



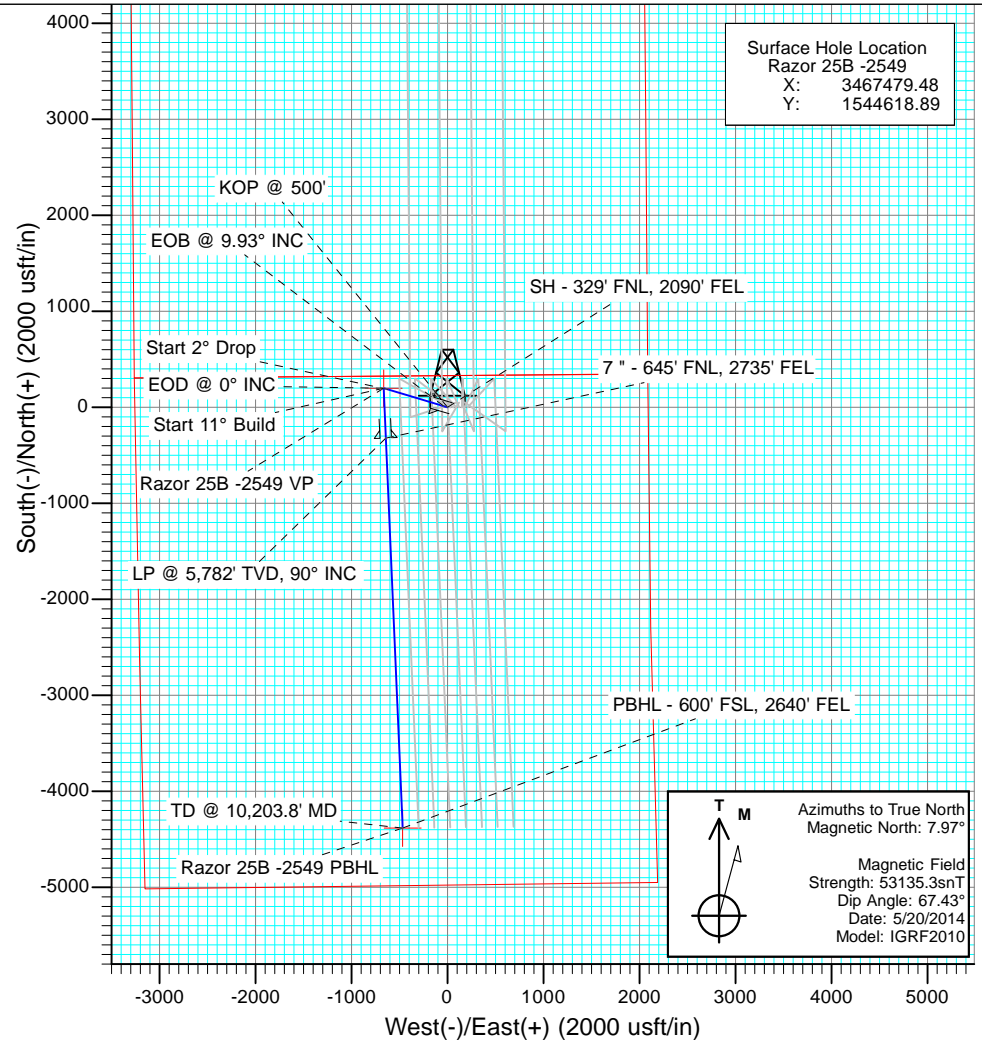
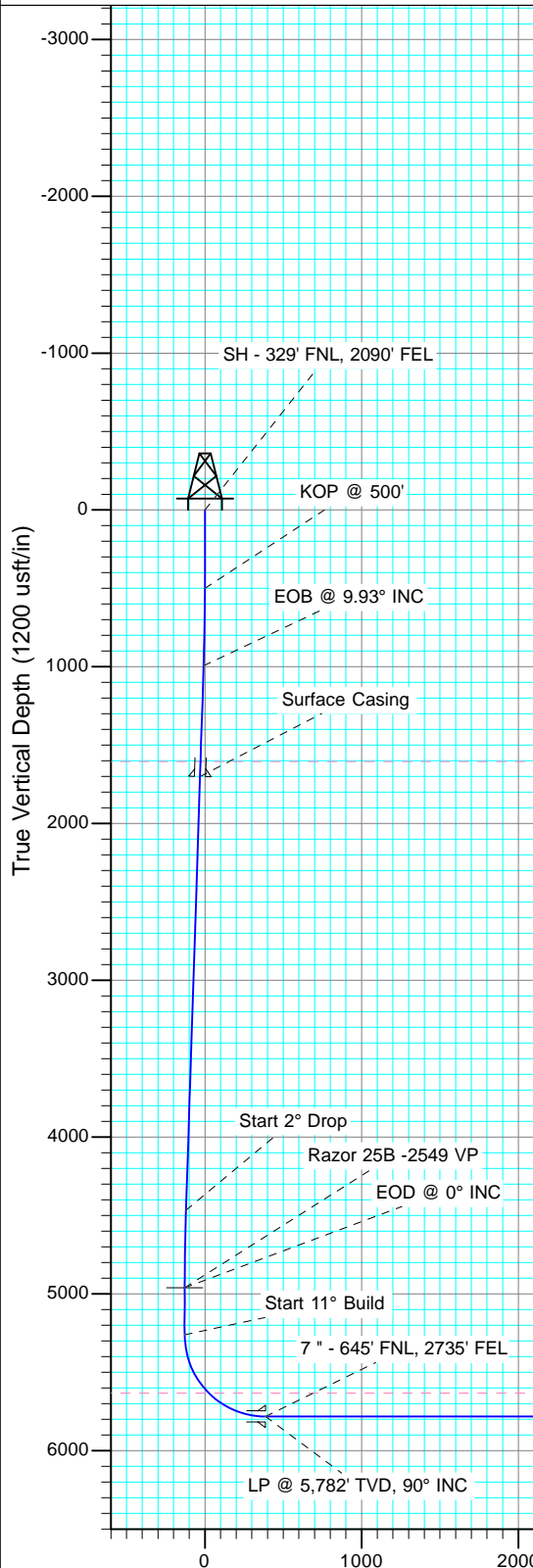
Project: Weld County, CO  
Site: S25-T10N-R58W  
Well: Razor 25B -2549  
Wellbore: HZ  
Design: Plan #1



Plan #1  
Razor 25B -2549  
145XXX; SC  
KB=17' @ 4773.4usft (Cade #23)  
Ground Elevation @ 4756.4  
North American Datum 1983  
Well Razor 25B -2549, True North

#### 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	500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	
3	996.6	9.93	286.75	994.1	12.4	-41.1	2.00	286.75	-8.0	
4	4522.3	9.93	286.75	4467.0	187.6	-623.4	0.00	0.00	-120.6	
5	5018.9	0.00	0.00	4961.1	200.0	-664.5	2.00	180.00	-128.5	Razor 25B -2549 VP
6	5318.9	0.00	0.00	5261.1	200.0	-664.5	0.00	0.00	-128.5	
7	6137.1	90.00	177.53	5782.0	-320.4	-642.1	11.00	177.53	386.6	
8	10203.8	90.00	177.53	5782.0	-4383.3	-466.8	0.00	0.00	4408.1	Razor 25B -2549 PBHL



#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Razor 25B -2549 VP	4961.1	200.0	-664.5	1544806.19	3466811.29
Razor 25B -2549 PBHL	5782.0	-4383.3	-466.8	1540227.44	3467096.28

Vertical Section at 186.08° (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 -2549
<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 -2549	<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 -2549					
Well Position	+N/-S	0.0 usft	Northing:	1,544,618.89 usft	Latitude:	40.816139
	+E/-W	0.0 usft	Easting:	3,467,479.48 usft	Longitude:	-103.811031
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	5/20/2014	7.97	67.43	53,135

<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	186.08

<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	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
996.6	9.93	286.75	994.1	12.4	-41.1	2.00	2.00	0.00	286.75	
4,522.3	9.93	286.75	4,467.0	187.6	-623.4	0.00	0.00	0.00	0.00	
5,018.9	0.00	0.00	4,961.1	200.0	-664.5	2.00	-2.00	0.00	180.00	Razor 25B -2549 VP
5,318.9	0.00	0.00	5,261.1	200.0	-664.5	0.00	0.00	0.00	0.00	
6,137.1	90.00	177.53	5,782.0	-320.4	-642.1	11.00	11.00	21.70	177.53	
10,203.8	90.00	177.53	5,782.0	-4,383.3	-466.8	0.00	0.00	0.00	0.00	Razor 25B -2549 PB

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2549
<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 -2549	<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 - 329' FNL, 2090' 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	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500'
600.0	2.00	286.75	600.0	0.5	-1.7	-0.3	2.00	2.00	
700.0	4.00	286.75	699.8	2.0	-6.7	-1.3	2.00	2.00	
800.0	6.00	286.75	799.5	4.5	-15.0	-2.9	2.00	2.00	
900.0	8.00	286.75	898.7	8.0	-26.7	-5.2	2.00	2.00	
996.6	9.93	286.75	994.1	12.4	-41.1	-8.0	2.00	2.00	EOB @ 9.93° INC
1,000.0	9.93	286.75	997.5	12.5	-41.7	-8.1	0.00	0.00	
1,100.0	9.93	286.75	1,096.0	17.5	-58.2	-11.3	0.00	0.00	
1,200.0	9.93	286.75	1,194.5	22.5	-74.7	-14.4	0.00	0.00	
1,300.0	9.93	286.75	1,293.0	27.5	-91.2	-17.6	0.00	0.00	
1,400.0	9.93	286.75	1,391.5	32.4	-107.7	-20.8	0.00	0.00	
1,500.0	9.93	286.75	1,490.0	37.4	-124.2	-24.0	0.00	0.00	
1,600.0	9.93	286.75	1,588.5	42.4	-140.8	-27.2	0.00	0.00	
1,615.8	9.93	286.75	1,604.0	43.2	-143.4	-27.7	0.00	0.00	Pierre
1,700.0	9.93	286.75	1,687.0	47.3	-157.3	-30.4	0.00	0.00	
1,713.2	9.93	286.75	1,700.0	48.0	-159.5	-30.8	0.00	0.00	Surface Casing
1,800.0	9.93	286.75	1,785.5	52.3	-173.8	-33.6	0.00	0.00	
1,900.0	9.93	286.75	1,884.0	57.3	-190.3	-36.8	0.00	0.00	
2,000.0	9.93	286.75	1,982.5	62.2	-206.8	-40.0	0.00	0.00	
2,100.0	9.93	286.75	2,081.0	67.2	-223.3	-43.2	0.00	0.00	
2,200.0	9.93	286.75	2,179.5	72.2	-239.9	-46.4	0.00	0.00	
2,300.0	9.93	286.75	2,278.0	77.2	-256.4	-49.6	0.00	0.00	
2,400.0	9.93	286.75	2,376.5	82.1	-272.9	-52.8	0.00	0.00	
2,500.0	9.93	286.75	2,475.0	87.1	-289.4	-56.0	0.00	0.00	
2,600.0	9.93	286.75	2,573.5	92.1	-305.9	-59.2	0.00	0.00	
2,700.0	9.93	286.75	2,672.0	97.0	-322.4	-62.4	0.00	0.00	
2,800.0	9.93	286.75	2,770.5	102.0	-338.9	-65.6	0.00	0.00	
2,900.0	9.93	286.75	2,869.0	107.0	-355.5	-68.7	0.00	0.00	
3,000.0	9.93	286.75	2,967.5	112.0	-372.0	-71.9	0.00	0.00	
3,100.0	9.93	286.75	3,066.0	116.9	-388.5	-75.1	0.00	0.00	
3,200.0	9.93	286.75	3,164.5	121.9	-405.0	-78.3	0.00	0.00	
3,300.0	9.93	286.75	3,263.0	126.9	-421.5	-81.5	0.00	0.00	
3,400.0	9.93	286.75	3,361.5	131.8	-438.0	-84.7	0.00	0.00	
3,500.0	9.93	286.75	3,460.0	136.8	-454.6	-87.9	0.00	0.00	
3,600.0	9.93	286.75	3,558.5	141.8	-471.1	-91.1	0.00	0.00	
3,700.0	9.93	286.75	3,657.0	146.8	-487.6	-94.3	0.00	0.00	
3,800.0	9.93	286.75	3,755.5	151.7	-504.1	-97.5	0.00	0.00	
3,900.0	9.93	286.75	3,854.0	156.7	-520.6	-100.7	0.00	0.00	
4,000.0	9.93	286.75	3,952.5	161.7	-537.1	-103.9	0.00	0.00	
4,100.0	9.93	286.75	4,051.0	166.6	-553.6	-107.1	0.00	0.00	
4,200.0	9.93	286.75	4,149.5	171.6	-570.2	-110.3	0.00	0.00	
4,300.0	9.93	286.75	4,248.0	176.6	-586.7	-113.5	0.00	0.00	
4,400.0	9.93	286.75	4,346.5	181.5	-603.2	-116.7	0.00	0.00	
4,500.0	9.93	286.75	4,445.0	186.5	-619.7	-119.8	0.00	0.00	
4,522.3	9.93	286.75	4,467.0	187.6	-623.4	-120.6	0.00	0.00	Start 2° Drop
4,600.0	8.38	286.75	4,543.7	191.2	-635.2	-122.9	2.00	-2.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2549
<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 -2549	<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
4,700.0	6.38	286.75	4,642.9	194.9	-647.5	-125.2	2.00	-2.00	
4,800.0	4.38	286.75	4,742.4	197.6	-656.5	-127.0	2.00	-2.00	
4,900.0	2.38	286.75	4,842.2	199.3	-662.1	-128.1	2.00	-2.00	
5,000.0	0.38	286.75	4,942.2	200.0	-664.4	-128.5	2.00	-2.00	
5,018.9	0.00	0.00	4,961.1	200.0	-664.5	-128.5	2.00	-2.00	EOD @ 0° INC
5,100.0	0.00	0.00	5,042.2	200.0	-664.5	-128.5	0.00	0.00	
5,200.0	0.00	0.00	5,142.2	200.0	-664.5	-128.5	0.00	0.00	
5,300.0	0.00	0.00	5,242.2	200.0	-664.5	-128.5	0.00	0.00	
5,318.9	0.00	0.00	5,261.1	200.0	-664.5	-128.5	0.00	0.00	Start 11° Build
5,350.0	3.42	177.53	5,292.2	199.1	-664.5	-127.6	11.00	11.00	
5,400.0	8.92	177.53	5,341.9	193.7	-664.2	-122.3	11.00	11.00	
5,450.0	14.42	177.53	5,390.8	183.6	-663.8	-112.3	11.00	11.00	
5,500.0	19.92	177.53	5,438.6	168.9	-663.2	-97.7	11.00	11.00	
5,550.0	25.42	177.53	5,484.7	149.6	-662.3	-78.6	11.00	11.00	
5,600.0	30.92	177.53	5,528.8	126.0	-661.3	-55.3	11.00	11.00	
5,650.0	36.42	177.53	5,570.3	98.4	-660.1	-27.9	11.00	11.00	
5,700.0	41.92	177.53	5,609.1	66.8	-658.8	3.3	11.00	11.00	
5,733.1	45.56	177.53	5,633.0	44.0	-657.8	25.9	11.00	11.00	Niobrara
5,750.0	47.42	177.53	5,644.6	31.7	-657.2	38.1	11.00	11.00	
5,800.0	52.92	177.53	5,676.7	-6.6	-655.6	76.0	11.00	11.00	
5,850.0	58.42	177.53	5,704.8	-47.9	-653.8	116.8	11.00	11.00	
5,900.0	63.92	177.53	5,728.9	-91.6	-651.9	160.1	11.00	11.00	
5,950.0	69.42	177.53	5,748.7	-137.5	-649.9	205.5	11.00	11.00	
6,000.0	74.92	177.53	5,764.0	-185.0	-647.9	252.6	11.00	11.00	
6,050.0	80.42	177.53	5,774.7	-233.8	-645.8	300.9	11.00	11.00	
6,100.0	85.92	177.53	5,780.7	-283.4	-643.6	349.9	11.00	11.00	
6,137.1	90.00	177.53	5,782.0	-320.4	-642.0	386.6	10.99	10.99	LP @ 5,782' TVD, 90° INC - 7" - 645' FNL, 273
6,200.0	90.00	177.53	5,782.0	-383.2	-639.3	448.8	0.00	0.00	
6,300.0	90.00	177.53	5,782.0	-483.2	-635.0	547.7	0.00	0.00	
6,400.0	90.00	177.53	5,782.0	-583.1	-630.7	646.6	0.00	0.00	
6,500.0	90.00	177.53	5,782.0	-683.0	-626.4	745.5	0.00	0.00	
6,600.0	90.00	177.53	5,782.0	-782.9	-622.1	844.3	0.00	0.00	
6,700.0	90.00	177.53	5,782.0	-882.8	-617.8	943.2	0.00	0.00	
6,800.0	90.00	177.53	5,782.0	-982.7	-613.5	1,042.1	0.00	0.00	
6,900.0	90.00	177.53	5,782.0	-1,082.6	-609.2	1,141.0	0.00	0.00	
7,000.0	90.00	177.53	5,782.0	-1,182.5	-604.9	1,239.9	0.00	0.00	
7,100.0	90.00	177.53	5,782.0	-1,282.4	-600.5	1,338.8	0.00	0.00	
7,200.0	90.00	177.53	5,782.0	-1,382.3	-596.2	1,437.7	0.00	0.00	
7,300.0	90.00	177.53	5,782.0	-1,482.2	-591.9	1,536.6	0.00	0.00	
7,400.0	90.00	177.53	5,782.0	-1,582.1	-587.6	1,635.5	0.00	0.00	
7,500.0	90.00	177.53	5,782.0	-1,682.0	-583.3	1,734.3	0.00	0.00	
7,600.0	90.00	177.53	5,782.0	-1,781.9	-579.0	1,833.2	0.00	0.00	
7,700.0	90.00	177.53	5,782.0	-1,881.9	-574.7	1,932.1	0.00	0.00	
7,800.0	90.00	177.53	5,782.0	-1,981.8	-570.4	2,031.0	0.00	0.00	
7,900.0	90.00	177.53	5,782.0	-2,081.7	-566.1	2,129.9	0.00	0.00	
8,000.0	90.00	177.53	5,782.0	-2,181.6	-561.8	2,228.8	0.00	0.00	
8,100.0	90.00	177.53	5,782.0	-2,281.5	-557.4	2,327.7	0.00	0.00	
8,200.0	90.00	177.53	5,782.0	-2,381.4	-553.1	2,426.6	0.00	0.00	
8,300.0	90.00	177.53	5,782.0	-2,481.3	-548.8	2,525.5	0.00	0.00	
8,400.0	90.00	177.53	5,782.0	-2,581.2	-544.5	2,624.3	0.00	0.00	
8,500.0	90.00	177.53	5,782.0	-2,681.1	-540.2	2,723.2	0.00	0.00	
8,600.0	90.00	177.53	5,782.0	-2,781.0	-535.9	2,822.1	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 -2549
<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 -2549	<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	177.53	5,782.0	-2,880.9	-531.6	2,921.0	0.00	0.00	
8,800.0	90.00	177.53	5,782.0	-2,980.8	-527.3	3,019.9	0.00	0.00	
8,900.0	90.00	177.53	5,782.0	-3,080.7	-523.0	3,118.8	0.00	0.00	
9,000.0	90.00	177.53	5,782.0	-3,180.6	-518.7	3,217.7	0.00	0.00	
9,100.0	90.00	177.53	5,782.0	-3,280.6	-514.3	3,316.6	0.00	0.00	
9,200.0	90.00	177.53	5,782.0	-3,380.5	-510.0	3,415.5	0.00	0.00	
9,300.0	90.00	177.53	5,782.0	-3,480.4	-505.7	3,514.3	0.00	0.00	
9,400.0	90.00	177.53	5,782.0	-3,580.3	-501.4	3,613.2	0.00	0.00	
9,500.0	90.00	177.53	5,782.0	-3,680.2	-497.1	3,712.1	0.00	0.00	
9,600.0	90.00	177.53	5,782.0	-3,780.1	-492.8	3,811.0	0.00	0.00	
9,700.0	90.00	177.53	5,782.0	-3,880.0	-488.5	3,909.9	0.00	0.00	
9,800.0	90.00	177.53	5,782.0	-3,979.9	-484.2	4,008.8	0.00	0.00	
9,900.0	90.00	177.53	5,782.0	-4,079.8	-479.9	4,107.7	0.00	0.00	
10,000.0	90.00	177.53	5,782.0	-4,179.7	-475.6	4,206.6	0.00	0.00	
10,100.0	90.00	177.53	5,782.0	-4,279.6	-471.2	4,305.5	0.00	0.00	
10,203.8	90.00	177.53	5,782.0	-4,383.3	-466.8	4,408.1	0.00	0.00	PBHL - 600' FSL, 2640' 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 -2549 PBHL	0.00	0.00	5,782.0	-4,383.3	-466.8	1,540,227.44	3,467,096.28	40.804108	-103.812717
- plan hits target center									
- Point									
Razor 25B -2549 VP	0.00	0.00	4,961.1	200.0	-664.5	1,544,806.19	3,466,811.29	40.816688	-103.813432
- plan hits target center									
- Point									

### Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,713.2	1,700.0	Surface Casing	0	0
6,137.1	5,782.0	7"	0	0

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,615.8	1,604.0	Pierre			
5,733.1	5,633.0	Niobrara			

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Razor 25B -2549
<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 -2549	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.5	0.5	0.0	0.0	SH - 329' FNL, 2090' FEL
500.0	500.0	0.0	0.0	KOP @ 500'
996.6	994.1	12.4	-41.1	EOB @ 9.93° INC
4,522.3	4,467.0	187.6	-623.4	Start 2° Drop
5,018.9	4,961.1	200.0	-664.5	EOD @ 0° INC
5,318.9	5,261.1	200.0	-664.5	Start 11° Build
6,137.1	5,782.0	-320.4	-642.1	LP @ 5,782' TVD, 90° INC
6,137.1	5,782.0	-320.4	-642.0	7 " - 645' FNL, 2735' FEL
10,203.8	5,782.0	-4,383.3	-466.8	PBHL - 600' FSL, 2640' FEL
10,203.8	5,782.0	-4,383.3	-466.8	TD @ 10,203.8' MD