



Project: Weld County, CO  
Site: Sec 29-T10N-R58W  
Well: Razor Federal #29L-3202  
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: 7.94°  
Magnetic Field  
Strength: 52878.4nT  
Dip Angle: 67.36°  
Date: 10/30/2015  
Model: IGRF2015

#### FORMATION TOP DETAILS

MDPath	Formation
1550.00	Upper Pierre
3500.00	Hygiene
3650.00	Lower Pierre
5689.00	P200 Marker
5724.00	P300 Marker
5748.00	P350 Marker
5760.00	Sharon Springs
5763.00	Niobrara
5783.00	Top A Chalk
5818.00	Top A Marl
5839.00	A Marl
5844.00	Top Upper B
5864.00	Base Upper B
5876.00	Top Lower B

#### WELL DETAILS: Razor Federal #29L-3202

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.00	0.00	1541397.53	4828.00	3443850.62	40° 48' 30.610 N	103° 53' 47.730 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	753.19	9.06	3.14	751.30	35.72	1.96	2.00	3.14	-35.71	
4	4755.56	9.06	3.14	4703.70	665.28	36.50	0.00	0.00	-665.08	
5	5208.75	0.00	0.00	5155.00	701.00	38.46	2.00	180.00	-700.79	
6	5408.75	0.00	0.00	5355.00	701.00	38.46	0.00	0.00	-700.79	
7	6227.14	90.00	180.00	5876.00	180.00	38.46	11.00	180.00	-179.80	
8	13729.30	90.00	180.00	5876.00	-7322.16	38.46	0.00	0.00	7322.26	PBHL 3202

#### 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'
751.30	753.19	9.06	3.14	35.72	1.96	-35.71	35.77	Hold 9.06° Inc
4703.70	4755.56	9.06	3.14	665.28	36.50	-665.08	666.28	Drop 2°/100'
5155.00	5208.75	0.00	0.00	701.00	38.46	-700.79	702.05	Hold Vertical
5355.00	5408.75	0.00	0.00	701.00	38.46	-700.79	702.05	KOP, Build 11°/100'
5876.00	6227.14	90.00	180.00	180.00	38.46	-179.80	1223.05	LP @ 90° Inc, Hold
5876.00	13729.30	90.00	180.00	-7322.16	38.46	7322.26	8725.22	TD at 13729.30

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 3202	5876.00	-7322.16	38.46	1534077.26	3444021.46	40° 47' 18.260 N 103° 53' 47.230 W	
Brennan #1	6647.00	-2989.68	365.65	1538414.95	3444270.26	40° 48' 1.069 N 103° 53' 42.976 W	
UHL #1	6691.00	-395.23	2.31	1541002.32	3443855.46	40° 48' 26.705 N 103° 53' 47.760 W	
Johnston #1	6709.00	-5678.12	69.96	1535721.60	3444023.23	40° 47' 34.505 N 103° 53' 46.820 W	
DeWitt-Brennan #32-1	6798.00	-3049.07	114.81	1538351.04	3444020.53	40° 48' 0.482 N 103° 53' 46.237 W	

SHL:  
2351' FSL, 661' FWL  
Sec29-T10N-R58W

BHL:  
300' FSL, 461' FWL  
Sec32-T10N-R58W

5 1/2" Marker / 7" CSG:  
2531' FSL, 699' FWL  
Sec29-T10N-R58W

Exit UHL #1  
1550' Radius @ 8352' MD

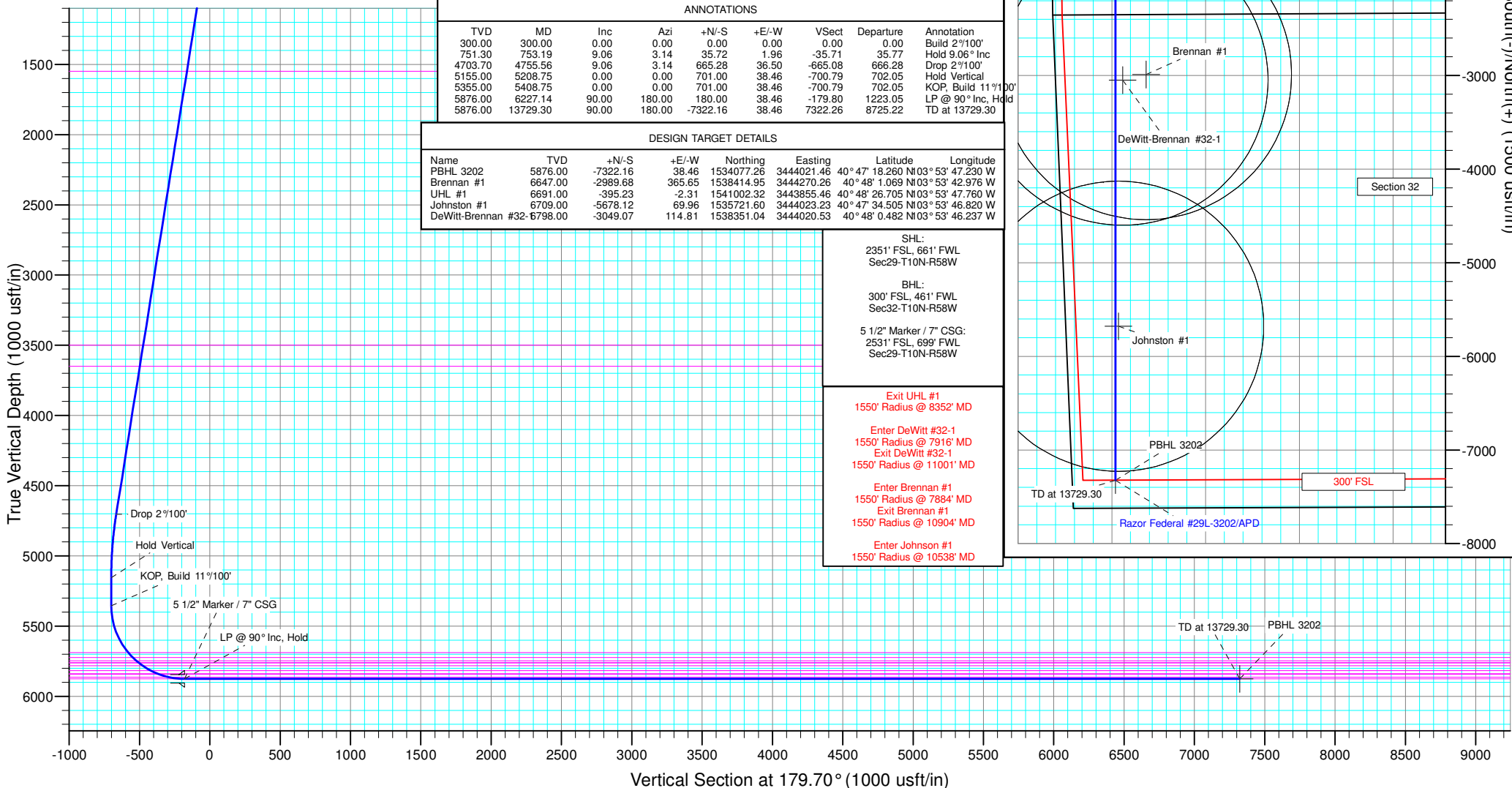
Enter DeWitt #32-1  
1550' Radius @ 7916' MD

Exit DeWitt #32-1  
1550' Radius @ 11001' MD

Enter Brennan #1  
1550' Radius @ 7884' MD

Exit Brennan #1  
1550' Radius @ 10904' MD

Enter Johnston #1  
1550' Radius @ 10538' MD





# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 29-T10N-R58W**

**Razor Federal #29L-3202**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**25 August, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29L-3202
<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 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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 Federal #29L-3202				
Well Position	+N/-S	-2,901.68 usft	Northing:	1,541,397.53 usft	Latitude:	40° 48' 30.610 N
	+E/-W	697.43 usft	Easting:	3,443,850.61 usft	Longitude:	103° 53' 47.730 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	10/30/2015	7.94	67.36	52,878

<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	179.70

<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	
753.19	9.06	3.14	751.30	35.72	1.96	2.00	2.00	0.00	3.14	
4,755.56	9.06	3.14	4,703.70	665.28	36.50	0.00	0.00	0.00	0.00	
5,208.75	0.00	0.00	5,155.00	701.00	38.46	2.00	-2.00	0.00	180.00	
5,408.75	0.00	0.00	5,355.00	701.00	38.46	0.00	0.00	0.00	0.00	
6,227.14	90.00	180.00	5,876.00	180.00	38.46	11.00	11.00	0.00	180.00	
13,729.30	90.00	180.00	5,876.00	-7,322.16	38.46	0.00	0.00	0.00	0.00	PBHL 3202



# WOG

## Planning Report

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<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 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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	3.14	399.98	1.74	0.10	-1.74	2.00	2.00	0.00	
500.00	4.00	3.14	499.84	6.97	0.38	-6.97	2.00	2.00	0.00	
600.00	6.00	3.14	599.45	15.67	0.86	-15.67	2.00	2.00	0.00	
700.00	8.00	3.14	698.70	27.84	1.53	-27.83	2.00	2.00	0.00	
753.19	9.06	3.14	751.30	35.72	1.96	-35.71	2.00	2.00	0.00	
<b>Hold 9.06° Inc</b>										
800.00	9.06	3.14	797.53	43.08	2.36	-43.07	0.00	0.00	0.00	
900.00	9.06	3.14	896.28	58.81	3.23	-58.79	0.00	0.00	0.00	
1,000.00	9.06	3.14	995.03	74.54	4.09	-74.52	0.00	0.00	0.00	
1,100.00	9.06	3.14	1,093.78	90.27	4.95	-90.24	0.00	0.00	0.00	
1,200.00	9.06	3.14	1,192.53	106.00	5.82	-105.97	0.00	0.00	0.00	
1,300.00	9.06	3.14	1,291.28	121.73	6.68	-121.69	0.00	0.00	0.00	
1,400.00	9.06	3.14	1,390.04	137.46	7.54	-137.42	0.00	0.00	0.00	
1,500.00	9.06	3.14	1,488.79	153.19	8.40	-153.14	0.00	0.00	0.00	
1,561.99	9.06	3.14	1,550.00	162.94	8.94	-162.89	0.00	0.00	0.00	
<b>Upper Pierre</b>										
1,600.00	9.06	3.14	1,587.54	168.92	9.27	-168.87	0.00	0.00	0.00	
1,700.00	9.06	3.14	1,686.29	184.65	10.13	-184.59	0.00	0.00	0.00	
1,800.00	9.06	3.14	1,785.04	200.38	10.99	-200.32	0.00	0.00	0.00	
1,900.00	9.06	3.14	1,883.79	216.11	11.86	-216.04	0.00	0.00	0.00	
2,000.00	9.06	3.14	1,982.54	231.84	12.72	-231.77	0.00	0.00	0.00	
2,100.00	9.06	3.14	2,081.30	247.57	13.58	-247.49	0.00	0.00	0.00	
2,200.00	9.06	3.14	2,180.05	263.30	14.45	-263.22	0.00	0.00	0.00	
2,300.00	9.06	3.14	2,278.80	279.03	15.31	-278.94	0.00	0.00	0.00	
2,400.00	9.06	3.14	2,377.55	294.76	16.17	-294.67	0.00	0.00	0.00	
2,500.00	9.06	3.14	2,476.30	310.49	17.03	-310.39	0.00	0.00	0.00	
2,600.00	9.06	3.14	2,575.05	326.22	17.90	-326.12	0.00	0.00	0.00	
2,700.00	9.06	3.14	2,673.80	341.95	18.76	-341.84	0.00	0.00	0.00	
2,800.00	9.06	3.14	2,772.55	357.68	19.62	-357.57	0.00	0.00	0.00	
2,900.00	9.06	3.14	2,871.31	373.41	20.49	-373.29	0.00	0.00	0.00	
3,000.00	9.06	3.14	2,970.06	389.14	21.35	-389.02	0.00	0.00	0.00	
3,100.00	9.06	3.14	3,068.81	404.87	22.21	-404.74	0.00	0.00	0.00	
3,200.00	9.06	3.14	3,167.56	420.60	23.08	-420.47	0.00	0.00	0.00	
3,300.00	9.06	3.14	3,266.31	436.33	23.94	-436.19	0.00	0.00	0.00	
3,400.00	9.06	3.14	3,365.06	452.06	24.80	-451.92	0.00	0.00	0.00	
3,500.00	9.06	3.14	3,463.81	467.79	25.66	-467.64	0.00	0.00	0.00	
3,536.64	9.06	3.14	3,500.00	473.55	25.98	-473.41	0.00	0.00	0.00	
<b>Hygiene</b>										
3,600.00	9.06	3.14	3,562.57	483.52	26.53	-483.37	0.00	0.00	0.00	
3,688.54	9.06	3.14	3,650.00	497.44	27.29	-497.29	0.00	0.00	0.00	
<b>Lower Pierre</b>										
3,700.00	9.06	3.14	3,661.32	499.24	27.39	-499.09	0.00	0.00	0.00	
3,800.00	9.06	3.14	3,760.07	514.97	28.25	-514.82	0.00	0.00	0.00	
3,900.00	9.06	3.14	3,858.82	530.70	29.12	-530.54	0.00	0.00	0.00	
4,000.00	9.06	3.14	3,957.57	546.43	29.98	-546.27	0.00	0.00	0.00	
4,100.00	9.06	3.14	4,056.32	562.16	30.84	-561.99	0.00	0.00	0.00	
4,200.00	9.06	3.14	4,155.07	577.89	31.71	-577.72	0.00	0.00	0.00	
4,300.00	9.06	3.14	4,253.82	593.62	32.57	-593.44	0.00	0.00	0.00	
4,400.00	9.06	3.14	4,352.58	609.35	33.43	-609.17	0.00	0.00	0.00	



# WOG Planning Report

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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4849.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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	9.06	3.14	4,451.33	625.08	34.29	-624.89	0.00	0.00	0.00
4,600.00	9.06	3.14	4,550.08	640.81	35.16	-640.62	0.00	0.00	0.00
4,700.00	9.06	3.14	4,648.83	656.54	36.02	-656.34	0.00	0.00	0.00
4,755.56	9.06	3.14	4,703.70	665.28	36.50	-665.08	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,800.00	8.18	3.14	4,747.63	671.93	36.87	-671.73	2.00	-2.00	0.00
4,900.00	6.18	3.14	4,846.85	684.40	37.55	-684.20	2.00	-2.00	0.00
5,000.00	4.18	3.14	4,946.43	693.41	38.04	-693.20	2.00	-2.00	0.00
5,100.00	2.18	3.14	5,046.27	698.94	38.35	-698.73	2.00	-2.00	0.00
5,200.00	0.18	3.14	5,146.25	700.99	38.46	-700.77	2.00	-2.00	0.00
5,208.75	0.00	0.00	5,155.00	701.00	38.46	-700.79	2.00	-2.00	0.00
<b>Hold Vertical</b>									
5,300.00	0.00	0.00	5,246.25	701.00	38.46	-700.79	0.00	0.00	0.00
5,400.00	0.00	0.00	5,346.25	701.00	38.46	-700.79	0.00	0.00	0.00
5,408.75	0.00	0.00	5,355.00	701.00	38.46	-700.79	0.00	0.00	0.00
<b>KOP, Build 11°/100'</b>									
5,500.00	10.03	180.00	5,445.78	693.03	38.46	-692.82	11.00	11.00	0.00
5,600.00	21.03	180.00	5,541.98	666.29	38.46	-666.08	11.00	11.00	0.00
5,700.00	32.03	180.00	5,631.31	621.69	38.46	-621.48	11.00	11.00	0.00
5,771.31	39.87	180.00	5,689.00	579.86	38.46	-579.65	11.00	11.00	0.00
<b>P200 Marker</b>									
5,800.00	43.03	180.00	5,710.50	560.87	38.46	-560.66	11.00	11.00	0.00
5,818.79	45.09	180.00	5,724.00	547.80	38.46	-547.59	11.00	11.00	0.00
<b>P300 Marker</b>									
5,854.01	48.97	180.00	5,748.00	522.04	38.46	-521.83	11.00	11.00	0.00
<b>P350 Marker</b>									
5,872.67	51.02	180.00	5,760.00	507.74	38.46	-507.53	11.00	11.00	0.00
<b>Sharon Springs</b>									
5,877.47	51.55	180.00	5,763.00	504.00	38.46	-503.79	11.00	11.00	0.00
<b>Niobrara</b>									
5,900.00	54.02	180.00	5,776.63	486.06	38.46	-485.85	11.00	11.00	0.00
5,911.01	55.23	180.00	5,783.00	477.08	38.46	-476.87	11.00	11.00	0.00
<b>Top A Chalk</b>									
5,978.96	62.71	180.00	5,818.00	418.90	38.46	-418.69	11.00	11.00	0.00
<b>Top A Marl</b>									
6,000.00	65.02	180.00	5,827.27	400.01	38.46	-399.80	11.00	11.00	0.00
6,029.60	68.28	180.00	5,839.00	372.83	38.46	-372.63	11.00	11.00	0.00
<b>A Marl</b>									
6,043.59	69.81	180.00	5,844.00	359.78	38.46	-359.57	11.00	11.00	0.00
<b>Top Upper B</b>									
6,100.00	76.02	180.00	5,860.56	305.88	38.46	-305.67	11.00	11.00	0.00
6,115.10	77.68	180.00	5,864.00	291.18	38.46	-290.97	11.00	11.00	0.00
<b>Base Upper B</b>									
6,200.00	87.02	180.00	5,875.29	207.12	38.46	-206.92	11.00	11.00	0.00
6,227.14	90.00	180.00	5,876.00	180.00	38.46	-179.79	11.00	11.00	0.00
<b>LP @ 90° Inc, Hold - Top Lower B - 5 1/2" Marker / 7" CSG</b>									
6,300.00	90.00	180.00	5,876.00	107.14	38.46	-106.93	0.00	0.00	0.00
6,400.00	90.00	180.00	5,876.00	7.14	38.46	-6.93	0.00	0.00	0.00
6,500.00	90.00	180.00	5,876.00	-92.86	38.46	93.06	0.00	0.00	0.00
6,600.00	90.00	180.00	5,876.00	-192.86	38.46	193.06	0.00	0.00	0.00
6,700.00	90.00	180.00	5,876.00	-292.86	38.46	293.06	0.00	0.00	0.00
6,800.00	90.00	180.00	5,876.00	-392.86	38.46	393.06	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29L-3202
<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 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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	180.00	5,876.00	-492.86	38.46	493.06	0.00	0.00	0.00
7,000.00	90.00	180.00	5,876.00	-592.86	38.46	593.06	0.00	0.00	0.00
7,100.00	90.00	180.00	5,876.00	-692.86	38.46	693.06	0.00	0.00	0.00
7,200.00	90.00	180.00	5,876.00	-792.86	38.46	793.05	0.00	0.00	0.00
7,300.00	90.00	180.00	5,876.00	-892.86	38.46	893.05	0.00	0.00	0.00
7,400.00	90.00	180.00	5,876.00	-992.86	38.46	993.05	0.00	0.00	0.00
7,500.00	90.00	180.00	5,876.00	-1,092.86	38.46	1,093.05	0.00	0.00	0.00
7,600.00	90.00	180.00	5,876.00	-1,192.86	38.46	1,193.05	0.00	0.00	0.00
7,700.00	90.00	180.00	5,876.00	-1,292.86	38.46	1,293.05	0.00	0.00	0.00
7,800.00	90.00	180.00	5,876.00	-1,392.86	38.46	1,393.05	0.00	0.00	0.00
7,900.00	90.00	180.00	5,876.00	-1,492.86	38.46	1,493.05	0.00	0.00	0.00
8,000.00	90.00	180.00	5,876.00	-1,592.86	38.46	1,593.04	0.00	0.00	0.00
8,100.00	90.00	180.00	5,876.00	-1,692.86	38.46	1,693.04	0.00	0.00	0.00
8,200.00	90.00	180.00	5,876.00	-1,792.86	38.46	1,793.04	0.00	0.00	0.00
8,300.00	90.00	180.00	5,876.00	-1,892.86	38.46	1,893.04	0.00	0.00	0.00
8,400.00	90.00	180.00	5,876.00	-1,992.86	38.46	1,993.04	0.00	0.00	0.00
8,500.00	90.00	180.00	5,876.00	-2,092.86	38.46	2,093.04	0.00	0.00	0.00
8,600.00	90.00	180.00	5,876.00	-2,192.86	38.46	2,193.04	0.00	0.00	0.00
8,700.00	90.00	180.00	5,876.00	-2,292.86	38.46	2,293.03	0.00	0.00	0.00
8,800.00	90.00	180.00	5,876.00	-2,392.86	38.46	2,393.03	0.00	0.00	0.00
8,900.00	90.00	180.00	5,876.00	-2,492.86	38.46	2,493.03	0.00	0.00	0.00
9,000.00	90.00	180.00	5,876.00	-2,592.86	38.46	2,593.03	0.00	0.00	0.00
9,100.00	90.00	180.00	5,876.00	-2,692.86	38.46	2,693.03	0.00	0.00	0.00
9,200.00	90.00	180.00	5,876.00	-2,792.86	38.46	2,793.03	0.00	0.00	0.00
9,300.00	90.00	180.00	5,876.00	-2,892.86	38.46	2,893.03	0.00	0.00	0.00
9,400.00	90.00	180.00	5,876.00	-2,992.86	38.46	2,993.02	0.00	0.00	0.00
9,500.00	90.00	180.00	5,876.00	-3,092.86	38.46	3,093.02	0.00	0.00	0.00
9,600.00	90.00	180.00	5,876.00	-3,192.86	38.46	3,193.02	0.00	0.00	0.00
9,700.00	90.00	180.00	5,876.00	-3,292.86	38.46	3,293.02	0.00	0.00	0.00
9,800.00	90.00	180.00	5,876.00	-3,392.86	38.46	3,393.02	0.00	0.00	0.00
9,900.00	90.00	180.00	5,876.00	-3,492.86	38.46	3,493.02	0.00	0.00	0.00
10,000.00	90.00	180.00	5,876.00	-3,592.86	38.46	3,593.02	0.00	0.00	0.00
10,100.00	90.00	180.00	5,876.00	-3,692.86	38.46	3,693.01	0.00	0.00	0.00
10,200.00	90.00	180.00	5,876.00	-3,792.86	38.46	3,793.01	0.00	0.00	0.00
10,300.00	90.00	180.00	5,876.00	-3,892.86	38.46	3,893.01	0.00	0.00	0.00
10,400.00	90.00	180.00	5,876.00	-3,992.86	38.46	3,993.01	0.00	0.00	0.00
10,500.00	90.00	180.00	5,876.00	-4,092.86	38.46	4,093.01	0.00	0.00	0.00
10,600.00	90.00	180.00	5,876.00	-4,192.86	38.46	4,193.01	0.00	0.00	0.00
10,700.00	90.00	180.00	5,876.00	-4,292.86	38.46	4,293.01	0.00	0.00	0.00
10,800.00	90.00	180.00	5,876.00	-4,392.86	38.46	4,393.01	0.00	0.00	0.00
10,900.00	90.00	180.00	5,876.00	-4,492.86	38.46	4,493.00	0.00	0.00	0.00
11,000.00	90.00	180.00	5,876.00	-4,592.86	38.46	4,593.00	0.00	0.00	0.00
11,100.00	90.00	180.00	5,876.00	-4,692.86	38.46	4,693.00	0.00	0.00	0.00
11,200.00	90.00	180.00	5,876.00	-4,792.86	38.46	4,793.00	0.00	0.00	0.00
11,300.00	90.00	180.00	5,876.00	-4,892.86	38.46	4,893.00	0.00	0.00	0.00
11,400.00	90.00	180.00	5,876.00	-4,992.86	38.46	4,993.00	0.00	0.00	0.00
11,500.00	90.00	180.00	5,876.00	-5,092.86	38.46	5,093.00	0.00	0.00	0.00
11,600.00	90.00	180.00	5,876.00	-5,192.86	38.46	5,192.99	0.00	0.00	0.00
11,700.00	90.00	180.00	5,876.00	-5,292.86	38.46	5,292.99	0.00	0.00	0.00
11,800.00	90.00	180.00	5,876.00	-5,392.86	38.46	5,392.99	0.00	0.00	0.00
11,900.00	90.00	180.00	5,876.00	-5,492.86	38.46	5,492.99	0.00	0.00	0.00
12,000.00	90.00	180.00	5,876.00	-5,592.86	38.46	5,592.99	0.00	0.00	0.00
12,100.00	90.00	180.00	5,876.00	-5,692.86	38.46	5,692.99	0.00	0.00	0.00
12,200.00	90.00	180.00	5,876.00	-5,792.86	38.46	5,792.99	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29L-3202
<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 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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	180.00	5,876.00	-5,892.86	38.46	5,892.98	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,876.00	-5,992.86	38.46	5,992.98	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,876.00	-6,092.86	38.46	6,092.98	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,876.00	-6,192.86	38.46	6,192.98	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,876.00	-6,292.86	38.46	6,292.98	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,876.00	-6,392.86	38.46	6,392.98	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,876.00	-6,492.86	38.46	6,492.98	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,876.00	-6,592.86	38.46	6,592.97	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,876.00	-6,692.86	38.46	6,692.97	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,876.00	-6,792.86	38.46	6,792.97	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,876.00	-6,892.86	38.46	6,892.97	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,876.00	-6,992.86	38.46	6,992.97	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,876.00	-7,092.86	38.46	7,092.97	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,876.00	-7,192.86	38.46	7,192.97	0.00	0.00	0.00	
13,700.00	90.00	180.00	5,876.00	-7,292.86	38.46	7,292.97	0.00	0.00	0.00	
13,729.30	90.00	180.00	5,876.00	-7,322.16	38.46	7,322.26	0.00	0.00	0.00	
TD at 13729.30										

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 3202	0.00	0.00	5,876.00	-7,322.16	38.46	1,534,077.26	3,444,021.46	40° 47' 18.260 N	103° 53' 47.230 W	
- plan hits target center										
- Point										
Brennan #1	0.00	0.00	6,647.00	-2,989.68	365.65	1,538,414.96	3,444,270.26	40° 48' 1.069 N	103° 53' 42.976 W	
- plan misses target center by 837.55usft at 9396.81usft MD (5876.00 TVD, -2989.68 N, 38.46 E)										
- Circle (radius 1,550.00)										
UHL #1	0.00	0.00	6,691.00	-395.23	-2.31	1,541,002.33	3,443,855.45	40° 48' 26.705 N	103° 53' 47.760 W	
- plan misses target center by 816.02usft at 6802.36usft MD (5876.00 TVD, -395.23 N, 38.46 E)										
- Circle (radius 1,550.00)										
Johnston #1	0.00	0.00	6,709.00	-5,678.12	69.96	1,535,721.60	3,444,023.23	40° 47' 34.505 N	103° 53' 46.820 W	
- plan misses target center by 833.60usft at 12085.26usft MD (5876.00 TVD, -5678.12 N, 38.46 E)										
- Circle (radius 1,550.00)										
DeWitt-Brennan #32-1	0.00	0.00	6,798.00	-3,049.07	114.81	1,538,351.04	3,444,020.53	40° 48' 0.482 N	103° 53' 46.237 W	
- plan misses target center by 925.16usft at 9456.20usft MD (5876.00 TVD, -3049.07 N, 38.46 E)										
- Circle (radius 1,550.00)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,227.14	5,876.00	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 #29L-3202
<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 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29L-3202	<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 (°)	
1,561.99	1,550.00	Upper Pierre				
3,536.64	3,500.00	Hygiene				
3,688.54	3,650.00	Lower Pierre				
5,771.31	5,689.00	P200 Marker				
5,818.79	5,724.00	P300 Marker				
5,854.01	5,748.00	P350 Marker				
5,872.67	5,760.00	Sharon Springs				
5,877.47	5,763.00	Niobrara				
5,911.01	5,783.00	Top A Chalk				
5,978.96	5,818.00	Top A Marl				
6,029.60	5,839.00	A Marl				
6,043.59	5,844.00	Top Upper B				
6,115.10	5,864.00	Base Upper B				
6,227.14	5,876.00	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'	
753.19	751.30	35.72	1.96	Hold 9.06° Inc	
4,755.56	4,703.70	665.28	36.50	Drop 2°/100'	
5,208.75	5,155.00	701.00	38.46	Hold Vertical	
5,408.75	5,355.00	701.00	38.46	KOP, Build 11°/100'	
6,227.14	5,876.00	180.00	38.46	LP @ 90° Inc, Hold	
13,729.30	5,876.00	-7,322.16	38.46	TD at 13729.30	