



Project: Weld County, CO  
Site: Sec 30-T10N-R58W  
Well: Razor Federal #30K-1906  
Wellbore: Hz  
Design: APD

ECT DETAILS: Weld County, CO  
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: 7.95°  
Magnetic Field  
Strength: 52880.4nT  
Dip Angle: 67.35°  
Date: 10/19/2015  
Model: IGRF2015

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
1550.00	1550.60	Upper Pierre
3500.00	3501.58	Hygiene
3650.00	3651.66	Lower Pierre
5701.00	5753.76	P200 Marker
5740.00	5811.84	P300 Marker
5761.00	5845.91	P350 Marker
5774.00	5868.29	Sharon Springs
5778.00	5875.41	Niobrara
5789.00	5895.63	Top A Chalk
5823.00	5966.06	Top A Marl
5840.00	6008.18	A Marl
5848.00	6030.60	Top Upper B
5871.00	6113.19	Base Upper B
5886.00	6251.65	Top Lower B

WELL DETAILS: Razor Federal #30K-1906

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Spot
0.00	0.00	1541250.96	4828.00	3440159.12	40° 48' 29.819 N	103° 54' 35.762 W	

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	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	390.99	1.82	179.23	390.98	-1.44	0.02	2.00	179.23	-1.44	
4	4960.84	1.82	179.23	4958.52	-146.56	1.98	0.00	0.00	-146.55	
5	5051.84	0.00	0.00	5049.50	-148.00	2.00	2.00	180.00	-148.00	
6	5251.84	0.00	0.00	5249.50	-148.00	2.00	0.00	0.00	-148.00	
7	6251.65	90.00	0.00	5886.00	488.50	2.00	9.00	0.00	488.50	
8	13977.15	90.00	0.00	5886.00	8214.00	2.00	0.00	0.00	8214.00	PBHL 1906

#### ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
390.98	390.99	1.82	179.23	-1.44	0.02	-1.44	1.44	Hold 1.82° Inc
4958.52	4960.84	1.82	179.23	-146.56	1.98	-146.55	146.57	Drop 2°/100'
5049.50	5051.84	0.00	0.00	-148.00	2.00	-148.00	148.01	Hold Vertical
5249.50	5251.84	0.00	0.00	-148.00	2.00	-148.00	148.01	KOP Build 9°/100'
5886.00	6251.65	90.00	0.00	488.50	2.00	488.50	784.51	LP @ 90° Inc, Hold
5886.00	13977.15	90.00	0.00	8214.00	2.00	8214.00	8510.01	TD at 13977.15

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1906	5886.00	8214.00	2.00	1549463.67	3440013.84	40° 49' 50.980 N	103° 54' 35.736 W
Nelson Ranches #F-1	2332.90	1171.39	1543604.48	3441288.49	40° 48' 52.869 N	103° 54' 20.527 W	

SHL:

2270' FSL, 1941' FWL

Sec30-T10N-R58W

BHL:

100' FNL, 1823' FWL

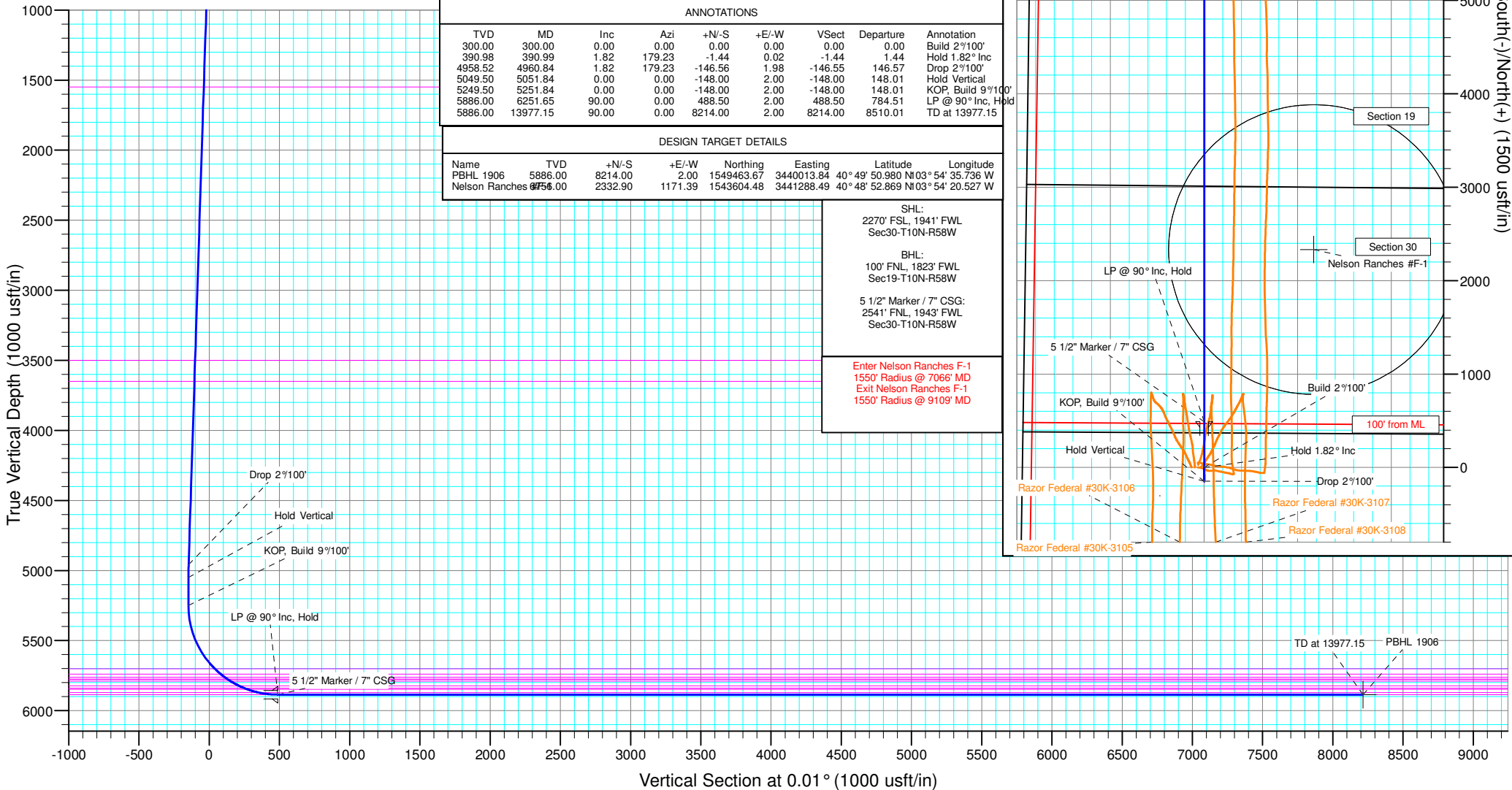
Sec19-T10N-R58W

5 1/2" Marker / 7" CSG:

2541' FNL, 1943' FWL

Sec30-T10N-R58W

Enter Nelson Ranches F-1  
1550' Radius @ 7066' MD  
Exit Nelson Ranches F-1  
1550' Radius @ 9109' MD





# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 30-T10N-R58W**

**Razor Federal #30K-1906**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**16 May, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<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 30-T10N-R58W			
Site Position:		Northing:	1,541,302.28 usft	Latitude:	40° 48' 30.570 N
From:	Lat/Long	Easting:	3,438,779.33 usft	Longitude:	103° 54' 53.690 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.02 °

Well	Razor Federal #30K-1906					
Well Position	+N/-S	-75.97 usft	Northing:	1,541,250.96 usft	Latitude:	40° 48' 29.819 N
	+E/-W	1,378.65 usft	Easting:	3,440,159.12 usft	Longitude:	103° 54' 35.762 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,828.00 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	10/19/2015	7.95	67.35	52,880

<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	0.01

<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	
390.99	1.82	179.23	390.98	-1.44	0.02	2.00	2.00	0.00	179.23	
4,960.84	1.82	179.23	4,958.52	-146.56	1.98	0.00	0.00	0.00	0.00	
5,051.84	0.00	0.00	5,049.50	-148.00	2.00	2.00	-2.00	0.00	180.00	
5,251.84	0.00	0.00	5,249.50	-148.00	2.00	0.00	0.00	0.00	0.00	
6,251.65	90.00	0.00	5,886.00	488.50	2.00	9.00	9.00	0.00	0.00	
13,977.15	90.00	0.00	5,886.00	8,214.00	2.00	0.00	0.00	0.00	0.00	PBHL 1906



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<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>									
390.99	1.82	179.23	390.98	-1.44	0.02	-1.44	2.00	2.00	0.00
<b>Hold 1.82° Inc</b>									
400.00	1.82	179.23	399.98	-1.73	0.02	-1.73	0.00	0.00	0.00
500.00	1.82	179.23	499.93	-4.91	0.07	-4.91	0.00	0.00	0.00
600.00	1.82	179.23	599.88	-8.08	0.11	-8.08	0.00	0.00	0.00
700.00	1.82	179.23	699.83	-11.26	0.15	-11.26	0.00	0.00	0.00
800.00	1.82	179.23	799.78	-14.43	0.20	-14.43	0.00	0.00	0.00
900.00	1.82	179.23	899.73	-17.61	0.24	-17.61	0.00	0.00	0.00
1,000.00	1.82	179.23	999.68	-20.78	0.28	-20.78	0.00	0.00	0.00
1,100.00	1.82	179.23	1,099.63	-23.96	0.32	-23.96	0.00	0.00	0.00
1,200.00	1.82	179.23	1,199.58	-27.13	0.37	-27.13	0.00	0.00	0.00
1,300.00	1.82	179.23	1,299.53	-30.31	0.41	-30.31	0.00	0.00	0.00
1,400.00	1.82	179.23	1,399.48	-33.48	0.45	-33.48	0.00	0.00	0.00
1,500.00	1.82	179.23	1,499.43	-36.66	0.50	-36.66	0.00	0.00	0.00
1,550.60	1.82	179.23	1,550.00	-38.27	0.52	-38.27	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	1.82	179.23	1,599.37	-39.84	0.54	-39.84	0.00	0.00	0.00
1,700.00	1.82	179.23	1,699.32	-43.01	0.58	-43.01	0.00	0.00	0.00
1,800.00	1.82	179.23	1,799.27	-46.19	0.62	-46.19	0.00	0.00	0.00
1,900.00	1.82	179.23	1,899.22	-49.36	0.67	-49.36	0.00	0.00	0.00
2,000.00	1.82	179.23	1,999.17	-52.54	0.71	-52.54	0.00	0.00	0.00
2,100.00	1.82	179.23	2,099.12	-55.71	0.75	-55.71	0.00	0.00	0.00
2,200.00	1.82	179.23	2,199.07	-58.89	0.80	-58.89	0.00	0.00	0.00
2,300.00	1.82	179.23	2,299.02	-62.06	0.84	-62.06	0.00	0.00	0.00
2,400.00	1.82	179.23	2,398.97	-65.24	0.88	-65.24	0.00	0.00	0.00
2,500.00	1.82	179.23	2,498.92	-68.41	0.92	-68.41	0.00	0.00	0.00
2,600.00	1.82	179.23	2,598.87	-71.59	0.97	-71.59	0.00	0.00	0.00
2,700.00	1.82	179.23	2,698.82	-74.76	1.01	-74.76	0.00	0.00	0.00
2,800.00	1.82	179.23	2,798.77	-77.94	1.05	-77.94	0.00	0.00	0.00
2,900.00	1.82	179.23	2,898.72	-81.12	1.10	-81.12	0.00	0.00	0.00
3,000.00	1.82	179.23	2,998.67	-84.29	1.14	-84.29	0.00	0.00	0.00
3,100.00	1.82	179.23	3,098.62	-87.47	1.18	-87.47	0.00	0.00	0.00
3,200.00	1.82	179.23	3,198.57	-90.64	1.22	-90.64	0.00	0.00	0.00
3,300.00	1.82	179.23	3,298.52	-93.82	1.27	-93.82	0.00	0.00	0.00
3,400.00	1.82	179.23	3,398.47	-96.99	1.31	-96.99	0.00	0.00	0.00
3,500.00	1.82	179.23	3,498.42	-100.17	1.35	-100.17	0.00	0.00	0.00
3,501.58	1.82	179.23	3,500.00	-100.22	1.35	-100.22	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	1.82	179.23	3,598.37	-103.34	1.40	-103.34	0.00	0.00	0.00
3,651.66	1.82	179.23	3,650.00	-104.98	1.42	-104.98	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	1.82	179.23	3,698.32	-106.52	1.44	-106.52	0.00	0.00	0.00
3,800.00	1.82	179.23	3,798.27	-109.69	1.48	-109.69	0.00	0.00	0.00
3,900.00	1.82	179.23	3,898.21	-112.87	1.53	-112.87	0.00	0.00	0.00
4,000.00	1.82	179.23	3,998.16	-116.04	1.57	-116.04	0.00	0.00	0.00
4,100.00	1.82	179.23	4,098.11	-119.22	1.61	-119.22	0.00	0.00	0.00
4,200.00	1.82	179.23	4,198.06	-122.40	1.65	-122.40	0.00	0.00	0.00
4,300.00	1.82	179.23	4,298.01	-125.57	1.70	-125.57	0.00	0.00	0.00
4,400.00	1.82	179.23	4,397.96	-128.75	1.74	-128.75	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<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	1.82	179.23	4,497.91	-131.92	1.78	-131.92	0.00	0.00	0.00
4,600.00	1.82	179.23	4,597.86	-135.10	1.83	-135.10	0.00	0.00	0.00
4,700.00	1.82	179.23	4,697.81	-138.27	1.87	-138.27	0.00	0.00	0.00
4,800.00	1.82	179.23	4,797.76	-141.45	1.91	-141.45	0.00	0.00	0.00
4,900.00	1.82	179.23	4,897.71	-144.62	1.95	-144.62	0.00	0.00	0.00
4,960.84	1.82	179.23	4,958.52	-146.56	1.98	-146.55	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
5,000.00	1.04	179.23	4,997.67	-147.53	1.99	-147.53	2.00	-2.00	0.00
5,051.84	0.00	0.00	5,049.50	-148.00	2.00	-148.00	2.00	-2.00	-345.76
<b>Hold Vertical</b>									
5,100.00	0.00	0.00	5,097.66	-148.00	2.00	-148.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,197.66	-148.00	2.00	-148.00	0.00	0.00	0.00
5,251.84	0.00	0.00	5,249.50	-148.00	2.00	-148.00	0.00	0.00	0.00
<b>KOP, Build 9°/100'</b>									
5,300.00	4.34	0.00	5,297.62	-146.18	2.00	-146.18	9.00	9.00	0.00
5,400.00	13.34	0.00	5,396.33	-130.83	2.00	-130.83	9.00	9.00	0.00
5,500.00	22.34	0.00	5,491.42	-100.23	2.00	-100.23	9.00	9.00	0.00
5,600.00	31.34	0.00	5,580.56	-55.13	2.00	-55.13	9.00	9.00	0.00
5,700.00	40.34	0.00	5,661.54	3.37	2.00	3.37	9.00	9.00	0.00
5,753.76	45.18	0.00	5,701.00	39.86	2.00	39.86	9.00	9.00	0.00
<b>P200 Marker</b>									
5,800.00	49.34	0.00	5,732.37	73.81	2.00	73.81	9.00	9.00	0.00
5,811.84	50.41	0.00	5,740.00	82.86	2.00	82.86	9.00	9.00	0.00
<b>P300 Marker</b>									
5,845.91	53.48	0.00	5,761.00	109.69	2.00	109.69	9.00	9.00	0.00
<b>P350 Marker</b>									
5,868.29	55.49	0.00	5,774.00	127.90	2.00	127.90	9.00	9.00	0.00
<b>Sharon Springs</b>									
5,875.41	56.13	0.00	5,778.00	133.79	2.00	133.79	9.00	9.00	0.00
<b>Niobrara</b>									
5,895.63	57.95	0.00	5,789.00	150.75	2.00	150.76	9.00	9.00	0.00
<b>Top A Chalk</b>									
5,900.00	58.35	0.00	5,791.31	154.47	2.00	154.47	9.00	9.00	0.00
5,966.06	64.29	0.00	5,823.00	212.40	2.00	212.40	9.00	9.00	0.00
<b>Top A Marl</b>									
6,000.00	67.35	0.00	5,836.90	243.36	2.00	243.36	9.00	9.00	0.00
6,008.18	68.08	0.00	5,840.00	250.92	2.00	250.93	9.00	9.00	0.00
<b>A Marl</b>									
6,030.60	70.10	0.00	5,848.00	271.87	2.00	271.87	9.00	9.00	0.00
<b>Top Upper B</b>									
6,100.00	76.35	0.00	5,868.02	338.28	2.00	338.28	9.00	9.00	0.00
6,113.19	77.54	0.00	5,871.00	351.13	2.00	351.13	9.00	9.00	0.00
<b>Base Upper B</b>									
6,200.00	85.35	0.00	5,883.91	436.91	2.00	436.91	9.00	9.00	0.00
6,251.65	90.00	0.00	5,886.00	488.50	2.00	488.50	9.00	9.00	0.00
<b>LP @ 90° Inc, Hold - Top Lower B - 5 1/2" Marker / 7" CSG</b>									
6,300.00	90.00	0.00	5,886.00	536.85	2.00	536.85	0.00	0.00	0.00
6,400.00	90.00	0.00	5,886.00	636.85	2.00	636.85	0.00	0.00	0.00
6,500.00	90.00	0.00	5,886.00	736.85	2.00	736.85	0.00	0.00	0.00
6,600.00	90.00	0.00	5,886.00	836.85	2.00	836.85	0.00	0.00	0.00
6,700.00	90.00	0.00	5,886.00	936.85	2.00	936.85	0.00	0.00	0.00
6,800.00	90.00	0.00	5,886.00	1,036.85	2.00	1,036.85	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<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)	
6,900.00	90.00	0.00	5,886.00	1,136.85	2.00	1,136.85	0.00	0.00	0.00	
7,000.00	90.00	0.00	5,886.00	1,236.85	2.00	1,236.85	0.00	0.00	0.00	
7,100.00	90.00	0.00	5,886.00	1,336.85	2.00	1,336.85	0.00	0.00	0.00	
7,200.00	90.00	0.00	5,886.00	1,436.85	2.00	1,436.85	0.00	0.00	0.00	
7,300.00	90.00	0.00	5,886.00	1,536.85	2.00	1,536.85	0.00	0.00	0.00	
7,400.00	90.00	0.00	5,886.00	1,636.85	2.00	1,636.85	0.00	0.00	0.00	
7,500.00	90.00	0.00	5,886.00	1,736.85	2.00	1,736.85	0.00	0.00	0.00	
7,600.00	90.00	0.00	5,886.00	1,836.85	2.00	1,836.85	0.00	0.00	0.00	
7,700.00	90.00	0.00	5,886.00	1,936.85	2.00	1,936.85	0.00	0.00	0.00	
7,800.00	90.00	0.00	5,886.00	2,036.85	2.00	2,036.85	0.00	0.00	0.00	
7,900.00	90.00	0.00	5,886.00	2,136.85	2.00	2,136.85	0.00	0.00	0.00	
8,000.00	90.00	0.00	5,886.00	2,236.85	2.00	2,236.85	0.00	0.00	0.00	
8,100.00	90.00	0.00	5,886.00	2,336.85	2.00	2,336.85	0.00	0.00	0.00	
8,200.00	90.00	0.00	5,886.00	2,436.85	2.00	2,436.85	0.00	0.00	0.00	
8,300.00	90.00	0.00	5,886.00	2,536.85	2.00	2,536.85	0.00	0.00	0.00	
8,400.00	90.00	0.00	5,886.00	2,636.85	2.00	2,636.85	0.00	0.00	0.00	
8,500.00	90.00	0.00	5,886.00	2,736.85	2.00	2,736.85	0.00	0.00	0.00	
8,600.00	90.00	0.00	5,886.00	2,836.85	2.00	2,836.85	0.00	0.00	0.00	
8,700.00	90.00	0.00	5,886.00	2,936.85	2.00	2,936.85	0.00	0.00	0.00	
8,800.00	90.00	0.00	5,886.00	3,036.85	2.00	3,036.85	0.00	0.00	0.00	
8,900.00	90.00	0.00	5,886.00	3,136.85	2.00	3,136.85	0.00	0.00	0.00	
9,000.00	90.00	0.00	5,886.00	3,236.85	2.00	3,236.85	0.00	0.00	0.00	
9,100.00	90.00	0.00	5,886.00	3,336.85	2.00	3,336.85	0.00	0.00	0.00	
9,200.00	90.00	0.00	5,886.00	3,436.85	2.00	3,436.85	0.00	0.00	0.00	
9,300.00	90.00	0.00	5,886.00	3,536.85	2.00	3,536.85	0.00	0.00	0.00	
9,400.00	90.00	0.00	5,886.00	3,636.85	2.00	3,636.85	0.00	0.00	0.00	
9,500.00	90.00	0.00	5,886.00	3,736.85	2.00	3,736.85	0.00	0.00	0.00	
9,600.00	90.00	0.00	5,886.00	3,836.85	2.00	3,836.85	0.00	0.00	0.00	
9,700.00	90.00	0.00	5,886.00	3,936.85	2.00	3,936.85	0.00	0.00	0.00	
9,800.00	90.00	0.00	5,886.00	4,036.85	2.00	4,036.85	0.00	0.00	0.00	
9,900.00	90.00	0.00	5,886.00	4,136.85	2.00	4,136.85	0.00	0.00	0.00	
10,000.00	90.00	0.00	5,886.00	4,236.85	2.00	4,236.85	0.00	0.00	0.00	
10,100.00	90.00	0.00	5,886.00	4,336.85	2.00	4,336.85	0.00	0.00	0.00	
10,200.00	90.00	0.00	5,886.00	4,436.85	2.00	4,436.85	0.00	0.00	0.00	
10,300.00	90.00	0.00	5,886.00	4,536.85	2.00	4,536.85	0.00	0.00	0.00	
10,400.00	90.00	0.00	5,886.00	4,636.85	2.00	4,636.85	0.00	0.00	0.00	
10,500.00	90.00	0.00	5,886.00	4,736.85	2.00	4,736.85	0.00	0.00	0.00	
10,600.00	90.00	0.00	5,886.00	4,836.85	2.00	4,836.85	0.00	0.00	0.00	
10,700.00	90.00	0.00	5,886.00	4,936.85	2.00	4,936.85	0.00	0.00	0.00	
10,800.00	90.00	0.00	5,886.00	5,036.85	2.00	5,036.85	0.00	0.00	0.00	
10,900.00	90.00	0.00	5,886.00	5,136.85	2.00	5,136.85	0.00	0.00	0.00	
11,000.00	90.00	0.00	5,886.00	5,236.85	2.00	5,236.85	0.00	0.00	0.00	
11,100.00	90.00	0.00	5,886.00	5,336.85	2.00	5,336.85	0.00	0.00	0.00	
11,200.00	90.00	0.00	5,886.00	5,436.85	2.00	5,436.85	0.00	0.00	0.00	
11,300.00	90.00	0.00	5,886.00	5,536.85	2.00	5,536.85	0.00	0.00	0.00	
11,400.00	90.00	0.00	5,886.00	5,636.85	2.00	5,636.85	0.00	0.00	0.00	
11,500.00	90.00	0.00	5,886.00	5,736.85	2.00	5,736.85	0.00	0.00	0.00	
11,600.00	90.00	0.00	5,886.00	5,836.85	2.00	5,836.85	0.00	0.00	0.00	
11,700.00	90.00	0.00	5,886.00	5,936.85	2.00	5,936.85	0.00	0.00	0.00	
11,800.00	90.00	0.00	5,886.00	6,036.85	2.00	6,036.85	0.00	0.00	0.00	
11,900.00	90.00	0.00	5,886.00	6,136.85	2.00	6,136.85	0.00	0.00	0.00	
12,000.00	90.00	0.00	5,886.00	6,236.85	2.00	6,236.85	0.00	0.00	0.00	
12,100.00	90.00	0.00	5,886.00	6,336.85	2.00	6,336.85	0.00	0.00	0.00	
12,200.00	90.00	0.00	5,886.00	6,436.85	2.00	6,436.85	0.00	0.00	0.00	



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<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)	
12,300.00	90.00	0.00	5,886.00	6,536.85	2.00	6,536.85	0.00	0.00	0.00	
12,400.00	90.00	0.00	5,886.00	6,636.85	2.00	6,636.85	0.00	0.00	0.00	
12,500.00	90.00	0.00	5,886.00	6,736.85	2.00	6,736.85	0.00	0.00	0.00	
12,600.00	90.00	0.00	5,886.00	6,836.85	2.00	6,836.85	0.00	0.00	0.00	
12,700.00	90.00	0.00	5,886.00	6,936.85	2.00	6,936.85	0.00	0.00	0.00	
12,800.00	90.00	0.00	5,886.00	7,036.85	2.00	7,036.85	0.00	0.00	0.00	
12,900.00	90.00	0.00	5,886.00	7,136.85	2.00	7,136.85	0.00	0.00	0.00	
13,000.00	90.00	0.00	5,886.00	7,236.85	2.00	7,236.85	0.00	0.00	0.00	
13,100.00	90.00	0.00	5,886.00	7,336.85	2.00	7,336.85	0.00	0.00	0.00	
13,200.00	90.00	0.00	5,886.00	7,436.85	2.00	7,436.85	0.00	0.00	0.00	
13,300.00	90.00	0.00	5,886.00	7,536.85	2.00	7,536.85	0.00	0.00	0.00	
13,400.00	90.00	0.00	5,886.00	7,636.85	2.00	7,636.85	0.00	0.00	0.00	
13,500.00	90.00	0.00	5,886.00	7,736.85	2.00	7,736.85	0.00	0.00	0.00	
13,600.00	90.00	0.00	5,886.00	7,836.85	2.00	7,836.85	0.00	0.00	0.00	
13,700.00	90.00	0.00	5,886.00	7,936.85	2.00	7,936.85	0.00	0.00	0.00	
13,800.00	90.00	0.00	5,886.00	8,036.85	2.00	8,036.85	0.00	0.00	0.00	
13,900.00	90.00	0.00	5,886.00	8,136.85	2.00	8,136.85	0.00	0.00	0.00	
13,977.15	90.00	0.00	5,886.00	8,214.00	2.00	8,214.00	0.00	0.00	0.00	
TD at 13977.15										

Design 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										
PBHL 1906	0.00	0.00	5,886.00	8,214.00	2.00	1,549,463.68	3,440,013.83	40° 49' 50.980 N	103° 54' 35.736 W	
- plan hits target center										
- Point										

Casing Points							Casing Diameter (in)	Hole Diameter (in)
Measured Depth (usft)	Vertical Depth (usft)	Name						
6,251.65	5,886.00	5 1/2" Marker / 7" CSG					7.000	8.750



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #30K-1906
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4849.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 30-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #30K-1906	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,550.60	1,550.00	Upper Pierre				
3,501.58	3,500.00	Hygiene				
3,651.66	3,650.00	Lower Pierre				
5,753.76	5,701.00	P200 Marker				
5,811.84	5,740.00	P300 Marker				
5,845.91	5,761.00	P350 Marker				
5,868.29	5,774.00	Sharon Springs				
5,875.41	5,778.00	Niobrara				
5,895.63	5,789.00	Top A Chalk				
5,966.06	5,823.00	Top A Marl				
6,008.18	5,840.00	A Marl				
6,030.60	5,848.00	Top Upper B				
6,113.19	5,871.00	Base Upper B				
6,251.65	5,886.00	Top Lower B				

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'	
390.99	390.98	-1.44	0.02	Hold 1.82° Inc	
4,960.84	4,958.52	-146.56	1.98	Drop 2°/100'	
5,051.84	5,049.50	-148.00	2.00	Hold Vertical	
5,251.84	5,249.50	-148.00	2.00	KOP, Build 9°/100'	
6,251.65	5,886.00	488.50	2.00	LP @ 90° Inc, Hold	
13,977.15	5,886.00	8,214.00	2.00	TD at 13977.15	