677.7	106.0	1,296.4	1,068.8	227.63	5.695	
10,200.0	5,747.0	13,250.1	5,812.0	88.7	151.1	68.14	5,677.7	106.0	1,200.5	971.2	229.34	5.235	
10,300.0	5,747.0	13,250.1	5,812.0	90.6	151.1	68.14	5,677.7	106.0	1,105.4	874.3	231.05	4.784	
10,400.0	5,747.0	13,250.1	5,812.0	92.5	151.1	68.14	5,677.7	106.0	1,011.2	778.4	232.76	4.344	
10,500.0	5,747.0	13,250.1	5,812.0	94.4	151.1	68.14	5,677.7	106.0	918.2	683.7	234.48	3.916	
10,600.0	5,747.0	13,250.1	5,812.0	96.3	151.1	68.14	5,677.7	106.0	826.8	590.6	236.19	3.501	
10,700.0	5,747.0	13,250.1	5,812.0	98.2	151.1	68.14	5,677.7	106.0	737.7	499.8	237.91	3.101	
10,800.0	5,747.0	13,250.1	5,812.0	100.1	151.1	68.14	5,677.7	106.0	651.8	412.2	239.62	2.720	
10,900.0	5,747.0	13,250.1	5,812.0	102.0	151.1	68.14	5,677.7	106.0	570.4	329.1	241.34	2.364	
11,000.0	5,747.0	13,250.1	5,812.0	103.9	151.1	68.14	5,677.7	106.0	496.0	252.9	243.05	2.041	
11,100.0	5,747.0	13,250.1	5,812.0	105.8	151.1	68.14	5,677.7	106.0	431.9	187.2	244.77	1.765	
11,146.8	5,747.0	13,250.1	5,812.0	106.7	151.1	68.14	5,677.7	106.0	407.0	161.4	245.57	1.657 CC, ES, SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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> S12-T10N-R58W - Razor Federal #12G-1312B - 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						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	5,747.0	13,435.7	5,911.0	90.6	151.2	87.14	5,678.7	435.8	1,237.4	992.2	245.20	5.046	
10,400.0	5,747.0	13,435.7	5,911.0	92.5	151.2	87.14	5,678.7	435.8	1,154.0	907.0	247.02	4.672	
10,500.0	5,747.0	13,435.7	5,911.0	94.4	151.2	87.14	5,678.7	435.8	1,073.5	824.6	248.85	4.314	
10,600.0	5,747.0	13,435.7	5,911.0	96.3	151.2	87.14	5,678.7	435.8	996.5	745.8	250.67	3.975	
10,700.0	5,747.0	13,435.7	5,911.0	98.2	151.2	87.14	5,678.7	435.8	923.9	671.4	252.49	3.659	
10,800.0	5,747.0	13,435.7	5,911.0	100.1	151.2	87.14	5,678.7	435.8	856.8	602.5	254.31	3.369	
10,900.0	5,747.0	13,435.7	5,911.0	102.0	151.2	87.14	5,678.7	435.8	796.7	540.6	256.13	3.110	
11,000.0	5,747.0	13,435.7	5,911.0	103.9	151.2	87.14	5,678.7	435.8	745.2	487.2	257.96	2.889	
11,100.0	5,747.0	13,435.7	5,911.0	105.8	151.2	87.14	5,678.7	435.8	704.2	444.4	259.78	2.711	
11,146.8	5,747.0	13,435.7	5,911.0	106.7	151.2	87.14	5,678.7	435.8	689.2	428.5	260.64	2.644	CC, ES, SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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													S12-T10N-R58W - Razor Federal #12H-1313A - 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					
10,500.0	5,747.0	13,552.2	5,795.0	94.4	153.6	81.78	5,680.8	765.5	1,310.2	1,061.5	248.62	5.270					
10,600.0	5,747.0	13,552.2	5,795.0	96.3	153.6	81.78	5,680.8	765.5	1,247.8	997.3	250.43	4.982					
10,700.0	5,747.0	13,552.2	5,795.0	98.2	153.6	81.78	5,680.8	765.5	1,190.5	938.2	252.24	4.720					
10,800.0	5,747.0	13,552.2	5,795.0	100.1	153.6	81.78	5,680.8	765.5	1,139.1	885.1	254.05	4.484					
10,900.0	5,747.0	13,552.2	5,795.0	102.0	153.6	81.78	5,680.8	765.5	1,094.5	838.7	255.86	4.278					
11,000.0	5,747.0	13,552.2	5,795.0	103.9	153.6	81.78	5,680.8	765.5	1,057.5	799.8	257.67	4.104					
11,100.0	5,747.0	13,552.2	5,795.0	105.8	153.6	81.78	5,680.8	765.5	1,028.9	769.5	259.48	3.965					
11,146.8	5,747.0	13,552.2	5,795.0	106.7	153.6	81.78	5,680.8	765.5	1,018.6	758.3	260.32	3.913 CC, ES, SF					

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2409 - 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	-89.99	0.0	-30.2	30.2					
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	0.0	-30.2	30.2	30.0	0.19	161.727		
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	0.0	-30.2	30.2	29.5	0.64	47.432		
300.0	300.0	300.0	300.0	0.5	0.5	-89.99	0.0	-30.2	30.2	29.1	1.09	27.792		
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	0.0	-30.2	30.2	28.6	1.54	19.654		
500.0	500.0	500.0	500.0	1.0	1.0	36.32	0.0	-30.2	28.7	26.8	1.97	14.595		
600.0	599.9	599.9	599.9	1.2	1.2	43.16	0.0	-30.2	24.9	22.5	2.40	10.396		
700.0	699.7	699.7	699.7	1.4	1.4	53.76	0.0	-30.2	21.1	18.3	2.83	7.459		
800.0	799.5	799.5	799.5	1.6	1.7	68.21	0.0	-30.2	18.3	15.0	3.28	5.585		
900.0	899.4	899.4	899.4	1.9	1.9	86.19	0.0	-30.2	17.1	13.3	3.75	4.554		
920.0	919.3	919.3	919.3	1.9	1.9	90.00	0.0	-30.2	17.0	13.2	3.84	4.434 CC, ES		
1,000.0	999.2	999.2	999.2	2.1	2.1	104.93	0.0	-30.2	17.6	13.4	4.20	4.190		
1,100.0	1,099.0	1,099.1	1,099.1	2.3	2.3	116.05	-0.4	-31.8	19.6	14.9	4.64	4.222		
1,200.0	1,198.9	1,199.2	1,199.0	2.6	2.5	115.87	-1.8	-36.9	21.5	16.4	5.08	4.233		
1,300.0	1,298.7	1,299.2	1,298.6	2.8	2.7	107.15	-4.0	-45.3	23.3	17.7	5.55	4.198		
1,400.0	1,398.6	1,398.8	1,397.5	3.1	3.0	92.39	-7.0	-57.0	26.4	20.3	6.04	4.361		
1,500.0	1,498.4	1,498.0	1,495.5	3.3	3.2	76.17	-10.9	-71.8	32.5	26.0	6.53	4.973		
1,600.0	1,598.2	1,597.3	1,593.5	3.6	3.5	64.71	-15.1	-87.5	41.0	34.0	7.00	5.855		
1,700.0	1,698.1	1,696.7	1,691.6	3.8	3.8	57.36	-19.2	-103.2	50.5	43.1	7.46	6.774		
1,800.0	1,797.9	1,796.1	1,789.6	4.1	4.2	52.39	-23.3	-118.8	60.6	52.7	7.92	7.657		
1,900.0	1,897.8	1,895.4	1,887.6	4.3	4.5	48.86	-27.4	-134.5	71.0	62.7	8.38	8.477		
2,000.0	1,997.6	1,994.8	1,985.7	4.6	4.8	46.24	-31.6	-150.2	81.7	72.8	8.85	9.231		
2,100.0	2,097.4	2,094.2	2,083.7	4.8	5.2	44.22	-35.7	-165.9	92.4	83.1	9.32	9.920		
2,200.0	2,197.3	2,193.6	2,181.8	5.1	5.5	42.63	-39.8	-181.6	103.3	93.5	9.79	10.549		
2,300.0	2,297.1	2,292.9	2,279.8	5.3	5.9	41.34	-43.9	-197.3	114.2	103.9	10.26	11.124		
2,400.0	2,396.9	2,392.3	2,377.8	5.6	6.3	40.27	-48.1	-212.9	125.1	114.4	10.74	11.651		
2,500.0	2,496.8	2,491.7	2,475.9	5.8	6.6	39.38	-52.2	-228.6	136.1	124.9	11.22	12.135		
2,600.0	2,596.6	2,591.1	2,573.9	6.1	7.0	38.62	-56.3	-244.3	147.2	135.5	11.70	12.581		
2,700.0	2,696.5	2,690.4	2,672.0	6.3	7.4	37.96	-60.4	-260.0	158.2	146.0	12.18	12.992		
2,800.0	2,796.3	2,789.8	2,770.0	6.6	7.7	37.40	-64.6	-275.7	169.3	156.6	12.66	13.373		
2,900.0	2,896.1	2,889.2	2,868.0	6.8	8.1	36.90	-68.7	-291.4	180.3	167.2	13.14	13.726		
3,000.0	2,996.0	2,988.6	2,966.1	7.1	8.5	36.46	-72.8	-307.1	191.4	177.8	13.62	14.055		
3,100.0	3,095.8	3,087.9	3,064.1	7.3	8.8	36.06	-76.9	-322.7	202.5	188.4	14.10	14.361		
3,200.0	3,195.7	3,187.3	3,162.2	7.6	9.2	35.71	-81.1	-338.4	213.6	199.0	14.58	14.647		
3,300.0	3,295.5	3,286.7	3,260.2	7.8	9.6	35.39	-85.2	-354.1	224.7	209.7	15.07	14.915		
3,400.0	3,395.3	3,386.0	3,358.2	8.1	10.0	35.11	-89.3	-369.8	235.9	220.3	15.55	15.167		
3,500.0	3,495.2	3,485.4	3,456.3	8.3	10.4	34.85	-93.4	-385.5	247.0	231.0	16.03	15.403		
3,600.0	3,595.0	3,584.8	3,554.3	8.6	10.7	34.61	-97.6	-401.2	258.1	241.6	16.52	15.626		
3,700.0	3,694.8	3,684.2	3,652.4	8.8	11.1	34.39	-101.7	-416.8	269.2	252.2	17.00	15.837		
3,800.0	3,794.7	3,783.5	3,750.4	9.1	11.5	34.19	-105.8	-432.5	280.4	262.9	17.49	16.035		
3,900.0	3,894.5	3,882.9	3,848.5	9.3	11.9	34.00	-109.9	-448.2	291.5	273.6	17.97	16.223		
4,000.0	3,994.4	3,982.3	3,946.5	9.6	12.3	33.83	-114.1	-463.9	302.7	284.2	18.45	16.402		
4,100.0	4,094.2	4,081.7	4,044.5	9.8	12.6	33.67	-118.2	-479.6	313.8	294.9	18.94	16.571		
4,200.0	4,194.0	4,181.0	4,142.6	10.1	13.0	33.52	-122.3	-495.3	325.0	305.5	19.42	16.733		
4,300.0	4,293.9	4,280.4	4,240.6	10.3	13.4	33.38	-126.4	-511.0	336.1	316.2	19.90	16.886		
4,400.0	4,393.7	4,379.8	4,338.7	10.6	13.8	33.25	-130.5	-526.6	347.3	326.9	20.39	17.032		
4,500.0	4,493.6	4,487.3	4,444.9	10.8	14.1	33.15	-134.8	-542.9	357.7	336.9	20.87	17.138		
4,600.0	4,593.4	4,601.0	4,557.7	11.1	14.4	33.19	-138.3	-556.1	364.7	343.4	21.34	17.091		
4,700.0	4,693.2	4,715.1	4,671.5	11.3	14.7	33.41	-140.6	-565.0	367.8	346.0	21.80	16.871		
4,800.0	4,793.1	4,829.3	4,785.6	11.6	14.9	33.77	-141.8	-569.6	367.2	344.9	22.25	16.504		
4,900.0	4,893.0	4,936.8	4,893.0	11.8	15.0	34.00	-142.0	-570.2	365.3	342.7	22.59	16.170		
4,954.8	4,947.9	4,991.6	4,947.9	11.8	15.1	34.04	-142.0	-570.2	365.0	342.2	22.79	16.012		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2409 - 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
5,000.0	4,993.0	5,036.8	4,993.0	11.9	15.2	-90.31	-142.0	-570.2	365.2	342.2	22.96	15.902	
5,100.0	5,093.0	5,136.8	5,093.0	12.1	15.3	-90.31	-142.0	-570.2	365.2	341.8	23.33	15.653	
5,200.0	5,193.0	5,237.0	5,193.1	12.3	15.4	-89.98	-139.9	-570.2	365.2	341.5	23.71	15.403	
5,211.0	5,204.0	5,247.9	5,204.0	12.3	15.5	-89.64	-138.8	-570.2	365.2	341.4	23.74	15.379	
5,300.0	5,292.8	5,334.9	5,289.2	12.4	15.6	-87.61	-121.9	-570.1	365.4	341.2	24.12	15.146	
5,400.0	5,390.2	5,430.1	5,377.9	12.6	15.6	-85.37	-87.6	-570.0	366.0	341.6	24.44	14.976	
5,500.0	5,481.5	5,523.0	5,457.0	12.6	15.7	-83.32	-39.0	-569.8	367.0	342.4	24.67	14.878	
5,600.0	5,563.4	5,614.1	5,525.0	12.7	15.7	-81.52	21.4	-569.6	368.2	343.3	24.90	14.790	
5,700.0	5,633.0	5,703.6	5,580.5	12.8	15.8	-80.01	91.5	-569.4	369.3	344.1	25.27	14.616	
5,800.0	5,687.5	5,792.0	5,622.8	13.0	16.0	-78.84	168.9	-569.2	370.2	344.3	25.94	14.270	
5,900.0	5,725.2	5,879.4	5,651.2	13.6	16.3	-78.03	251.6	-568.9	370.8	343.7	27.06	13.703	
6,000.0	5,744.5	5,966.3	5,665.3	14.5	16.7	-77.60	337.2	-568.6	370.8	342.2	28.66	12.941	
6,100.0	5,747.0	6,060.0	5,667.0	15.5	17.4	-77.52	430.8	-568.3	370.3	339.6	30.69	12.067	
6,200.0	5,747.0	6,160.0	5,667.0	16.7	18.3	-77.50	530.8	-568.0	369.7	336.7	33.01	11.199	
6,300.0	5,747.0	6,259.9	5,667.0	18.1	19.5	-77.48	630.8	-567.7	369.1	333.5	35.58	10.374	
6,400.0	5,747.0	6,359.9	5,667.0	19.5	20.7	-77.46	730.8	-567.4	368.5	330.1	38.35	9.610	
6,500.0	5,747.0	6,459.9	5,667.0	21.0	22.1	-77.44	830.8	-567.0	367.9	326.6	41.27	8.914	
6,600.0	5,747.0	6,559.9	5,667.0	22.5	23.5	-77.42	930.8	-566.7	367.3	322.9	44.32	8.287	
6,700.0	5,747.0	6,659.9	5,667.0	24.1	25.0	-77.40	1,030.8	-566.4	366.6	319.2	47.47	7.723	
6,800.0	5,747.0	6,759.9	5,667.0	25.8	26.6	-77.38	1,130.8	-566.1	366.0	315.3	50.71	7.218	
6,900.0	5,747.0	6,859.9	5,667.0	27.5	28.2	-77.35	1,230.8	-565.8	365.4	311.4	54.01	6.765	
7,000.0	5,747.0	6,959.9	5,667.0	29.2	29.9	-77.33	1,330.8	-565.4	364.8	307.4	57.37	6.358	
7,100.0	5,747.0	7,059.9	5,667.0	30.9	31.6	-77.31	1,430.8	-565.1	364.2	303.4	60.78	5.992	
7,200.0	5,747.0	7,159.9	5,667.0	32.7	33.3	-77.29	1,530.8	-564.8	363.6	299.4	64.23	5.661	
7,300.0	5,747.0	7,259.9	5,667.0	34.5	35.0	-77.27	1,630.8	-564.5	363.0	295.3	67.71	5.361	
7,400.0	5,747.0	7,359.9	5,667.0	36.3	36.7	-77.25	1,730.7	-564.1	362.4	291.1	71.21	5.088	
7,500.0	5,747.0	7,459.9	5,667.0	38.1	38.5	-77.22	1,830.7	-563.8	361.7	287.0	74.75	4.840	
7,600.0	5,747.0	7,559.9	5,667.0	39.9	40.3	-77.20	1,930.7	-563.5	361.1	282.8	78.30	4.612	
7,700.0	5,747.0	7,659.9	5,667.0	41.7	42.1	-77.18	2,030.7	-563.2	360.5	278.6	81.87	4.404	
7,800.0	5,747.0	7,759.9	5,667.0	43.6	43.9	-77.16	2,130.7	-562.9	359.9	274.5	85.45	4.212	
7,900.0	5,747.0	7,859.9	5,667.0	45.4	45.7	-77.13	2,230.7	-562.5	359.3	270.2	89.05	4.035	
8,000.0	5,747.0	7,959.9	5,667.0	47.2	47.5	-77.11	2,330.7	-562.2	358.7	266.0	92.66	3.871	
8,100.0	5,747.0	8,059.9	5,667.0	49.1	49.3	-77.09	2,430.7	-561.9	358.1	261.8	96.29	3.719	
8,200.0	5,747.0	8,159.9	5,667.0	50.9	51.2	-77.07	2,530.7	-561.6	357.5	257.5	99.92	3.578	
8,300.0	5,747.0	8,259.9	5,667.0	52.8	53.0	-77.04	2,630.7	-561.2	356.8	253.3	103.56	3.446	
8,400.0	5,747.0	8,359.9	5,667.0	54.7	54.9	-77.02	2,730.7	-560.9	356.2	249.0	107.20	3.323	
8,500.0	5,747.0	8,459.9	5,667.0	56.5	56.7	-77.00	2,830.7	-560.6	355.6	244.8	110.86	3.208	
8,600.0	5,747.0	8,559.9	5,667.0	58.4	58.6	-76.98	2,930.7	-560.3	355.0	240.5	114.52	3.100	
8,700.0	5,747.0	8,659.9	5,667.0	60.3	60.4	-76.95	3,030.7	-560.0	354.4	236.2	118.18	2.999	
8,800.0	5,747.0	8,759.9	5,667.0	62.2	62.3	-76.93	3,130.7	-559.6	353.8	231.9	121.85	2.903	
8,900.0	5,747.0	8,859.9	5,667.0	64.1	64.1	-76.91	3,230.7	-559.3	353.2	227.6	125.52	2.814	
9,000.0	5,747.0	8,959.9	5,667.0	65.9	66.0	-76.88	3,330.7	-559.0	352.6	223.4	129.20	2.729	
9,100.0	5,747.0	9,059.9	5,667.0	67.8	67.9	-76.86	3,430.7	-558.7	351.9	219.1	132.88	2.649	
9,200.0	5,747.0	9,159.9	5,667.0	69.7	69.8	-76.84	3,530.7	-558.4	351.3	214.8	136.57	2.573	
9,300.0	5,747.0	9,259.9	5,667.0	71.6	71.6	-76.81	3,630.7	-558.0	350.7	210.5	140.25	2.501	
9,400.0	5,747.0	9,359.9	5,667.0	73.5	73.5	-76.79	3,730.7	-557.7	350.1	206.2	143.94	2.432	
9,500.0	5,747.0	9,459.9	5,667.0	75.4	75.4	-76.77	3,830.7	-557.4	349.5	201.9	147.63	2.367	
9,600.0	5,747.0	9,559.9	5,667.0	77.3	77.3	-76.74	3,930.7	-557.1	348.9	197.6	151.33	2.305	
9,700.0	5,747.0	9,659.9	5,667.0	79.2	79.2	-76.72	4,030.7	-556.7	348.3	193.2	155.02	2.247	
9,800.0	5,747.0	9,759.9	5,667.0	81.1	81.1	-76.70	4,130.7	-556.4	347.7	188.9	158.72	2.190	
9,900.0	5,747.0	9,859.9	5,667.0	83.0	82.9	-76.67	4,230.7	-556.1	347.0	184.6	162.42	2.137	
10,000.0	5,747.0	9,959.9	5,667.0	84.9	84.8	-76.65	4,330.7	-555.8	346.4	180.3	166.12	2.085	

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2409 - 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		
10,100.0	5,747.0	10,059.9	5,667.0	86.8	86.7	-76.62	4,430.7	-555.5	345.8	176.0	169.82	2.036		
10,200.0	5,747.0	10,159.9	5,667.0	88.7	88.6	-76.60	4,530.7	-555.1	345.2	171.7	173.52	1.989		
10,300.0	5,747.0	10,259.9	5,667.0	90.6	90.5	-76.58	4,630.7	-554.8	344.6	167.4	177.23	1.944		
10,400.0	5,747.0	10,359.9	5,667.0	92.5	92.4	-76.55	4,730.7	-554.5	344.0	163.1	180.93	1.901		
10,500.0	5,747.0	10,459.9	5,667.0	94.4	94.3	-76.53	4,830.7	-554.2	343.4	158.7	184.63	1.860		
10,600.0	5,747.0	10,559.9	5,667.0	96.3	96.2	-76.50	4,930.7	-553.8	342.8	154.4	188.34	1.820		
10,700.0	5,747.0	10,659.9	5,667.0	98.2	98.1	-76.48	5,030.7	-553.5	342.2	150.1	192.05	1.782		
10,800.0	5,747.0	10,759.9	5,667.0	100.1	100.0	-76.45	5,130.7	-553.2	341.5	145.8	195.75	1.745		
10,900.0	5,747.0	10,859.9	5,667.0	102.0	101.9	-76.43	5,230.7	-552.9	340.9	141.5	199.46	1.709		
11,000.0	5,747.0	10,959.9	5,667.0	103.9	103.8	-76.40	5,330.7	-552.6	340.3	137.2	203.17	1.675		
11,100.0	5,747.0	11,059.9	5,667.0	105.8	105.7	-76.38	5,430.7	-552.2	339.7	132.8	206.88	1.642		
11,146.8	5,747.0	11,104.5	5,667.0	106.7	106.5	-76.37	5,475.3	-552.1	339.4	130.9	208.57	1.627		
11,146.8	5,747.0	11,104.5	5,667.0	106.7	106.5	-76.37	5,475.3	-552.1	339.4	130.9	208.57	1.627 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2411 - 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	87.90	1.1	29.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	87.90	1.1	29.9	29.9	29.7	0.19	160.351		
200.0	200.0	200.0	200.0	0.3	0.3	87.90	1.1	29.9	29.9	29.3	0.64	47.029		
300.0	300.0	300.0	300.0	0.5	0.5	87.90	1.1	29.9	29.9	28.8	1.09	27.555		
400.0	400.0	400.0	400.0	0.8	0.8	87.90	1.1	29.9	29.9	28.4	1.54	19.486 CC, ES		
500.0	500.0	499.3	499.3	1.0	1.0	-147.04	-0.2	31.0	32.5	30.5	1.95	16.670		
600.0	599.9	598.8	598.7	1.2	1.2	-146.26	-3.3	33.8	39.4	37.1	2.35	16.742		
700.0	699.7	698.6	698.3	1.4	1.4	-146.12	-6.6	36.7	47.0	44.2	2.77	16.960		
800.0	799.5	798.3	798.0	1.6	1.6	-146.02	-9.8	39.6	54.6	51.4	3.20	17.032		
900.0	899.4	898.0	897.6	1.9	1.8	-145.95	-13.0	42.5	62.1	58.5	3.65	17.037		
1,000.0	999.2	997.7	997.2	2.1	2.0	-145.89	-16.2	45.4	69.7	65.6	4.10	17.010		
1,100.0	1,099.0	1,097.4	1,096.8	2.3	2.3	-145.84	-19.5	48.2	77.3	72.7	4.55	16.970		
1,200.0	1,198.9	1,197.1	1,196.4	2.6	2.5	-145.80	-22.7	51.1	84.9	79.8	5.01	16.925		
1,300.0	1,298.7	1,296.8	1,296.1	2.8	2.7	-145.76	-25.9	54.0	92.4	87.0	5.48	16.879		
1,400.0	1,398.6	1,396.5	1,395.7	3.1	3.0	-145.74	-29.1	56.9	100.0	94.1	5.94	16.835		
1,500.0	1,498.4	1,496.3	1,495.3	3.3	3.2	-145.71	-32.4	59.8	107.6	101.2	6.41	16.793		
1,600.0	1,598.2	1,596.0	1,594.9	3.6	3.4	-145.69	-35.6	62.6	115.2	108.3	6.87	16.754		
1,700.0	1,698.1	1,695.7	1,694.5	3.8	3.7	-145.67	-38.8	65.5	122.7	115.4	7.34	16.718		
1,800.0	1,797.9	1,795.4	1,794.2	4.1	3.9	-145.66	-42.1	68.4	130.3	122.5	7.81	16.685		
1,900.0	1,897.8	1,895.1	1,893.8	4.3	4.2	-145.64	-45.3	71.3	137.9	129.6	8.28	16.654		
2,000.0	1,997.6	1,994.8	1,993.4	4.6	4.4	-145.63	-48.5	74.1	145.4	136.7	8.75	16.626		
2,100.0	2,097.4	2,094.5	2,093.0	4.8	4.6	-145.62	-51.7	77.0	153.0	143.8	9.22	16.600		
2,200.0	2,197.3	2,194.2	2,192.6	5.1	4.9	-145.61	-55.0	79.9	160.6	150.9	9.69	16.577		
2,300.0	2,297.1	2,294.0	2,292.3	5.3	5.1	-145.60	-58.2	82.8	168.2	158.0	10.16	16.555		
2,400.0	2,396.9	2,393.7	2,391.9	5.6	5.4	-145.59	-61.4	85.7	175.7	165.1	10.63	16.535		
2,500.0	2,496.8	2,493.4	2,491.5	5.8	5.6	-145.58	-64.6	88.5	183.3	172.2	11.10	16.516		
2,600.0	2,596.6	2,593.1	2,591.1	6.1	5.8	-145.57	-67.9	91.4	190.9	179.3	11.57	16.499		
2,700.0	2,696.5	2,692.8	2,690.7	6.3	6.1	-145.57	-71.1	94.3	198.5	186.4	12.04	16.483		
2,800.0	2,796.3	2,792.5	2,790.3	6.6	6.3	-145.56	-74.3	97.2	206.0	193.5	12.51	16.468		
2,900.0	2,896.1	2,892.2	2,890.0	6.8	6.6	-145.55	-77.5	100.1	213.6	200.6	12.98	16.455		
3,000.0	2,996.0	2,991.9	2,989.6	7.1	6.8	-145.55	-80.8	102.9	221.2	207.7	13.45	16.442		
3,100.0	3,095.8	3,091.7	3,089.2	7.3	7.0	-145.54	-84.0	105.8	228.7	214.8	13.92	16.430		
3,200.0	3,195.7	3,191.4	3,188.8	7.6	7.3	-145.54	-87.2	108.7	236.3	221.9	14.39	16.419		
3,300.0	3,295.5	3,291.1	3,288.4	7.8	7.5	-145.53	-90.5	111.6	243.9	229.0	14.86	16.409		
3,400.0	3,395.3	3,390.8	3,388.1	8.1	7.8	-145.53	-93.7	114.5	251.5	236.1	15.33	16.400		
3,500.0	3,495.2	3,490.5	3,487.7	8.3	8.0	-145.53	-96.9	117.3	259.0	243.2	15.80	16.391		
3,600.0	3,595.0	3,590.2	3,587.3	8.6	8.2	-145.52	-100.1	120.2	266.6	250.3	16.27	16.383		
3,700.0	3,694.8	3,689.9	3,686.9	8.8	8.5	-145.52	-103.4	123.1	274.2	257.4	16.74	16.376		
3,800.0	3,794.7	3,789.6	3,786.5	9.1	8.7	-145.52	-106.6	126.0	281.8	264.5	17.21	16.369		
3,900.0	3,894.5	3,889.4	3,886.2	9.3	9.0	-145.51	-109.8	128.8	289.3	271.6	17.68	16.362		
4,000.0	3,994.4	3,989.1	3,985.8	9.6	9.2	-145.51	-113.0	131.7	296.9	278.7	18.15	16.356		
4,100.0	4,094.2	4,088.8	4,085.4	9.8	9.4	-145.51	-116.3	134.6	304.5	285.9	18.62	16.351		
4,200.0	4,194.0	4,188.5	4,185.0	10.1	9.7	-145.50	-119.5	137.5	312.0	293.0	19.09	16.346		
4,300.0	4,293.9	4,288.2	4,284.6	10.3	9.9	-145.50	-122.7	140.4	319.6	300.1	19.56	16.341		
4,400.0	4,393.7	4,387.9	4,384.3	10.6	10.2	-145.50	-126.0	143.2	327.2	307.2	20.03	16.336		
4,500.0	4,493.6	4,487.6	4,483.9	10.8	10.4	-145.50	-129.2	146.1	334.8	314.3	20.50	16.332		
4,600.0	4,593.4	4,587.4	4,583.5	11.1	10.6	-145.49	-132.4	149.0	342.3	321.4	20.97	16.328		
4,700.0	4,693.2	4,687.1	4,683.1	11.3	10.9	-145.49	-135.6	151.9	349.9	328.5	21.43	16.325		
4,800.0	4,793.1	4,792.3	4,788.3	11.6	11.1	-145.49	-138.5	154.4	356.9	335.0	21.89	16.304		
4,900.0	4,893.0	4,891.1	4,893.0	11.8	11.3	-145.83	-138.9	154.8	359.6	337.4	22.27	16.153		
5,000.0	4,993.0	4,991.1	4,993.0	11.9	11.5	89.83	-138.9	154.8	359.8	337.2	22.63	15.900		
5,100.0	5,093.0	5,091.1	5,093.0	12.1	11.6	89.83	-138.9	154.8	359.8	336.8	22.98	15.655		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2411 - 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		
5,189.2	5,182.2	5,186.3	5,182.3	12.3	11.8	89.63	-137.6	154.8	359.8	336.5	23.30	15.444		
5,200.0	5,193.0	5,197.1	5,193.0	12.3	11.8	89.49	-136.8	154.8	359.8	336.5	23.33	15.420		
5,300.0	5,292.8	5,294.8	5,288.9	12.4	11.9	87.45	-118.9	154.6	360.1	336.4	23.61	15.250		
5,400.0	5,390.2	5,389.8	5,377.4	12.6	12.0	85.19	-84.7	154.3	360.8	337.0	23.81	15.152		
5,500.0	5,481.5	5,482.6	5,456.5	12.6	12.1	83.12	-36.3	153.9	361.9	337.9	24.00	15.081		
5,600.0	5,563.4	5,573.6	5,524.4	12.7	12.2	81.31	23.9	153.4	363.1	338.9	24.26	14.970		
5,700.0	5,633.0	5,663.0	5,580.0	12.8	12.5	79.80	93.8	152.8	364.3	339.6	24.70	14.751		
5,800.0	5,687.5	5,750.0	5,621.9	13.0	12.9	78.65	170.0	152.2	365.3	339.9	25.43	14.367		
5,900.0	5,725.2	5,838.6	5,650.9	13.6	13.6	77.84	253.6	151.5	365.9	339.4	26.55	13.781		
6,000.0	5,744.5	5,925.5	5,665.2	14.5	14.4	77.43	339.2	150.8	366.0	338.0	28.06	13.042		
6,100.0	5,747.0	6,019.0	5,667.0	15.5	15.4	77.36	432.6	150.0	365.6	335.6	30.03	12.174		
6,200.0	5,747.0	6,119.0	5,667.0	16.7	16.6	77.34	532.6	149.2	365.1	332.7	32.39	11.272		
6,300.0	5,747.0	6,219.0	5,667.0	18.1	17.9	77.32	632.6	148.3	364.6	329.6	34.99	10.419		
6,400.0	5,747.0	6,319.0	5,667.0	19.5	19.4	77.31	732.6	147.5	364.1	326.3	37.79	9.633		
6,500.0	5,747.0	6,419.0	5,667.0	21.0	20.9	77.29	832.6	146.6	363.5	322.8	40.75	8.922		
6,600.0	5,747.0	6,519.0	5,667.0	22.5	22.4	77.27	932.6	145.8	363.0	319.2	43.83	8.283		
6,700.0	5,747.0	6,619.0	5,667.0	24.1	24.1	77.25	1,032.6	145.0	362.5	315.5	47.01	7.712		
6,800.0	5,747.0	6,719.0	5,667.0	25.8	25.7	77.23	1,132.6	144.1	362.0	311.7	50.27	7.201		
6,900.0	5,747.0	6,819.0	5,667.0	27.5	27.4	77.21	1,232.6	143.3	361.5	307.9	53.59	6.745		
7,000.0	5,747.0	6,919.0	5,667.0	29.2	29.2	77.19	1,332.6	142.4	360.9	304.0	56.97	6.335		
7,100.0	5,747.0	7,019.0	5,667.0	30.9	30.9	77.18	1,432.6	141.6	360.4	300.0	60.40	5.967		
7,200.0	5,747.0	7,119.0	5,667.0	32.7	32.7	77.16	1,532.6	140.8	359.9	296.0	63.86	5.636		
7,300.0	5,747.0	7,219.0	5,667.0	34.5	34.5	77.14	1,632.6	139.9	359.4	292.0	67.35	5.336		
7,400.0	5,747.0	7,319.0	5,667.0	36.3	36.3	77.12	1,732.5	139.1	358.9	288.0	70.88	5.063		
7,500.0	5,747.0	7,419.0	5,667.0	38.1	38.1	77.10	1,832.5	138.2	358.3	283.9	74.42	4.815		
7,600.0	5,747.0	7,519.0	5,667.0	39.9	39.9	77.08	1,932.5	137.4	357.8	279.8	77.98	4.588		
7,700.0	5,747.0	7,619.0	5,667.0	41.7	41.7	77.06	2,032.5	136.6	357.3	275.7	81.57	4.381		
7,800.0	5,747.0	7,719.0	5,667.0	43.6	43.6	77.04	2,132.5	135.7	356.8	271.6	85.16	4.189		
7,900.0	5,747.0	7,819.0	5,667.0	45.4	45.4	77.02	2,232.5	134.9	356.3	267.5	88.77	4.013		
8,000.0	5,747.0	7,919.0	5,667.0	47.2	47.3	77.00	2,332.5	134.1	355.7	263.4	92.39	3.850		
8,100.0	5,747.0	8,018.9	5,667.0	49.1	49.1	76.98	2,432.5	133.2	355.2	259.2	96.02	3.699		
8,200.0	5,747.0	8,118.9	5,667.0	50.9	51.0	76.97	2,532.5	132.4	354.7	255.0	99.66	3.559		
8,300.0	5,747.0	8,218.9	5,667.0	52.8	52.9	76.95	2,632.5	131.5	354.2	250.9	103.31	3.428		
8,400.0	5,747.0	8,318.9	5,667.0	54.7	54.7	76.93	2,732.5	130.7	353.7	246.7	106.97	3.306		
8,500.0	5,747.0	8,418.9	5,667.0	56.5	56.6	76.91	2,832.5	129.9	353.2	242.5	110.63	3.192		
8,600.0	5,747.0	8,518.9	5,667.0	58.4	58.5	76.89	2,932.5	129.0	352.6	238.3	114.29	3.085		
8,700.0	5,747.0	8,618.9	5,667.0	60.3	60.4	76.87	3,032.5	128.2	352.1	234.2	117.96	2.985		
8,800.0	5,747.0	8,718.9	5,667.0	62.2	62.2	76.85	3,132.5	127.3	351.6	230.0	121.64	2.890		
8,900.0	5,747.0	8,818.9	5,667.0	64.1	64.1	76.83	3,232.5	126.5	351.1	225.8	125.32	2.801		
9,000.0	5,747.0	8,918.9	5,667.0	65.9	66.0	76.81	3,332.5	125.7	350.6	221.6	129.01	2.717		
9,100.0	5,747.0	9,018.9	5,667.0	67.8	67.9	76.79	3,432.5	124.8	350.0	217.3	132.69	2.638		
9,200.0	5,747.0	9,118.9	5,667.0	69.7	69.8	76.77	3,532.5	124.0	349.5	213.1	136.38	2.563		
9,300.0	5,747.0	9,218.9	5,667.0	71.6	71.7	76.75	3,632.5	123.1	349.0	208.9	140.08	2.492		
9,400.0	5,747.0	9,318.9	5,667.0	73.5	73.6	76.73	3,732.4	122.3	348.5	204.7	143.77	2.424		
9,500.0	5,747.0	9,418.9	5,667.0	75.4	75.5	76.71	3,832.4	121.5	348.0	200.5	147.47	2.360		
9,600.0	5,747.0	9,518.9	5,667.0	77.3	77.4	76.69	3,932.4	120.6	347.5	196.3	151.17	2.298		
9,700.0	5,747.0	9,618.9	5,667.0	79.2	79.3	76.67	4,032.4	119.8	346.9	192.1	154.87	2.240		
9,800.0	5,747.0	9,718.9	5,667.0	81.1	81.2	76.65	4,132.4	118.9	346.4	187.8	158.57	2.185		
9,900.0	5,747.0	9,818.9	5,667.0	83.0	83.1	76.63	4,232.4	118.1	345.9	183.6	162.28	2.131		
10,000.0	5,747.0	9,918.9	5,667.0	84.9	85.0	76.61	4,332.4	117.3	345.4	179.4	165.99	2.081		
10,100.0	5,747.0	10,018.9	5,667.0	86.8	86.9	76.59	4,432.4	116.4	344.9	175.2	169.69	2.032		
10,200.0	5,747.0	10,118.9	5,667.0	88.7	88.8	76.57	4,532.4	115.6	344.3	170.9	173.40	1.986		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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> S25-T10N-R58W - Razor 25B -2411 - 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
10,300.0	5,747.0	10,218.9	5,667.0	90.6	90.7	76.55	4,632.4	114.8	343.8	166.7	177.11	1.941	
10,400.0	5,747.0	10,318.9	5,667.0	92.5	92.6	76.52	4,732.4	113.9	343.3	162.5	180.82	1.899	
10,500.0	5,747.0	10,418.9	5,667.0	94.4	94.5	76.50	4,832.4	113.1	342.8	158.3	184.53	1.858	
10,600.0	5,747.0	10,518.9	5,667.0	96.3	96.4	76.48	4,932.4	112.2	342.3	154.0	188.24	1.818	
10,700.0	5,747.0	10,618.9	5,667.0	98.2	98.3	76.46	5,032.4	111.4	341.8	149.8	191.96	1.780	
10,800.0	5,747.0	10,718.9	5,667.0	100.1	100.2	76.44	5,132.4	110.6	341.2	145.6	195.67	1.744	
10,900.0	5,747.0	10,818.9	5,667.0	102.0	102.1	76.42	5,232.4	109.7	340.7	141.3	199.38	1.709	
11,000.0	5,747.0	10,918.9	5,667.0	103.9	104.0	76.40	5,332.4	108.9	340.2	137.1	203.10	1.675	
11,100.0	5,747.0	11,018.9	5,667.0	105.8	105.9	76.38	5,432.4	108.0	339.7	132.9	206.81	1.642	
11,146.8	5,747.0	11,064.8	5,667.0	106.7	106.8	76.37	5,478.2	107.7	339.4	130.9	208.53	1.628 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2412 - 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	88.96	1.1	59.8	59.8					
100.0	100.0	100.0	100.0	0.1	0.1	88.96	1.1	59.8	59.8	59.6	0.19	320.540		
200.0	200.0	200.0	200.0	0.3	0.3	88.96	1.1	59.8	59.8	59.2	0.64	94.010		
300.0	300.0	300.0	300.0	0.5	0.5	88.96	1.1	59.8	59.8	58.7	1.09	55.083		
400.0	400.0	400.0	400.0	0.8	0.8	88.96	1.1	59.8	59.8	58.3	1.54	38.953 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	-147.59	1.1	59.8	61.3	59.3	1.97	31.082		
600.0	599.9	598.3	598.2	1.2	1.2	-149.60	0.8	60.7	66.4	64.1	2.39	27.820		
700.0	699.7	695.6	695.5	1.4	1.4	-150.70	-0.2	64.7	75.4	72.6	2.80	26.915		
800.0	799.5	792.3	791.9	1.6	1.6	-150.78	-2.2	71.8	87.5	84.2	3.23	27.067		
900.0	899.4	888.6	887.6	1.9	1.9	-150.22	-4.9	82.0	102.7	99.0	3.68	27.891		
1,000.0	999.2	987.2	985.5	2.1	2.1	-149.58	-8.1	93.6	119.0	114.9	4.13	28.801		
1,100.0	1,099.0	1,085.9	1,083.4	2.3	2.4	-149.10	-11.2	105.2	135.4	130.8	4.59	29.502		
1,200.0	1,198.9	1,184.5	1,181.3	2.6	2.7	-148.73	-14.4	116.8	151.8	146.7	5.05	30.042		
1,300.0	1,298.7	1,283.1	1,279.2	2.8	3.0	-148.43	-17.5	128.4	168.2	162.6	5.52	30.470		
1,400.0	1,398.6	1,381.8	1,377.1	3.1	3.3	-148.18	-20.6	140.0	184.6	178.6	5.99	30.816		
1,500.0	1,498.4	1,480.4	1,475.1	3.3	3.6	-147.97	-23.8	151.6	200.9	194.5	6.46	31.100		
1,600.0	1,598.2	1,579.1	1,573.0	3.6	3.9	-147.79	-26.9	163.2	217.3	210.4	6.94	31.339		
1,700.0	1,698.1	1,677.7	1,670.9	3.8	4.2	-147.64	-30.1	174.8	233.7	226.3	7.41	31.542		
1,800.0	1,797.9	1,776.4	1,768.8	4.1	4.5	-147.51	-33.2	186.4	250.1	242.2	7.89	31.716		
1,900.0	1,897.8	1,875.0	1,866.7	4.3	4.8	-147.39	-36.3	198.0	266.5	258.2	8.36	31.868		
2,000.0	1,997.6	1,973.7	1,964.6	4.6	5.1	-147.29	-39.5	209.6	282.9	274.1	8.84	32.001		
2,100.0	2,097.4	2,072.3	2,062.5	4.8	5.5	-147.20	-42.6	221.2	299.3	290.0	9.32	32.120		
2,200.0	2,197.3	2,171.0	2,160.4	5.1	5.8	-147.12	-45.8	232.8	315.7	305.9	9.80	32.226		
2,300.0	2,297.1	2,269.6	2,258.3	5.3	6.1	-147.04	-48.9	244.4	332.1	321.9	10.28	32.321		
2,400.0	2,396.9	2,368.2	2,356.2	5.6	6.4	-146.98	-52.1	256.0	348.5	337.8	10.75	32.408		
2,500.0	2,496.8	2,466.9	2,454.2	5.8	6.7	-146.91	-55.2	267.6	364.9	353.7	11.23	32.488		
2,600.0	2,596.6	2,565.5	2,552.1	6.1	7.0	-146.86	-58.3	279.2	381.3	369.6	11.71	32.561		
2,700.0	2,696.5	2,664.2	2,650.0	6.3	7.3	-146.81	-61.5	290.8	397.7	385.6	12.19	32.628		
2,800.0	2,796.3	2,762.8	2,747.9	6.6	7.7	-146.76	-64.6	302.4	414.1	401.5	12.67	32.691		
2,900.0	2,896.1	2,861.5	2,845.8	6.8	8.0	-146.72	-67.8	314.0	430.6	417.4	13.15	32.749		
3,000.0	2,996.0	2,960.1	2,943.7	7.1	8.3	-146.68	-70.9	325.6	447.0	433.3	13.62	32.804		
3,100.0	3,095.8	3,058.8	3,041.6	7.3	8.6	-146.64	-74.1	337.2	463.4	449.3	14.10	32.856		
3,200.0	3,195.7	3,157.4	3,139.5	7.6	8.9	-146.61	-77.2	348.8	479.8	465.2	14.58	32.905		
3,300.0	3,295.5	3,256.0	3,237.4	7.8	9.2	-146.57	-80.3	360.4	496.2	481.1	15.06	32.951		
3,400.0	3,395.3	3,354.7	3,335.3	8.1	9.6	-146.54	-83.5	372.0	512.6	497.0	15.54	32.995		
3,500.0	3,495.2	3,453.3	3,433.3	8.3	9.9	-146.51	-86.6	383.7	529.0	513.0	16.01	33.037		
3,600.0	3,595.0	3,552.0	3,531.2	8.6	10.2	-146.49	-89.8	395.3	545.4	528.9	16.49	33.077		
3,700.0	3,694.8	3,650.6	3,629.1	8.8	10.5	-146.46	-92.9	406.9	561.8	544.8	16.96	33.115		
3,800.0	3,794.7	3,749.3	3,727.0	9.1	10.8	-146.44	-96.0	418.5	578.2	560.8	17.44	33.152		
3,900.0	3,894.5	3,847.9	3,824.9	9.3	11.2	-146.42	-99.2	430.1	594.6	576.7	17.92	33.187		
4,000.0	3,994.4	3,946.6	3,922.8	9.6	11.5	-146.40	-102.3	441.7	611.0	592.6	18.39	33.222		
4,100.0	4,094.2	4,045.2	4,020.7	9.8	11.8	-146.37	-105.5	453.3	627.4	608.5	18.87	33.255		
4,200.0	4,194.0	4,143.9	4,118.6	10.1	12.1	-146.36	-108.6	464.9	643.8	624.5	19.34	33.287		
4,300.0	4,293.9	4,242.5	4,216.5	10.3	12.4	-146.34	-111.8	476.5	660.2	640.4	19.82	33.318		
4,400.0	4,393.7	4,341.1	4,314.4	10.6	12.8	-146.32	-114.9	488.1	676.6	656.3	20.29	33.348		
4,500.0	4,493.6	4,439.8	4,412.4	10.8	13.1	-146.30	-118.0	499.7	693.0	672.3	20.76	33.378		
4,600.0	4,593.4	4,538.4	4,510.3	11.1	13.4	-146.29	-121.2	511.3	709.4	688.2	21.24	33.407		
4,700.0	4,693.2	4,647.2	4,618.2	11.3	13.7	-146.28	-124.6	523.8	725.6	703.9	21.72	33.409		
4,800.0	4,793.1	4,778.7	4,749.3	11.6	14.0	-146.39	-127.5	534.5	738.3	716.1	22.21	33.250		
4,900.0	4,893.0	4,911.6	4,882.0	11.8	14.2	-146.51	-128.8	539.5	744.5	721.8	22.64	32.889		
5,000.0	4,993.0	5,022.6	4,993.0	11.9	14.4	89.15	-128.9	539.8	744.9	721.8	23.03	32.345		
5,100.0	5,093.0	5,122.6	5,093.0	12.1	14.6	89.15	-128.9	539.8	744.9	721.5	23.39	31.846		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2412 - 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	5,193.0	5,222.6	5,193.0	12.3	14.7	89.15	-128.9	539.8	744.9	721.1	23.75	31.357		
5,300.0	5,292.8	5,322.9	5,293.2	12.4	14.9	89.33	-124.6	539.7	744.8	720.7	24.10	30.908		
5,400.0	5,390.2	5,423.4	5,390.9	12.6	15.0	89.36	-102.1	539.3	744.5	720.1	24.34	30.586		
5,500.0	5,481.5	5,523.8	5,482.6	12.6	15.0	89.41	-61.4	538.6	743.9	719.3	24.54	30.307		
5,600.0	5,563.4	5,624.2	5,564.7	12.7	15.1	89.48	-3.9	537.5	743.0	718.2	24.83	29.928		
5,700.0	5,633.0	5,724.5	5,634.2	12.8	15.2	89.58	68.2	536.2	741.9	716.6	25.33	29.292		
5,800.0	5,687.5	5,824.8	5,688.6	13.0	15.3	89.68	152.3	534.6	740.6	714.4	26.18	28.293		
5,900.0	5,725.2	5,925.0	5,725.8	13.6	15.6	89.81	245.1	533.0	739.2	711.8	27.45	26.930		
6,000.0	5,744.5	6,025.0	5,744.7	14.5	16.1	89.93	343.2	531.2	737.7	708.6	29.15	25.312		
6,100.0	5,747.0	6,125.0	5,747.0	15.5	17.0	90.00	443.1	529.3	736.2	705.0	31.21	23.589		
6,200.0	5,747.0	6,225.0	5,747.0	16.7	18.0	90.00	543.0	527.5	734.7	701.1	33.58	21.881		
6,300.0	5,747.0	6,325.0	5,747.0	18.1	19.2	90.00	643.0	525.7	733.2	697.0	36.20	20.253		
6,400.0	5,747.0	6,425.0	5,747.0	19.5	20.5	90.00	743.0	523.8	731.6	692.6	39.03	18.746		
6,500.0	5,747.0	6,525.0	5,747.0	21.0	21.9	90.00	843.0	522.0	730.1	688.1	42.02	17.374		
6,600.0	5,747.0	6,625.0	5,747.0	22.5	23.4	90.00	942.9	520.2	728.6	683.4	45.15	16.138		
6,700.0	5,747.0	6,725.0	5,747.0	24.1	25.0	90.00	1,042.9	518.4	727.1	678.7	48.38	15.029		
6,800.0	5,747.0	6,825.0	5,747.0	25.8	26.6	90.00	1,142.9	516.5	725.5	673.9	51.69	14.036		
6,900.0	5,747.0	6,924.9	5,747.0	27.5	28.2	90.00	1,242.9	514.7	724.0	668.9	55.08	13.145		
7,000.0	5,747.0	7,024.9	5,747.0	29.2	29.9	90.00	1,342.8	512.9	722.5	664.0	58.53	12.345		
7,100.0	5,747.0	7,124.9	5,747.0	30.9	31.6	90.00	1,442.8	511.1	721.0	659.0	62.02	11.625		
7,200.0	5,747.0	7,224.9	5,747.0	32.7	33.3	90.00	1,542.8	509.2	719.5	653.9	65.55	10.975		
7,300.0	5,747.0	7,324.9	5,747.0	34.5	35.1	90.00	1,642.7	507.4	717.9	648.8	69.12	10.387		
7,400.0	5,747.0	7,424.9	5,747.0	36.3	36.8	90.00	1,742.7	505.6	716.4	643.7	72.72	9.852		
7,500.0	5,747.0	7,524.9	5,747.0	38.1	38.6	90.00	1,842.7	503.7	714.9	638.6	76.34	9.364		
7,600.0	5,747.0	7,624.9	5,747.0	39.9	40.4	90.00	1,942.7	501.9	713.4	633.4	79.99	8.918		
7,700.0	5,747.0	7,724.8	5,747.0	41.7	42.2	90.00	2,042.6	500.1	711.9	628.2	83.65	8.510		
7,800.0	5,747.0	7,824.8	5,747.0	43.6	44.0	90.00	2,142.6	498.3	710.3	623.0	87.33	8.134		
7,900.0	5,747.0	7,924.8	5,747.0	45.4	45.8	90.00	2,242.6	496.4	708.8	617.8	91.03	7.787		
8,000.0	5,747.0	8,024.8	5,747.0	47.2	47.7	90.00	2,342.5	494.6	707.3	612.6	94.74	7.466		
8,100.0	5,747.0	8,124.8	5,747.0	49.1	49.5	90.00	2,442.5	492.8	705.8	607.3	98.46	7.168		
8,200.0	5,747.0	8,224.8	5,747.0	50.9	51.3	90.00	2,542.5	490.9	704.2	602.1	102.19	6.892		
8,300.0	5,747.0	8,324.8	5,747.0	52.8	53.2	90.00	2,642.5	489.1	702.7	596.8	105.92	6.634		
8,400.0	5,747.0	8,424.8	5,747.0	54.7	55.0	90.00	2,742.4	487.3	701.2	591.5	109.67	6.394		
8,500.0	5,747.0	8,524.8	5,747.0	56.5	56.9	90.00	2,842.4	485.5	699.7	586.3	113.43	6.169		
8,600.0	5,747.0	8,624.7	5,747.0	58.4	58.8	90.00	2,942.4	483.6	698.2	581.0	117.19	5.958		
8,700.0	5,747.0	8,724.7	5,747.0	60.3	60.6	90.00	3,042.3	481.8	696.6	575.7	120.95	5.760		
8,800.0	5,747.0	8,824.7	5,747.0	62.2	62.5	90.00	3,142.3	480.0	695.1	570.4	124.73	5.573		
8,900.0	5,747.0	8,924.7	5,747.0	64.1	64.4	90.00	3,242.3	478.1	693.6	565.1	128.50	5.398		
9,000.0	5,747.0	9,024.7	5,747.0	65.9	66.3	90.00	3,342.3	476.3	692.1	559.8	132.28	5.232		
9,100.0	5,747.0	9,124.7	5,747.0	67.8	68.1	90.00	3,442.2	474.5	690.6	554.5	136.07	5.075		
9,200.0	5,747.0	9,224.7	5,747.0	69.7	70.0	90.00	3,542.2	472.7	689.0	549.2	139.86	4.927		
9,300.0	5,747.0	9,324.7	5,747.0	71.6	71.9	90.00	3,642.2	470.8	687.5	543.9	143.65	4.786		
9,400.0	5,747.0	9,424.7	5,747.0	73.5	73.8	90.00	3,742.1	469.0	686.0	538.5	147.45	4.652		
9,500.0	5,747.0	9,524.6	5,747.0	75.4	75.7	90.00	3,842.1	467.2	684.5	533.2	151.25	4.525		
9,600.0	5,747.0	9,624.6	5,747.0	77.3	77.6	90.00	3,942.1	465.4	682.9	527.9	155.05	4.405		
9,700.0	5,747.0	9,724.6	5,747.0	79.2	79.5	90.00	4,042.1	463.5	681.4	522.6	158.86	4.290		
9,800.0	5,747.0	9,824.6	5,747.0	81.1	81.4	90.00	4,142.0	461.7	679.9	517.2	162.67	4.180		
9,900.0	5,747.0	9,924.6	5,747.0	83.0	83.2	90.00	4,242.0	459.9	678.4	511.9	166.47	4.075		
10,000.0	5,747.0	10,024.6	5,747.0	84.9	85.1	90.00	4,342.0	458.0	676.9	506.6	170.29	3.975		
10,100.0	5,747.0	10,124.6	5,747.0	86.8	87.0	90.00	4,441.9	456.2	675.3	501.2	174.10	3.879		
10,200.0	5,747.0	10,224.6	5,747.0	88.7	88.9	90.00	4,541.9	454.4	673.8	495.9	177.92	3.787		
10,300.0	5,747.0	10,324.5	5,747.0	90.6	90.8	90.00	4,641.9	452.6	672.3	490.6	181.73	3.699		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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> S25-T10N-R58W - Razor 25B -2412 - 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
10,400.0	5,747.0	10,424.5	5,747.0	92.5	92.7	90.00	4,741.9	450.7	670.8	485.2	185.55	3.615	
10,500.0	5,747.0	10,524.5	5,747.0	94.4	94.6	90.00	4,841.8	448.9	669.3	479.9	189.37	3.534	
10,600.0	5,747.0	10,624.5	5,747.0	96.3	96.5	90.00	4,941.8	447.1	667.7	474.5	193.19	3.456	
10,700.0	5,747.0	10,724.5	5,747.0	98.2	98.4	90.00	5,041.8	445.2	666.2	469.2	197.02	3.381	
10,800.0	5,747.0	10,824.5	5,747.0	100.1	100.4	90.00	5,141.7	443.4	664.7	463.8	200.84	3.310	
10,900.0	5,747.0	10,924.5	5,747.0	102.0	102.3	90.00	5,241.7	441.6	663.2	458.5	204.67	3.240	
11,000.0	5,747.0	11,024.5	5,747.0	103.9	104.2	90.00	5,341.7	439.8	661.6	453.2	208.49	3.173	
11,100.0	5,747.0	11,124.5	5,747.0	105.8	106.1	90.00	5,441.7	437.9	660.1	447.8	212.32	3.109	
11,146.8	5,747.0	11,162.1	5,747.0	106.7	106.8	90.00	5,479.3	437.2	659.5	445.5	213.93	3.083 SF	



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2549 - HZ - Plan #2													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	-112.42	-49.6	-120.1	130.0					
100.0	100.0	100.0	100.0	0.1	0.1	-112.42	-49.6	-120.1	130.0	129.8	0.19	696.601		
200.0	200.0	200.0	200.0	0.3	0.3	-112.42	-49.6	-120.1	130.0	129.3	0.64	204.304		
300.0	300.0	300.0	300.0	0.5	0.5	-112.42	-49.6	-120.1	130.0	128.9	1.09	119.706		
400.0	400.0	400.0	400.0	0.8	0.8	-112.42	-49.6	-120.1	130.0	128.4	1.54	84.653		
500.0	500.0	500.0	500.0	1.0	1.0	12.08	-49.6	-120.1	128.2	126.3	1.97	65.022		
600.0	599.9	596.5	596.5	1.2	1.2	13.01	-49.1	-121.7	124.7	122.3	2.38	52.380		
698.3	698.0	691.3	691.2	1.4	1.4	14.89	-47.9	-126.3	123.3	120.5	2.78	44.354 CC		
700.0	699.7	693.0	692.9	1.4	1.4	14.93	-47.9	-126.4	123.3	120.5	2.79	44.244 ES		
800.0	799.5	789.3	788.8	1.6	1.6	17.69	-45.7	-134.2	124.9	121.7	3.21	38.893		
900.0	899.4	885.2	884.0	1.9	1.9	21.06	-42.7	-145.1	129.7	126.1	3.65	35.525		
1,000.0	999.2	980.5	978.2	2.1	2.2	24.73	-39.0	-158.9	138.0	133.9	4.11	33.619		
1,100.0	1,099.0	1,076.2	1,072.4	2.3	2.5	28.43	-34.4	-175.7	149.8	145.2	4.57	32.761		
1,200.0	1,198.9	1,174.9	1,169.3	2.6	2.9	31.77	-29.4	-193.8	162.9	157.9	5.04	32.301		
1,300.0	1,298.7	1,273.7	1,266.2	2.8	3.2	34.61	-24.4	-211.9	176.6	171.0	5.52	31.996		
1,400.0	1,398.6	1,372.4	1,363.1	3.1	3.6	37.05	-19.5	-230.0	190.5	184.5	5.99	31.785		
1,500.0	1,498.4	1,471.1	1,460.0	3.3	4.0	39.14	-14.5	-248.2	204.8	198.3	6.47	31.644		
1,600.0	1,598.2	1,569.8	1,556.9	3.6	4.4	40.97	-9.6	-266.3	219.3	212.4	6.96	31.533		
1,700.0	1,698.1	1,668.5	1,653.9	3.8	4.8	42.57	-4.6	-284.4	234.0	226.6	7.44	31.438		
1,800.0	1,797.9	1,767.2	1,750.8	4.1	5.2	43.97	0.3	-302.5	248.9	240.9	7.93	31.364		
1,900.0	1,897.8	1,866.0	1,847.7	4.3	5.7	45.22	5.3	-320.6	263.9	255.4	8.43	31.305		
2,000.0	1,997.6	1,964.7	1,944.6	4.6	6.1	46.34	10.2	-338.7	279.0	270.0	8.92	31.257		
2,100.0	2,097.4	2,063.4	2,041.5	4.8	6.5	47.34	15.2	-356.8	294.1	284.7	9.42	31.217		
2,200.0	2,197.3	2,162.1	2,138.4	5.1	6.9	48.24	20.2	-374.9	309.4	299.5	9.92	31.183		
2,300.0	2,297.1	2,260.8	2,235.3	5.3	7.3	49.06	25.1	-393.0	324.8	314.3	10.42	31.153		
2,400.0	2,396.9	2,359.5	2,332.3	5.6	7.7	49.80	30.1	-411.1	340.1	329.2	10.93	31.128		
2,500.0	2,496.8	2,458.2	2,429.2	5.8	8.1	50.48	35.0	-429.3	355.6	344.2	11.43	31.106		
2,600.0	2,596.6	2,557.0	2,526.1	6.1	8.6	51.10	40.0	-447.4	371.1	359.2	11.94	31.086		
2,700.0	2,696.5	2,655.7	2,623.0	6.3	9.0	51.68	44.9	-465.5	386.6	374.2	12.44	31.069		
2,800.0	2,796.3	2,754.4	2,719.9	6.6	9.4	52.21	49.9	-483.6	402.2	389.2	12.95	31.053		
2,900.0	2,896.1	2,853.1	2,816.8	6.8	9.8	52.69	54.8	-501.7	417.8	404.3	13.46	31.040		
3,000.0	2,996.0	2,951.8	2,913.7	7.1	10.2	53.15	59.8	-519.8	433.4	419.4	13.97	31.027		
3,100.0	3,095.8	3,050.5	3,010.6	7.3	10.7	53.57	64.8	-537.9	449.1	434.6	14.48	31.016		
3,200.0	3,195.7	3,149.3	3,107.6	7.6	11.1	53.96	69.7	-556.0	464.7	449.7	14.99	31.007		
3,300.0	3,295.5	3,248.0	3,204.5	7.8	11.5	54.33	74.7	-574.1	480.4	464.9	15.50	30.998		
3,400.0	3,395.3	3,346.7	3,301.4	8.1	11.9	54.68	79.6	-592.3	496.1	480.1	16.01	30.990		
3,500.0	3,495.2	3,445.4	3,398.3	8.3	12.3	55.00	84.6	-610.4	511.9	495.3	16.52	30.983		
3,600.0	3,595.0	3,544.1	3,495.2	8.6	12.8	55.31	89.5	-628.5	527.6	510.6	17.03	30.977		
3,700.0	3,694.8	3,642.8	3,592.1	8.8	13.2	55.59	94.5	-646.6	543.3	525.8	17.54	30.972		
3,800.0	3,794.7	3,741.5	3,689.0	9.1	13.6	55.86	99.4	-664.7	559.1	541.1	18.05	30.968		
3,900.0	3,894.5	3,840.3	3,786.0	9.3	14.0	56.12	104.4	-682.8	574.9	556.3	18.57	30.964		
4,000.0	3,994.4	3,939.0	3,882.9	9.6	14.5	56.36	109.4	-700.9	590.7	571.6	19.08	30.961		
4,100.0	4,094.2	4,037.7	3,979.8	9.8	14.9	56.59	114.3	-719.0	606.5	586.9	19.59	30.958		
4,200.0	4,194.0	4,136.4	4,076.7	10.1	15.3	56.81	119.3	-737.1	622.3	602.2	20.10	30.956		
4,300.0	4,293.9	4,235.1	4,173.6	10.3	15.7	57.02	124.2	-755.3	638.1	617.5	20.61	30.955		
4,400.0	4,393.7	4,333.8	4,270.5	10.6	16.1	57.21	129.2	-773.4	653.9	632.8	21.13	30.954		
4,500.0	4,493.6	4,432.6	4,367.4	10.8	16.6	57.40	134.1	-791.5	669.8	648.1	21.64	30.953		
4,600.0	4,593.4	4,546.5	4,479.4	11.1	17.0	57.62	139.7	-811.7	685.1	662.9	22.16	30.917		
4,700.0	4,693.2	4,676.9	4,608.4	11.3	17.3	57.91	144.7	-830.0	696.5	673.8	22.67	30.717		
4,800.0	4,793.1	4,808.4	4,739.2	11.6	17.6	58.28	148.2	-842.7	703.5	680.3	23.16	30.369		
4,900.0	4,893.0	4,940.4	4,871.1	11.8	17.8	58.53	150.1	-849.7	707.4	683.8	23.54	30.052		
5,000.0	4,993.0	5,062.4	4,993.0	11.9	18.0	-65.79	150.4	-851.0	708.3	684.4	23.92	29.608		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2549 - HZ - Plan #2													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		
5,100.0	5,093.0	5,162.4	5,093.0	12.1	18.1	-65.79	150.4	-851.0	708.3	684.0	24.28	29.176		
5,200.0	5,193.0	5,262.4	5,193.0	12.3	18.3	-65.79	150.4	-851.0	708.3	683.7	24.64	28.750		
5,300.0	5,292.8	5,413.3	5,343.5	12.4	18.4	-67.07	143.9	-850.7	705.4	680.4	25.04	28.167		
5,400.0	5,390.2	5,606.6	5,524.5	12.6	18.4	-77.49	79.1	-846.9	683.4	658.3	25.10	27.224		
5,500.0	5,481.5	5,696.2	5,597.5	12.6	18.4	-87.09	27.5	-843.9	656.9	631.8	25.17	26.104		
5,600.0	5,563.4	5,726.8	5,620.3	12.7	18.4	-91.59	7.0	-842.8	640.3	615.1	25.27	25.342		
5,657.3	5,605.0	5,729.9	5,622.5	12.7	18.4	-92.17	4.9	-842.6	637.7	612.3	25.39	25.114		
5,700.0	5,633.0	5,727.8	5,621.0	12.8	18.4	-91.81	6.4	-842.7	639.1	613.6	25.50	25.067 SF		
5,800.0	5,687.5	5,712.9	5,610.0	13.0	18.4	-88.87	16.5	-843.3	653.8	627.8	25.99	25.159		
5,900.0	5,725.2	5,688.7	5,591.7	13.6	18.4	-83.63	32.2	-844.2	681.7	655.1	26.66	25.570		
6,000.0	5,744.5	5,650.0	5,561.0	14.5	18.4	-76.31	55.6	-845.6	719.2	692.0	27.25	26.395		
6,100.0	5,747.0	5,626.0	5,541.0	15.5	18.4	-72.18	69.0	-846.3	762.6	734.6	27.96	27.275		
6,200.0	5,747.0	5,600.0	5,518.8	16.7	18.4	-70.42	82.4	-847.1	813.5	784.5	28.97	28.077		
6,300.0	5,747.0	5,574.0	5,495.9	18.1	18.4	-68.64	94.6	-847.8	871.5	841.4	30.06	28.994		
6,400.0	5,747.0	5,550.0	5,474.2	19.5	18.5	-67.00	104.9	-848.4	935.5	904.3	31.20	29.983		
6,500.0	5,747.0	5,550.0	5,474.2	21.0	18.5	-67.00	104.9	-848.4	1,004.9	972.2	32.68	30.747		
6,600.0	5,747.0	5,521.9	5,448.3	22.5	18.5	-65.09	115.7	-849.0	1,078.1	1,044.2	33.83	31.868		
6,700.0	5,747.0	5,500.0	5,427.7	24.1	18.5	-63.61	123.1	-849.5	1,155.2	1,120.1	35.05	32.954		
6,800.0	5,747.0	5,500.0	5,427.7	25.8	18.5	-63.61	123.1	-849.5	1,235.0	1,198.4	36.64	33.704		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2550 - HZ - Plan #2													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	-118.85	-49.6	-90.0	102.7					
100.0	100.0	100.0	100.0	0.1	0.1	-118.85	-49.6	-90.0	102.7	102.5	0.19	550.535		
200.0	200.0	200.0	200.0	0.3	0.3	-118.85	-49.6	-90.0	102.7	102.1	0.64	161.464		
300.0	300.0	300.0	300.0	0.5	0.5	-118.85	-49.6	-90.0	102.7	101.6	1.09	94.605		
400.0	400.0	400.0	400.0	0.8	0.8	-118.85	-49.6	-90.0	102.7	101.2	1.54	66.903		
500.0	500.0	500.0	500.0	1.0	1.0	5.58	-49.6	-90.0	101.0	99.0	1.97	51.181		
600.0	599.9	598.9	598.9	1.2	1.2	6.08	-49.4	-90.3	96.2	93.8	2.39	40.200		
700.0	699.7	697.0	696.9	1.4	1.4	8.18	-47.8	-93.3	92.5	89.7	2.80	33.006		
800.0	799.5	794.9	794.6	1.6	1.6	12.10	-44.6	-99.2	91.1	87.9	3.23	28.212		
803.8	803.3	798.5	798.2	1.6	1.7	12.28	-44.5	-99.5	91.1	87.9	3.25	28.070 CC, ES		
900.0	899.4	892.3	891.5	1.9	1.9	17.59	-39.9	-108.0	92.5	88.9	3.67	25.192		
1,000.0	999.2	989.2	987.5	2.1	2.2	24.06	-33.7	-119.6	97.5	93.3	4.13	23.569		
1,100.0	1,099.0	1,087.6	1,084.7	2.3	2.5	30.62	-26.2	-133.4	105.5	100.9	4.61	22.896		
1,200.0	1,198.9	1,186.6	1,182.4	2.6	2.8	36.24	-18.8	-147.3	114.9	109.8	5.08	22.594		
1,300.0	1,298.7	1,285.6	1,280.1	2.8	3.1	40.99	-11.3	-161.2	125.1	119.6	5.56	22.512		
1,400.0	1,398.6	1,384.5	1,377.8	3.1	3.5	45.01	-3.8	-175.2	136.2	130.1	6.04	22.559		
1,500.0	1,498.4	1,483.5	1,475.5	3.3	3.8	48.41	3.7	-189.1	147.7	141.2	6.51	22.681		
1,600.0	1,598.2	1,582.5	1,573.1	3.6	4.2	51.31	11.2	-203.1	159.7	152.7	6.99	22.840		
1,700.0	1,698.1	1,681.5	1,670.8	3.8	4.5	53.81	18.7	-217.0	172.1	164.6	7.48	23.017		
1,800.0	1,797.9	1,780.4	1,768.5	4.1	4.9	55.96	26.2	-230.9	184.7	176.8	7.97	23.187		
1,900.0	1,897.8	1,879.4	1,866.2	4.3	5.2	57.84	33.6	-244.9	197.6	189.1	8.46	23.357		
2,000.0	1,997.6	1,978.4	1,963.9	4.6	5.6	59.49	41.1	-258.8	210.7	201.7	8.96	23.522		
2,100.0	2,097.4	2,077.4	2,061.6	4.8	6.0	60.95	48.6	-272.8	223.9	214.4	9.45	23.680		
2,200.0	2,197.3	2,176.3	2,159.3	5.1	6.3	62.24	56.1	-286.7	237.2	227.2	9.95	23.830		
2,300.0	2,297.1	2,275.3	2,257.0	5.3	6.7	63.40	63.6	-300.6	250.6	240.2	10.46	23.973		
2,400.0	2,396.9	2,374.3	2,354.7	5.6	7.1	64.44	71.1	-314.6	264.2	253.2	10.96	24.107		
2,500.0	2,496.8	2,473.2	2,452.4	5.8	7.4	65.38	78.6	-328.5	277.8	266.3	11.46	24.233		
2,600.0	2,596.6	2,572.2	2,550.1	6.1	7.8	66.23	86.0	-342.5	291.4	279.5	11.97	24.352		
2,700.0	2,696.5	2,671.2	2,647.8	6.3	8.2	67.00	93.5	-356.4	305.2	292.7	12.47	24.463		
2,800.0	2,796.3	2,770.2	2,745.5	6.6	8.5	67.71	101.0	-370.3	318.9	306.0	12.98	24.569		
2,900.0	2,896.1	2,869.1	2,843.2	6.8	8.9	68.35	108.5	-384.3	332.8	319.3	13.49	24.668		
3,000.0	2,996.0	2,968.1	2,940.9	7.1	9.3	68.95	116.0	-398.2	346.6	332.6	14.00	24.762		
3,100.0	3,095.8	3,067.1	3,038.6	7.3	9.7	69.50	123.5	-412.1	360.5	346.0	14.51	24.850		
3,200.0	3,195.7	3,166.1	3,136.3	7.6	10.0	70.01	131.0	-426.1	374.4	359.4	15.02	24.934		
3,300.0	3,295.5	3,265.0	3,234.0	7.8	10.4	70.48	138.5	-440.0	388.4	372.9	15.53	25.014		
3,400.0	3,395.3	3,364.0	3,331.7	8.1	10.8	70.92	145.9	-454.0	402.4	386.3	16.04	25.089		
3,500.0	3,495.2	3,463.0	3,429.4	8.3	11.1	71.34	153.4	-467.9	416.4	399.8	16.55	25.161		
3,600.0	3,595.0	3,561.9	3,527.1	8.6	11.5	71.72	160.9	-481.8	430.4	413.3	17.06	25.229		
3,700.0	3,694.8	3,660.9	3,624.8	8.8	11.9	72.08	168.4	-495.8	444.4	426.8	17.57	25.294		
3,800.0	3,794.7	3,759.9	3,722.5	9.1	12.2	72.42	175.9	-509.7	458.5	440.4	18.08	25.356		
3,900.0	3,894.5	3,858.9	3,820.2	9.3	12.6	72.74	183.4	-523.7	472.5	453.9	18.59	25.416		
4,000.0	3,994.4	3,957.8	3,917.9	9.6	13.0	73.04	190.9	-537.6	486.6	467.5	19.10	25.473		
4,100.0	4,094.2	4,056.8	4,015.6	9.8	13.4	73.32	198.3	-551.5	500.7	481.1	19.61	25.527		
4,200.0	4,194.0	4,155.8	4,113.3	10.1	13.7	73.58	205.8	-565.5	514.8	494.7	20.13	25.580		
4,300.0	4,293.9	4,254.8	4,211.0	10.3	14.1	73.84	213.3	-579.4	528.9	508.3	20.64	25.630		
4,400.0	4,393.7	4,353.7	4,308.7	10.6	14.5	74.08	220.8	-593.4	543.0	521.9	21.15	25.679		
4,500.0	4,493.6	4,452.7	4,406.4	10.8	14.9	74.31	228.3	-607.3	557.2	535.5	21.66	25.726		
4,600.0	4,593.4	4,560.5	4,512.9	11.1	15.2	74.55	236.3	-622.2	571.0	548.9	22.18	25.748		
4,700.0	4,693.2	4,684.2	4,635.7	11.3	15.6	74.90	243.5	-635.6	581.6	558.9	22.69	25.636		
4,800.0	4,793.1	4,808.8	4,759.8	11.6	15.8	75.37	248.2	-644.3	587.9	564.8	23.16	25.381		
4,900.0	4,893.0	4,933.8	4,884.7	11.8	16.0	75.67	250.3	-648.3	590.7	567.2	23.54	25.092		
5,000.0	4,993.0	5,042.1	4,993.0	11.9	16.1	-48.64	250.4	-648.6	590.9	567.0	23.92	24.702		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2550 - HZ - Plan #2												Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD												Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		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)	Uncertainty Axis		
5,100.0	5,093.0	5,142.1	5,093.0	12.1	16.3	-48.64	250.4	-648.6	590.9	566.6	24.29	24.331	
5,200.0	5,193.0	5,242.1	5,193.0	12.3	16.4	-48.64	250.4	-648.6	590.9	566.3	24.65	23.969	
5,300.0	5,292.8	5,551.7	5,489.8	12.4	16.5	-56.74	178.8	-645.1	575.7	550.6	25.06	22.970	
5,400.0	5,390.2	5,733.1	5,627.3	12.6	16.3	-77.89	62.0	-639.4	525.0	500.0	24.99	21.007	
5,500.0	5,481.5	5,778.7	5,654.8	12.6	16.2	-89.70	25.7	-637.6	476.2	451.2	25.08	18.991	
5,600.0	5,563.4	5,778.2	5,654.5	12.7	16.2	-93.43	26.1	-637.7	443.8	418.6	25.17	17.635	
5,696.6	5,630.8	5,759.3	5,643.5	12.8	16.2	-92.15	41.4	-638.4	433.2	407.8	25.40	17.050	
5,700.0	5,633.0	5,758.4	5,643.0	12.8	16.2	-92.04	42.1	-638.4	433.2	407.8	25.41	17.044 SF	
5,800.0	5,687.5	5,728.9	5,624.6	13.0	16.3	-87.10	65.2	-639.6	444.5	418.6	25.90	17.160	
5,900.0	5,725.2	5,700.0	5,605.4	13.6	16.3	-80.39	86.8	-640.6	473.4	447.0	26.43	17.914	
6,000.0	5,744.5	5,650.0	5,569.4	14.5	16.4	-70.59	121.4	-642.3	513.8	487.2	26.54	19.358	
6,100.0	5,747.0	5,616.2	5,543.3	15.5	16.4	-65.04	142.8	-643.3	560.6	533.8	26.83	20.893	
6,200.0	5,747.0	5,582.3	5,515.8	16.7	16.5	-62.19	162.6	-644.3	615.9	588.5	27.45	22.438	
6,300.0	5,747.0	5,550.0	5,488.4	18.1	16.5	-59.51	179.7	-645.1	678.9	650.8	28.15	24.117	
6,400.0	5,747.0	5,530.0	5,470.9	19.5	16.5	-57.87	189.4	-645.6	748.2	719.1	29.09	25.721	
6,500.0	5,747.0	5,500.0	5,444.0	21.0	16.5	-55.47	202.7	-646.2	822.7	792.9	29.82	27.590	
6,600.0	5,747.0	5,500.0	5,444.0	22.5	16.5	-55.47	202.7	-646.2	901.1	869.9	31.23	28.853	
6,700.0	5,747.0	5,476.7	5,422.7	24.1	16.6	-53.65	212.0	-646.7	982.7	950.6	32.10	30.612	
6,800.0	5,747.0	5,450.0	5,397.7	25.8	16.6	-51.62	221.4	-647.1	1,067.2	1,034.3	32.85	32.488	
6,900.0	5,747.0	5,450.0	5,397.7	27.5	16.6	-51.62	221.4	-647.1	1,153.4	1,119.1	34.31	33.619	
7,000.0	5,747.0	5,450.0	5,397.7	29.2	16.6	-51.62	221.4	-647.1	1,241.6	1,205.8	35.79	34.694	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2551 - HZ - Plan #2													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	-129.53	-49.6	-60.1	77.9					
100.0	100.0	100.0	100.0	0.1	0.1	-129.53	-49.6	-60.1	77.9	77.7	0.19	417.467		
200.0	200.0	200.0	200.0	0.3	0.3	-129.53	-49.6	-60.1	77.9	77.2	0.64	122.438		
300.0	300.0	300.0	300.0	0.5	0.5	-129.53	-49.6	-60.1	77.9	76.8	1.09	71.739		
400.0	400.0	400.0	400.0	0.8	0.8	-129.53	-49.6	-60.1	77.9	76.3	1.54	50.732		
500.0	500.0	500.0	500.0	1.0	1.0	-5.33	-49.6	-60.1	76.1	74.2	1.97	38.594		
600.0	599.9	599.9	599.9	1.2	1.2	-5.70	-49.6	-60.1	71.2	68.8	2.40	29.643		
700.0	699.7	699.1	699.1	1.4	1.4	-4.75	-48.6	-61.5	66.0	63.1	2.82	23.395		
800.0	799.5	798.2	798.1	1.6	1.7	-0.59	-45.6	-65.7	61.9	58.6	3.24	19.071		
900.0	899.4	897.0	896.5	1.9	1.9	7.08	-40.7	-72.6	59.7	56.0	3.68	16.196		
924.6	923.9	921.2	920.6	1.9	2.0	9.47	-39.2	-74.8	59.6	55.8	3.80	15.690 CC, ES		
1,000.0	999.2	995.7	994.5	2.1	2.1	17.62	-33.9	-82.2	60.6	56.4	4.14	14.618		
1,100.0	1,099.0	1,095.0	1,093.0	2.3	2.4	28.03	-26.7	-92.4	64.1	59.4	4.62	13.880		
1,200.0	1,198.9	1,194.3	1,191.5	2.6	2.7	37.11	-19.5	-102.6	69.4	64.3	5.09	13.645		
1,300.0	1,298.7	1,293.6	1,290.0	2.8	3.0	44.75	-12.2	-112.9	76.3	70.7	5.56	13.715		
1,400.0	1,398.6	1,392.9	1,388.5	3.1	3.3	51.04	-5.0	-123.1	84.3	78.2	6.04	13.956		
1,500.0	1,498.4	1,492.2	1,487.0	3.3	3.6	56.21	2.2	-133.3	93.1	86.6	6.52	14.286		
1,600.0	1,598.2	1,591.4	1,585.5	3.6	3.9	60.45	9.5	-143.6	102.5	95.5	7.00	14.652		
1,700.0	1,698.1	1,690.7	1,684.0	3.8	4.2	63.97	16.7	-153.8	112.4	104.9	7.48	15.020		
1,800.0	1,797.9	1,790.0	1,782.4	4.1	4.5	66.91	23.9	-164.0	122.7	114.7	7.98	15.380		
1,900.0	1,897.8	1,889.3	1,880.9	4.3	4.8	69.40	31.2	-174.2	133.2	124.7	8.47	15.725		
2,000.0	1,997.6	1,988.6	1,979.4	4.6	5.2	71.51	38.4	-184.5	144.0	135.0	8.97	16.052		
2,100.0	2,097.4	2,087.9	2,077.9	4.8	5.5	73.33	45.6	-194.7	154.9	145.4	9.47	16.360		
2,200.0	2,197.3	2,187.2	2,176.4	5.1	5.8	74.92	52.8	-204.9	165.9	155.9	9.97	16.647		
2,300.0	2,297.1	2,286.5	2,274.9	5.3	6.1	76.30	60.1	-215.1	177.1	166.6	10.47	16.916		
2,400.0	2,396.9	2,385.8	2,373.4	5.6	6.4	77.52	67.3	-225.4	188.3	177.3	10.97	17.167		
2,500.0	2,496.8	2,485.1	2,471.9	5.8	6.7	78.60	74.5	-235.6	199.6	188.2	11.47	17.401		
2,600.0	2,596.6	2,584.4	2,570.4	6.1	7.1	79.56	81.8	-245.8	211.0	199.0	11.98	17.620		
2,700.0	2,696.5	2,683.6	2,668.9	6.3	7.4	80.43	89.0	-256.1	222.4	210.0	12.48	17.824		
2,800.0	2,796.3	2,782.9	2,767.4	6.6	7.7	81.21	96.2	-266.3	233.9	220.9	12.98	18.015		
2,900.0	2,896.1	2,882.2	2,865.9	6.8	8.0	81.92	103.5	-276.5	245.4	232.0	13.49	18.195		
3,000.0	2,996.0	2,981.5	2,964.4	7.1	8.3	82.56	110.7	-286.7	257.0	243.0	14.00	18.363		
3,100.0	3,095.8	3,080.8	3,062.9	7.3	8.7	83.15	117.9	-297.0	268.6	254.1	14.50	18.522		
3,200.0	3,195.7	3,180.1	3,161.4	7.6	9.0	83.69	125.2	-307.2	280.2	265.2	15.01	18.671		
3,300.0	3,295.5	3,279.4	3,259.9	7.8	9.3	84.19	132.4	-317.4	291.8	276.3	15.51	18.812		
3,400.0	3,395.3	3,378.7	3,358.4	8.1	9.6	84.65	139.6	-327.6	303.5	287.4	16.02	18.945		
3,500.0	3,495.2	3,478.0	3,456.9	8.3	10.0	85.08	146.9	-337.9	315.1	298.6	16.52	19.071		
3,600.0	3,595.0	3,577.3	3,555.4	8.6	10.3	85.47	154.1	-348.1	326.8	309.8	17.03	19.191		
3,700.0	3,694.8	3,676.6	3,653.9	8.8	10.6	85.84	161.3	-358.3	338.5	321.0	17.54	19.304		
3,800.0	3,794.7	3,775.8	3,752.4	9.1	10.9	86.18	168.6	-368.6	350.2	332.2	18.04	19.412		
3,900.0	3,894.5	3,875.1	3,850.9	9.3	11.2	86.50	175.8	-378.8	362.0	343.4	18.55	19.515		
4,000.0	3,994.4	3,974.4	3,949.4	9.6	11.6	86.80	183.0	-389.0	373.7	354.6	19.05	19.613		
4,100.0	4,094.2	4,073.7	4,047.9	9.8	11.9	87.09	190.2	-399.2	385.4	365.9	19.56	19.706		
4,200.0	4,194.0	4,173.0	4,146.4	10.1	12.2	87.35	197.5	-409.5	397.2	377.1	20.06	19.795		
4,300.0	4,293.9	4,272.3	4,244.9	10.3	12.5	87.60	204.7	-419.7	408.9	388.4	20.57	19.881		
4,400.0	4,393.7	4,371.6	4,343.4	10.6	12.9	87.84	211.9	-429.9	420.7	399.6	21.07	19.962		
4,500.0	4,493.6	4,470.9	4,441.9	10.8	13.2	88.06	219.2	-440.2	432.5	410.9	21.58	20.041		
4,600.0	4,593.4	4,570.2	4,540.4	11.1	13.5	88.27	226.4	-450.4	444.3	422.2	22.08	20.116		
4,700.0	4,693.2	4,669.5	4,638.9	11.3	13.8	88.47	233.6	-460.6	456.0	433.5	22.59	20.189		
4,800.0	4,793.1	4,777.9	4,746.5	11.6	14.1	88.75	241.2	-471.3	467.3	444.3	23.09	20.241		
4,900.0	4,893.0	4,895.9	4,864.1	11.8	14.4	88.92	247.0	-479.5	475.3	451.8	23.48	20.242		
5,000.0	4,993.0	5,014.4	4,982.5	11.9	14.6	-35.55	250.0	-483.7	479.5	455.6	23.86	20.093		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2551 - HZ - Plan #2												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)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,093.0	5,125.0	5,093.0	12.1	14.8	-35.58	250.4	-484.4	480.1	455.9	24.23	19.817	
5,200.0	5,193.0	5,225.0	5,193.0	12.3	14.9	-35.58	250.4	-484.4	480.1	455.5	24.60	19.517	
5,300.0	5,292.8	5,324.8	5,292.8	12.4	15.1	-35.93	250.4	-484.4	476.6	451.7	24.92	19.128	
5,400.0	5,390.2	5,526.0	5,492.2	12.6	15.3	-43.22	230.4	-483.4	454.0	429.2	24.76	18.334	
5,500.0	5,481.5	5,705.7	5,653.1	12.6	15.2	-67.52	152.6	-479.6	394.6	369.7	24.83	15.888	
5,600.0	5,563.4	5,759.4	5,695.1	12.7	15.1	-86.15	119.1	-478.0	331.5	306.2	25.27	13.118	
5,700.0	5,633.0	5,764.9	5,699.2	12.8	15.1	-92.91	115.4	-477.8	286.4	260.9	25.50	11.232	
5,788.4	5,682.0	5,751.7	5,689.3	12.9	15.1	-91.74	124.2	-478.2	272.5	246.6	25.89	10.526	
5,800.0	5,687.5	5,749.2	5,687.4	13.0	15.1	-91.20	125.8	-478.3	272.8	246.8	25.95	10.511 SF	
5,900.0	5,725.2	5,722.7	5,666.8	13.6	15.1	-83.60	142.5	-479.1	293.1	266.5	26.59	11.021	
6,000.0	5,744.5	5,690.0	5,640.2	14.5	15.2	-72.34	161.6	-480.0	337.6	310.9	26.72	12.634	
6,100.0	5,747.0	5,650.0	5,606.3	15.5	15.2	-62.91	182.6	-481.1	395.1	368.6	26.42	14.954	
6,200.0	5,747.0	5,625.0	5,584.3	16.7	15.2	-59.45	194.4	-481.6	462.9	436.0	26.86	17.234	
6,300.0	5,747.0	5,600.0	5,561.7	18.1	15.3	-56.13	205.1	-482.2	538.5	511.3	27.29	19.736	
6,400.0	5,747.0	5,580.8	5,544.0	19.5	15.3	-53.71	212.6	-482.5	619.7	591.8	27.90	22.209	
6,500.0	5,747.0	5,564.0	5,528.3	21.0	15.3	-51.68	218.7	-482.8	704.7	676.1	28.60	24.638	
6,600.0	5,747.0	5,550.0	5,515.1	22.5	15.3	-50.06	223.3	-483.0	792.5	763.1	29.41	26.950	
6,700.0	5,747.0	5,550.0	5,515.1	24.1	15.3	-50.06	223.3	-483.0	882.7	852.0	30.79	28.674	
6,800.0	5,747.0	5,526.7	5,492.9	25.8	15.3	-47.49	230.2	-483.4	974.1	942.9	31.19	31.233	
6,900.0	5,747.0	5,517.3	5,483.9	27.5	15.3	-46.51	232.7	-483.5	1,066.9	1,034.7	32.17	33.169	
7,000.0	5,747.0	5,500.0	5,467.0	29.2	15.3	-44.75	236.9	-483.7	1,160.8	1,128.1	32.77	35.421	
7,100.0	5,747.0	5,500.0	5,467.0	30.9	15.3	-44.75	236.9	-483.7	1,255.3	1,221.2	34.16	36.754	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2552 - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance					Total Uncertainty Axis	Separation Factor	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)				
0.0	0.0	0.0	0.0	0.0	0.0	-148.67	-49.6	-30.2	58.0					
100.0	100.0	100.0	100.0	0.1	0.1	-148.67	-49.6	-30.2	58.0	57.8	0.19	311.059		
200.0	200.0	200.0	200.0	0.3	0.3	-148.67	-49.6	-30.2	58.0	57.4	0.64	91.230		
300.0	300.0	300.0	300.0	0.5	0.5	-148.67	-49.6	-30.2	58.0	56.9	1.09	53.453		
400.0	400.0	400.0	400.0	0.8	0.8	-148.67	-49.6	-30.2	58.0	56.5	1.54	37.801		
500.0	500.0	500.0	500.0	1.0	1.0	-25.09	-49.6	-30.2	56.4	54.5	1.97	28.625		
600.0	599.9	599.9	599.9	1.2	1.2	-27.44	-49.6	-30.2	52.0	49.6	2.40	21.654		
700.0	699.7	700.0	700.0	1.4	1.4	-30.15	-49.3	-30.5	46.8	44.0	2.83	16.557		
800.0	799.5	800.3	800.3	1.6	1.7	-29.55	-46.7	-32.9	40.7	37.5	3.26	12.471		
900.0	899.4	900.4	900.0	1.9	1.9	-23.08	-41.7	-37.8	33.6	29.9	3.71	9.068		
1,000.0	999.2	999.9	999.1	2.1	2.1	-7.03	-34.5	-44.7	27.1	23.0	4.16	6.531		
1,100.0	1,099.0	1,099.3	1,097.9	2.3	2.4	16.70	-27.1	-51.9	24.1	19.4	4.62	5.209		
1,115.4	1,114.4	1,114.6	1,113.1	2.4	2.4	20.71	-25.9	-53.0	24.0	19.3	4.69	5.114 CC, ES		
1,200.0	1,198.9	1,198.7	1,196.8	2.6	2.7	41.79	-19.6	-59.1	25.7	20.6	5.10	5.047		
1,300.0	1,298.7	1,298.1	1,295.6	2.8	2.9	60.78	-12.2	-66.3	31.4	25.8	5.59	5.626		
1,400.0	1,398.6	1,397.5	1,394.5	3.1	3.2	73.07	-4.7	-73.6	39.4	33.4	6.07	6.494		
1,500.0	1,498.4	1,496.9	1,493.3	3.3	3.5	81.00	2.7	-80.8	48.6	42.1	6.57	7.406		
1,600.0	1,598.2	1,596.3	1,592.2	3.6	3.8	86.34	10.2	-88.0	58.5	51.4	7.06	8.279		
1,700.0	1,698.1	1,695.6	1,691.0	3.8	4.0	90.13	17.7	-95.2	68.6	61.1	7.55	9.086		
1,800.0	1,797.9	1,795.0	1,789.9	4.1	4.3	92.93	25.1	-102.4	79.0	71.0	8.05	9.820		
1,900.0	1,897.8	1,894.4	1,888.7	4.3	4.6	95.08	32.6	-109.6	89.6	81.0	8.54	10.485		
2,000.0	1,997.6	1,993.8	1,987.6	4.6	4.9	96.77	40.0	-116.8	100.2	91.2	9.04	11.088		
2,100.0	2,097.4	2,093.2	2,086.4	4.8	5.2	98.14	47.5	-124.1	110.9	101.4	9.54	11.634		
2,200.0	2,197.3	2,192.6	2,185.3	5.1	5.5	99.27	55.0	-131.3	121.7	111.7	10.03	12.132		
2,300.0	2,297.1	2,292.0	2,284.1	5.3	5.8	100.21	62.4	-138.5	132.5	122.0	10.53	12.585		
2,400.0	2,396.9	2,391.4	2,383.0	5.6	6.0	101.01	69.9	-145.7	143.3	132.3	11.03	13.001		
2,500.0	2,496.8	2,490.8	2,481.8	5.8	6.3	101.70	77.3	-152.9	154.2	142.7	11.52	13.382		
2,600.0	2,596.6	2,590.2	2,580.7	6.1	6.6	102.30	84.8	-160.1	165.1	153.1	12.02	13.733		
2,700.0	2,696.5	2,689.6	2,679.5	6.3	6.9	102.82	92.2	-167.4	176.0	163.4	12.52	14.058		
2,800.0	2,796.3	2,789.0	2,778.4	6.6	7.2	103.29	99.7	-174.6	186.9	173.9	13.01	14.359		
2,900.0	2,896.1	2,888.4	2,877.2	6.8	7.5	103.70	107.2	-181.8	197.8	184.3	13.51	14.638		
3,000.0	2,996.0	2,987.8	2,976.1	7.1	7.8	104.07	114.6	-189.0	208.7	194.7	14.01	14.898		
3,100.0	3,095.8	3,087.1	3,074.9	7.3	8.1	104.40	122.1	-196.2	219.6	205.1	14.51	15.141		
3,200.0	3,195.7	3,186.5	3,173.8	7.6	8.4	104.70	129.5	-203.4	230.6	215.6	15.00	15.368		
3,300.0	3,295.5	3,285.9	3,272.6	7.8	8.7	104.97	137.0	-210.6	241.5	226.0	15.50	15.581		
3,400.0	3,395.3	3,385.3	3,371.5	8.1	9.0	105.22	144.4	-217.9	252.5	236.5	16.00	15.782		
3,500.0	3,495.2	3,484.7	3,470.3	8.3	9.3	105.45	151.9	-225.1	263.4	246.9	16.49	15.970		
3,600.0	3,595.0	3,584.1	3,569.2	8.6	9.6	105.66	159.4	-232.3	274.4	257.4	16.99	16.148		
3,700.0	3,694.8	3,683.5	3,668.0	8.8	9.8	105.85	166.8	-239.5	285.3	267.8	17.49	16.317		
3,800.0	3,794.7	3,782.9	3,766.9	9.1	10.1	106.03	174.3	-246.7	296.3	278.3	17.98	16.476		
3,900.0	3,894.5	3,882.3	3,865.7	9.3	10.4	106.20	181.7	-253.9	307.3	288.8	18.48	16.627		
4,000.0	3,994.4	3,981.7	3,964.6	9.6	10.7	106.36	189.2	-261.1	318.2	299.3	18.98	16.770		
4,100.0	4,094.2	4,081.1	4,063.4	9.8	11.0	106.50	196.7	-268.4	329.2	309.7	19.47	16.907		
4,200.0	4,194.0	4,180.5	4,162.3	10.1	11.3	106.64	204.1	-275.6	340.2	320.2	19.97	17.037		
4,300.0	4,293.9	4,279.9	4,261.1	10.3	11.6	106.77	211.6	-282.8	351.2	330.7	20.46	17.160		
4,400.0	4,393.7	4,379.3	4,360.0	10.6	11.9	106.88	219.0	-290.0	362.1	341.2	20.96	17.279		
4,500.0	4,493.6	4,478.7	4,458.8	10.8	12.2	107.00	226.5	-297.2	373.1	351.7	21.45	17.392		
4,600.0	4,593.4	4,578.0	4,557.7	11.1	12.5	107.10	233.9	-304.4	384.1	362.1	21.95	17.499		
4,700.0	4,693.2	4,681.6	4,660.7	11.3	12.8	107.22	241.6	-311.8	394.9	372.5	22.45	17.593		
4,800.0	4,793.1	4,785.3	4,774.1	11.6	13.0	107.58	247.5	-317.6	403.0	380.1	22.90	17.597		
4,900.0	4,893.0	4,909.6	4,888.3	11.8	13.2	107.85	250.3	-320.2	406.9	383.6	23.28	17.477		
5,000.0	4,993.0	5,014.3	4,993.0	11.9	13.4	-16.46	250.4	-320.4	407.1	383.5	23.65	17.211		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2552 - HZ - Plan #2													Offset Site Error:	0.0 usft
Survey Program: 0-ISCSWA MWD													Offset Well Error:	0.0 usft
Reference		Offset		Semi Major Axis			Distance				Total		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)	Uncertainty Axis	Separation Factor		
5,100.0	5,093.0	5,114.3	5,093.0	12.1	13.6	-16.46	250.4	-320.4	407.1	383.1	24.03	16.940		
5,200.0	5,193.0	5,214.3	5,193.0	12.3	13.7	-16.46	250.4	-320.4	407.1	382.7	24.41	16.677		
5,300.0	5,292.8	5,495.2	5,464.6	12.4	13.8	-20.15	192.7	-317.5	387.3	362.4	24.92	15.539		
5,400.0	5,390.2	5,676.8	5,608.5	12.6	13.6	-41.97	83.4	-312.2	312.9	288.3	24.59	12.726		
5,500.0	5,481.5	5,729.7	5,642.4	12.6	13.6	-77.86	42.9	-310.2	224.4	199.7	24.72	9.078		
5,600.0	5,563.4	5,734.2	5,645.1	12.7	13.6	-95.76	39.3	-310.0	143.8	119.0	24.76	5.808		
5,698.9	5,632.3	5,718.1	5,635.3	12.8	13.6	-92.12	52.1	-310.7	105.1	80.1	25.07	4.195		
5,700.0	5,633.0	5,717.9	5,635.2	12.8	13.6	-91.99	52.2	-310.7	105.2	80.1	25.07	4.194 SF		
5,800.0	5,687.5	5,690.9	5,617.9	13.0	13.6	-73.65	73.0	-311.7	143.0	118.0	24.96	5.728		
5,900.0	5,725.2	5,657.8	5,595.3	13.6	13.6	-51.26	97.1	-312.9	215.3	193.6	21.76	9.894		
6,000.0	5,744.5	5,620.9	5,568.4	14.5	13.7	-34.97	122.3	-314.1	292.6	275.3	17.23	16.975		
6,100.0	5,747.0	5,582.7	5,538.7	15.5	13.7	-27.71	146.3	-315.3	368.0	352.8	15.21	24.188		
6,200.0	5,747.0	5,550.0	5,512.0	16.7	13.8	-25.13	165.1	-316.2	447.2	432.3	14.97	29.866		
6,300.0	5,747.0	5,522.2	5,488.3	18.1	13.8	-23.21	179.7	-316.9	530.4	515.4	15.00	35.350		
6,400.0	5,747.0	5,500.0	5,468.9	19.5	13.8	-21.84	190.4	-317.4	616.5	601.2	15.26	40.392		
6,500.0	5,747.0	5,478.9	5,450.0	21.0	13.8	-20.64	199.9	-317.9	704.8	689.2	15.60	45.188		
6,600.0	5,747.0	5,450.0	5,423.6	22.5	13.9	-19.17	211.6	-318.5	795.2	779.4	15.81	50.287		
6,700.0	5,747.0	5,450.0	5,423.6	24.1	13.9	-19.17	211.6	-318.5	886.5	869.8	16.66	53.211		
6,800.0	5,747.0	5,433.7	5,408.5	25.8	13.9	-18.41	217.5	-318.8	979.1	961.9	17.18	57.005		
6,900.0	5,747.0	5,422.2	5,397.6	27.5	13.9	-17.90	221.4	-319.0	1,072.6	1,054.8	17.80	60.260		
7,000.0	5,747.0	5,400.0	5,376.5	29.2	13.9	-16.99	228.3	-319.3	1,167.2	1,148.9	18.23	64.026		
7,100.0	5,747.0	5,400.0	5,376.5	30.9	13.9	-16.99	228.3	-319.3	1,261.9	1,242.8	19.09	66.093		



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2553 - 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	180.00	-49.5	0.0	49.5					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-49.5	0.0	49.5	49.4	0.19	265.584		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-49.5	0.0	49.5	48.9	0.64	77.892		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-49.5	0.0	49.5	48.5	1.09	45.639		
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-49.5	0.0	49.5	48.0	1.54	32.274		
500.0	500.0	500.0	500.0	1.0	1.0	-57.39	-49.5	0.0	48.6	46.6	1.97	24.692		
600.0	599.9	599.9	599.9	1.2	1.2	-62.64	-49.5	0.0	46.1	43.7	2.39	19.248		
700.0	699.7	699.7	699.7	1.4	1.4	-69.25	-49.5	0.0	43.8	40.9	2.83	15.438		
800.0	799.5	801.0	800.9	1.6	1.7	-76.50	-47.9	-0.7	40.3	37.0	3.29	12.255		
900.0	899.4	901.9	901.8	1.9	1.9	-85.54	-43.0	-2.8	34.1	30.4	3.76	9.087		
1,000.0	999.2	1,001.8	1,001.3	2.1	2.1	-99.95	-35.6	-6.0	26.5	22.3	4.22	6.272		
1,100.0	1,099.0	1,101.2	1,100.3	2.3	2.4	-123.37	-28.0	-9.2	21.4	16.8	4.67	4.588		
1,150.9	1,149.9	1,151.8	1,150.8	2.5	2.5	-138.34	-24.1	-10.9	20.7	15.8	4.90	4.224 CC, ES		
1,200.0	1,198.9	1,200.6	1,199.4	2.6	2.6	-152.78	-20.4	-12.5	21.4	16.3	5.12	4.177		
1,300.0	1,298.7	1,300.0	1,298.4	2.8	2.9	-176.38	-12.8	-15.8	26.3	20.8	5.58	4.719		
1,400.0	1,398.6	1,399.4	1,397.5	3.1	3.1	169.07	-5.2	-19.0	34.2	28.1	6.06	5.645		
1,500.0	1,498.4	1,498.8	1,496.5	3.3	3.4	160.29	2.4	-22.3	43.4	36.9	6.54	6.639		
1,600.0	1,598.2	1,598.2	1,595.6	3.6	3.6	154.65	10.0	-25.5	53.3	46.3	7.02	7.590		
1,700.0	1,698.1	1,697.6	1,694.7	3.8	3.9	150.80	17.7	-28.8	63.5	56.0	7.50	8.467		
1,800.0	1,797.9	1,797.0	1,793.7	4.1	4.2	148.02	25.3	-32.0	73.9	65.9	7.98	9.264		
1,900.0	1,897.8	1,896.4	1,892.8	4.3	4.4	145.93	32.9	-35.3	84.5	76.0	8.46	9.986		
2,000.0	1,997.6	1,995.8	1,991.8	4.6	4.7	144.31	40.5	-38.6	95.1	86.2	8.94	10.640		
2,100.0	2,097.4	2,095.2	2,090.9	4.8	4.9	143.01	48.1	-41.8	105.8	96.4	9.42	11.234		
2,200.0	2,197.3	2,194.6	2,189.9	5.1	5.2	141.95	55.7	-45.1	116.5	106.6	9.90	11.776		
2,300.0	2,297.1	2,294.0	2,289.0	5.3	5.5	141.07	63.3	-48.3	127.3	116.9	10.38	12.270		
2,400.0	2,396.9	2,393.4	2,388.0	5.6	5.7	140.33	70.9	-51.6	138.1	127.2	10.85	12.723		
2,500.0	2,496.8	2,492.8	2,487.1	5.8	6.0	139.70	78.5	-54.8	148.9	137.6	11.33	13.140		
2,600.0	2,596.6	2,592.2	2,586.2	6.1	6.3	139.15	86.1	-58.1	159.8	147.9	11.81	13.524		
2,700.0	2,696.5	2,691.6	2,685.2	6.3	6.5	138.67	93.7	-61.4	170.6	158.3	12.29	13.879		
2,800.0	2,796.3	2,791.0	2,784.3	6.6	6.8	138.25	101.3	-64.6	181.5	168.7	12.77	14.209		
2,900.0	2,896.1	2,890.4	2,883.3	6.8	7.1	137.88	108.9	-67.9	192.3	179.1	13.25	14.516		
3,000.0	2,996.0	2,989.8	2,982.4	7.1	7.3	137.54	116.5	-71.1	203.2	189.5	13.73	14.802		
3,100.0	3,095.8	3,089.2	3,081.4	7.3	7.6	137.24	124.1	-74.4	214.1	199.9	14.21	15.069		
3,200.0	3,195.7	3,188.6	3,180.5	7.6	7.9	136.97	131.7	-77.6	224.9	210.3	14.68	15.320		
3,300.0	3,295.5	3,288.0	3,279.5	7.8	8.1	136.73	139.3	-80.9	235.8	220.7	15.16	15.555		
3,400.0	3,395.3	3,387.4	3,378.6	8.1	8.4	136.50	146.9	-84.2	246.7	231.1	15.64	15.777		
3,500.0	3,495.2	3,486.8	3,477.7	8.3	8.7	136.30	154.6	-87.4	257.6	241.5	16.12	15.985		
3,600.0	3,595.0	3,586.2	3,576.7	8.6	8.9	136.11	162.2	-90.7	268.5	251.9	16.59	16.182		
3,700.0	3,694.8	3,685.6	3,675.8	8.8	9.2	135.94	169.8	-93.9	279.4	262.4	17.07	16.369		
3,800.0	3,794.7	3,785.0	3,774.8	9.1	9.5	135.77	177.4	-97.2	290.3	272.8	17.55	16.545		
3,900.0	3,894.5	3,884.4	3,873.9	9.3	9.7	135.63	185.0	-100.5	301.2	283.2	18.02	16.713		
4,000.0	3,994.4	3,983.8	3,972.9	9.6	10.0	135.49	192.6	-103.7	312.1	293.6	18.50	16.872		
4,100.0	4,094.2	4,083.2	4,072.0	9.8	10.3	135.36	200.2	-107.0	323.0	304.1	18.98	17.024		
4,200.0	4,194.0	4,182.6	4,171.1	10.1	10.5	135.24	207.8	-110.2	334.0	314.5	19.45	17.167		
4,300.0	4,293.9	4,282.0	4,270.1	10.3	10.8	135.12	215.4	-113.5	344.9	324.9	19.93	17.300		
4,400.0	4,393.7	4,381.4	4,369.2	10.6	11.1	135.02	223.0	-116.7	355.8	335.4	20.42	17.427		
4,500.0	4,493.6	4,480.8	4,468.2	10.8	11.3	134.92	230.6	-120.0	366.7	345.8	20.90	17.548		
4,600.0	4,593.4	4,580.2	4,567.3	11.1	11.6	134.82	238.2	-123.3	377.6	356.2	21.38	17.664		
4,700.0	4,693.2	4,687.1	4,673.8	11.3	11.9	134.79	245.7	-126.5	388.0	366.1	21.85	17.752		
4,800.0	4,793.1	4,799.6	4,786.2	11.6	12.1	135.09	249.9	-128.3	395.2	372.9	22.29	17.733		
4,900.0	4,893.0	4,906.4	4,893.0	11.8	12.3	135.39	250.5	-128.5	397.7	375.1	22.67	17.548		
5,000.0	4,993.0	5,006.4	4,993.0	11.9	12.4	11.09	250.5	-128.5	397.9	374.8	23.07	17.249		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2553 - 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		
5,100.0	5,093.0	5,106.4	5,093.0	12.1	12.6	11.09	250.5	-128.5	397.9	374.4	23.46	16.961		
5,200.0	5,193.0	5,334.8	5,318.2	12.3	12.8	12.15	221.2	-127.2	390.1	366.1	24.00	16.257		
5,300.0	5,292.8	5,583.8	5,525.1	12.4	12.6	23.81	87.1	-121.5	332.5	308.2	24.28	13.691		
5,400.0	5,390.2	5,674.5	5,581.3	12.6	12.6	54.33	16.1	-118.4	246.6	222.5	24.10	10.230		
5,500.0	5,481.5	5,696.5	5,592.9	12.6	12.6	85.67	-2.5	-117.6	158.3	133.6	24.73	6.404		
5,600.0	5,563.4	5,689.2	5,589.2	12.7	12.6	91.22	3.7	-117.9	93.3	68.4	24.88	3.751		
5,633.3	5,588.1	5,683.2	5,586.0	12.7	12.6	88.02	8.8	-118.1	87.4	62.5	24.89	3.513 SF		
5,700.0	5,633.0	5,667.7	5,577.4	12.8	12.6	75.75	21.8	-118.6	108.6	84.1	24.50	4.432		
5,800.0	5,687.5	5,638.1	5,560.2	13.0	12.6	51.10	45.7	-119.7	180.0	159.0	21.00	8.571		
5,900.0	5,725.2	5,600.0	5,536.0	13.6	12.6	31.85	75.1	-120.9	259.9	244.8	15.16	17.150		
6,000.0	5,744.5	5,566.3	5,512.9	14.5	12.6	21.95	99.6	-122.0	337.2	326.5	10.69	31.547		
6,100.0	5,747.0	5,527.7	5,484.5	15.5	12.7	17.49	125.7	-123.1	410.2	401.1	9.12	44.981		
6,200.0	5,747.0	5,500.0	5,462.9	16.7	12.7	16.10	143.1	-123.9	486.8	477.4	9.37	51.942		
6,300.0	5,747.0	5,465.2	5,434.6	18.1	12.7	14.57	163.3	-124.7	567.3	557.6	9.64	58.839		
6,400.0	5,747.0	5,450.0	5,421.8	19.5	12.8	13.97	171.6	-125.1	651.1	640.9	10.23	63.638		
6,500.0	5,747.0	5,419.3	5,395.3	21.0	12.8	12.85	187.0	-125.8	737.1	726.4	10.69	68.965		
6,600.0	5,747.0	5,400.0	5,378.2	22.5	12.8	12.22	195.9	-126.1	825.2	813.9	11.30	73.038		
6,700.0	5,747.0	5,400.0	5,378.2	24.1	12.8	12.22	195.9	-126.1	915.3	903.2	12.09	75.697		
6,800.0	5,747.0	5,370.2	5,351.2	25.8	12.8	11.34	208.4	-126.7	1,006.0	993.4	12.63	79.629		
6,900.0	5,747.0	5,350.0	5,332.4	27.5	12.8	10.80	216.0	-127.0	1,098.2	1,084.9	13.28	82.724		
7,000.0	5,747.0	5,350.0	5,332.4	29.2	12.8	10.80	216.0	-127.0	1,191.1	1,177.0	14.07	84.681		
7,100.0	5,747.0	5,350.0	5,332.4	30.9	12.8	10.80	216.0	-127.0	1,285.1	1,270.3	14.86	86.489		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2554 - HZ - Plan #2													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	148.90	-49.6	29.9	57.9					
100.0	100.0	100.0	100.0	0.1	0.1	148.90	-49.6	29.9	57.9	57.7	0.19	310.218		
200.0	200.0	200.0	200.0	0.3	0.3	148.90	-49.6	29.9	57.9	57.2	0.64	90.983		
300.0	300.0	300.0	300.0	0.5	0.5	148.90	-49.6	29.9	57.9	56.8	1.09	53.309		
400.0	400.0	400.0	400.0	0.8	0.8	148.90	-49.6	29.9	57.9	56.3	1.54	37.699		
500.0	500.0	500.0	500.0	1.0	1.0	-88.50	-49.6	29.9	57.8	55.8	1.97	29.415		
538.6	538.6	538.6	538.6	1.1	1.1	-90.00	-49.6	29.9	57.8	55.7	2.13	27.117		
600.0	599.9	599.9	599.9	1.2	1.2	-93.44	-49.6	29.9	57.9	55.5	2.39	24.193		
700.0	699.7	701.0	701.0	1.4	1.4	-100.42	-47.8	30.1	57.4	54.5	2.84	20.211		
800.0	799.5	801.6	801.4	1.6	1.7	-110.45	-42.5	30.7	55.9	52.6	3.29	16.984		
862.7	862.1	864.0	863.6	1.8	1.8	-118.00	-38.0	31.2	55.4	51.9	3.58	15.482 CC, ES		
900.0	899.4	901.0	900.5	1.9	1.9	-122.51	-35.3	31.5	55.6	51.9	3.75	14.827		
1,000.0	999.2	1,000.3	999.6	2.1	2.1	-134.19	-28.1	32.3	57.8	53.6	4.21	13.711		
1,100.0	1,099.0	1,099.6	1,098.6	2.3	2.4	-144.65	-20.9	33.1	62.1	57.5	4.68	13.287		
1,200.0	1,198.9	1,198.9	1,197.6	2.6	2.6	-153.50	-13.6	33.9	68.3	63.1	5.14	13.293		
1,300.0	1,298.7	1,298.2	1,296.7	2.8	2.9	-160.77	-6.4	34.7	75.8	70.2	5.59	13.543		
1,400.0	1,398.6	1,397.5	1,395.7	3.1	3.1	-166.65	0.8	35.5	84.3	78.2	6.05	13.921		
1,500.0	1,498.4	1,496.8	1,494.8	3.3	3.4	-171.43	8.0	36.3	93.5	87.0	6.51	14.356		
1,600.0	1,598.2	1,596.1	1,593.8	3.6	3.6	-175.33	15.2	37.1	103.2	96.3	6.97	14.811		
1,700.0	1,698.1	1,695.4	1,692.8	3.8	3.9	-178.55	22.4	37.9	113.4	105.9	7.43	15.261		
1,800.0	1,797.9	1,794.7	1,791.9	4.1	4.1	178.77	29.7	38.7	123.8	115.9	7.89	15.696		
1,900.0	1,897.8	1,894.0	1,890.9	4.3	4.4	176.50	36.9	39.5	134.5	126.1	8.35	16.109		
2,000.0	1,997.6	1,993.3	1,989.9	4.6	4.6	174.57	44.1	40.4	145.3	136.5	8.81	16.499		
2,100.0	2,097.4	2,092.6	2,089.0	4.8	4.9	172.91	51.3	41.2	156.3	147.0	9.27	16.866		
2,200.0	2,197.3	2,191.9	2,188.0	5.1	5.1	171.47	58.5	42.0	167.4	157.6	9.73	17.208		
2,300.0	2,297.1	2,291.2	2,287.0	5.3	5.4	170.21	65.8	42.8	178.6	168.4	10.19	17.529		
2,400.0	2,396.9	2,390.5	2,386.1	5.6	5.7	169.09	73.0	43.6	189.8	179.2	10.65	17.829		
2,500.0	2,496.8	2,489.8	2,485.1	5.8	5.9	168.11	80.2	44.4	201.1	190.0	11.11	18.110		
2,600.0	2,596.6	2,589.1	2,584.1	6.1	6.2	167.22	87.4	45.2	212.5	201.0	11.57	18.374		
2,700.0	2,696.5	2,688.4	2,683.2	6.3	6.4	166.43	94.6	46.0	223.9	211.9	12.03	18.620		
2,800.0	2,796.3	2,787.7	2,782.2	6.6	6.7	165.71	101.8	46.8	235.4	222.9	12.49	18.852		
2,900.0	2,896.1	2,887.0	2,881.2	6.8	6.9	165.06	109.1	47.6	246.9	234.0	12.95	19.070		
3,000.0	2,996.0	2,986.3	2,980.3	7.1	7.2	164.47	116.3	48.4	258.4	245.0	13.41	19.276		
3,100.0	3,095.8	3,085.6	3,079.3	7.3	7.4	163.93	123.5	49.2	270.0	256.1	13.87	19.470		
3,200.0	3,195.7	3,184.9	3,178.3	7.6	7.7	163.43	130.7	50.0	281.5	267.2	14.33	19.653		
3,300.0	3,295.5	3,284.2	3,277.4	7.8	8.0	162.98	137.9	50.8	293.1	278.3	14.78	19.827		
3,400.0	3,395.3	3,383.5	3,376.4	8.1	8.2	162.55	145.1	51.6	304.7	289.5	15.24	19.991		
3,500.0	3,495.2	3,482.8	3,475.4	8.3	8.5	162.16	152.4	52.4	316.3	300.6	15.70	20.147		
3,600.0	3,595.0	3,582.1	3,574.5	8.6	8.7	161.80	159.6	53.2	328.0	311.8	16.16	20.295		
3,700.0	3,694.8	3,681.4	3,673.5	8.8	9.0	161.46	166.8	54.1	339.6	323.0	16.62	20.436		
3,800.0	3,794.7	3,780.7	3,772.5	9.1	9.2	161.14	174.0	54.9	351.3	334.2	17.08	20.570		
3,900.0	3,894.5	3,880.0	3,871.6	9.3	9.5	160.85	181.2	55.7	362.9	345.4	17.53	20.699		
4,000.0	3,994.4	3,979.3	3,970.6	9.6	9.8	160.57	188.5	56.5	374.6	356.6	18.00	20.817		
4,100.0	4,094.2	4,078.6	4,069.6	9.8	10.0	160.31	195.7	57.3	386.3	367.8	18.46	20.928		
4,200.0	4,194.0	4,177.9	4,168.7	10.1	10.3	160.06	202.9	58.1	398.0	379.1	18.92	21.034		
4,300.0	4,293.9	4,277.2	4,267.7	10.3	10.5	159.83	210.1	58.9	409.7	390.3	19.38	21.134		
4,400.0	4,393.7	4,376.5	4,366.7	10.6	10.8	159.61	217.3	59.7	421.4	401.5	19.85	21.231		
4,500.0	4,493.6	4,475.8	4,465.8	10.8	11.0	159.40	224.5	60.5	433.1	412.8	20.31	21.323		
4,600.0	4,593.4	4,575.1	4,564.8	11.1	11.3	159.21	231.8	61.3	444.8	424.0	20.77	21.412		
4,700.0	4,693.2	4,674.4	4,663.9	11.3	11.6	159.02	239.0	62.1	456.5	435.3	21.24	21.496		
4,800.0	4,793.1	4,781.5	4,770.7	11.6	11.8	158.88	246.3	62.9	467.7	446.0	21.71	21.549		
4,900.0	4,893.0	4,889.3	4,887.4	11.8	12.0	158.84	250.2	63.4	473.4	451.3	22.11	21.417		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2554 - HZ - Plan #2													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	
5,000.0	4,993.0	5,003.9	4,993.0	11.9	12.2	34.50	250.4	63.4	473.8	451.3	22.49	21.064	
5,100.0	5,093.0	5,103.9	5,093.0	12.1	12.4	34.50	250.4	63.4	473.8	450.9	22.89	20.697	
5,200.0	5,193.0	5,203.9	5,193.0	12.3	12.6	34.50	250.4	63.4	473.8	450.5	23.29	20.340	
5,300.0	5,292.8	5,461.6	5,443.9	12.4	12.7	40.68	202.8	65.2	458.7	434.9	23.73	19.333	
5,400.0	5,390.2	5,641.1	5,590.9	12.6	12.6	63.00	101.5	69.0	402.0	377.9	24.05	16.713	
5,500.0	5,481.5	5,699.6	5,630.3	12.6	12.6	81.60	58.3	70.6	339.8	315.2	24.59	13.818	
5,600.0	5,563.4	5,708.6	5,635.9	12.7	12.6	89.24	51.2	70.9	293.4	268.5	24.86	11.804	
5,700.0	5,633.0	5,695.4	5,627.6	12.8	12.6	88.48	61.5	70.5	276.2	251.1	25.04	11.029 SF	
5,700.6	5,633.3	5,695.3	5,627.5	12.8	12.6	88.45	61.6	70.5	276.2	251.2	25.01	11.043	
5,800.0	5,687.5	5,670.6	5,611.4	13.0	12.6	81.80	80.2	69.8	292.0	266.8	25.19	11.590	
5,900.0	5,725.2	5,639.3	5,589.6	13.6	12.6	71.34	102.8	68.9	332.7	307.9	24.75	13.443	
6,000.0	5,744.5	5,600.0	5,560.4	14.5	12.6	59.18	129.1	67.9	386.5	363.4	23.08	16.748	
6,100.0	5,747.0	5,566.6	5,534.2	15.5	12.6	52.07	149.6	67.2	445.8	423.8	21.99	20.268	
6,200.0	5,747.0	5,534.6	5,507.8	16.7	12.7	48.72	167.7	66.5	512.8	490.8	21.97	23.340	
6,300.0	5,747.0	5,500.0	5,478.1	18.1	12.7	45.31	185.5	65.8	586.7	564.8	21.90	26.784	
6,400.0	5,747.0	5,485.0	5,464.9	19.5	12.7	43.91	192.5	65.6	665.4	642.8	22.51	29.554	
6,500.0	5,747.0	5,465.5	5,447.4	21.0	12.7	42.16	201.1	65.2	747.9	724.9	23.00	32.515	
6,600.0	5,747.0	5,450.0	5,433.2	22.5	12.7	40.83	207.5	65.0	833.4	809.7	23.64	35.253	
6,700.0	5,747.0	5,434.1	5,418.6	24.1	12.7	39.52	213.6	64.8	921.1	896.8	24.27	37.949	
6,800.0	5,747.0	5,421.3	5,406.6	25.8	12.8	38.50	218.2	64.6	1,010.6	985.6	25.01	40.402	
6,900.0	5,747.0	5,400.0	5,386.5	27.5	12.8	36.88	225.2	64.3	1,101.7	1,076.2	25.46	43.276	
7,000.0	5,747.0	5,400.0	5,386.5	29.2	12.8	36.88	225.2	64.3	1,193.6	1,167.0	26.65	44.794	
7,100.0	5,747.0	5,400.0	5,386.5	30.9	12.8	36.88	225.2	64.3	1,286.8	1,258.9	27.85	46.204	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2555 - HZ - Plan #2													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	129.66	-49.6	59.8	77.7					
100.0	100.0	100.0	100.0	0.1	0.1	129.66	-49.6	59.8	77.7	77.5	0.19	416.284		
200.0	200.0	200.0	200.0	0.3	0.3	129.66	-49.6	59.8	77.7	77.0	0.64	122.090		
300.0	300.0	300.0	300.0	0.5	0.5	129.66	-49.6	59.8	77.7	76.6	1.09	71.535		
400.0	400.0	400.0	400.0	0.8	0.8	129.66	-49.6	59.8	77.7	76.1	1.54	50.588 CC, ES		
500.0	500.0	500.0	500.0	1.0	1.0	-107.23	-49.6	59.8	78.2	76.2	1.97	39.761		
600.0	599.9	599.9	599.9	1.2	1.2	-110.95	-49.2	60.0	79.8	77.4	2.39	33.336		
700.0	699.7	699.4	699.4	1.4	1.4	-117.05	-46.3	61.9	82.2	79.3	2.83	29.023		
800.0	799.5	798.2	797.9	1.6	1.7	-124.94	-40.6	65.7	86.1	82.9	3.28	26.245		
900.0	899.4	897.2	896.5	1.9	1.9	-133.13	-33.2	70.4	92.3	88.5	3.74	24.642		
1,000.0	999.2	996.2	995.1	2.1	2.1	-140.19	-25.9	75.2	100.0	95.8	4.21	23.773		
1,100.0	1,099.0	1,095.2	1,093.7	2.3	2.4	-146.17	-18.6	80.0	109.1	104.4	4.67	23.362		
1,200.0	1,198.9	1,194.1	1,192.3	2.6	2.7	-151.20	-11.3	84.7	119.2	114.1	5.13	23.230		
1,300.0	1,298.7	1,293.1	1,290.9	2.8	2.9	-155.42	-4.0	89.5	130.0	124.5	5.59	23.267		
1,400.0	1,398.6	1,392.1	1,389.5	3.1	3.2	-158.98	3.3	94.3	141.5	135.4	6.05	23.402		
1,500.0	1,498.4	1,491.1	1,488.1	3.3	3.4	-162.00	10.7	99.0	153.4	146.9	6.50	23.593		
1,600.0	1,598.2	1,590.1	1,586.7	3.6	3.7	-164.58	18.0	103.8	165.7	158.7	6.96	23.814		
1,700.0	1,698.1	1,689.1	1,685.3	3.8	4.0	-166.81	25.3	108.6	178.2	170.8	7.41	24.048		
1,800.0	1,797.9	1,788.1	1,783.9	4.1	4.2	-168.74	32.6	113.3	191.0	183.2	7.87	24.285		
1,900.0	1,897.8	1,887.0	1,882.5	4.3	4.5	-170.43	39.9	118.1	204.0	195.7	8.32	24.519		
2,000.0	1,997.6	1,986.0	1,981.1	4.6	4.8	-171.91	47.2	122.9	217.1	208.3	8.77	24.747		
2,100.0	2,097.4	2,085.0	2,079.7	4.8	5.0	-173.23	54.6	127.6	230.4	221.2	9.23	24.966		
2,200.0	2,197.3	2,184.0	2,178.3	5.1	5.3	-174.40	61.9	132.4	243.7	234.1	9.68	25.176		
2,300.0	2,297.1	2,283.0	2,276.9	5.3	5.6	-175.45	69.2	137.2	257.2	247.1	10.14	25.377		
2,400.0	2,396.9	2,382.0	2,375.5	5.6	5.9	-176.39	76.5	141.9	270.7	260.1	10.59	25.567		
2,500.0	2,496.8	2,481.0	2,474.1	5.8	6.1	-177.25	83.8	146.7	284.3	273.3	11.04	25.748		
2,600.0	2,596.6	2,580.0	2,572.7	6.1	6.4	-178.03	91.1	151.5	298.0	286.5	11.50	25.920		
2,700.0	2,696.5	2,678.9	2,671.3	6.3	6.7	-178.74	98.5	156.2	311.7	299.7	11.95	26.084		
2,800.0	2,796.3	2,777.9	2,769.9	6.6	6.9	-179.38	105.8	161.0	325.4	313.0	12.40	26.239		
2,900.0	2,896.1	2,876.9	2,868.5	6.8	7.2	-179.98	113.1	165.8	339.2	326.3	12.85	26.387		
3,000.0	2,996.0	2,975.9	2,967.1	7.1	7.5	179.47	120.4	170.5	353.0	339.7	13.31	26.527		
3,100.0	3,095.8	3,074.9	3,065.7	7.3	7.8	178.96	127.7	175.3	366.8	353.1	13.76	26.661		
3,200.0	3,195.7	3,173.9	3,164.3	7.6	8.0	178.49	135.0	180.1	380.7	366.5	14.21	26.788		
3,300.0	3,295.5	3,272.9	3,262.9	7.8	8.3	178.05	142.4	184.9	394.6	379.9	14.66	26.910		
3,400.0	3,395.3	3,371.8	3,361.5	8.1	8.6	177.64	149.7	189.6	408.5	393.4	15.12	27.026		
3,500.0	3,495.2	3,470.8	3,460.1	8.3	8.8	177.26	157.0	194.4	422.5	406.9	15.57	27.137		
3,600.0	3,595.0	3,569.8	3,558.7	8.6	9.1	176.90	164.3	199.2	436.4	420.4	16.02	27.243		
3,700.0	3,694.8	3,668.8	3,657.3	8.8	9.4	176.57	171.6	203.9	450.4	433.9	16.47	27.345		
3,800.0	3,794.7	3,767.8	3,755.9	9.1	9.7	176.25	178.9	208.7	464.4	447.4	16.92	27.443		
3,900.0	3,894.5	3,866.8	3,854.5	9.3	9.9	175.95	186.3	213.5	478.4	461.0	17.37	27.533		
4,000.0	3,994.4	3,965.8	3,953.1	9.6	10.2	175.67	193.6	218.2	492.4	474.5	17.83	27.613		
4,100.0	4,094.2	4,064.7	4,051.7	9.8	10.5	175.41	200.9	223.0	506.4	488.1	18.29	27.690		
4,200.0	4,194.0	4,163.7	4,150.3	10.1	10.7	175.16	208.2	227.8	520.4	501.7	18.74	27.764		
4,300.0	4,293.9	4,262.7	4,248.9	10.3	11.0	174.92	215.5	232.5	534.4	515.2	19.20	27.834		
4,400.0	4,393.7	4,361.7	4,347.5	10.6	11.3	174.70	222.8	237.3	548.5	528.8	19.66	27.902		
4,500.0	4,493.6	4,460.7	4,446.1	10.8	11.6	174.48	230.2	242.1	562.5	542.4	20.11	27.966		
4,600.0	4,593.4	4,559.7	4,544.7	11.1	11.8	174.28	237.5	246.8	576.6	556.0	20.57	28.029		
4,700.0	4,693.2	4,671.0	4,655.6	11.3	12.1	174.08	245.1	251.8	590.1	569.1	21.04	28.051		
4,800.0	4,793.1	4,795.3	4,779.8	11.6	12.3	174.00	249.8	254.9	599.9	578.4	21.49	27.914		
4,900.0	4,893.0	4,908.5	4,893.0	11.8	12.5	174.02	250.4	255.3	603.4	581.5	21.90	27.554		
5,000.0	4,993.0	5,008.5	4,993.0	11.9	12.7	49.69	250.4	255.3	603.6	581.3	22.31	27.053		
5,100.0	5,093.0	5,108.5	5,093.0	12.1	12.9	49.69	250.4	255.3	603.6	580.9	22.71	26.579		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2555 - HZ - Plan #2													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	5,193.0	5,324.5	5,306.3	12.3	13.1	51.62	225.2	256.1	599.0	575.8	23.25	25.767		
5,300.0	5,292.8	5,565.9	5,511.0	12.4	12.9	66.17	101.3	260.0	565.7	541.9	23.81	23.764		
5,400.0	5,390.2	5,660.5	5,572.1	12.6	12.8	80.67	29.3	262.3	521.5	497.1	24.33	21.433		
5,500.0	5,481.5	5,686.1	5,586.4	12.6	12.8	87.80	8.0	262.9	486.6	462.0	24.60	19.777		
5,600.0	5,563.4	5,681.5	5,583.9	12.7	12.8	89.15	12.0	262.8	469.5	444.8	24.73	18.987		
5,634.2	5,588.7	5,676.0	5,580.9	12.7	12.8	88.61	16.6	262.7	468.3	443.5	24.77	18.906 SF		
5,700.0	5,633.0	5,661.7	5,572.8	12.8	12.8	86.45	28.3	262.3	472.5	447.7	24.88	18.991		
5,800.0	5,687.5	5,633.6	5,556.1	13.0	12.9	80.90	50.9	261.6	493.5	468.5	25.06	19.692		
5,900.0	5,725.2	5,600.0	5,534.5	13.6	12.9	73.54	76.7	260.8	527.6	502.6	24.98	21.120		
6,000.0	5,744.5	5,563.7	5,509.4	14.5	12.9	65.58	102.9	259.9	569.4	544.9	24.48	23.263		
6,100.0	5,747.0	5,525.8	5,481.3	15.5	13.0	60.26	128.3	259.1	615.2	590.9	24.26	25.354		
6,200.0	5,747.0	5,500.0	5,461.2	16.7	13.0	58.40	144.4	258.6	668.5	643.7	24.88	26.868		
6,300.0	5,747.0	5,464.4	5,432.1	18.1	13.0	55.84	164.9	258.0	729.1	703.7	25.38	28.733		
6,400.0	5,747.0	5,450.0	5,420.0	19.5	13.0	54.81	172.7	257.7	796.1	769.8	26.31	30.253		
6,500.0	5,747.0	5,419.2	5,393.3	21.0	13.1	52.64	188.1	257.3	867.8	840.9	26.93	32.222		
6,600.0	5,747.0	5,400.0	5,376.3	22.5	13.1	51.32	196.9	257.0	943.8	916.0	27.81	33.942		
6,700.0	5,747.0	5,400.0	5,376.3	24.1	13.1	51.32	196.9	257.0	1,023.6	994.4	29.15	35.115		
6,800.0	5,747.0	5,370.9	5,349.8	25.8	13.1	49.35	209.0	256.6	1,105.4	1,075.7	29.79	37.112		
6,900.0	5,747.0	5,350.0	5,330.4	27.5	13.1	47.99	216.8	256.4	1,190.0	1,159.4	30.61	38.876		
7,000.0	5,747.0	5,350.0	5,330.4	29.2	13.1	47.99	216.8	256.4	1,276.3	1,244.3	31.98	39.906		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2556 - HZ - Plan #2													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	118.86	-49.6	90.0	102.7					
100.0	100.0	100.0	100.0	0.1	0.1	118.86	-49.6	90.0	102.7	102.5	0.19	550.576		
200.0	200.0	200.0	200.0	0.3	0.3	118.86	-49.6	90.0	102.7	102.1	0.64	161.476		
300.0	300.0	300.0	300.0	0.5	0.5	118.86	-49.6	90.0	102.7	101.6	1.09	94.612		
400.0	400.0	400.0	400.0	0.8	0.8	118.86	-49.6	90.0	102.7	101.2	1.54	66.908	CC, ES	
500.0	500.0	500.0	500.0	1.0	1.0	-117.66	-49.6	90.0	103.5	101.5	1.97	52.630		
600.0	599.9	598.3	598.3	1.2	1.2	-120.81	-48.5	91.3	106.6	104.3	2.39	44.649		
700.0	699.7	696.0	695.8	1.4	1.4	-125.58	-45.3	95.1	112.1	109.3	2.82	39.726		
800.0	799.5	792.9	792.4	1.6	1.7	-131.14	-39.9	101.4	120.3	117.0	3.27	36.768		
900.0	899.4	890.7	889.5	1.9	1.9	-136.87	-33.0	109.7	131.2	127.5	3.74	35.130		
1,000.0	999.2	989.2	987.5	2.1	2.2	-141.78	-25.8	118.3	143.4	139.2	4.20	34.153		
1,100.0	1,099.0	1,087.8	1,085.4	2.3	2.5	-145.90	-18.6	126.8	156.4	151.8	4.66	33.565		
1,200.0	1,198.9	1,186.3	1,183.3	2.6	2.7	-149.39	-11.5	135.3	170.1	165.0	5.12	33.225		
1,300.0	1,298.7	1,284.9	1,281.3	2.8	3.0	-152.35	-4.3	143.8	184.4	178.8	5.58	33.045		
1,400.0	1,398.6	1,383.5	1,379.2	3.1	3.3	-154.88	2.9	152.4	199.1	193.0	6.04	32.966		
1,500.0	1,498.4	1,482.0	1,477.1	3.3	3.6	-157.06	10.0	160.9	214.1	207.6	6.50	32.955		
1,600.0	1,598.2	1,580.6	1,575.0	3.6	3.9	-158.96	17.2	169.4	229.3	222.4	6.95	32.986		
1,700.0	1,698.1	1,679.1	1,673.0	3.8	4.2	-160.62	24.4	178.0	244.8	237.4	7.41	33.045		
1,800.0	1,797.9	1,777.7	1,770.9	4.1	4.5	-162.08	31.5	186.5	260.5	252.6	7.86	33.121		
1,900.0	1,897.8	1,876.3	1,868.8	4.3	4.8	-163.38	38.7	195.0	276.3	267.9	8.32	33.208		
2,000.0	1,997.6	1,974.8	1,966.8	4.6	5.1	-164.53	45.8	203.5	292.2	283.4	8.77	33.300		
2,100.0	2,097.4	2,073.4	2,064.7	4.8	5.4	-165.57	53.0	212.1	308.2	299.0	9.23	33.395		
2,200.0	2,197.3	2,171.9	2,162.6	5.1	5.7	-166.50	60.2	220.6	324.3	314.7	9.68	33.491		
2,300.0	2,297.1	2,270.5	2,260.5	5.3	6.0	-167.35	67.3	229.1	340.5	330.4	10.14	33.586		
2,400.0	2,396.9	2,369.1	2,358.5	5.6	6.3	-168.12	74.5	237.6	356.8	346.2	10.59	33.680		
2,500.0	2,496.8	2,467.6	2,456.4	5.8	6.6	-168.82	81.7	246.2	373.1	362.1	11.05	33.772		
2,600.0	2,596.6	2,566.2	2,554.3	6.1	6.9	-169.46	88.8	254.7	389.5	378.0	11.50	33.861		
2,700.0	2,696.5	2,664.7	2,652.3	6.3	7.2	-170.05	96.0	263.2	405.9	394.0	11.96	33.948		
2,800.0	2,796.3	2,763.3	2,750.2	6.6	7.5	-170.60	103.1	271.7	422.4	409.9	12.41	34.032		
2,900.0	2,896.1	2,861.9	2,848.1	6.8	7.8	-171.10	110.3	280.3	438.8	426.0	12.86	34.113		
3,000.0	2,996.0	2,960.4	2,946.1	7.1	8.1	-171.57	117.5	288.8	455.4	442.0	13.32	34.192		
3,100.0	3,095.8	3,059.0	3,044.0	7.3	8.4	-172.00	124.6	297.3	471.9	458.1	13.77	34.268		
3,200.0	3,195.7	3,157.5	3,141.9	7.6	8.7	-172.41	131.8	305.8	488.5	474.3	14.22	34.342		
3,300.0	3,295.5	3,256.1	3,239.8	7.8	9.0	-172.79	139.0	314.4	505.1	490.4	14.68	34.413		
3,400.0	3,395.3	3,354.7	3,337.8	8.1	9.3	-173.14	146.1	322.9	521.7	506.6	15.13	34.482		
3,500.0	3,495.2	3,453.2	3,435.7	8.3	9.6	-173.47	153.3	331.4	538.3	522.7	15.58	34.548		
3,600.0	3,595.0	3,551.8	3,533.6	8.6	9.9	-173.79	160.5	340.0	555.0	538.9	16.03	34.613		
3,700.0	3,694.8	3,650.3	3,631.6	8.8	10.2	-174.08	167.6	348.5	571.6	555.1	16.49	34.675		
3,800.0	3,794.7	3,748.9	3,729.5	9.1	10.5	-174.36	174.8	357.0	588.3	571.4	16.94	34.736		
3,900.0	3,894.5	3,847.5	3,827.4	9.3	10.8	-174.62	181.9	365.5	605.0	587.6	17.39	34.794		
4,000.0	3,994.4	3,946.0	3,925.3	9.6	11.1	-174.87	189.1	374.1	621.7	603.8	17.85	34.837		
4,100.0	4,094.2	4,044.6	4,023.3	9.8	11.4	-175.11	196.3	382.6	638.4	620.1	18.30	34.879		
4,200.0	4,194.0	4,143.1	4,121.2	10.1	11.7	-175.33	203.4	391.1	655.1	636.4	18.76	34.919		
4,300.0	4,293.9	4,241.7	4,219.1	10.3	12.0	-175.54	210.6	399.6	671.9	652.6	19.22	34.958		
4,400.0	4,393.7	4,340.3	4,317.1	10.6	12.3	-175.75	217.8	408.2	688.6	668.9	19.68	34.995		
4,500.0	4,493.6	4,438.8	4,415.0	10.8	12.6	-175.94	224.9	416.7	705.3	685.2	20.14	35.030		
4,600.0	4,593.4	4,537.4	4,512.9	11.1	12.9	-176.12	232.1	425.2	722.1	701.5	20.59	35.065		
4,700.0	4,693.2	4,638.9	4,613.7	11.3	13.2	-176.30	239.4	434.0	738.8	717.8	21.06	35.091		
4,800.0	4,793.1	4,772.1	4,746.5	11.6	13.5	-176.49	246.8	442.7	752.8	731.3	21.54	34.946		
4,900.0	4,893.0	4,907.0	4,881.3	11.8	13.7	-176.58	250.2	446.8	759.6	737.6	21.99	34.549		
5,000.0	4,993.0	5,018.8	4,993.0	11.9	13.9	59.09	250.4	447.1	760.0	737.6	22.40	33.936		
5,100.0	5,093.0	5,118.8	5,093.0	12.1	14.1	59.09	250.4	447.1	760.0	737.2	22.79	33.355		

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 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 S25-T10N-R58W - Razor 25B -2556 - HZ - Plan #2													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)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
5,200.0	5,193.0	5,218.8	5,193.0	12.3	14.2	59.09	250.4	447.1	760.0	736.8	23.18	32.790		
5,300.0	5,292.8	5,467.6	5,435.8	12.4	14.4	64.01	206.4	448.2	751.1	727.3	23.78	31.588		
5,400.0	5,390.2	5,645.6	5,583.4	12.6	14.2	77.30	108.6	450.7	718.9	694.5	24.32	29.563		
5,500.0	5,481.5	5,706.3	5,625.0	12.6	14.2	85.84	64.5	451.9	686.5	661.8	24.71	27.788		
5,600.0	5,563.4	5,717.1	5,631.9	12.7	14.2	89.20	56.2	452.1	665.0	640.0	24.94	26.668		
5,700.0	5,633.0	5,705.1	5,624.3	12.8	14.2	88.99	65.4	451.9	657.6	632.4	25.18	26.114		
5,700.7	5,633.4	5,705.0	5,624.2	12.8	14.2	88.98	65.5	451.9	657.6	632.4	25.18	26.112		
5,800.0	5,687.5	5,681.3	5,608.5	13.0	14.2	86.25	83.2	451.4	664.4	638.8	25.57	25.986 SF		
5,900.0	5,725.2	5,650.0	5,586.6	13.6	14.2	81.68	105.6	450.8	683.2	657.1	26.02	26.253		
6,000.0	5,744.5	5,615.7	5,561.1	14.5	14.3	76.09	128.4	450.2	710.9	684.5	26.42	26.910		
6,100.0	5,747.0	5,579.1	5,532.2	15.5	14.3	71.86	151.0	449.6	744.7	717.8	26.91	27.673		
6,200.0	5,747.0	5,550.0	5,508.2	16.7	14.3	69.98	167.4	449.2	786.7	758.9	27.78	28.322		
6,300.0	5,747.0	5,520.9	5,483.4	18.1	14.4	68.07	182.5	448.8	836.7	807.9	28.71	29.141		
6,400.0	5,747.0	5,500.0	5,465.0	19.5	14.4	66.69	192.4	448.6	893.7	863.9	29.79	30.002		
6,500.0	5,747.0	5,479.1	5,446.3	21.0	14.4	65.32	201.6	448.3	956.8	925.9	30.90	30.963		
6,600.0	5,747.0	5,450.0	5,419.5	22.5	14.4	63.41	213.2	448.0	1,025.3	993.4	31.91	32.135		
6,700.0	5,747.0	5,450.0	5,419.5	24.1	14.4	63.41	213.2	448.0	1,097.7	1,064.3	33.39	32.877		
6,800.0	5,747.0	5,450.0	5,419.5	25.8	14.4	63.41	213.2	448.0	1,174.1	1,139.2	34.91	33.635		
6,900.0	5,747.0	5,424.1	5,395.3	27.5	14.4	61.73	222.2	447.8	1,253.1	1,217.1	35.98	34.830		



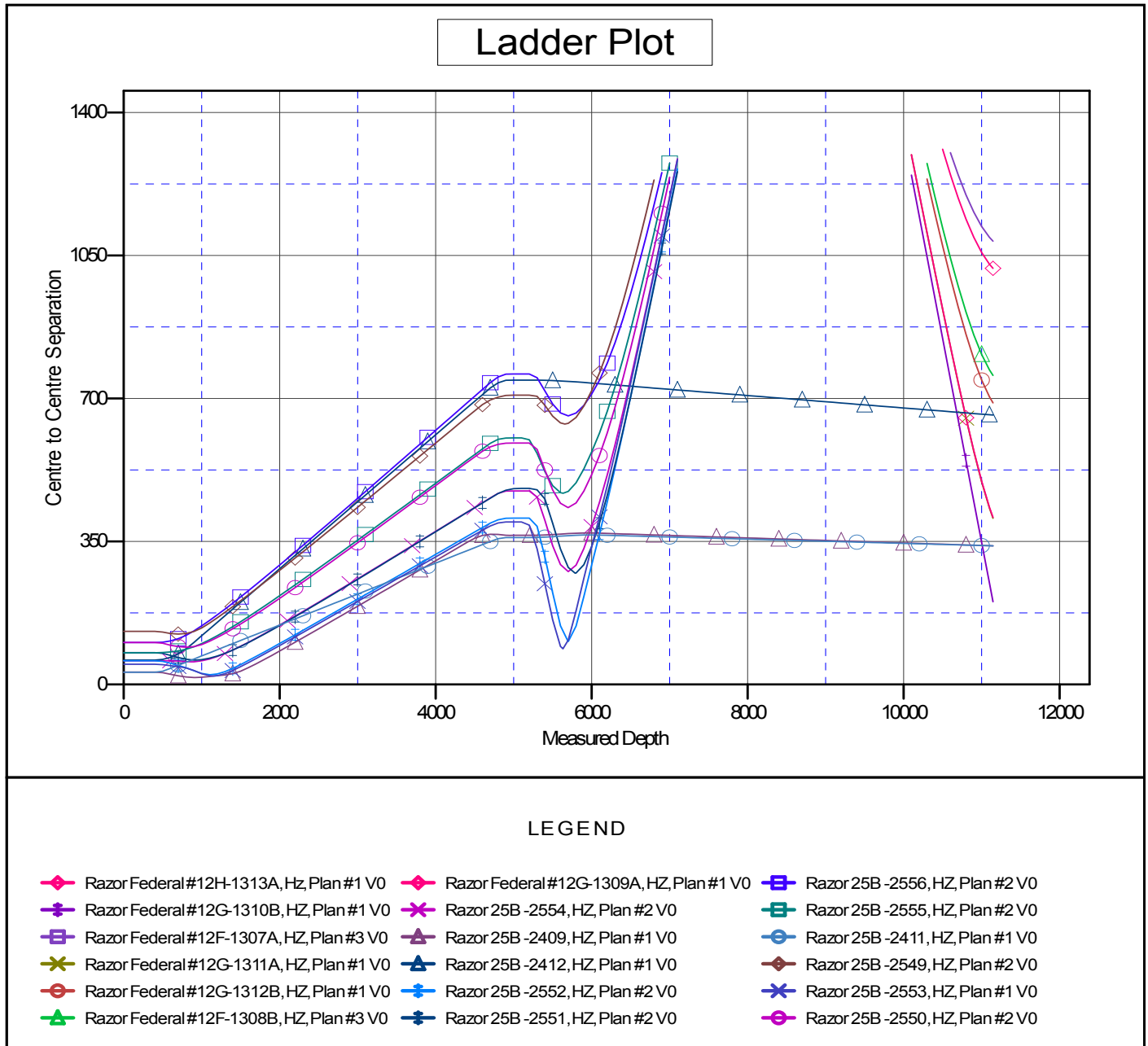
# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Whiting Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2410
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Reference Site:</b>	S25-T10N-R58W	<b>MD Reference:</b>	KB=17' @ 4773.4usft (Cade #23)
<b>Site Error:</b>	0.0usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Razor 25B -2410	<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 KB=17' @ 4773.4usft (Cade #23)  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Razor 25B -2410  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 1.09°



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