



Project: Weld County, CO  
Site: Sec 29-T10N-R58W  
Well: Razor Federal #29G-3209  
Wellbore: Hz  
Design: APD

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



Azimuths to True North  
Magnetic North: 7.89°  
Magnetic Field  
Strength: 52823.1 nT  
Dip Angle: 67.35°  
Date: 4/29/2016  
Model: IGRF2015

#### FORMATION TOP DETAILS

	TVDPath	MDPath	Formation
	1550.00	1552.24	Upper Pierre
	3500.00	3506.10	Hygiene
	3650.00	3656.40	Lower Pierre
	5668.00	5764.94	P200 Marker
	5703.00	5830.38	P300 Marker
	5727.00	5883.21	P350 Marker
	5739.00	5913.57	Sharon Springs
	5742.00	5921.74	Niobrara
	5762.00	5985.41	Top A Chalk

#### WELL DETAILS: Razor Federal #29G-3209

+N/-S	+E/-W	Northing	Ground Level:	Latitude	Longitude	Spot
0.00	0.00	1542246.68	4811.00	40° 48' 38.630 N	103° 53' 20.740 W	
			Easting: 3445911.00			

#### 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	480.17	3.60	101.06	480.05	-1.09	5.56	2.00	101.06	1.28	
4	4777.07	3.60	101.06	4768.45	-52.91	270.59	0.00	0.00	62.07	
5	4957.23	0.00	0.00	4948.50	-54.00	276.15	2.00	180.00	63.35	
6	5157.23	0.00	0.00	5148.50	-54.00	276.15	0.00	0.00	63.35	
7	6157.04	90.00	180.00	5785.00	-690.50	276.15	9.00	180.00	699.48	
8	13592.28	90.00	180.00	5785.00	-8125.74	276.15	0.00	0.00	8130.43	PBHL Razor 29G-3209

#### 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'
480.05	480.17	3.60	101.06	-1.09	5.56	1.28	5.66	Hold 3.60° Inc
4768.45	4777.07	3.60	101.06	-52.91	270.59	62.07	275.72	Drop 2°/100'
4948.50	4957.23	0.00	0.00	-54.00	276.15	63.35	281.38	Hold Vertical
5148.50	5157.23	0.00	0.00	-54.00	276.15	63.35	281.38	KOP, Build 9°/100'
5785.00	6157.04	90.00	180.00	-690.50	276.15	699.48	917.88	LP @ 90° Inc, Hold
5785.00	13592.28	90.00	180.00	-8125.74	276.15	8130.43	8353.12	TD at 13592.28

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Razor 29G-3209	5785.00	-8125.74	276.15	1534127.30	3446334.71	40° 47' 18.340 N	103° 53' 17.150 W
Brennan #2	6693.00	-3868.01	671.25	1538391.50	3446652.40	40° 48' 0.410 N	103° 53' 12.012 W

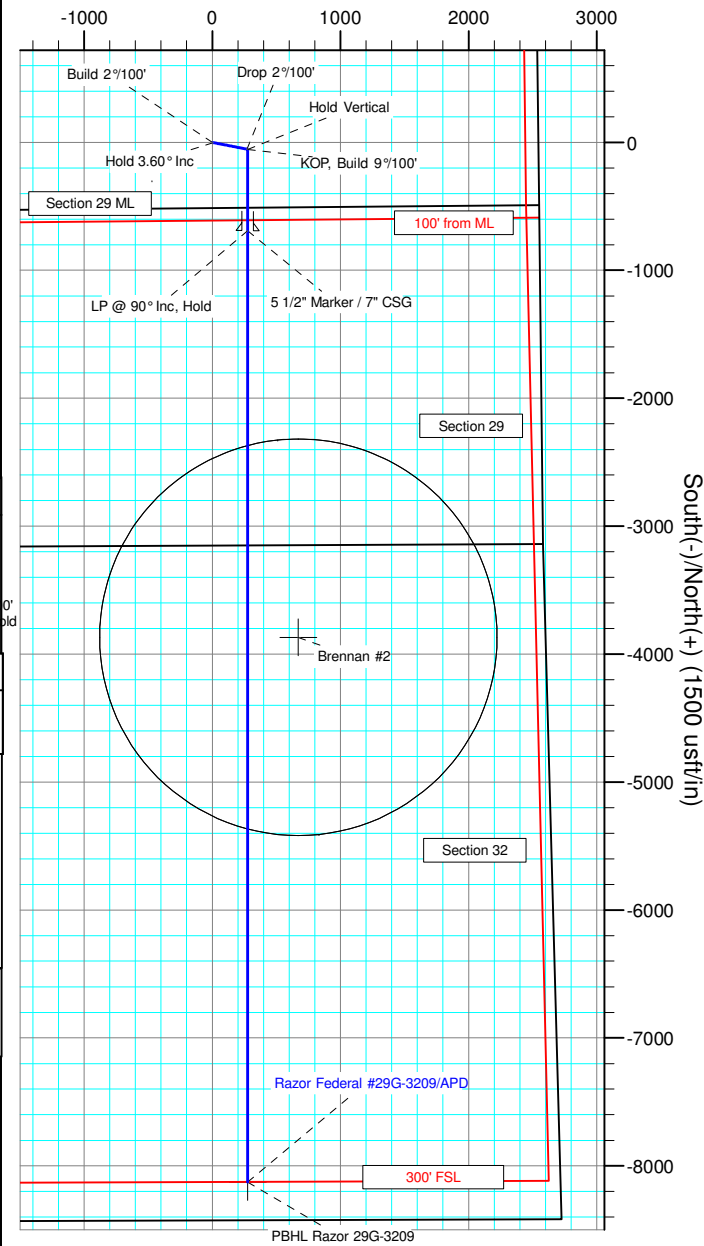
SHL:  
2128' FNL, 2544' FEL  
Sec29-T10N-R58W

BHL:  
300' FSL, 2441' FEL  
Sec32-T10N-R58W

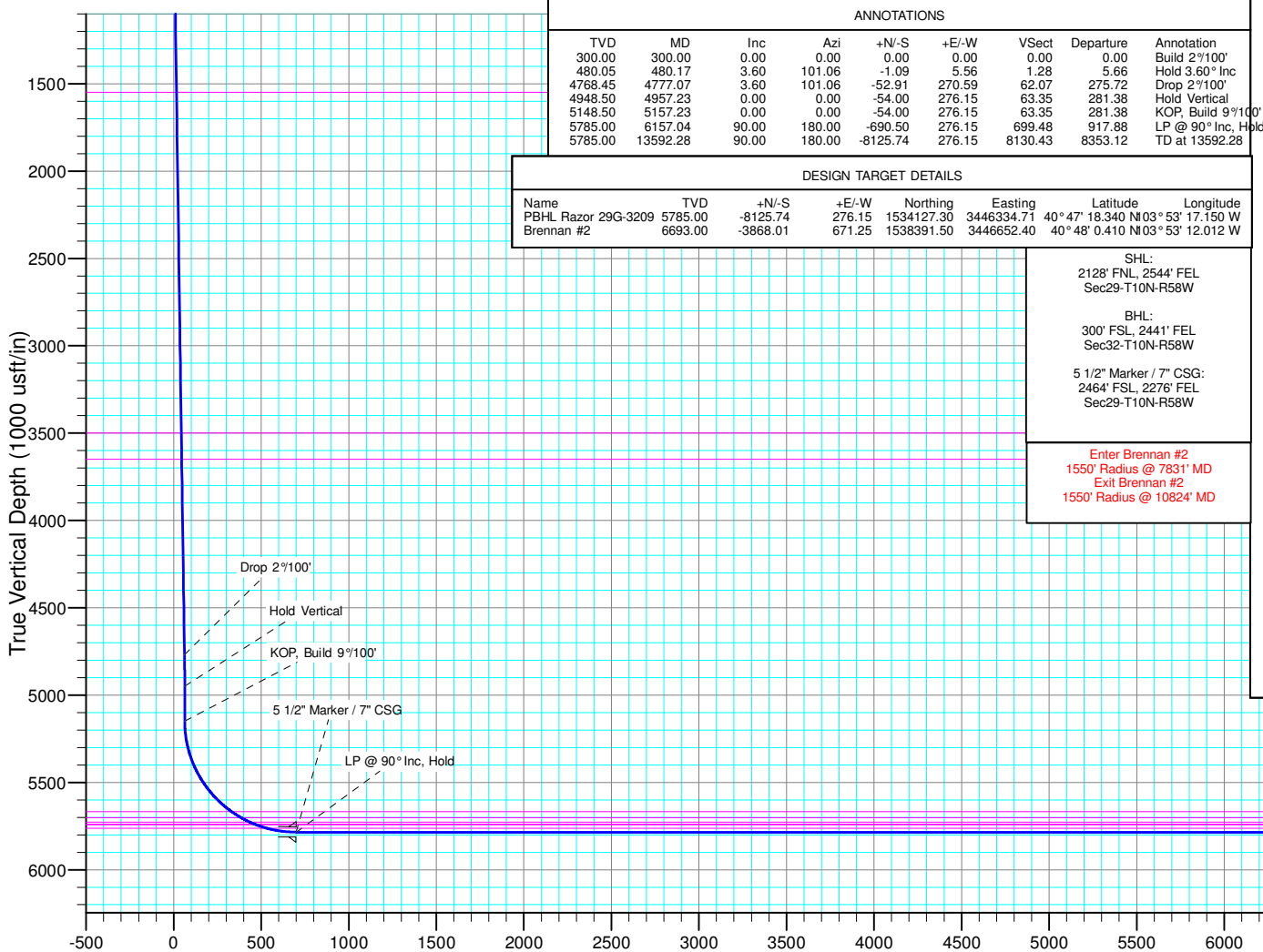
5 1/2" Marker / 7" CSG:  
2464' FSL, 2276' FEL  
Sec29-T10N-R58W

Enter Brennan #2  
1550' Radius @ 7831' MD  
Exit Brennan #2  
1550' Radius @ 10824' MD

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



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



Vertical Section at 178.05° (1000 usft/in)



# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 29-T10N-R58W**

**Razor Federal #29G-3209**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**24 August, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<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 #29G-3209				
Well Position	+N/-S	-2,089.86 usft	Northing:	1,542,246.68 usft	Latitude:	40° 48' 38.630 N
	+E/-W	2,772.81 usft	Easting:	3,445,911.00 usft	Longitude:	103° 53' 20.740 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,811.00 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	4/29/2016	7.89	67.35	52,823

<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	178.05

<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	
480.17	3.60	101.06	480.05	-1.09	5.56	2.00	2.00	0.00	101.06	
4,777.07	3.60	101.06	4,768.45	-52.91	270.59	0.00	0.00	0.00	0.00	
4,957.23	0.00	0.00	4,948.50	-54.00	276.15	2.00	-2.00	0.00	180.00	
5,157.23	0.00	0.00	5,148.50	-54.00	276.15	0.00	0.00	0.00	0.00	
6,157.04	90.00	180.00	5,785.00	-690.50	276.15	9.00	9.00	0.00	180.00	
13,592.28	90.00	180.00	5,785.00	-8,125.74	276.15	0.00	0.00	0.00	0.00	PBHL Razor 29G-320



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<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	101.06	399.98	-0.33	1.71	0.39	2.00	2.00	0.00
480.17	3.60	101.06	480.05	-1.09	5.56	1.28	2.00	2.00	0.00
<b>Hold 3.60° Inc</b>									
500.00	3.60	101.06	499.84	-1.33	6.78	1.56	0.00	0.00	0.00
600.00	3.60	101.06	599.64	-2.53	12.95	2.97	0.00	0.00	0.00
700.00	3.60	101.06	699.45	-3.74	19.12	4.39	0.00	0.00	0.00
800.00	3.60	101.06	799.25	-4.94	25.29	5.80	0.00	0.00	0.00
900.00	3.60	101.06	899.05	-6.15	31.45	7.22	0.00	0.00	0.00
1,000.00	3.60	101.06	998.85	-7.36	37.62	8.63	0.00	0.00	0.00
1,100.00	3.60	101.06	1,098.66	-8.56	43.79	10.05	0.00	0.00	0.00
1,200.00	3.60	101.06	1,198.46	-9.77	49.96	11.46	0.00	0.00	0.00
1,300.00	3.60	101.06	1,298.26	-10.98	56.13	12.88	0.00	0.00	0.00
1,400.00	3.60	101.06	1,398.06	-12.18	62.29	14.29	0.00	0.00	0.00
1,500.00	3.60	101.06	1,497.87	-13.39	68.46	15.70	0.00	0.00	0.00
1,552.24	3.60	101.06	1,550.00	-14.02	71.68	16.44	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	3.60	101.06	1,597.67	-14.59	74.63	17.12	0.00	0.00	0.00
1,700.00	3.60	101.06	1,697.47	-15.80	80.80	18.53	0.00	0.00	0.00
1,800.00	3.60	101.06	1,797.27	-17.01	86.97	19.95	0.00	0.00	0.00
1,900.00	3.60	101.06	1,897.07	-18.21	93.13	21.36	0.00	0.00	0.00
2,000.00	3.60	101.06	1,996.88	-19.42	99.30	22.78	0.00	0.00	0.00
2,100.00	3.60	101.06	2,096.68	-20.62	105.47	24.19	0.00	0.00	0.00
2,200.00	3.60	101.06	2,196.48	-21.83	111.64	25.61	0.00	0.00	0.00
2,300.00	3.60	101.06	2,296.28	-23.04	117.81	27.02	0.00	0.00	0.00
2,400.00	3.60	101.06	2,396.09	-24.24	123.97	28.44	0.00	0.00	0.00
2,500.00	3.60	101.06	2,495.89	-25.45	130.14	29.85	0.00	0.00	0.00
2,600.00	3.60	101.06	2,595.69	-26.65	136.31	31.27	0.00	0.00	0.00
2,700.00	3.60	101.06	2,695.49	-27.86	142.48	32.68	0.00	0.00	0.00
2,800.00	3.60	101.06	2,795.30	-29.07	148.65	34.10	0.00	0.00	0.00
2,900.00	3.60	101.06	2,895.10	-30.27	154.81	35.51	0.00	0.00	0.00
3,000.00	3.60	101.06	2,994.90	-31.48	160.98	36.93	0.00	0.00	0.00
3,100.00	3.60	101.06	3,094.70	-32.69	167.15	38.34	0.00	0.00	0.00
3,200.00	3.60	101.06	3,194.50	-33.89	173.32	39.76	0.00	0.00	0.00
3,300.00	3.60	101.06	3,294.31	-35.10	179.49	41.17	0.00	0.00	0.00
3,400.00	3.60	101.06	3,394.11	-36.30	185.65	42.59	0.00	0.00	0.00
3,500.00	3.60	101.06	3,493.91	-37.51	191.82	44.00	0.00	0.00	0.00
3,506.10	3.60	101.06	3,500.00	-37.58	192.20	44.09	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	3.60	101.06	3,593.71	-38.72	197.99	45.42	0.00	0.00	0.00
3,656.40	3.60	101.06	3,650.00	-39.40	201.47	46.22	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	3.60	101.06	3,693.52	-39.92	204.16	46.83	0.00	0.00	0.00
3,800.00	3.60	101.06	3,793.32	-41.13	210.33	48.25	0.00	0.00	0.00
3,900.00	3.60	101.06	3,893.12	-42.33	216.49	49.66	0.00	0.00	0.00
4,000.00	3.60	101.06	3,992.92	-43.54	222.66	51.08	0.00	0.00	0.00
4,100.00	3.60	101.06	4,092.73	-44.75	228.83	52.49	0.00	0.00	0.00
4,200.00	3.60	101.06	4,192.53	-45.95	235.00	53.91	0.00	0.00	0.00
4,300.00	3.60	101.06	4,292.33	-47.16	241.17	55.32	0.00	0.00	0.00
4,400.00	3.60	101.06	4,392.13	-48.37	247.33	56.74	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<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	3.60	101.06	4,491.93	-49.57	253.50	58.15	0.00	0.00	0.00
4,600.00	3.60	101.06	4,591.74	-50.78	259.67	59.57	0.00	0.00	0.00
4,700.00	3.60	101.06	4,691.54	-51.98	265.84	60.98	0.00	0.00	0.00
4,777.07	3.60	101.06	4,768.45	-52.91	270.59	62.07	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,800.00	3.14	101.06	4,791.35	-53.17	271.92	62.38	2.00	-2.00	0.00
4,900.00	1.14	101.06	4,891.27	-53.89	275.59	63.22	2.00	-2.00	0.00
4,957.23	0.00	0.00	4,948.50	-54.00	276.15	63.35	2.00	-2.00	0.00
<b>Hold Vertical</b>									
5,000.00	0.00	0.00	4,991.27	-54.00	276.15	63.35	0.00	0.00	0.00
5,100.00	0.00	0.00	5,091.27	-54.00	276.15	63.35	0.00	0.00	0.00
5,157.23	0.00	0.00	5,148.50	-54.00	276.15	63.35	0.00	0.00	0.00
<b>KOP, Build 9°/100'</b>									
5,200.00	3.85	180.00	5,191.24	-55.44	276.15	64.78	9.00	9.00	0.00
5,300.00	12.85	180.00	5,290.07	-69.94	276.15	79.28	9.00	9.00	0.00
5,400.00	21.85	180.00	5,385.42	-99.74	276.15	109.06	9.00	9.00	0.00
5,500.00	30.85	180.00	5,474.94	-144.08	276.15	153.38	9.00	9.00	0.00
5,600.00	39.86	180.00	5,556.41	-201.89	276.15	211.15	9.00	9.00	0.00
5,700.00	48.86	180.00	5,627.84	-271.73	276.15	280.95	9.00	9.00	0.00
5,764.94	54.70	180.00	5,668.00	-322.73	276.15	331.93	9.00	9.00	0.00
<b>P200 Marker</b>									
5,800.00	57.86	180.00	5,687.46	-351.89	276.15	361.06	9.00	9.00	0.00
5,830.38	60.59	180.00	5,703.00	-377.99	276.15	387.15	9.00	9.00	0.00
<b>P300 Marker</b>									
5,883.21	65.35	180.00	5,727.00	-425.04	276.15	434.17	9.00	9.00	0.00
<b>P350 Marker</b>									
5,900.00	66.86	180.00	5,733.80	-440.39	276.15	449.51	9.00	9.00	0.00
5,913.57	68.08	180.00	5,739.00	-452.92	276.15	462.04	9.00	9.00	0.00
<b>Sharon Springs</b>									
5,921.74	68.82	180.00	5,742.00	-460.52	276.15	469.64	9.00	9.00	0.00
<b>Niobrara</b>									
5,985.41	74.55	180.00	5,762.00	-520.94	276.15	530.02	9.00	9.00	0.00
<b>Top A Chalk</b>									
6,000.00	75.86	180.00	5,765.72	-535.04	276.15	544.12	9.00	9.00	0.00
6,100.00	84.87	180.00	5,782.45	-633.53	276.15	642.55	9.00	9.00	0.00
6,157.04	90.00	180.00	5,785.00	-690.50	276.15	699.48	9.00	9.00	0.00
<b>LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG</b>									
6,200.00	90.00	180.00	5,785.00	-733.46	276.15	742.41	0.00	0.00	0.00
6,300.00	90.00	180.00	5,785.00	-833.46	276.15	842.35	0.00	0.00	0.00
6,400.00	90.00	180.00	5,785.00	-933.46	276.15	942.30	0.00	0.00	0.00
6,500.00	90.00	180.00	5,785.00	-1,033.46	276.15	1,042.24	0.00	0.00	0.00
6,600.00	90.00	180.00	5,785.00	-1,133.46	276.15	1,142.18	0.00	0.00	0.00
6,700.00	90.00	180.00	5,785.00	-1,233.46	276.15	1,242.12	0.00	0.00	0.00
6,800.00	90.00	180.00	5,785.00	-1,333.46	276.15	1,342.07	0.00	0.00	0.00
6,900.00	90.00	180.00	5,785.00	-1,433.46	276.15	1,442.01	0.00	0.00	0.00
7,000.00	90.00	180.00	5,785.00	-1,533.46	276.15	1,541.95	0.00	0.00	0.00
7,100.00	90.00	180.00	5,785.00	-1,633.46	276.15	1,641.89	0.00	0.00	0.00
7,200.00	90.00	180.00	5,785.00	-1,733.46	276.15	1,741.84	0.00	0.00	0.00
7,300.00	90.00	180.00	5,785.00	-1,833.46	276.15	1,841.78	0.00	0.00	0.00
7,400.00	90.00	180.00	5,785.00	-1,933.46	276.15	1,941.72	0.00	0.00	0.00
7,500.00	90.00	180.00	5,785.00	-2,033.46	276.15	2,041.66	0.00	0.00	0.00
7,600.00	90.00	180.00	5,785.00	-2,133.46	276.15	2,141.60	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<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)	
7,700.00	90.00	180.00	5,785.00	-2,233.46	276.15	2,241.55	0.00	0.00	0.00	
7,800.00	90.00	180.00	5,785.00	-2,333.46	276.15	2,341.49	0.00	0.00	0.00	
7,900.00	90.00	180.00	5,785.00	-2,433.46	276.15	2,441.43	0.00	0.00	0.00	
8,000.00	90.00	180.00	5,785.00	-2,533.46	276.15	2,541.37	0.00	0.00	0.00	
8,100.00	90.00	180.00	5,785.00	-2,633.46	276.15	2,641.32	0.00	0.00	0.00	
8,200.00	90.00	180.00	5,785.00	-2,733.46	276.15	2,741.26	0.00	0.00	0.00	
8,300.00	90.00	180.00	5,785.00	-2,833.46	276.15	2,841.20	0.00	0.00	0.00	
8,400.00	90.00	180.00	5,785.00	-2,933.46	276.15	2,941.14	0.00	0.00	0.00	
8,500.00	90.00	180.00	5,785.00	-3,033.46	276.15	3,041.09	0.00	0.00	0.00	
8,600.00	90.00	180.00	5,785.00	-3,133.46	276.15	3,141.03	0.00	0.00	0.00	
8,700.00	90.00	180.00	5,785.00	-3,233.46	276.15	3,240.97	0.00	0.00	0.00	
8,800.00	90.00	180.00	5,785.00	-3,333.46	276.15	3,340.91	0.00	0.00	0.00	
8,900.00	90.00	180.00	5,785.00	-3,433.46	276.15	3,440.85	0.00	0.00	0.00	
9,000.00	90.00	180.00	5,785.00	-3,533.46	276.15	3,540.80	0.00	0.00	0.00	
9,100.00	90.00	180.00	5,785.00	-3,633.46	276.15	3,640.74	0.00	0.00	0.00	
9,200.00	90.00	180.00	5,785.00	-3,733.46	276.15	3,740.68	0.00	0.00	0.00	
9,300.00	90.00	180.00	5,785.00	-3,833.46	276.15	3,840.62	0.00	0.00	0.00	
9,400.00	90.00	180.00	5,785.00	-3,933.46	276.15	3,940.57	0.00	0.00	0.00	
9,500.00	90.00	180.00	5,785.00	-4,033.46	276.15	4,040.51	0.00	0.00	0.00	
9,600.00	90.00	180.00	5,785.00	-4,133.46	276.15	4,140.45	0.00	0.00	0.00	
9,700.00	90.00	180.00	5,785.00	-4,233.46	276.15	4,240.39	0.00	0.00	0.00	
9,800.00	90.00	180.00	5,785.00	-4,333.46	276.15	4,340.34	0.00	0.00	0.00	
9,900.00	90.00	180.00	5,785.00	-4,433.46	276.15	4,440.28	0.00	0.00	0.00	
10,000.00	90.00	180.00	5,785.00	-4,533.46	276.15	4,540.22	0.00	0.00	0.00	
10,100.00	90.00	180.00	5,785.00	-4,633.46	276.15	4,640.16	0.00	0.00	0.00	
10,200.00	90.00	180.00	5,785.00	-4,733.46	276.15	4,740.10	0.00	0.00	0.00	
10,300.00	90.00	180.00	5,785.00	-4,833.46	276.15	4,840.05	0.00	0.00	0.00	
10,400.00	90.00	180.00	5,785.00	-4,933.46	276.15	4,939.99	0.00	0.00	0.00	
10,500.00	90.00	180.00	5,785.00	-5,033.46	276.15	5,039.93	0.00	0.00	0.00	
10,600.00	90.00	180.00	5,785.00	-5,133.46	276.15	5,139.87	0.00	0.00	0.00	
10,700.00	90.00	180.00	5,785.00	-5,233.46	276.15	5,239.82	0.00	0.00	0.00	
10,800.00	90.00	180.00	5,785.00	-5,333.46	276.15	5,339.76	0.00	0.00	0.00	
10,900.00	90.00	180.00	5,785.00	-5,433.46	276.15	5,439.70	0.00	0.00	0.00	
11,000.00	90.00	180.00	5,785.00	-5,533.46	276.15	5,539.64	0.00	0.00	0.00	
11,100.00	90.00	180.00	5,785.00	-5,633.46	276.15	5,639.59	0.00	0.00	0.00	
11,200.00	90.00	180.00	5,785.00	-5,733.46	276.15	5,739.53	0.00	0.00	0.00	
11,300.00	90.00	180.00	5,785.00	-5,833.46	276.15	5,839.47	0.00	0.00	0.00	
11,400.00	90.00	180.00	5,785.00	-5,933.46	276.15	5,939.41	0.00	0.00	0.00	
11,500.00	90.00	180.00	5,785.00	-6,033.46	276.15	6,039.35	0.00	0.00	0.00	
11,600.00	90.00	180.00	5,785.00	-6,133.46	276.15	6,139.30	0.00	0.00	0.00	
11,700.00	90.00	180.00	5,785.00	-6,233.46	276.15	6,239.24	0.00	0.00	0.00	
11,800.00	90.00	180.00	5,785.00	-6,333.46	276.15	6,339.18	0.00	0.00	0.00	
11,900.00	90.00	180.00	5,785.00	-6,433.46	276.15	6,439.12	0.00	0.00	0.00	
12,000.00	90.00	180.00	5,785.00	-6,533.46	276.15	6,539.07	0.00	0.00	0.00	
12,100.00	90.00	180.00	5,785.00	-6,633.46	276.15	6,639.01	0.00	0.00	0.00	
12,200.00	90.00	180.00	5,785.00	-6,733.46	276.15	6,738.95	0.00	0.00	0.00	
12,300.00	90.00	180.00	5,785.00	-6,833.46	276.15	6,838.89	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,785.00	-6,933.46	276.15	6,938.84	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,785.00	-7,033.46	276.15	7,038.78	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,785.00	-7,133.46	276.15	7,138.72	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,785.00	-7,233.46	276.15	7,238.66	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,785.00	-7,333.46	276.15	7,338.60	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,785.00	-7,433.46	276.15	7,438.55	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,785.00	-7,533.46	276.15	7,538.49	0.00	0.00	0.00	



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<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)
13,100.00	90.00	180.00	5,785.00	-7,633.46	276.15	7,638.43	0.00	0.00	0.00
13,200.00	90.00	180.00	5,785.00	-7,733.46	276.15	7,738.37	0.00	0.00	0.00
13,300.00	90.00	180.00	5,785.00	-7,833.46	276.15	7,838.32	0.00	0.00	0.00
13,400.00	90.00	180.00	5,785.00	-7,933.46	276.15	7,938.26	0.00	0.00	0.00
13,500.00	90.00	180.00	5,785.00	-8,033.46	276.15	8,038.20	0.00	0.00	0.00
13,592.28	90.00	180.00	5,785.00	-8,125.74	276.15	8,130.43	0.00	0.00	0.00
TD at 13592.28									

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 29G-3209	0.00	0.00	5,785.00	-8,125.74	276.15	1,534,127.30	3,446,334.71	40° 47' 18.340 N	103° 53' 17.150 W
- plan hits target center									
- Point									
Brennan #2	0.00	0.00	6,693.00	-3,868.01	671.25	1,538,391.50	3,446,652.40	40° 48' 0.410 N	103° 53' 12.012 W
- plan misses target center by 990.24usft at 9334.56usft MD (5785.00 TVD, -3868.01 N, 276.15 E)									
- Circle (radius 1,550.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,157.04	5,785.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,552.24	1,550.00	Upper Pierre				
3,506.10	3,500.00	Hygiene				
3,656.40	3,650.00	Lower Pierre				
5,764.94	5,668.00	P200 Marker				
5,830.38	5,703.00	P300 Marker				
5,883.21	5,727.00	P350 Marker				
5,913.57	5,739.00	Sharon Springs				
5,921.74	5,742.00	Niobrara				
5,985.41	5,762.00	Top A Chalk				



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #29G-3209
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4832.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4832.00usft
<b>Site:</b>	Sec 29-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #29G-3209	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Build 2°/100'
480.17	480.05	-1.09	5.56	Hold 3.60° Inc
4,777.07	4,768.45	-52.91	270.59	Drop 2°/100'
4,957.23	4,948.50	-54.00	276.15	Hold Vertical
5,157.23	5,148.50	-54.00	276.15	KOP, Build 9°/100'
6,157.04	5,785.00	-690.50	276.15	LP @ 90° Inc, Hold
13,592.28	5,785.00	-8,125.74	276.15	TD at 13592.28