



Project: Weld County, CO  
Site: Sec 33-T10N-R58W  
Well: Razor #33O-2844  
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: 7.83°  
Magnetic Field  
Strength: 52764.6nT  
Dip Angle: 67.32°  
Date: 10/5/2016  
Model: IGRF2015

FORMATION TOP DETAILS		
	MDPath	Formation
TVDPath	1450.00	Upper Pierre
	3500.00	Hygiene
	3650.00	Lower Pierre
	5541.00	P200 Marker
	5564.00	P300 Marker
	5585.00	P350 Marker
	5597.00	Sharon Springs
	5608.00	Niobrara
	5624.00	Top A Chalk
	5649.00	Top A Marl
	5663.00	A Marl
	5673.00	Top Upper B
	5685.00	Base Upper B
	5710.00	Top Lower B
	5730.00	Base Lower B
	5749.00	Top B Marl
	5788.00	Top C Chalk
	5794.00	Middle C Chalk
	5807.00	Middle C Marl
	5818.00	Lower C Chalk

#### WELL DETAILS: Razor #33O-2844

+N/-S	+E/-W	Northing	Ground Level:	4715.00	Longitude	Slot
0.00	0.00	1534175.02	Easting	3451931.53	40° 47' 17.800 N	103° 52' 4.390 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	544.83	4.90	122.02	544.53	-5.54	8.86	2.00	122.02	-5.16	
4	4762.66	4.90	122.02	4746.97	-196.46	314.10	0.00	0.00	-182.94	
5	5007.49	0.00	0.00	4991.50	-202.00	322.97	2.00	180.00	-188.10	
6	5207.49	0.00	0.00	5191.50	-202.00	322.97	0.00	0.00	-188.10	
7	6207.30	90.00	0.00	5828.00	434.50	322.97	9.00	0.00	447.82	
8	13371.27	90.00	0.00	5828.00	7598.47	322.97	0.00	0.00	7605.33	PBHL 33O-2844

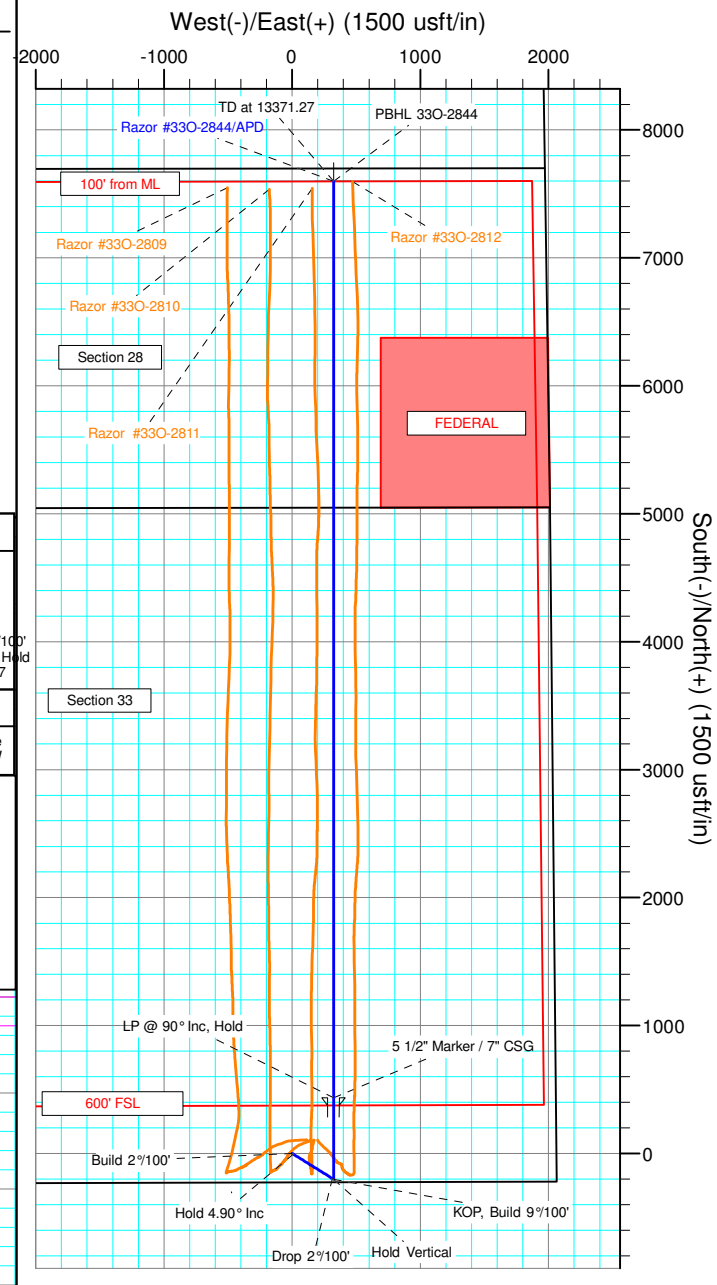
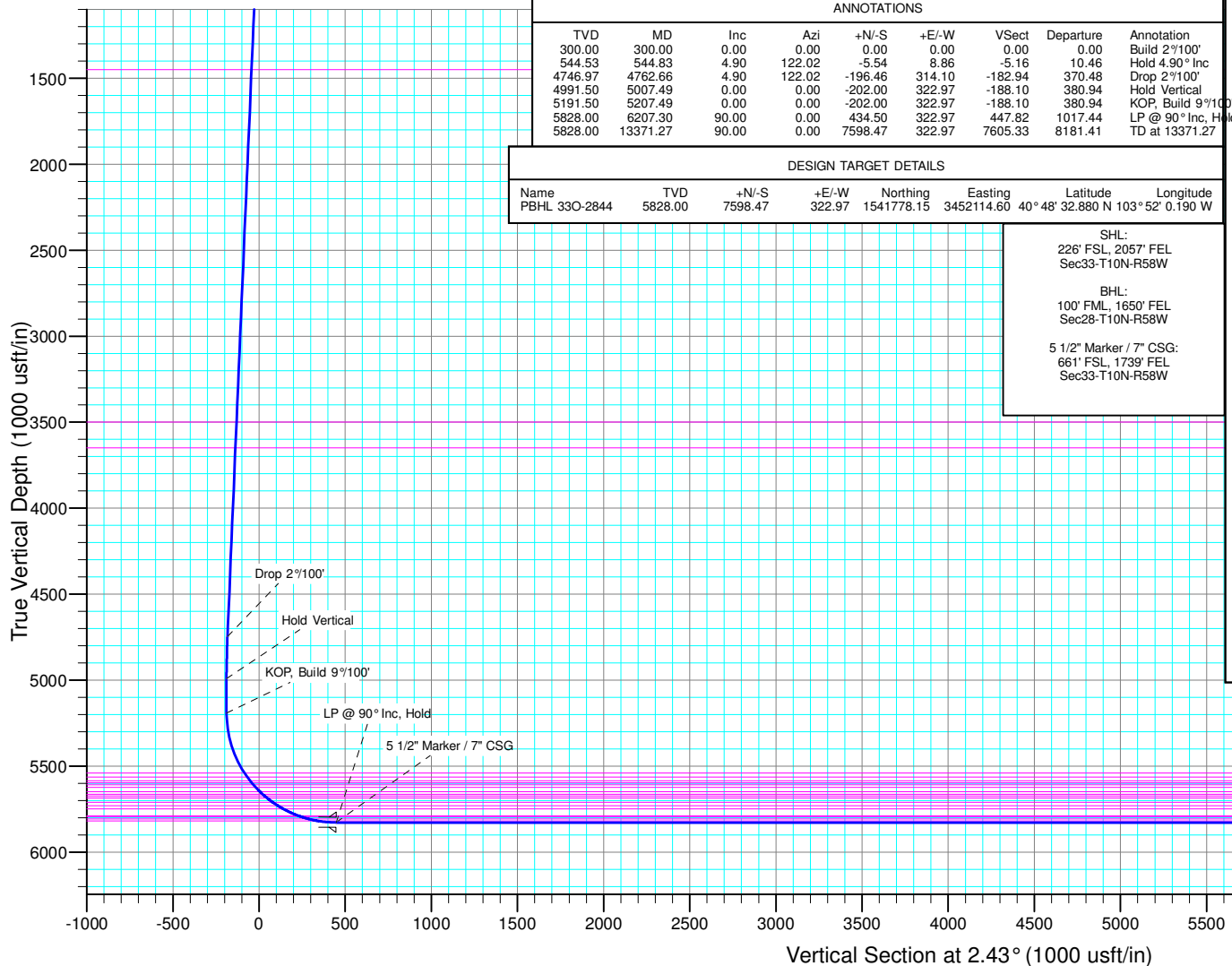
#### ANNOTATIONS

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'
544.53	544.83	4.90	122.02	-5.54	8.86	-5.16	10.46	Hold 4.90° Inc
4746.97	4762.66	4.90	122.02	-196.46	314.10	-182.94	370.48	Drop 2°/100'
4991.50	5007.49	0.00	0.00	-202.00	322.97	-188.10	380.94	Hold Vertical
5191.50	5207.49	0.00	0.00	-202.00	322.97	-188.10	380.94	KOP, Build 9°/100'
5828.00	6207.30	90.00	0.00	434.50	322.97	447.82	1017.44	LP @ 90° Inc, Hold
5828.00	13371.27	90.00	0.00	7598.47	322.97	7605.33	8181.41	TD at 13371.27

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 33O-2844	5828.00	7598.47	322.97	1541778.15	3452114.60	40° 48' 32.880 N	103° 52' 0.190 W

SHL:  
226° FSL, 2057' FEL  
Sec33-T10N-R58W  
  
BHL:  
100° FML, 1650' FEL  
Sec28-T10N-R58W  
  
5 1/2" Marker / 7" CSG:  
661° FSL, 1739' FEL  
Sec33-T10N-R58W





# **Whiting Petroleum Corp.**

**Weld County, CO  
Sec 33-T10N-R58W  
Razor #33O-2844**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**19 October, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #33O-2844
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4736.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4736.00usft
<b>Site:</b>	Sec 33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33O-2844	<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 33-T10N-R58W			
Site Position:		Northing:	1,533,880.60 usft	Latitude:	40° 47' 15.461 N
From:	Lat/Long	Easting:	3,448,788.72 usft	Longitude:	103° 52' 45.311 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.05 °

Well		Razor #33O-2844				
Well Position	+N/-S	236.93 usft	Northing:	1,534,175.02 usft	Latitude:	40° 47' 17.800 N
	+E/-W	3,147.66 usft	Easting:	3,451,931.53 usft	Longitude:	103° 52' 4.390 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	4,729.70 usft	Ground Level:	4,715.00 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	10/5/2016	7.83	67.32	52,765

<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	2.43	

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
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	
544.83	4.90	122.02	544.53	-5.54	8.86	2.00	2.00	0.00	122.02	
4,762.66	4.90	122.02	4,746.97	-196.46	314.10	0.00	0.00	0.00	0.00	
5,007.49	0.00	0.00	4,991.50	-202.00	322.97	2.00	-2.00	0.00	180.00	
5,207.49	0.00	0.00	5,191.50	-202.00	322.97	0.00	0.00	0.00	0.00	
6,207.30	90.00	0.00	5,828.00	434.50	322.97	9.00	9.00	0.00	0.00	
13,371.27	90.00	0.00	5,828.00	7,598.47	322.97	0.00	0.00	0.00	0.00	PBHL 33O-2844



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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4736.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4736.00usft
<b>Site:</b>	Sec 33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33O-2844	<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	122.02	399.98	-0.93	1.48	-0.86	2.00	2.00	0.00
500.00	4.00	122.02	499.84	-3.70	5.92	-3.45	2.00	2.00	0.00
544.83	4.90	122.02	544.53	-5.54	8.86	-5.16	2.00	2.00	0.00
<b>Hold 4.90° Inc</b>									
600.00	4.90	122.02	599.50	-8.04	12.86	-7.49	0.00	0.00	0.00
700.00	4.90	122.02	699.14	-12.57	20.09	-11.70	0.00	0.00	0.00
800.00	4.90	122.02	798.77	-17.09	27.33	-15.92	0.00	0.00	0.00
900.00	4.90	122.02	898.41	-21.62	34.57	-20.13	0.00	0.00	0.00
1,000.00	4.90	122.02	998.04	-26.15	41.80	-24.35	0.00	0.00	0.00
1,100.00	4.90	122.02	1,097.68	-30.67	49.04	-28.56	0.00	0.00	0.00
1,200.00	4.90	122.02	1,197.31	-35.20	56.28	-32.78	0.00	0.00	0.00
1,300.00	4.90	122.02	1,296.95	-39.73	63.52	-36.99	0.00	0.00	0.00
1,400.00	4.90	122.02	1,396.58	-44.25	70.75	-41.21	0.00	0.00	0.00
1,453.61	4.90	122.02	1,450.00	-46.68	74.63	-43.47	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,500.00	4.90	122.02	1,496.22	-48.78	77.99	-45.42	0.00	0.00	0.00
1,600.00	4.90	122.02	1,595.85	-53.30	85.23	-49.64	0.00	0.00	0.00
1,700.00	4.90	122.02	1,695.49	-57.83	92.46	-53.85	0.00	0.00	0.00
1,800.00	4.90	122.02	1,795.12	-62.36	99.70	-58.07	0.00	0.00	0.00
1,900.00	4.90	122.02	1,894.76	-66.88	106.94	-62.28	0.00	0.00	0.00
2,000.00	4.90	122.02	1,994.39	-71.41	114.17	-66.50	0.00	0.00	0.00
2,100.00	4.90	122.02	2,094.03	-75.94	121.41	-70.71	0.00	0.00	0.00
2,200.00	4.90	122.02	2,193.66	-80.46	128.65	-74.93	0.00	0.00	0.00
2,300.00	4.90	122.02	2,293.30	-84.99	135.88	-79.14	0.00	0.00	0.00
2,400.00	4.90	122.02	2,392.93	-89.51	143.12	-83.36	0.00	0.00	0.00
2,500.00	4.90	122.02	2,492.57	-94.04	150.36	-87.57	0.00	0.00	0.00
2,600.00	4.90	122.02	2,592.20	-98.57	157.59	-91.79	0.00	0.00	0.00
2,700.00	4.90	122.02	2,691.84	-103.09	164.83	-96.00	0.00	0.00	0.00
2,800.00	4.90	122.02	2,791.47	-107.62	172.07	-100.22	0.00	0.00	0.00
2,900.00	4.90	122.02	2,891.11	-112.15	179.31	-104.43	0.00	0.00	0.00
3,000.00	4.90	122.02	2,990.74	-116.67	186.54	-108.65	0.00	0.00	0.00
3,100.00	4.90	122.02	3,090.38	-121.20	193.78	-112.86	0.00	0.00	0.00
3,200.00	4.90	122.02	3,190.01	-125.73	201.02	-117.08	0.00	0.00	0.00
3,300.00	4.90	122.02	3,289.65	-130.25	208.25	-121.29	0.00	0.00	0.00
3,400.00	4.90	122.02	3,389.28	-134.78	215.49	-125.51	0.00	0.00	0.00
3,500.00	4.90	122.02	3,488.92	-139.30	222.73	-129.72	0.00	0.00	0.00
3,511.12	4.90	122.02	3,500.00	-139.81	223.53	-130.19	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	4.90	122.02	3,588.55	-143.83	229.96	-133.93	0.00	0.00	0.00
3,661.67	4.90	122.02	3,650.00	-146.62	234.43	-136.53	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	4.90	122.02	3,688.19	-148.36	237.20	-138.15	0.00	0.00	0.00
3,800.00	4.90	122.02	3,787.82	-152.88	244.44	-142.36	0.00	0.00	0.00
3,900.00	4.90	122.02	3,887.46	-157.41	251.67	-146.58	0.00	0.00	0.00
4,000.00	4.90	122.02	3,987.09	-161.94	258.91	-150.79	0.00	0.00	0.00
4,100.00	4.90	122.02	4,086.73	-166.46	266.15	-155.01	0.00	0.00	0.00
4,200.00	4.90	122.02	4,186.36	-170.99	273.38	-159.22	0.00	0.00	0.00
4,300.00	4.90	122.02	4,286.00	-175.51	280.62	-163.44	0.00	0.00	0.00
4,400.00	4.90	122.02	4,385.63	-180.04	287.86	-167.65	0.00	0.00	0.00



# WOG Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4736.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4736.00usft
<b>Site:</b>	Sec 33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33O-2844	<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	4.90	122.02	4,485.27	-184.57	295.09	-171.87	0.00	0.00	0.00
4,600.00	4.90	122.02	4,584.90	-189.09	302.33	-176.08	0.00	0.00	0.00
4,700.00	4.90	122.02	4,684.54	-193.62	309.57	-180.30	0.00	0.00	0.00
4,762.66	4.90	122.02	4,746.97	-196.46	314.10	-182.94	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,800.00	4.15	122.02	4,784.19	-198.02	316.60	-184.39	2.00	-2.00	0.00
4,900.00	2.15	122.02	4,884.04	-200.93	321.26	-187.11	2.00	-2.00	0.00
5,000.00	0.15	122.02	4,984.01	-201.99	322.96	-188.10	2.00	-2.00	0.00
5,007.49	0.00	0.00	4,991.50	-202.00	322.97	-188.10	2.00	-2.00	-1,629.28
<b>Hold Vertical</b>									
5,100.00	0.00	0.00	5,084.01	-202.00	322.97	-188.10	0.00	0.00	0.00
5,200.00	0.00	0.00	5,184.01	-202.00	322.97	-188.10	0.00	0.00	0.00
5,207.49	0.00	0.00	5,191.50	-202.00	322.97	-188.10	0.00	0.00	0.00
<b>KOP, Build 9°/100'</b>									
5,300.00	8.33	0.00	5,283.69	-195.29	322.97	-181.40	9.00	9.00	0.00
5,400.00	17.33	0.00	5,381.09	-173.11	322.97	-159.24	9.00	9.00	0.00
5,500.00	26.33	0.00	5,473.82	-135.96	322.97	-122.12	9.00	9.00	0.00
5,577.48	33.31	0.00	5,541.00	-97.46	322.97	-83.66	9.00	9.00	0.00
<b>P200 Marker</b>									
5,600.00	35.33	0.00	5,559.60	-84.76	322.97	-70.97	9.00	9.00	0.00
5,605.41	35.82	0.00	5,564.00	-81.62	322.97	-67.83	9.00	9.00	0.00
<b>P300 Marker</b>									
5,631.71	38.19	0.00	5,585.00	-65.79	322.97	-52.02	9.00	9.00	0.00
<b>P350 Marker</b>									
5,647.12	39.57	0.00	5,597.00	-56.11	322.97	-42.35	9.00	9.00	0.00
<b>Sharon Springs</b>									
5,661.53	40.87	0.00	5,608.00	-46.81	322.97	-33.05	9.00	9.00	0.00
<b>Niobrara</b>									
5,683.00	42.80	0.00	5,624.00	-32.49	322.97	-18.74	9.00	9.00	0.00
<b>Top A Chalk</b>									
5,700.00	44.33	0.00	5,636.31	-20.77	322.97	-7.04	9.00	9.00	0.00
5,717.99	45.95	0.00	5,649.00	-8.02	322.97	5.70	9.00	9.00	0.00
<b>Top A Marl</b>									
5,738.47	47.80	0.00	5,663.00	6.93	322.97	20.63	9.00	9.00	0.00
<b>A Marl</b>									
5,753.55	49.15	0.00	5,673.00	18.22	322.97	31.92	9.00	9.00	0.00
<b>Top Upper B</b>									
5,772.22	50.84	0.00	5,685.00	32.52	322.97	46.20	9.00	9.00	0.00
<b>Base Upper B</b>									
5,800.00	53.34	0.00	5,702.07	54.43	322.97	68.10	9.00	9.00	0.00
5,813.47	54.55	0.00	5,710.00	65.33	322.97	78.98	9.00	9.00	0.00
<b>Top Lower B</b>									
5,849.40	57.78	0.00	5,730.00	95.16	322.97	108.79	9.00	9.00	0.00
<b>Base Lower B</b>									
5,886.80	61.15	0.00	5,749.00	127.37	322.97	140.97	9.00	9.00	0.00
<b>Top B Marl</b>									
5,900.00	62.34	0.00	5,755.25	139.00	322.97	152.59	9.00	9.00	0.00
5,980.45	69.58	0.00	5,788.00	212.42	322.97	225.94	9.00	9.00	0.00
<b>Top C Chalk</b>									
5,998.32	71.19	0.00	5,794.00	229.25	322.97	242.76	9.00	9.00	0.00
<b>Middle C Chalk</b>									
6,000.00	71.34	0.00	5,794.54	230.84	322.97	244.35	9.00	9.00	0.00



WOG  
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #33O-2844
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4736.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4736.00usft
Site:	Sec 33-T10N-R58W	North Reference:	True
Well:	Razor #33O-2844	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)	
6,043.35	75.24	0.00	5,807.00	272.35	322.97	285.82	9.00	9.00	0.00	
Middle C Marl										
6,094.33	79.83	0.00	5,818.00	322.12	322.97	335.54	9.00	9.00	0.00	
Lower C Chalk										
6,100.00	80.34	0.00	5,818.98	327.71	322.97	341.13	9.00	9.00	0.00	
6,200.00	89.34	0.00	5,827.96	427.20	322.97	440.53	9.00	9.00	0.00	
6,207.30	90.00	0.00	5,828.00	434.50	322.97	447.82	9.00	9.00	0.00	
LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG										
6,300.00	90.00	0.00	5,828.00	527.20	322.97	540.44	0.00	0.00	0.00	
6,400.00	90.00	0.00	5,828.00	627.20	322.97	640.35	0.00	0.00	0.00	
6,500.00	90.00	0.00	5,828.00	727.20	322.97	740.26	0.00	0.00	0.00	
6,600.00	90.00	0.00	5,828.00	827.20	322.97	840.17	0.00	0.00	0.00	
6,700.00	90.00	0.00	5,828.00	927.20	322.97	940.08	0.00	0.00	0.00	
6,800.00	90.00	0.00	5,828.00	1,027.20	322.97	1,039.99	0.00	0.00	0.00	
6,900.00	90.00	0.00	5,828.00	1,127.20	322.97	1,139.90	0.00	0.00	0.00	
7,000.00	90.00	0.00	5,828.00	1,227.20	322.97	1,239.81	0.00	0.00	0.00	
7,100.00	90.00	0.00	5,828.00	1,327.20	322.97	1,339.72	0.00	0.00	0.00	
7,200.00	90.00	0.00	5,828.00	1,427.20	322.97	1,439.63	0.00	0.00	0.00	
7,300.00	90.00	0.00	5,828.00	1,527.20	322.97	1,539.54	0.00	0.00	0.00	
7,400.00	90.00	0.00	5,828.00	1,627.20	322.97	1,639.45	0.00	0.00	0.00	
7,500.00	90.00	0.00	5,828.00	1,727.20	322.97	1,739.36	0.00	0.00	0.00	
7,600.00	90.00	0.00	5,828.00	1,827.20	322.97	1,839.27	0.00	0.00	0.00	
7,700.00	90.00	0.00	5,828.00	1,927.20	322.97	1,939.18	0.00	0.00	0.00	
7,800.00	90.00	0.00	5,828.00	2,027.20	322.97	2,039.09	0.00	0.00	0.00	
7,900.00	90.00	0.00	5,828.00	2,127.20	322.97	2,138.99	0.00	0.00	0.00	
8,000.00	90.00	0.00	5,828.00	2,227.20	322.97	2,238.90	0.00	0.00	0.00	
8,100.00	90.00	0.00	5,828.00	2,327.20	322.97	2,338.81	0.00	0.00	0.00	
8,200.00	90.00	0.00	5,828.00	2,427.20	322.97	2,438.72	0.00	0.00	0.00	
8,300.00	90.00	0.00	5,828.00	2,527.20	322.97	2,538.63	0.00	0.00	0.00	
8,400.00	90.00	0.00	5,828.00	2,627.20	322.97	2,638.54	0.00	0.00	0.00	
8,500.00	90.00	0.00	5,828.00	2,727.20	322.97	2,738.45	0.00	0.00	0.00	
8,600.00	90.00	0.00	5,828.00	2,827.20	322.97	2,838.36	0.00	0.00	0.00	
8,700.00	90.00	0.00	5,828.00	2,927.20	322.97	2,938.27	0.00	0.00	0.00	
8,800.00	90.00	0.00	5,828.00	3,027.20	322.97	3,038.18	0.00	0.00	0.00	
8,900.00	90.00	0.00	5,828.00	3,127.20	322.97	3,138.09	0.00	0.00	0.00	
9,000.00	90.00	0.00	5,828.00	3,227.20	322.97	3,238.00	0.00	0.00	0.00	
9,100.00	90.00	0.00	5,828.00	3,327.20	322.97	3,337.91	0.00	0.00	0.00	
9,200.00	90.00	0.00	5,828.00	3,427.20	322.97	3,437.82	0.00	0.00	0.00	
9,300.00	90.00	0.00	5,828.00	3,527.20	322.97	3,537.73	0.00	0.00	0.00	
9,400.00	90.00	0.00	5,828.00	3,627.20	322.97	3,637.64	0.00	0.00	0.00	
9,500.00	90.00	0.00	5,828.00	3,727.20	322.97	3,737.55	0.00	0.00	0.00	
9,600.00	90.00	0.00	5,828.00	3,827.20	322.97	3,837.46	0.00	0.00	0.00	
9,700.00	90.00	0.00	5,828.00	3,927.20	322.97	3,937.37	0.00	0.00	0.00	
9,800.00	90.00	0.00	5,828.00	4,027.20	322.97	4,037.28	0.00	0.00	0.00	
9,900.00	90.00	0.00	5,828.00	4,127.20	322.97	4,137.19	0.00	0.00	0.00	
10,000.00	90.00	0.00	5,828.00	4,227.20	322.97	4,237.10	0.00	0.00	0.00	
10,100.00	90.00	0.00	5,828.00	4,327.20	322.97	4,337.01	0.00	0.00	0.00	
10,200.00	90.00	0.00	5,828.00	4,427.20	322.97	4,436.92	0.00	0.00	0.00	
10,300.00	90.00	0.00	5,828.00	4,527.20	322.97	4,536.83	0.00	0.00	0.00	
10,400.00	90.00	0.00	5,828.00	4,627.20	322.97	4,636.74	0.00	0.00	0.00	
10,500.00	90.00	0.00	5,828.00	4,727.20	322.97	4,736.65	0.00	0.00	0.00	
10,600.00	90.00	0.00	5,828.00	4,827.20	322.97	4,836.56	0.00	0.00	0.00	
10,700.00	90.00	0.00	5,828.00	4,927.20	322.97	4,936.47	0.00	0.00	0.00	



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #33O-2844
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4736.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4736.00usft
<b>Site:</b>	Sec 33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33O-2844	<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)	
10,800.00	90.00	0.00	5,828.00	5,027.20	322.97	5,036.38	0.00	0.00	0.00	
10,900.00	90.00	0.00	5,828.00	5,127.20	322.97	5,136.29	0.00	0.00	0.00	
11,000.00	90.00	0.00	5,828.00	5,227.20	322.97	5,236.20	0.00	0.00	0.00	
11,100.00	90.00	0.00	5,828.00	5,327.20	322.97	5,336.11	0.00	0.00	0.00	
11,200.00	90.00	0.00	5,828.00	5,427.20	322.97	5,436.02	0.00	0.00	0.00	
11,300.00	90.00	0.00	5,828.00	5,527.20	322.97	5,535.93	0.00	0.00	0.00	
11,400.00	90.00	0.00	5,828.00	5,627.20	322.97	5,635.84	0.00	0.00	0.00	
11,500.00	90.00	0.00	5,828.00	5,727.20	322.97	5,735.75	0.00	0.00	0.00	
11,600.00	90.00	0.00	5,828.00	5,827.20	322.97	5,835.66	0.00	0.00	0.00	
11,700.00	90.00	0.00	5,828.00	5,927.20	322.97	5,935.57	0.00	0.00	0.00	
11,800.00	90.00	0.00	5,828.00	6,027.20	322.97	6,035.48	0.00	0.00	0.00	
11,900.00	90.00	0.00	5,828.00	6,127.20	322.97	6,135.39	0.00	0.00	0.00	
12,000.00	90.00	0.00	5,828.00	6,227.20	322.97	6,235.30	0.00	0.00	0.00	
12,100.00	90.00	0.00	5,828.00	6,327.20	322.97	6,335.21	0.00	0.00	0.00	
12,200.00	90.00	0.00	5,828.00	6,427.20	322.97	6,435.12	0.00	0.00	0.00	
12,300.00	90.00	0.00	5,828.00	6,527.20	322.97	6,535.03	0.00	0.00	0.00	
12,400.00	90.00	0.00	5,828.00	6,627.20	322.97	6,634.94	0.00	0.00	0.00	
12,500.00	90.00	0.00	5,828.00	6,727.20	322.97	6,734.85	0.00	0.00	0.00	
12,600.00	90.00	0.00	5,828.00	6,827.20	322.97	6,834.76	0.00	0.00	0.00	
12,700.00	90.00	0.00	5,828.00	6,927.20	322.97	6,934.67	0.00	0.00	0.00	
12,800.00	90.00	0.00	5,828.00	7,027.20	322.97	7,034.57	0.00	0.00	0.00	
12,900.00	90.00	0.00	5,828.00	7,127.20	322.97	7,134.48	0.00	0.00	0.00	
13,000.00	90.00	0.00	5,828.00	7,227.20	322.97	7,234.39	0.00	0.00	0.00	
13,100.00	90.00	0.00	5,828.00	7,327.20	322.97	7,334.30	0.00	0.00	0.00	
13,200.00	90.00	0.00	5,828.00	7,427.20	322.97	7,434.21	0.00	0.00	0.00	
13,300.00	90.00	0.00	5,828.00	7,527.20	322.97	7,534.12	0.00	0.00	0.00	
13,371.27	90.00	0.00	5,828.00	7,598.47	322.97	7,605.33	0.00	0.00	0.00	
TD at 13371.27										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
PBHL 33O-2844	0.00	0.00	5,828.00	7,598.47	322.97	1,541,778.15	3,452,114.59	40° 48' 32.880 N		103° 52' 0.190 W
- hit/miss target										
- Shape										
- plan hits target center										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
6,207.30	5,828.00	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 #33O-2844
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4736.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4736.00usft
<b>Site:</b>	Sec 33-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #33O-2844	<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 (°)	
1,453.61	1,450.00	Upper Pierre				
3,511.12	3,500.00	Hygiene				
3,661.67	3,650.00	Lower Pierre				
5,577.48	5,541.00	P200 Marker				
5,605.41	5,564.00	P300 Marker				
5,631.71	5,585.00	P350 Marker				
5,647.12	5,597.00	Sharon Springs				
5,661.53	5,608.00	Niobrara				
5,683.00	5,624.00	Top A Chalk				
5,717.99	5,649.00	Top A Marl				
5,738.47	5,663.00	A Marl				
5,753.55	5,673.00	Top Upper B				
5,772.22	5,685.00	Base Upper B				
5,813.47	5,710.00	Top Lower B				
5,849.40	5,730.00	Base Lower B				
5,886.80	5,749.00	Top B Marl				
5,980.45	5,788.00	Top C Chalk				
5,998.32	5,794.00	Middle C Chalk				
6,043.35	5,807.00	Middle C Marl				
6,094.33	5,818.00	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'	
544.83	544.53	-5.54	8.86	Hold 4.90° Inc	
4,762.66	4,746.97	-196.46	314.10	Drop 2°/100'	
5,007.49	4,991.50	-202.00	322.97	Hold Vertical	
5,207.49	5,191.50	-202.00	322.97	KOP, Build 9°/100'	
6,207.30	5,828.00	434.50	322.97	LP @ 90° Inc, Hold	
13,371.27	5,828.00	7,598.47	322.97	TD at 13371.27	