



Project: Weld County, CO  
Site: Sec 29-T10N-R58W  
Well: Razor #29H-2048  
Wellbore: Hz  
Design: APD

PROJECT DETAILS: Weld County, CO  
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level



Azimuths to True North  
Magnetic North: 7.88°  
Magnetic Field  
Strength: 52822.3snT  
Dip Angle: 67.35°  
Date: 5/4/2016  
Model: IGRF2015

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1550.00	1570.65	Upper Pierre
3500.00	3569.28	Hygiene
3650.00	3723.03	Lower Pierre
5794.00	5914.34	P200 Marker
5829.00	5956.37	P300 Marker
5853.00	5986.36	P350 Marker
5865.00	6001.78	Sharon Springs
5868.00	6005.68	Niobrara
5888.00	6032.23	Top A Chalk
5923.00	6081.33	Top A Marl
5944.00	6112.81	A Marl
5949.00	6120.58	Top Upper B
5969.00	6152.87	Base Upper B
5981.00	6173.33	Top Lower B
6001.00	6209.72	Base Lower B
6011.00	6229.24	Top B Marl
6063.00	6356.10	Top C Chalk
6070.00	6379.40	Middle C Chalk
6082.00	6428.21	Middle C Marl
6096.00	6561.96	Lower C Chalk

#### WELL DETAILS: Razor #29H-2048

+N/-S	+E/-W	Northing	Ground Level:	4766.80	Eastings	Latitude	Longitude	Slot
0.00	0.00	1542141.28	3447629.51	40° 48' 37.280 N	103° 52' 58.420 W			

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	933.26	12.67	155.06	928.11	-63.21	29.40	2.00	155.06	-61.48	
4	4728.89	12.67	155.06	4631.39	-817.79	380.34	0.00	0.00	-795.51	
5	5362.14	0.00	0.00	5259.50	-881.00	409.73	2.00	180.00	-856.99	
6	5562.14	0.00	0.00	5459.50	-881.00	409.73	0.00	0.00	-856.99	
7	6561.96	90.00	0.00	6096.00	-244.50	409.73	9.00	0.00	-221.47	
8	14204.62	90.00	0.00	6096.00	7398.17	409.73	0.00	0.00	7409.50	PBHL Razor 29H-2048

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
928.11	933.26	12.67	155.06	-63.21	29.40	-61.48	69.71	Hold 12.67° Inc
4631.39	4728.89	12.67	155.06	-817.79	380.34	-795.51	901.91	Drop 2°/100'
5259.50	5362.14	0.00	0.00	-881.00	409.73	-856.99	971.62	Hold Vertical
5459.50	5562.14	0.00	0.00	-881.00	409.73	-856.99	971.62	KOP, Build 9°/100'
6096.00	6561.96	90.00	0.00	-244.50	409.73	-221.47	1608.12	LP @ 90° Inc, Hold
6096.00	14204.62	90.00	0.00	7398.17	409.73	7409.50	9250.78	TD at 14204.62

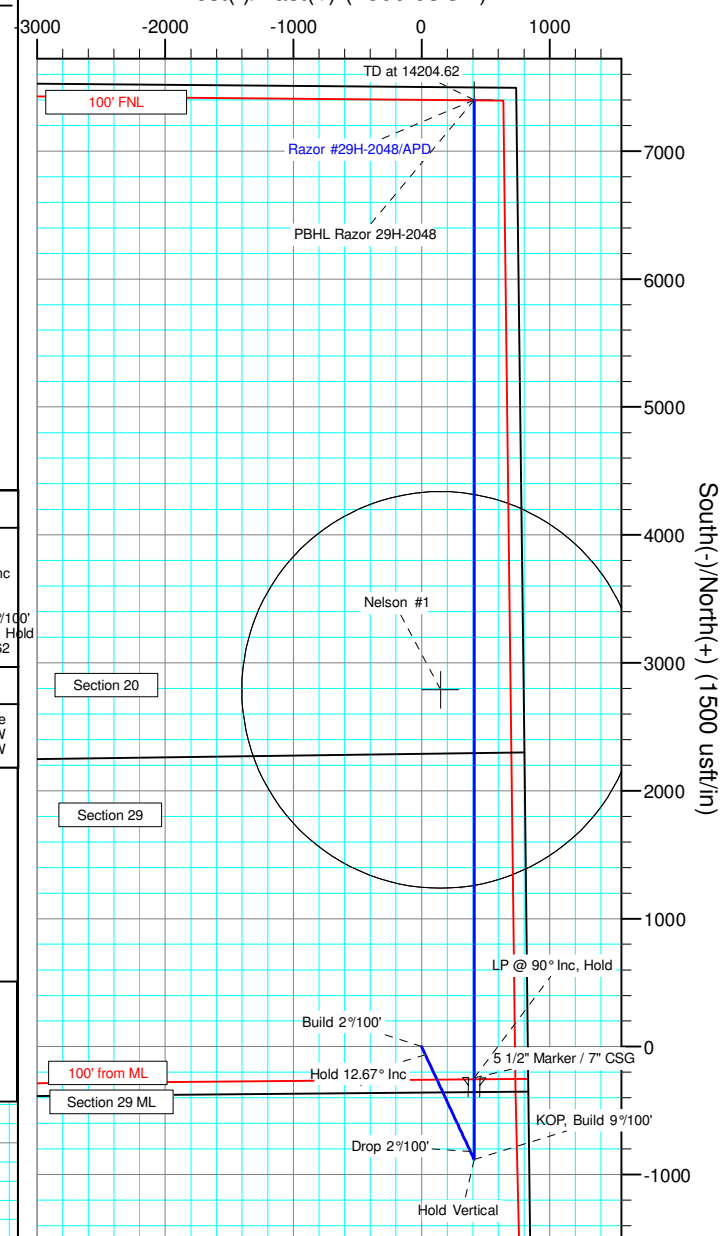
#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Eastings	Latitude	Longitude
PBHL Razor 29H-2048	6096.00	7398.17	409.73	1549545.69	3447904.27	40° 49' 50.380 N	103° 52' 53.090 W
Nelson #1	6700.80	2788.84	147.93	1544932.36	3447726.56	40° 49' 4.836 N	103° 52' 56.496 W

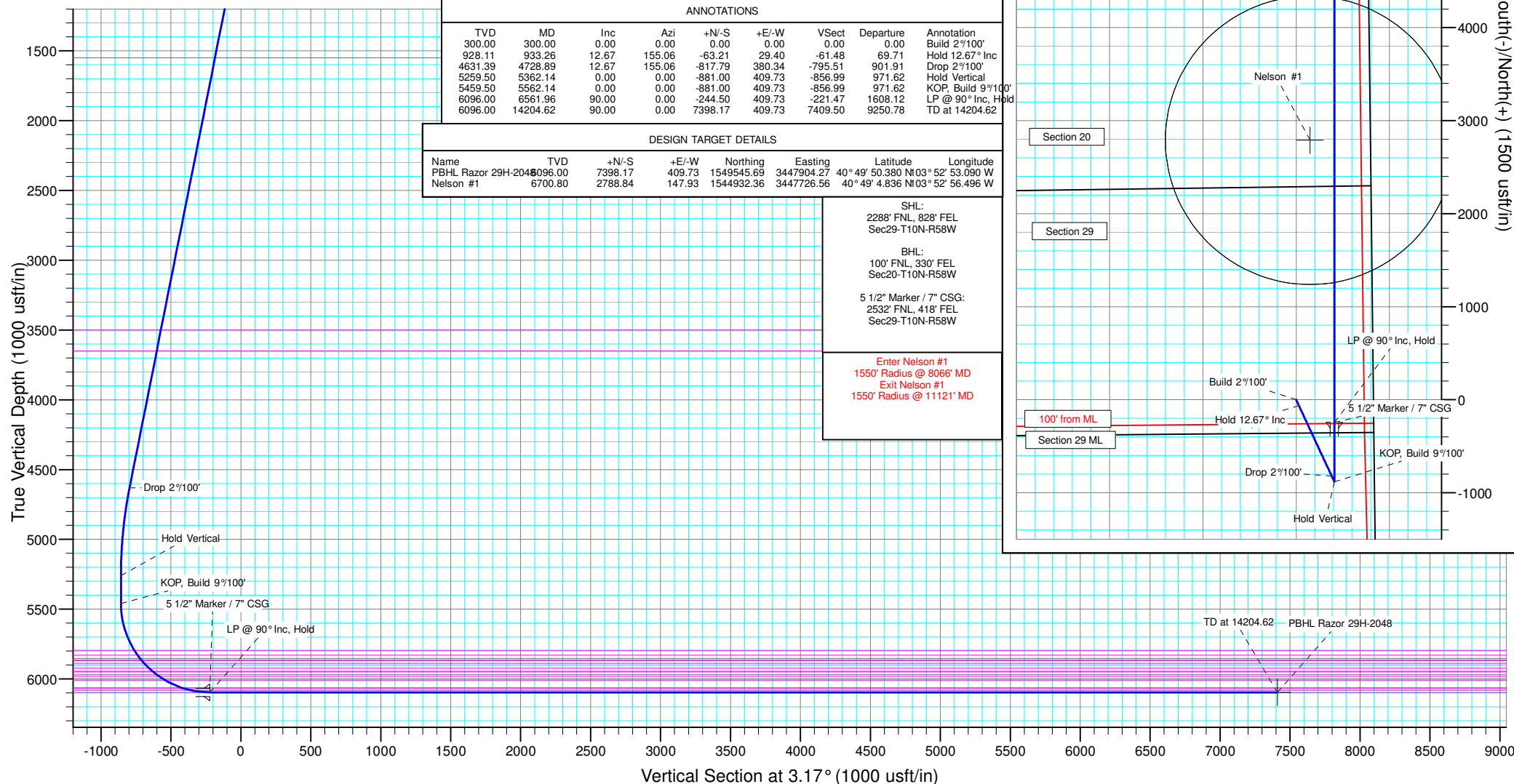
SHL:  
2288' FNL, 828' FEL  
Sec29-T10N-R58W  
  
BHL:  
100' FNL, 330' FEL  
Sec20-T10N-R58W  
  
5 1/2" Marker / 7" CSG:  
2532' FNL, 418' FEL  
Sec29-T10N-R58W

Enter Nelson #1  
1550' Radius @ 8066' MD  
Exit Nelson #1  
1550' Radius @ 11121' MD

West(-)/East(+) (1500 usft/in)



South(-)/North(+) (1500 usft/in)





# **Whiting Petroleum Corp.**

**Weld County, CO  
Sec 29-T10N-R58W  
Razor #29H-2048**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**09 May, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29H-2048
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4787.80usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4787.80usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29H-2048	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

<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		Sec 29-T10N-R58W			
Site Position:		Northing:	1,544,286.15 usft	Latitude:	40° 48' 59.281 N
From:	Lat/Long	Easting:	3,443,100.91 usft	Longitude:	103° 53' 56.800 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.03 °

Well		Razor #29H-2048				
Well Position	+N/-S	-2,226.26 usft	Northing:	1,542,141.29 usft	Latitude:	40° 48' 37.280 N
	+E/-W	4,489.14 usft	Easting:	3,447,629.51 usft	Longitude:	103° 52' 58.420 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,766.80 usft

<b>Wellbore</b>	Hz				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	5/4/2016	7.88	67.35	52,822

<b>Design</b>	APD			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	3.17

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
933.26	12.67	155.06	928.11	-63.21	29.40	2.00	2.00	0.00	155.06	
4,728.89	12.67	155.06	4,631.39	-817.79	380.34	0.00	0.00	0.00	0.00	
5,362.14	0.00	0.00	5,259.50	-881.00	409.73	2.00	-2.00	0.00	180.00	
5,562.14	0.00	0.00	5,459.50	-881.00	409.73	0.00	0.00	0.00	0.00	
6,561.96	90.00	0.00	6,096.00	-244.50	409.73	9.00	9.00	0.00	0.00	
14,204.62	90.00	0.00	6,096.00	7,398.17	409.73	0.00	0.00	0.00	0.00	PBHL Razor 29H-204



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29H-2048
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4787.80usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4787.80usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29H-2048	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	APD		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Build 2°/100'</b>									
400.00	2.00	155.06	399.98	-1.58	0.74	-1.54	2.00	2.00	0.00
500.00	4.00	155.06	499.84	-6.33	2.94	-6.16	2.00	2.00	0.00
600.00	6.00	155.06	599.45	-14.23	6.62	-13.84	2.00	2.00	0.00
700.00	8.00	155.06	698.70	-25.28	11.76	-24.59	2.00	2.00	0.00
800.00	10.00	155.06	797.47	-39.46	18.35	-38.39	2.00	2.00	0.00
900.00	12.00	155.06	895.62	-56.76	26.40	-55.22	2.00	2.00	0.00
933.26	12.67	155.06	928.11	-63.21	29.40	-61.48	2.00	2.00	0.00
<b>Hold 12.67° Inc</b>									
1,000.00	12.67	155.06	993.23	-76.47	35.57	-74.39	0.00	0.00	0.00
1,100.00	12.67	155.06	1,090.80	-96.35	44.81	-93.73	0.00	0.00	0.00
1,200.00	12.67	155.06	1,188.37	-116.23	54.06	-113.07	0.00	0.00	0.00
1,300.00	12.67	155.06	1,285.93	-136.12	63.30	-132.41	0.00	0.00	0.00
1,400.00	12.67	155.06	1,383.50	-156.00	72.55	-151.75	0.00	0.00	0.00
1,500.00	12.67	155.06	1,481.07	-175.88	81.80	-171.08	0.00	0.00	0.00
1,570.65	12.67	155.06	1,550.00	-189.92	88.33	-184.75	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	12.67	155.06	1,578.63	-195.76	91.04	-190.42	0.00	0.00	0.00
1,700.00	12.67	155.06	1,676.20	-215.64	100.29	-209.76	0.00	0.00	0.00
1,800.00	12.67	155.06	1,773.77	-235.52	109.53	-229.10	0.00	0.00	0.00
1,900.00	12.67	155.06	1,871.33	-255.40	118.78	-248.44	0.00	0.00	0.00
2,000.00	12.67	155.06	1,968.90	-275.28	128.03	-267.78	0.00	0.00	0.00
2,100.00	12.67	155.06	2,066.47	-295.16	137.27	-287.12	0.00	0.00	0.00
2,200.00	12.67	155.06	2,164.03	-315.04	146.52	-306.46	0.00	0.00	0.00
2,300.00	12.67	155.06	2,261.60	-334.92	155.76	-325.79	0.00	0.00	0.00
2,400.00	12.67	155.06	2,359.17	-354.80	165.01	-345.13	0.00	0.00	0.00
2,500.00	12.67	155.06	2,456.73	-374.68	174.25	-364.47	0.00	0.00	0.00
2,600.00	12.67	155.06	2,554.30	-394.56	183.50	-383.81	0.00	0.00	0.00
2,700.00	12.67	155.06	2,651.87	-414.44	192.75	-403.15	0.00	0.00	0.00
2,800.00	12.67	155.06	2,749.43	-434.32	201.99	-422.49	0.00	0.00	0.00
2,900.00	12.67	155.06	2,847.00	-454.20	211.24	-441.83	0.00	0.00	0.00
3,000.00	12.67	155.06	2,944.57	-474.08	220.48	-461.17	0.00	0.00	0.00
3,100.00	12.67	155.06	3,042.13	-493.96	229.73	-480.50	0.00	0.00	0.00
3,200.00	12.67	155.06	3,139.70	-513.84	238.98	-499.84	0.00	0.00	0.00
3,300.00	12.67	155.06	3,237.27	-533.73	248.22	-519.18	0.00	0.00	0.00
3,400.00	12.67	155.06	3,334.83	-553.61	257.47	-538.52	0.00	0.00	0.00
3,500.00	12.67	155.06	3,432.40	-573.49	266.71	-557.86	0.00	0.00	0.00
3,569.28	12.67	155.06	3,500.00	-587.26	273.12	-571.26	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	12.67	155.06	3,529.97	-593.37	275.96	-577.20	0.00	0.00	0.00
3,700.00	12.67	155.06	3,627.53	-613.25	285.21	-596.54	0.00	0.00	0.00
3,723.03	12.67	155.06	3,650.00	-617.82	287.33	-600.99	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,800.00	12.67	155.06	3,725.10	-633.13	294.45	-615.88	0.00	0.00	0.00
3,900.00	12.67	155.06	3,822.67	-653.01	303.70	-635.22	0.00	0.00	0.00
4,000.00	12.67	155.06	3,920.24	-672.89	312.94	-654.55	0.00	0.00	0.00
4,100.00	12.67	155.06	4,017.80	-692.77	322.19	-673.89	0.00	0.00	0.00
4,200.00	12.67	155.06	4,115.37	-712.65	331.44	-693.23	0.00	0.00	0.00
4,300.00	12.67	155.06	4,212.94	-732.53	340.68	-712.57	0.00	0.00	0.00
4,400.00	12.67	155.06	4,310.50	-752.41	349.93	-731.91	0.00	0.00	0.00



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29H-2048
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4787.80usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4787.80usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29H-2048	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.00	12.67	155.06	4,408.07	-772.29	359.17	-751.25	0.00	0.00	0.00
4,600.00	12.67	155.06	4,505.64	-792.17	368.42	-770.59	0.00	0.00	0.00
4,700.00	12.67	155.06	4,603.20	-812.05	377.66	-789.93	0.00	0.00	0.00
4,728.89	12.67	155.06	4,631.39	-817.79	380.34	-795.51	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,800.00	11.24	155.06	4,700.96	-831.15	386.55	-808.50	2.00	-2.00	0.00
4,900.00	9.24	155.06	4,799.36	-847.27	394.05	-824.19	2.00	-2.00	0.00
5,000.00	7.24	155.06	4,898.32	-860.27	400.09	-836.83	2.00	-2.00	0.00
5,100.00	5.24	155.06	4,997.72	-870.13	404.68	-846.42	2.00	-2.00	0.00
5,200.00	3.24	155.06	5,097.44	-876.84	407.80	-852.95	2.00	-2.00	0.00
5,300.00	1.24	155.06	5,197.36	-880.39	409.45	-856.40	2.00	-2.00	0.00
5,362.14	0.00	0.00	5,259.50	-881.00	409.73	-856.99	2.00	-2.00	0.00
<b>Hold Vertical</b>									
5,400.00	0.00	0.00	5,297.36	-881.00	409.73	-856.99	0.00	0.00	0.00
5,500.00	0.00	0.00	5,397.36	-881.00	409.73	-856.99	0.00	0.00	0.00
5,562.14	0.00	0.00	5,459.50	-881.00	409.73	-856.99	0.00	0.00	0.00
<b>KOP, Build 9°/100'</b>									
5,600.00	3.41	0.00	5,497.33	-879.87	409.73	-855.87	9.00	9.00	0.00
5,700.00	12.41	0.00	5,596.28	-866.13	409.73	-842.15	9.00	9.00	0.00
5,800.00	21.41	0.00	5,691.86	-837.07	409.73	-813.13	9.00	9.00	0.00
5,900.00	30.41	0.00	5,781.71	-793.42	409.73	-769.55	9.00	9.00	0.00
5,914.34	31.70	0.00	5,794.00	-786.02	409.73	-762.16	9.00	9.00	0.00
<b>P200 Marker</b>									
5,956.37	35.49	0.00	5,829.00	-762.77	409.73	-738.94	9.00	9.00	0.00
<b>P300 Marker</b>									
5,986.36	38.19	0.00	5,853.00	-744.79	409.73	-720.99	9.00	9.00	0.00
<b>P350 Marker</b>									
6,000.00	39.41	0.00	5,863.63	-736.24	409.73	-712.46	9.00	9.00	0.00
6,001.78	39.57	0.00	5,865.00	-735.11	409.73	-711.33	9.00	9.00	0.00
<b>Sharon Springs</b>									
6,005.68	39.93	0.00	5,868.00	-732.62	409.73	-708.84	9.00	9.00	0.00
<b>Niobrara</b>									
6,032.23	42.32	0.00	5,888.00	-715.16	409.73	-691.41	9.00	9.00	0.00
<b>Top A Chalk</b>									
6,081.33	46.74	0.00	5,923.00	-680.73	409.73	-657.04	9.00	9.00	0.00
<b>Top A Marl</b>									
6,100.00	48.42	0.00	5,935.59	-666.96	409.73	-643.28	9.00	9.00	0.00
6,112.81	49.57	0.00	5,944.00	-657.29	409.73	-633.62	9.00	9.00	0.00
<b>A Marl</b>									
6,120.58	50.27	0.00	5,949.00	-651.34	409.73	-627.69	9.00	9.00	0.00
<b>Top Upper B</b>									
6,152.87	53.18	0.00	5,969.00	-626.00	409.73	-602.38	9.00	9.00	0.00
<b>Base Upper B</b>									
6,173.33	55.02	0.00	5,981.00	-609.42	409.73	-585.83	9.00	9.00	0.00
<b>Top Lower B</b>									
6,200.00	57.42	0.00	5,995.83	-587.26	409.73	-563.71	9.00	9.00	0.00
6,209.72	58.29	0.00	6,001.00	-579.03	409.73	-555.49	9.00	9.00	0.00
<b>Base Lower B</b>									
6,229.24	60.05	0.00	6,011.00	-562.27	409.73	-538.76	9.00	9.00	0.00
<b>Top B Marl</b>									
6,300.00	66.42	0.00	6,042.85	-499.12	409.73	-475.70	9.00	9.00	0.00
6,356.10	71.47	0.00	6,063.00	-446.79	409.73	-423.45	9.00	9.00	0.00



WOG  
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2048
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2048	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Top C Chalk									
6,379.40	73.57	0.00	6,070.00	-424.56	409.73	-401.25	9.00	9.00	0.00
Middle C Chalk									
6,400.00	75.42	0.00	6,075.51	-404.71	409.73	-381.44	9.00	9.00	0.00
6,428.21	77.96	0.00	6,082.00	-377.26	409.73	-354.03	9.00	9.00	0.00
Middle C Marl									
6,500.00	84.42	0.00	6,092.99	-306.36	409.73	-283.23	9.00	9.00	0.00
6,561.96	90.00	0.00	6,096.00	-244.50	409.73	-221.47	9.00	9.00	0.00
LP @ 90° Inc, Hold - Lower C Chalk - 5 1/2" Marker / 7" CSG									
6,600.00	90.00	0.00	6,096.00	-206.46	409.73	-183.48	0.00	0.00	0.00
6,700.00	90.00	0.00	6,096.00	-106.46	409.73	-83.64	0.00	0.00	0.00
6,800.00	90.00	0.00	6,096.00	-6.46	409.73	16.21	0.00	0.00	0.00
6,900.00	90.00	0.00	6,096.00	93.54	409.73	116.06	0.00	0.00	0.00
7,000.00	90.00	0.00	6,096.00	193.54	409.73	215.90	0.00	0.00	0.00
7,100.00	90.00	0.00	6,096.00	293.54	409.73	315.75	0.00	0.00	0.00
7,200.00	90.00	0.00	6,096.00	393.54	409.73	415.60	0.00	0.00	0.00
7,300.00	90.00	0.00	6,096.00	493.54	409.73	515.45	0.00	0.00	0.00
7,400.00	90.00	0.00	6,096.00	593.54	409.73	615.29	0.00	0.00	0.00
7,500.00	90.00	0.00	6,096.00	693.54	409.73	715.14	0.00	0.00	0.00
7,600.00	90.00	0.00	6,096.00	793.54	409.73	814.99	0.00	0.00	0.00
7,700.00	90.00	0.00	6,096.00	893.54	409.73	914.83	0.00	0.00	0.00
7,800.00	90.00	0.00	6,096.00	993.54	409.73	1,014.68	0.00	0.00	0.00
7,900.00	90.00	0.00	6,096.00	1,093.54	409.73	1,114.53	0.00	0.00	0.00
8,000.00	90.00	0.00	6,096.00	1,193.54	409.73	1,214.37	0.00	0.00	0.00
8,100.00	90.00	0.00	6,096.00	1,293.54	409.73	1,314.22	0.00	0.00	0.00
8,200.00	90.00	0.00	6,096.00	1,393.54	409.73	1,414.07	0.00	0.00	0.00
8,300.00	90.00	0.00	6,096.00	1,493.54	409.73	1,513.92	0.00	0.00	0.00
8,400.00	90.00	0.00	6,096.00	1,593.54	409.73	1,613.76	0.00	0.00	0.00
8,500.00	90.00	0.00	6,096.00	1,693.54	409.73	1,713.61	0.00	0.00	0.00
8,600.00	90.00	0.00	6,096.00	1,793.54	409.73	1,813.46	0.00	0.00	0.00
8,700.00	90.00	0.00	6,096.00	1,893.54	409.73	1,913.30	0.00	0.00	0.00
8,800.00	90.00	0.00	6,096.00	1,993.54	409.73	2,013.15	0.00	0.00	0.00
8,900.00	90.00	0.00	6,096.00	2,093.54	409.73	2,113.00	0.00	0.00	0.00
9,000.00	90.00	0.00	6,096.00	2,193.54	409.73	2,212.84	0.00	0.00	0.00
9,100.00	90.00	0.00	6,096.00	2,293.54	409.73	2,312.69	0.00	0.00	0.00
9,200.00	90.00	0.00	6,096.00	2,393.54	409.73	2,412.54	0.00	0.00	0.00
9,300.00	90.00	0.00	6,096.00	2,493.54	409.73	2,512.39	0.00	0.00	0.00
9,400.00	90.00	0.00	6,096.00	2,593.54	409.73	2,612.23	0.00	0.00	0.00
9,500.00	90.00	0.00	6,096.00	2,693.54	409.73	2,712.08	0.00	0.00	0.00
9,600.00	90.00	0.00	6,096.00	2,793.54	409.73	2,811.93	0.00	0.00	0.00
9,700.00	90.00	0.00	6,096.00	2,893.54	409.73	2,911.77	0.00	0.00	0.00
9,800.00	90.00	0.00	6,096.00	2,993.54	409.73	3,011.62	0.00	0.00	0.00
9,900.00	90.00	0.00	6,096.00	3,093.54	409.73	3,111.47	0.00	0.00	0.00
10,000.00	90.00	0.00	6,096.00	3,193.54	409.73	3,211.31	0.00	0.00	0.00
10,100.00	90.00	0.00	6,096.00	3,293.54	409.73	3,311.16	0.00	0.00	0.00
10,200.00	90.00	0.00	6,096.00	3,393.54	409.73	3,411.01	0.00	0.00	0.00
10,300.00	90.00	0.00	6,096.00	3,493.54	409.73	3,510.86	0.00	0.00	0.00
10,400.00	90.00	0.00	6,096.00	3,593.54	409.73	3,610.70	0.00	0.00	0.00
10,500.00	90.00	0.00	6,096.00	3,693.54	409.73	3,710.55	0.00	0.00	0.00
10,600.00	90.00	0.00	6,096.00	3,793.54	409.73	3,810.40	0.00	0.00	0.00
10,700.00	90.00	0.00	6,096.00	3,893.54	409.73	3,910.24	0.00	0.00	0.00
10,800.00	90.00	0.00	6,096.00	3,993.54	409.73	4,010.09	0.00	0.00	0.00
10,900.00	90.00	0.00	6,096.00	4,093.54	409.73	4,109.94	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29H-2048
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4787.80usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4787.80usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29H-2048	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,000.00	90.00	0.00	6,096.00	4,193.54	409.73	4,209.78	0.00	0.00	0.00
11,100.00	90.00	0.00	6,096.00	4,293.54	409.73	4,309.63	0.00	0.00	0.00
11,200.00	90.00	0.00	6,096.00	4,393.54	409.73	4,409.48	0.00	0.00	0.00
11,300.00	90.00	0.00	6,096.00	4,493.54	409.73	4,509.33	0.00	0.00	0.00
11,400.00	90.00	0.00	6,096.00	4,593.54	409.73	4,609.17	0.00	0.00	0.00
11,500.00	90.00	0.00	6,096.00	4,693.54	409.73	4,709.02	0.00	0.00	0.00
11,600.00	90.00	0.00	6,096.00	4,793.54	409.73	4,808.87	0.00	0.00	0.00
11,700.00	90.00	0.00	6,096.00	4,893.54	409.73	4,908.71	0.00	0.00	0.00
11,800.00	90.00	0.00	6,096.00	4,993.54	409.73	5,008.56	0.00	0.00	0.00
11,900.00	90.00	0.00	6,096.00	5,093.54	409.73	5,108.41	0.00	0.00	0.00
12,000.00	90.00	0.00	6,096.00	5,193.54	409.73	5,208.25	0.00	0.00	0.00
12,100.00	90.00	0.00	6,096.00	5,293.54	409.73	5,308.10	0.00	0.00	0.00
12,200.00	90.00	0.00	6,096.00	5,393.54	409.73	5,407.95	0.00	0.00	0.00
12,300.00	90.00	0.00	6,096.00	5,493.54	409.73	5,507.80	0.00	0.00	0.00
12,400.00	90.00	0.00	6,096.00	5,593.54	409.73	5,607.64	0.00	0.00	0.00
12,500.00	90.00	0.00	6,096.00	5,693.54	409.73	5,707.49	0.00	0.00	0.00
12,600.00	90.00	0.00	6,096.00	5,793.54	409.73	5,807.34	0.00	0.00	0.00
12,700.00	90.00	0.00	6,096.00	5,893.54	409.73	5,907.18	0.00	0.00	0.00
12,800.00	90.00	0.00	6,096.00	5,993.54	409.73	6,007.03	0.00	0.00	0.00
12,900.00	90.00	0.00	6,096.00	6,093.54	409.73	6,106.88	0.00	0.00	0.00
13,000.00	90.00	0.00	6,096.00	6,193.54	409.73	6,206.72	0.00	0.00	0.00
13,100.00	90.00	0.00	6,096.00	6,293.54	409.73	6,306.57	0.00	0.00	0.00
13,200.00	90.00	0.00	6,096.00	6,393.54	409.73	6,406.42	0.00	0.00	0.00
13,300.00	90.00	0.00	6,096.00	6,493.54	409.73	6,506.27	0.00	0.00	0.00
13,400.00	90.00	0.00	6,096.00	6,593.54	409.73	6,606.11	0.00	0.00	0.00
13,500.00	90.00	0.00	6,096.00	6,693.54	409.73	6,705.96	0.00	0.00	0.00
13,600.00	90.00	0.00	6,096.00	6,793.54	409.73	6,805.81	0.00	0.00	0.00
13,700.00	90.00	0.00	6,096.00	6,893.54	409.73	6,905.65	0.00	0.00	0.00
13,800.00	90.00	0.00	6,096.00	6,993.54	409.73	7,005.50	0.00	0.00	0.00
13,900.00	90.00	0.00	6,096.00	7,093.54	409.73	7,105.35	0.00	0.00	0.00
14,000.00	90.00	0.00	6,096.00	7,193.54	409.73	7,205.19	0.00	0.00	0.00
14,100.00	90.00	0.00	6,096.00	7,293.54	409.73	7,305.04	0.00	0.00	0.00
14,200.00	90.00	0.00	6,096.00	7,393.54	409.73	7,404.89	0.00	0.00	0.00
14,204.62	90.00	0.00	6,096.00	7,398.17	409.73	7,409.50	0.00	0.00	0.00
TD at 14204.62									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL Razor 29H-2048 - hit/miss target - Shape - Point	0.00	0.00	6,096.00	7,398.17	409.73	1,549,545.70	3,447,904.26	40° 49' 50.380 N	103° 52' 53.090 W
Nelson #1 - plan misses target center by 659.03usft at 9595.30usft MD (6096.00 TVD, 2788.84 N, 409.73 E) - Circle (radius 1,550.00)	0.00	0.00	6,700.80	2,788.84	147.93	1,544,932.36	3,447,726.56	40° 49' 4.836 N	103° 52' 56.496 W



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29H-2048
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4787.80usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4787.80usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29H-2048	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,561.96	6,096.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,570.65	1,550.00	Upper Pierre				
3,569.28	3,500.00	Hygiene				
3,723.03	3,650.00	Lower Pierre				
5,914.34	5,794.00	P200 Marker				
5,956.37	5,829.00	P300 Marker				
5,986.36	5,853.00	P350 Marker				
6,001.78	5,865.00	Sharon Springs				
6,005.68	5,868.00	Niobrara				
6,032.23	5,888.00	Top A Chalk				
6,081.33	5,923.00	Top A Marl				
6,112.81	5,944.00	A Marl				
6,120.58	5,949.00	Top Upper B				
6,152.87	5,969.00	Base Upper B				
6,173.33	5,981.00	Top Lower B				
6,209.72	6,001.00	Base Lower B				
6,229.24	6,011.00	Top B Marl				
6,356.10	6,063.00	Top C Chalk				
6,379.40	6,070.00	Middle C Chalk				
6,428.21	6,082.00	Middle C Marl				
6,561.96	6,096.00	Lower C Chalk				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.00	300.00	0.00	0.00	Build 2°/100'	
933.26	928.11	-63.21	29.40	Hold 12.67° Inc	
4,728.89	4,631.39	-817.79	380.34	Drop 2°/100'	
5,362.14	5,259.50	-881.00	409.73	Hold Vertical	
5,562.14	5,459.50	-881.00	409.73	KOP, Build 9°/100'	
6,561.96	6,096.00	-244.50	409.73	LP @ 90° Inc, Hold	
14,204.62	6,096.00	7,398.17	409.73	TD at 14204.62	