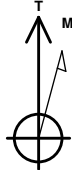




Project: Weld County, CO  
Site: Sec 29-T10N-R58W  
Well: Razor #29F-3238  
Wellbore: Hz  
Design: APD

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: 7.89°  
Magnetic Field  
Strength: 52823.9nT  
Dip Angle: 67.35°  
Date: 4/25/2016  
Model: IGRF2015

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1550.00	1550.68	Upper Pierre
3500.00	3501.80	Hygiene
3650.00	3651.89	Lower Pierre
5668.00	5688.40	P200 Marker
5703.00	5730.43	P300 Marker
5727.00	5760.42	P350 Marker
5739.00	5775.83	Sharon Springs
5742.00	5779.73	Niobrara
5762.00	5806.28	Top A Chalk
5797.00	5855.39	Top A Marl
5818.00	5886.87	A Marl
5823.00	5894.64	Top Upper B
5843.00	5926.92	Base Upper B
5855.00	5947.39	Top Lower B
5875.00	5983.78	Base Lower B
5885.00	6003.29	Top B Marl
5937.00	6130.16	Top C Chalk
5944.00	6153.46	Middle C Chalk
5956.00	6202.27	Middle C Marl
5970.00	6336.01	Lower C Chalk

WELL DETAILS: Razor #29F-3238

+N/-S	+E/-W	Northing	Ground Level:	4815.00	Longitude	Slot
0.00	0.00	1542122.96	Easting	3445118.02	40° 48' 37.550 N	103° 53' 31.080 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	397.06	1.94	315.76	397.04	1.18	-1.15	2.00	315.76	-1.17	
4	5039.14	1.94	315.76	5036.46	113.82	-110.85	0.00	0.00	-112.61	
5	5136.20	0.00	0.00	5133.50	115.00	-112.00	2.00	180.00	-113.78	
6	5336.20	0.00	0.00	5333.50	115.00	-112.00	0.00	0.00	-113.78	
7	6336.01	90.00	179.82	5970.00	-521.50	-110.04	9.00	179.82	522.66	
8	13835.03	90.00	179.82	5970.00	-8020.48	-86.92	0.00	0.00	8020.95	PBHL Razor 29F-3238

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'
397.04	397.06	1.94	315.76	1.18	-1.15	-1.17	1.64	Hold 1.94° Inc
5036.46	5039.14	1.94	315.76	113.82	-110.85	-112.61	158.88	Drop 2°/100'
5133.50	5136.20	0.00	0.00	115.00	-112.00	-113.78	160.53	Hold Vertical
5333.50	5336.20	0.00	0.00	115.00	-112.00	-113.78	160.53	KOP, Build 9°/100'
5970.00	6336.01	90.00	179.82	-521.50	-110.04	522.66	797.03	LP @ 90° Inc, Hold
5970.00	13835.03	90.00	179.82	-8020.48	-86.92	8020.95	8296.04	TD at 13835.03

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Razor 29F-3238	5970.00	-8020.48	-86.92	1534102.22	3445176.55	40° 47' 18.300 N	103° 53' 32.210 W
Brennan #1	6634.00	-3692.02	-914.86	1538414.95	3444270.26	40° 48' 1.069 N	103° 53' 42.976 W
Johnston #1	6696.00	-6380.45	-1210.68	1535721.60	3444023.23	40° 47' 34.505 N	103° 53' 46.820 W
DeWitt-Brennan #32-1	6785.00	-3751.40	-1165.70	1538351.04	3444020.53	40° 48' 0.482 N	103° 53' 46.237 W

SHL:  
2226' FNL, 1951' FWL  
Sec29-T10N-R58W

BHL:  
300' FSL, 1616' FWL  
Sec32-T10N-R58W

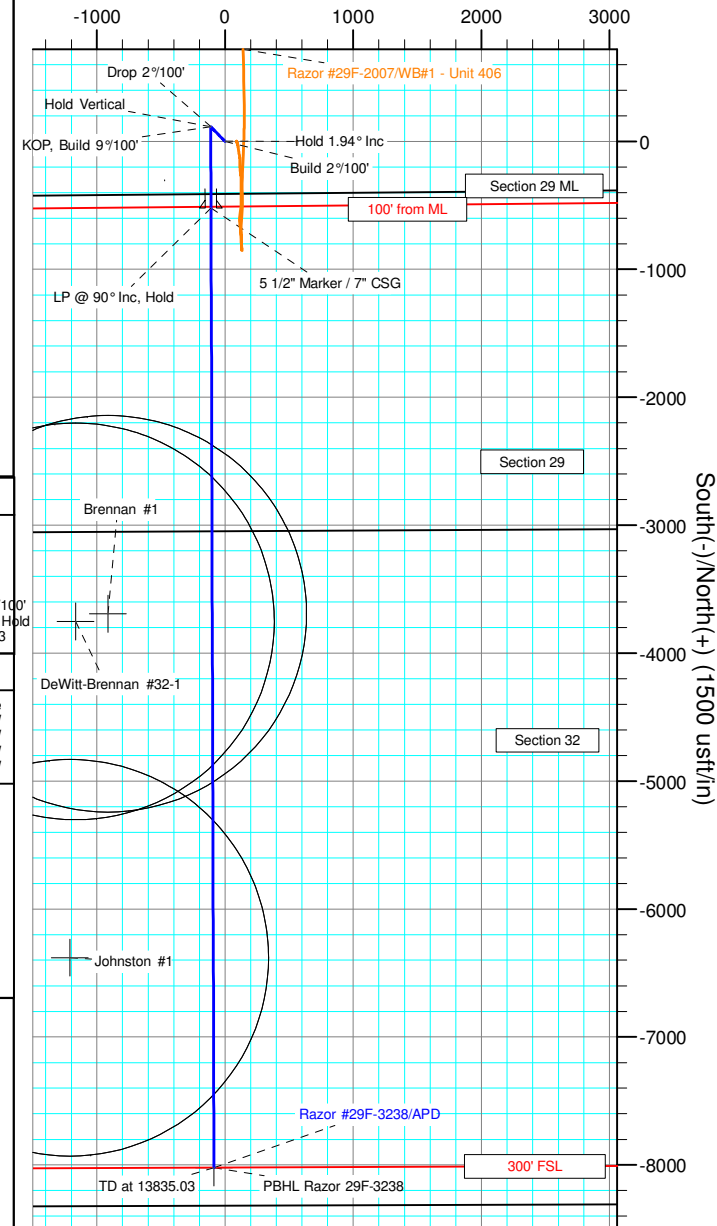
5 1/2" Marker / 7" CSG:  
2510' FSL, 1840' FWL  
Sec29-T10N-R58W

Enter Brennan #1  
1550' Radius @ 8184' MD  
Exit Brennan #1  
1550' Radius @ 10839' MD

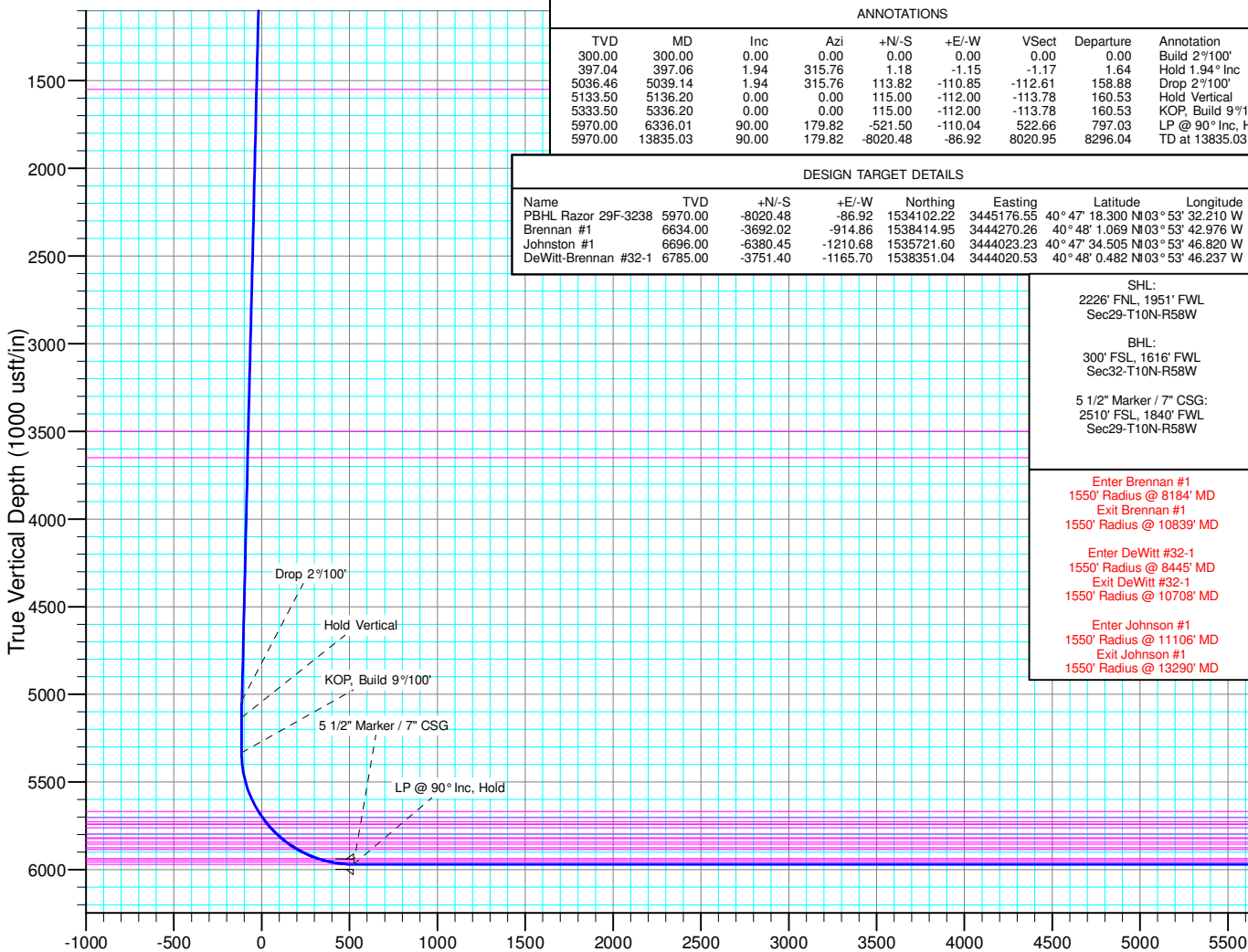
Enter DeWitt #32-1  
1550' Radius @ 8445' MD  
Exit DeWitt #32-1  
1550' Radius @ 10708' MD

Enter Johnson #1  
1550' Radius @ 11106' MD  
Exit Johnson #1  
1550' Radius @ 13290' MD

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



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



Vertical Section at 180.62° (1000 usft/in)



# **Whiting Petroleum Corp.**

**Weld County, CO  
Sec 29-T10N-R58W  
Razor #29F-3238**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**24 August, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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 #29F-3238				
Well Position	+N/-S	-2,199.25 usft	Northing:	1,542,122.96 usft	Latitude:	40° 48' 37.550 N
	+E/-W	1,977.72 usft	Easting:	3,445,118.02 usft	Longitude:	103° 53' 31.080 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,815.00 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	4/25/2016	7.89	67.35	52,824

<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	180.62

<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	
397.06	1.94	315.76	397.04	1.18	-1.15	2.00	2.00	0.00	315.76	
5,039.14	1.94	315.76	5,036.46	113.82	-110.85	0.00	0.00	0.00	0.00	
5,136.20	0.00	0.00	5,133.50	115.00	-112.00	2.00	-2.00	0.00	180.00	
5,336.20	0.00	0.00	5,333.50	115.00	-112.00	0.00	0.00	0.00	0.00	
6,336.01	90.00	179.82	5,970.00	-521.50	-110.04	9.00	9.00	0.00	179.82	
13,835.03	90.00	179.82	5,970.00	-8,020.48	-86.92	0.00	0.00	0.00	0.00	PBHL Razor 29F-323



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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>									
397.06	1.94	315.76	397.04	1.18	-1.15	-1.17	2.00	2.00	0.00
<b>Hold 1.94° Inc</b>									
400.00	1.94	315.76	399.98	1.25	-1.22	-1.24	0.00	0.00	0.00
500.00	1.94	315.76	499.92	3.68	-3.58	-3.64	0.00	0.00	0.00
600.00	1.94	315.76	599.86	6.10	-5.94	-6.04	0.00	0.00	0.00
700.00	1.94	315.76	699.81	8.53	-8.31	-8.44	0.00	0.00	0.00
800.00	1.94	315.76	799.75	10.96	-10.67	-10.84	0.00	0.00	0.00
900.00	1.94	315.76	899.69	13.38	-13.03	-13.24	0.00	0.00	0.00
1,000.00	1.94	315.76	999.64	15.81	-15.40	-15.64	0.00	0.00	0.00
1,100.00	1.94	315.76	1,099.58	18.24	-17.76	-18.04	0.00	0.00	0.00
1,200.00	1.94	315.76	1,199.52	20.66	-20.12	-20.44	0.00	0.00	0.00
1,300.00	1.94	315.76	1,299.46	23.09	-22.49	-22.84	0.00	0.00	0.00
1,400.00	1.94	315.76	1,399.41	25.52	-24.85	-25.24	0.00	0.00	0.00
1,500.00	1.94	315.76	1,499.35	27.94	-27.21	-27.65	0.00	0.00	0.00
1,550.68	1.94	315.76	1,550.00	29.17	-28.41	-28.86	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	1.94	315.76	1,599.29	30.37	-29.58	-30.05	0.00	0.00	0.00
1,700.00	1.94	315.76	1,699.23	32.79	-31.94	-32.45	0.00	0.00	0.00
1,800.00	1.94	315.76	1,799.18	35.22	-34.30	-34.85	0.00	0.00	0.00
1,900.00	1.94	315.76	1,899.12	37.65	-36.67	-37.25	0.00	0.00	0.00
2,000.00	1.94	315.76	1,999.06	40.07	-39.03	-39.65	0.00	0.00	0.00
2,100.00	1.94	315.76	2,099.00	42.50	-41.39	-42.05	0.00	0.00	0.00
2,200.00	1.94	315.76	2,198.95	44.93	-43.76	-44.45	0.00	0.00	0.00
2,300.00	1.94	315.76	2,298.89	47.35	-46.12	-46.85	0.00	0.00	0.00
2,400.00	1.94	315.76	2,398.83	49.78	-48.48	-49.25	0.00	0.00	0.00
2,500.00	1.94	315.76	2,498.77	52.21	-50.85	-51.65	0.00	0.00	0.00
2,600.00	1.94	315.76	2,598.72	54.63	-53.21	-54.05	0.00	0.00	0.00
2,700.00	1.94	315.76	2,698.66	57.06	-55.57	-56.46	0.00	0.00	0.00
2,800.00	1.94	315.76	2,798.60	59.49	-57.94	-58.86	0.00	0.00	0.00
2,900.00	1.94	315.76	2,898.55	61.91	-60.30	-61.26	0.00	0.00	0.00
3,000.00	1.94	315.76	2,998.49	64.34	-62.66	-63.66	0.00	0.00	0.00
3,100.00	1.94	315.76	3,098.43	66.77	-65.03	-66.06	0.00	0.00	0.00
3,200.00	1.94	315.76	3,198.37	69.19	-67.39	-68.46	0.00	0.00	0.00
3,300.00	1.94	315.76	3,298.32	71.62	-69.75	-70.86	0.00	0.00	0.00
3,400.00	1.94	315.76	3,398.26	74.05	-72.12	-73.26	0.00	0.00	0.00
3,500.00	1.94	315.76	3,498.20	76.47	-74.48	-75.66	0.00	0.00	0.00
3,501.80	1.94	315.76	3,500.00	76.52	-74.52	-75.71	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	1.94	315.76	3,598.14	78.90	-76.84	-78.06	0.00	0.00	0.00
3,651.89	1.94	315.76	3,650.00	80.16	-78.07	-79.31	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	1.94	315.76	3,698.09	81.33	-79.21	-80.46	0.00	0.00	0.00
3,800.00	1.94	315.76	3,798.03	83.75	-81.57	-82.86	0.00	0.00	0.00
3,900.00	1.94	315.76	3,897.97	86.18	-83.93	-85.27	0.00	0.00	0.00
4,000.00	1.94	315.76	3,997.91	88.61	-86.30	-87.67	0.00	0.00	0.00
4,100.00	1.94	315.76	4,097.86	91.03	-88.66	-90.07	0.00	0.00	0.00
4,200.00	1.94	315.76	4,197.80	93.46	-91.02	-92.47	0.00	0.00	0.00
4,300.00	1.94	315.76	4,297.74	95.89	-93.38	-94.87	0.00	0.00	0.00
4,400.00	1.94	315.76	4,397.68	98.31	-95.75	-97.27	0.00	0.00	0.00



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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	1.94	315.76	4,497.63	100.74	-98.11	-99.67	0.00	0.00	0.00
4,600.00	1.94	315.76	4,597.57	103.17	-100.47	-102.07	0.00	0.00	0.00
4,700.00	1.94	315.76	4,697.51	105.59	-102.84	-104.47	0.00	0.00	0.00
4,800.00	1.94	315.76	4,797.45	108.02	-105.20	-106.87	0.00	0.00	0.00
4,900.00	1.94	315.76	4,897.40	110.45	-107.56	-109.27	0.00	0.00	0.00
5,000.00	1.94	315.76	4,997.34	112.87	-109.93	-111.67	0.00	0.00	0.00
5,039.14	1.94	315.76	5,036.46	113.82	-110.85	-112.61	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
5,100.00	0.72	315.76	5,097.30	114.84	-111.84	-113.62	2.00	-2.00	0.00
5,136.20	0.00	0.00	5,133.50	115.00	-112.00	-113.78	2.00	-2.00	122.21
<b>Hold Vertical</b>									
5,200.00	0.00	0.00	5,197.30	115.00	-112.00	-113.78	0.00	0.00	0.00
5,300.00	0.00	0.00	5,297.30	115.00	-112.00	-113.78	0.00	0.00	0.00
5,336.20	0.00	0.00	5,333.50	115.00	-112.00	-113.78	0.00	0.00	0.00
<b>KOP, Build 9°/100'</b>									
5,400.00	5.74	179.82	5,397.19	111.81	-111.99	-110.59	9.00	9.00	0.00
5,500.00	14.74	179.82	5,495.50	94.04	-111.94	-92.82	9.00	9.00	0.00
5,600.00	23.75	179.82	5,589.81	61.11	-111.83	-59.90	9.00	9.00	0.00
5,688.40	31.70	179.82	5,668.00	20.02	-111.71	-18.81	9.00	9.00	0.00
<b>P200 Marker</b>									
5,700.00	32.75	179.82	5,677.81	13.83	-111.69	-12.62	9.00	9.00	0.00
5,730.43	35.49	179.82	5,703.00	-3.23	-111.64	4.44	9.00	9.00	0.00
<b>P300 Marker</b>									
5,760.42	38.19	179.82	5,727.00	-21.21	-111.58	22.42	9.00	9.00	0.00
<b>P350 Marker</b>									
5,775.83	39.57	179.82	5,739.00	-30.89	-111.55	32.09	9.00	9.00	0.00
<b>Sharon Springs</b>									
5,779.73	39.93	179.82	5,742.00	-33.38	-111.54	34.59	9.00	9.00	0.00
<b>Niobrara</b>									
5,800.00	41.75	179.82	5,757.33	-46.63	-111.50	47.84	9.00	9.00	0.00
5,806.29	42.32	179.82	5,762.00	-50.84	-111.49	52.05	9.00	9.00	0.00
<b>Top A Chalk</b>									
5,855.39	46.74	179.82	5,797.00	-85.27	-111.38	86.47	9.00	9.00	0.00
<b>Top A Marl</b>									
5,886.87	49.57	179.82	5,818.00	-108.71	-111.31	109.91	9.00	9.00	0.00
<b>A Marl</b>									
5,894.64	50.27	179.82	5,823.00	-114.65	-111.29	115.85	9.00	9.00	0.00
<b>Top Upper B</b>									
5,900.00	50.75	179.82	5,826.41	-118.79	-111.28	119.99	9.00	9.00	0.00
5,926.92	53.18	179.82	5,843.00	-140.00	-111.21	141.20	9.00	9.00	0.00
<b>Base Upper B</b>									
5,947.39	55.02	179.82	5,855.00	-156.57	-111.16	157.77	9.00	9.00	0.00
<b>Top Lower B</b>									
5,983.78	58.29	179.82	5,875.00	-186.97	-111.07	188.16	9.00	9.00	0.00
<b>Base Lower B</b>									
6,000.00	59.75	179.82	5,883.35	-200.88	-111.03	202.07	9.00	9.00	0.00
6,003.29	60.05	179.82	5,885.00	-203.72	-111.02	204.92	9.00	9.00	0.00
<b>Top B Marl</b>									
6,100.00	68.75	179.82	5,926.74	-290.86	-110.75	292.04	9.00	9.00	0.00
6,130.16	71.47	179.82	5,937.00	-319.21	-110.66	320.39	9.00	9.00	0.00
<b>Top C Chalk</b>									
6,153.46	73.57	179.82	5,944.00	-341.44	-110.59	342.62	9.00	9.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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)
<b>Middle C Chalk</b>									
6,200.00	77.76	179.82	5,955.52	-386.52	-110.45	387.69	9.00	9.00	0.00
6,202.27	77.96	179.82	5,956.00	-388.73	-110.45	389.91	9.00	9.00	0.00
<b>Middle C Marl</b>									
6,300.00	86.76	179.82	5,968.98	-485.50	-110.15	486.67	9.00	9.00	0.00
6,336.01	90.00	179.82	5,970.00	-521.49	-110.04	522.66	9.00	9.00	0.00
<b>LP @ 90° Inc, Hold - Lower C Chalk - 5 1/2" Marker / 7" CSG</b>									
6,400.00	90.00	179.82	5,970.00	-585.48	-109.84	586.64	0.00	0.00	0.00
6,500.00	90.00	179.82	5,970.00	-685.48	-109.53	686.63	0.00	0.00	0.00
6,600.00	90.00	179.82	5,970.00	-785.48	-109.22	786.62	0.00	0.00	0.00
6,700.00	90.00	179.82	5,970.00	-885.48	-108.92	886.61	0.00	0.00	0.00
6,800.00	90.00	179.82	5,970.00	-985.48	-108.61	986.60	0.00	0.00	0.00
6,900.00	90.00	179.82	5,970.00	-1,085.48	-108.30	1,086.59	0.00	0.00	0.00
7,000.00	90.00	179.82	5,970.00	-1,185.48	-107.99	1,186.58	0.00	0.00	0.00
7,100.00	90.00	179.82	5,970.00	-1,285.48	-107.68	1,286.57	0.00	0.00	0.00
7,200.00	90.00	179.82	5,970.00	-1,385.48	-107.37	1,386.56	0.00	0.00	0.00
7,300.00	90.00	179.82	5,970.00	-1,485.48	-107.07	1,486.55	0.00	0.00	0.00
7,400.00	90.00	179.82	5,970.00	-1,585.48	-106.76	1,586.54	0.00	0.00	0.00
7,500.00	90.00	179.82	5,970.00	-1,685.48	-106.45	1,686.53	0.00	0.00	0.00
7,600.00	90.00	179.82	5,970.00	-1,785.48	-106.14	1,786.52	0.00	0.00	0.00
7,700.00	90.00	179.82	5,970.00	-1,885.48	-105.83	1,886.51	0.00	0.00	0.00
7,800.00	90.00	179.82	5,970.00	-1,985.48	-105.52	1,986.50	0.00	0.00	0.00
7,900.00	90.00	179.82	5,970.00	-2,085.48	-105.22	2,086.49	0.00	0.00	0.00
8,000.00	90.00	179.82	5,970.00	-2,185.48	-104.91	2,186.48	0.00	0.00	0.00
8,100.00	90.00	179.82	5,970.00	-2,285.48	-104.60	2,286.48	0.00	0.00	0.00
8,200.00	90.00	179.82	5,970.00	-2,385.48	-104.29	2,386.47	0.00	0.00	0.00
8,300.00	90.00	179.82	5,970.00	-2,485.47	-103.98	2,486.46	0.00	0.00	0.00
8,400.00	90.00	179.82	5,970.00	-2,585.47	-103.68	2,586.45	0.00	0.00	0.00
8,500.00	90.00	179.82	5,970.00	-2,685.47	-103.37	2,686.44	0.00	0.00	0.00
8,600.00	90.00	179.82	5,970.00	-2,785.47	-103.06	2,786.43	0.00	0.00	0.00
8,700.00	90.00	179.82	5,970.00	-2,885.47	-102.75	2,886.42	0.00	0.00	0.00
8,800.00	90.00	179.82	5,970.00	-2,985.47	-102.44	2,986.41	0.00	0.00	0.00
8,900.00	90.00	179.82	5,970.00	-3,085.47	-102.13	3,086.40	0.00	0.00	0.00
9,000.00	90.00	179.82	5,970.00	-3,185.47	-101.83	3,186.39	0.00	0.00	0.00
9,100.00	90.00	179.82	5,970.00	-3,285.47	-101.52	3,286.38	0.00	0.00	0.00
9,200.00	90.00	179.82	5,970.00	-3,385.47	-101.21	3,386.37	0.00	0.00	0.00
9,300.00	90.00	179.82	5,970.00	-3,485.47	-100.90	3,486.36	0.00	0.00	0.00
9,400.00	90.00	179.82	5,970.00	-3,585.47	-100.59	3,586.35	0.00	0.00	0.00
9,500.00	90.00	179.82	5,970.00	-3,685.47	-100.28	3,686.34	0.00	0.00	0.00
9,600.00	90.00	179.82	5,970.00	-3,785.47	-99.98	3,786.33	0.00	0.00	0.00
9,700.00	90.00	179.82	5,970.00	-3,885.47	-99.67	3,886.32	0.00	0.00	0.00
9,800.00	90.00	179.82	5,970.00	-3,985.47	-99.36	3,986.31	0.00	0.00	0.00
9,900.00	90.00	179.82	5,970.00	-4,085.47	-99.05	4,086.30	0.00	0.00	0.00
10,000.00	90.00	179.82	5,970.00	-4,185.47	-98.74	4,186.29	0.00	0.00	0.00
10,100.00	90.00	179.82	5,970.00	-4,285.47	-98.43	4,286.28	0.00	0.00	0.00
10,200.00	90.00	179.82	5,970.00	-4,385.47	-98.13	4,386.27	0.00	0.00	0.00
10,300.00	90.00	179.82	5,970.00	-4,485.47	-97.82	4,486.26	0.00	0.00	0.00
10,400.00	90.00	179.82	5,970.00	-4,585.46	-97.51	4,586.25	0.00	0.00	0.00
10,500.00	90.00	179.82	5,970.00	-4,685.46	-97.20	4,686.24	0.00	0.00	0.00
10,600.00	90.00	179.82	5,970.00	-4,785.46	-96.89	4,786.23	0.00	0.00	0.00
10,700.00	90.00	179.82	5,970.00	-4,885.46	-96.58	4,886.22	0.00	0.00	0.00
10,800.00	90.00	179.82	5,970.00	-4,985.46	-96.28	4,986.21	0.00	0.00	0.00
10,900.00	90.00	179.82	5,970.00	-5,085.46	-95.97	5,086.20	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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	179.82	5,970.00	-5,185.46	-95.66	5,186.19	0.00	0.00	0.00	
11,100.00	90.00	179.82	5,970.00	-5,285.46	-95.35	5,286.18	0.00	0.00	0.00	
11,200.00	90.00	179.82	5,970.00	-5,385.46	-95.04	5,386.17	0.00	0.00	0.00	
11,300.00	90.00	179.82	5,970.00	-5,485.46	-94.74	5,486.17	0.00	0.00	0.00	
11,400.00	90.00	179.82	5,970.00	-5,585.46	-94.43	5,586.16	0.00	0.00	0.00	
11,500.00	90.00	179.82	5,970.00	-5,685.46	-94.12	5,686.15	0.00	0.00	0.00	
11,600.00	90.00	179.82	5,970.00	-5,785.46	-93.81	5,786.14	0.00	0.00	0.00	
11,700.00	90.00	179.82	5,970.00	-5,885.46	-93.50	5,886.13	0.00	0.00	0.00	
11,800.00	90.00	179.82	5,970.00	-5,985.46	-93.19	5,986.12	0.00	0.00	0.00	
11,900.00	90.00	179.82	5,970.00	-6,085.46	-92.89	6,086.11	0.00	0.00	0.00	
12,000.00	90.00	179.82	5,970.00	-6,185.46	-92.58	6,186.10	0.00	0.00	0.00	
12,100.00	90.00	179.82	5,970.00	-6,285.46	-92.27	6,286.09	0.00	0.00	0.00	
12,200.00	90.00	179.82	5,970.00	-6,385.46	-91.96	6,386.08	0.00	0.00	0.00	
12,300.00	90.00	179.82	5,970.00	-6,485.46	-91.65	6,486.07	0.00	0.00	0.00	
12,400.00	90.00	179.82	5,970.00	-6,585.46	-91.34	6,586.06	0.00	0.00	0.00	
12,500.00	90.00	179.82	5,970.00	-6,685.46	-91.04	6,686.05	0.00	0.00	0.00	
12,600.00	90.00	179.82	5,970.00	-6,785.45	-90.73	6,786.04	0.00	0.00	0.00	
12,700.00	90.00	179.82	5,970.00	-6,885.45	-90.42	6,886.03	0.00	0.00	0.00	
12,800.00	90.00	179.82	5,970.00	-6,985.45	-90.11	6,986.02	0.00	0.00	0.00	
12,900.00	90.00	179.82	5,970.00	-7,085.45	-89.80	7,086.01	0.00	0.00	0.00	
13,000.00	90.00	179.82	5,970.00	-7,185.45	-89.49	7,186.00	0.00	0.00	0.00	
13,100.00	90.00	179.82	5,970.00	-7,285.45	-89.19	7,285.99	0.00	0.00	0.00	
13,200.00	90.00	179.82	5,970.00	-7,385.45	-88.88	7,385.98	0.00	0.00	0.00	
13,300.00	90.00	179.82	5,970.00	-7,485.45	-88.57	7,485.97	0.00	0.00	0.00	
13,400.00	90.00	179.82	5,970.00	-7,585.45	-88.26	7,585.96	0.00	0.00	0.00	
13,500.00	90.00	179.82	5,970.00	-7,685.45	-87.95	7,685.95	0.00	0.00	0.00	
13,600.00	90.00	179.82	5,970.00	-7,785.45	-87.64	7,785.94	0.00	0.00	0.00	
13,700.00	90.00	179.82	5,970.00	-7,885.45	-87.34	7,885.93	0.00	0.00	0.00	
13,800.00	90.00	179.82	5,970.00	-7,985.45	-87.03	7,985.92	0.00	0.00	0.00	
13,835.03	90.00	179.82	5,970.00	-8,020.48	-86.92	8,020.95	0.00	0.00	0.00	
TD at 13835.03										

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 Razor 29F-3238	0.00	0.00	5,970.00	-8,020.48	-86.92	1,534,102.23	3,445,176.55	40° 47' 18.300 N		103° 53' 32.210 W
- plan hits target center										
- Point										
Brennan #1	0.00	0.00	6,634.00	-3,692.02	-914.86	1,538,414.96	3,444,270.26	40° 48' 1.069 N		103° 53' 42.976 W
- plan misses target center by 1050.93usft at 9504.04usft MD (5970.00 TVD, -3689.51 N, -100.27 E)										
- Circle (radius 1,550.00)										
Johnston #1	0.00	0.00	6,696.00	-6,380.45	-1,210.68	1,535,721.60	3,444,023.23	40° 47' 34.505 N		103° 53' 46.820 W
- plan misses target center by 1333.63usft at 12191.55usft MD (5970.00 TVD, -6377.01 N, -91.99 E)										
- Circle (radius 1,550.00)										
DeWitt-Brennan #32-1	0.00	0.00	6,785.00	-3,751.40	-1,165.70	1,538,351.04	3,444,020.53	40° 48' 0.482 N		103° 53' 46.237 W
- plan misses target center by 1341.55usft at 9562.64usft MD (5970.00 TVD, -3748.11 N, -100.09 E)										
- Circle (radius 1,550.00)										



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor #29F-3238
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4836.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4836.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor #29F-3238	<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)	
6,336.01	5,970.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,550.68	1,550.00	Upper Pierre				
3,501.80	3,500.00	Hygiene				
3,651.89	3,650.00	Lower Pierre				
5,688.40	5,668.00	P200 Marker				
5,730.43	5,703.00	P300 Marker				
5,760.42	5,727.00	P350 Marker				
5,775.83	5,739.00	Sharon Springs				
5,779.73	5,742.00	Niobrara				
5,806.29	5,762.00	Top A Chalk				
5,855.39	5,797.00	Top A Marl				
5,886.87	5,818.00	A Marl				
5,894.64	5,823.00	Top Upper B				
5,926.92	5,843.00	Base Upper B				
5,947.39	5,855.00	Top Lower B				
5,983.78	5,875.00	Base Lower B				
6,003.29	5,885.00	Top B Marl				
6,130.16	5,937.00	Top C Chalk				
6,153.46	5,944.00	Middle C Chalk				
6,202.27	5,956.00	Middle C Marl				
6,336.01	5,970.00	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'	
397.06	397.04	1.18	-1.15	Hold 1.94° Inc	
5,039.14	5,036.46	113.82	-110.85	Drop 2°/100'	
5,136.20	5,133.50	115.00	-112.00	Hold Vertical	
5,336.20	5,333.50	115.00	-112.00	KOP, Build 9°/100'	
6,336.01	5,970.00	-521.50	-110.04	LP @ 90° Inc, Hold	
13,835.03	5,970.00	-8,020.48	-86.92	TD at 13835.03	