



Project: Weld County, CO
Site: Sec 29-T10N-R58W
Well: Razor Federal #29L-3204
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			
	TVDPath	MDPath	Formation
	1550.00	1569.37	Upper Pierre
	3500.00	3564.05	Hygiene
	3650.00	3717.49	Lower Pierre
	5689.00	5810.26	P200 Marker
	5724.00	5857.74	P300 Marker
	5748.00	5892.95	P350 Marker
	5760.00	5911.62	Sharon Springs
	5763.00	5916.42	Niobrara
	5783.00	5949.96	Top A Chalk
	5818.00	6017.91	Top A Marl
	5839.00	6068.55	A Marl
	5844.00	6082.53	Top Upper B
	5864.00	6154.05	Base Upper B
	5876.00	6266.08	Top Lower B

WELL DETAILS: Razor Federal #29L-3204

+N/-S	+E/-W	Northing	Ground Level:	4828.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1541399.70	3443970.56	40° 48' 30.610 N	103° 53' 46.170 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	907.49	12.15	39.33	902.95	49.64	40.67	2.00	39.33	-46.28	
4	4640.20	12.15	39.33	4552.05	657.36	538.54	0.00	0.00	-612.83	
5	5247.70	0.00	0.00	5155.00	707.00	579.21	2.00	180.00	-659.11	
6	5447.70	0.00	0.00	5355.00	707.00	579.21	0.00	0.00	-659.11	
7	6266.08	90.00	180.00	5876.00	186.00	579.21	11.00	180.00	-139.73	
8	13772.21	90.00	180.00	5876.00	-7320.13	579.21	0.00	0.00	7343.01	PBHL 3204

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'
902.95	907.49	12.15	39.33	49.64	40.67	-46.28	64.17	Hold 12.15° Inc
4552.05	4640.20	12.15	39.33	657.36	538.54	-612.83	849.80	Drop 2°/100'
5155.00	5247.70	0.00	0.00	707.00	579.21	-659.11	913.97	Hold Vertical
5355.00	5447.70	0.00	0.00	707.00	579.21	-659.11	913.97	KOP, Build 11°/100'
5876.00	6266.08	90.00	180.00	186.00	579.21	-139.73	1434.97	LP @ 90° Inc, Hold
5876.00	13772.21	90.00	180.00	-7320.13	579.21	7343.01	8941.10	TD at 13772.21

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 3204	5876.00	-7320.13	579.21	1534091.24	3444682.07	40° 47' 18.280 N 103° 53' 38.640 W	
Brennan #1	6647.00	-2989.68	245.67	1538414.95	3444270.26	40° 48' 1.069 N 103° 53' 42.976 W	
UHL #1	6691.00	-395.23	-122.27	1541002.32	3443855.46	40° 48' 26.705 N 103° 53' 47.760 W	
Johnston #1	6709.00	-5678.12	-50.03	1535721.60	3444023.23	40° 47' 34.505 N 103° 53' 46.820 W	
DeWitt-Brennan #32-1	6798.00	-3049.07	-5.17	1538351.04	3444020.53	40° 48' 0.482 N 103° 53' 46.237 W	

SHL:
2351' FSL, 781' FWL
Sec29-T10N-R58W

BHL:
300' FSL, 1121' FWL
Sec32-T10N-R58W

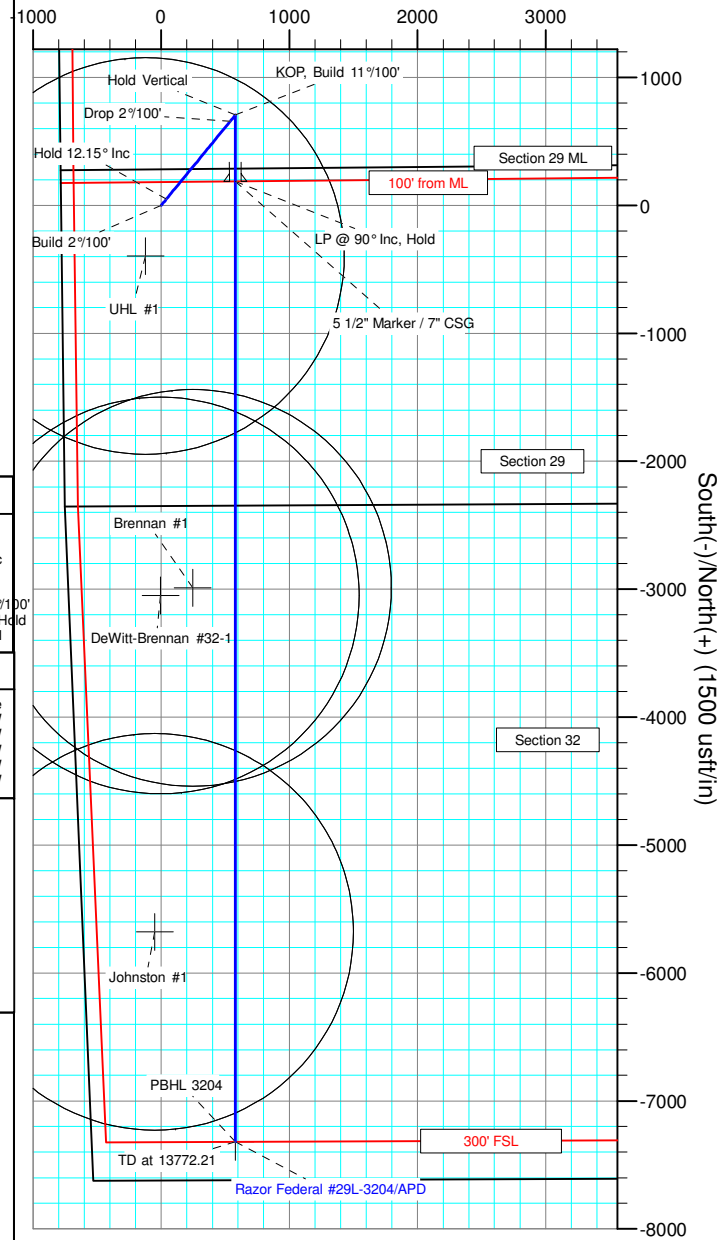
5 1/2" Marker / 7" CSG:
2537' FSL, 1360' FWL
Sec29-T10N-R58W

Exit UHL #1
1550' Radius @ 8233' MD
Enter DeWitt #32-1
1550' Radius @ 8064' MD
Exit DeWitt #32-1
1550' Radius @ 10935' MD

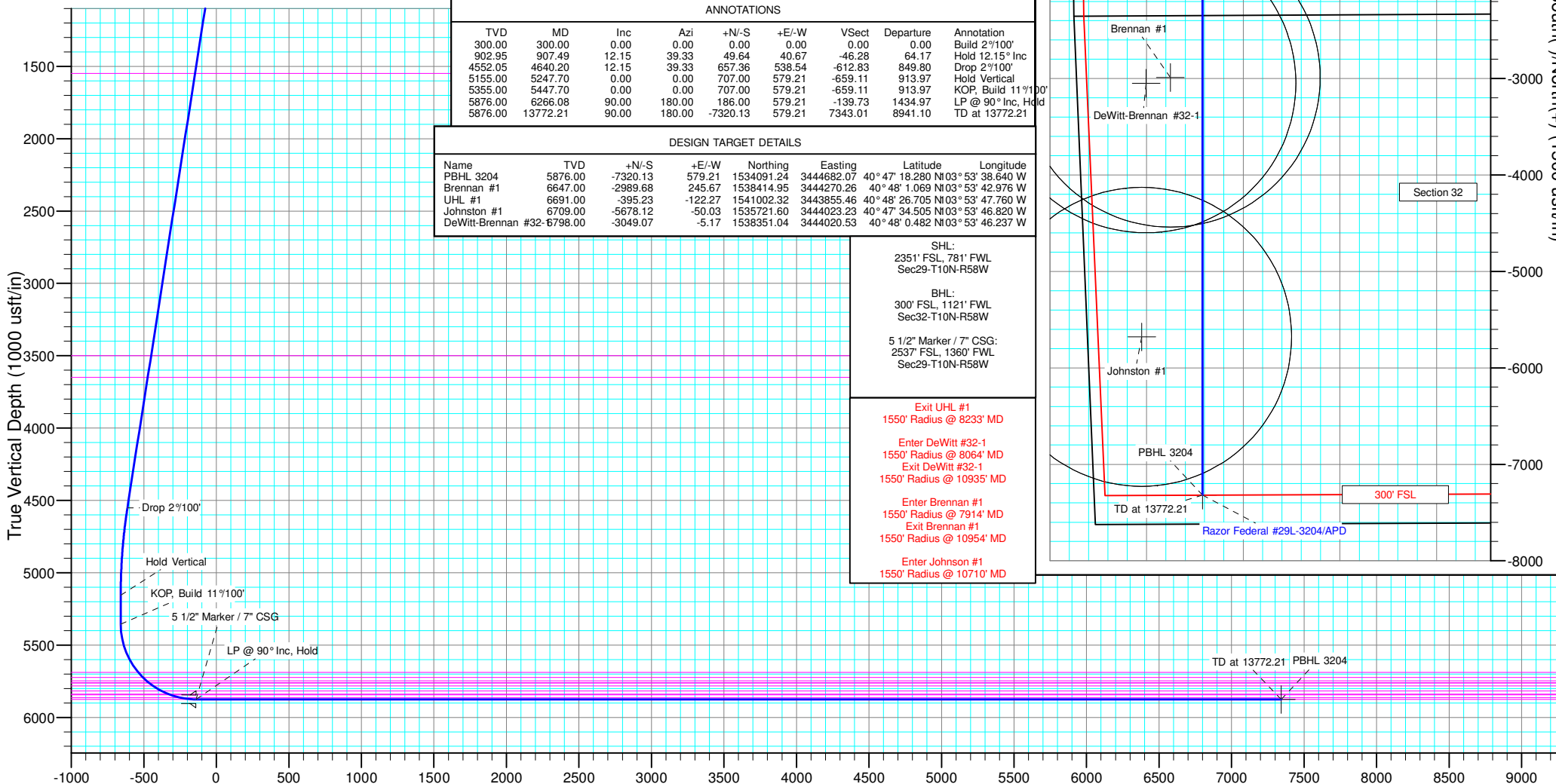
Enter Brennan #1
1550' Radius @ 7914' MD
Exit Brennan #1
1550' Radius @ 10954' MD

Enter Johnson #1
1550' Radius @ 10710' MD

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



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



Vertical Section at 175.48° (1000 usft/in)



Whiting Petroleum Corp.

Weld County, CO

Sec 29-T10N-R58W

Razor Federal #29L-3204

Hz

Plan: APD

Standard Planning Report

25 August, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #29L-3204
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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-3204				
Well Position	+N/-S	-2,901.67 usft	Northing:	1,541,399.70 usft	Latitude:	40° 48' 30.610 N
	+E/-W	817.39 usft	Easting:	3,443,970.55 usft	Longitude:	103° 53' 46.170 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,828.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/30/2015	7.94	67.36	52,878

Design	APD			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	175.48

Plan Sections										
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	
907.49	12.15	39.33	902.95	49.64	40.67	2.00	2.00	0.00	39.33	
4,640.20	12.15	39.33	4,552.05	657.36	538.54	0.00	0.00	0.00	0.00	
5,247.70	0.00	0.00	5,155.00	707.00	579.21	2.00	-2.00	0.00	180.00	
5,447.70	0.00	0.00	5,355.00	707.00	579.21	0.00	0.00	0.00	0.00	
6,266.08	90.00	180.00	5,876.00	186.00	579.21	11.00	11.00	0.00	180.00	
13,772.22	90.00	180.00	5,876.00	-7,320.13	579.21	0.00	0.00	0.00	0.00	PBHL 3204



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #29L-3204
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	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)
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
Build 2°/100'									
400.00	2.00	39.33	399.98	1.35	1.11	-1.26	2.00	2.00	0.00
500.00	4.00	39.33	499.84	5.40	4.42	-5.03	2.00	2.00	0.00
600.00	6.00	39.33	599.45	12.14	9.95	-11.32	2.00	2.00	0.00
700.00	8.00	39.33	698.70	21.57	17.67	-20.11	2.00	2.00	0.00
800.00	10.00	39.33	797.47	33.67	27.58	-31.39	2.00	2.00	0.00
900.00	12.00	39.33	895.62	48.43	39.67	-45.15	2.00	2.00	0.00
907.49	12.15	39.33	902.95	49.64	40.67	-46.28	2.00	2.00	0.00
Hold 12.15° Inc									
1,000.00	12.15	39.33	993.39	64.70	53.01	-60.32	0.00	0.00	0.00
1,100.00	12.15	39.33	1,091.15	80.98	66.34	-75.50	0.00	0.00	0.00
1,200.00	12.15	39.33	1,188.91	97.26	79.68	-90.67	0.00	0.00	0.00
1,300.00	12.15	39.33	1,286.67	113.54	93.02	-105.85	0.00	0.00	0.00
1,400.00	12.15	39.33	1,384.43	129.82	106.36	-121.03	0.00	0.00	0.00
1,500.00	12.15	39.33	1,482.19	146.10	119.70	-136.21	0.00	0.00	0.00
1,569.37	12.15	39.33	1,550.00	157.40	128.95	-146.74	0.00	0.00	0.00
Upper Pierre									
1,600.00	12.15	39.33	1,579.95	162.39	133.03	-151.39	0.00	0.00	0.00
1,700.00	12.15	39.33	1,677.71	178.67	146.37	-166.56	0.00	0.00	0.00
1,800.00	12.15	39.33	1,775.47	194.95	159.71	-181.74	0.00	0.00	0.00
1,900.00	12.15	39.33	1,873.23	211.23	173.05	-196.92	0.00	0.00	0.00
2,000.00	12.15	39.33	1,970.99	227.51	186.39	-212.10	0.00	0.00	0.00
2,100.00	12.15	39.33	2,068.75	243.79	199.73	-227.28	0.00	0.00	0.00
2,200.00	12.15	39.33	2,166.51	260.07	213.06	-242.46	0.00	0.00	0.00
2,300.00	12.15	39.33	2,264.27	276.35	226.40	-257.63	0.00	0.00	0.00
2,400.00	12.15	39.33	2,362.03	292.63	239.74	-272.81	0.00	0.00	0.00
2,500.00	12.15	39.33	2,459.79	308.91	253.08	-287.99	0.00	0.00	0.00
2,600.00	12.15	39.33	2,557.55	325.20	266.42	-303.17	0.00	0.00	0.00
2,700.00	12.15	39.33	2,655.31	341.48	279.75	-318.35	0.00	0.00	0.00
2,800.00	12.15	39.33	2,753.07	357.76	293.09	-333.52	0.00	0.00	0.00
2,900.00	12.15	39.33	2,850.83	374.04	306.43	-348.70	0.00	0.00	0.00
3,000.00	12.15	39.33	2,948.59	390.32	319.77	-363.88	0.00	0.00	0.00
3,100.00	12.15	39.33	3,046.35	406.60	333.11	-379.06	0.00	0.00	0.00
3,200.00	12.15	39.33	3,144.11	422.88	346.45	-394.24	0.00	0.00	0.00
3,300.00	12.15	39.33	3,241.87	439.16	359.78	-409.41	0.00	0.00	0.00
3,400.00	12.15	39.33	3,339.63	455.44	373.12	-424.59	0.00	0.00	0.00
3,500.00	12.15	39.33	3,437.39	471.72	386.46	-439.77	0.00	0.00	0.00
3,564.05	12.15	39.33	3,500.00	482.15	395.00	-449.49	0.00	0.00	0.00
Hygiene									
3,600.00	12.15	39.33	3,535.15	488.01	399.80	-454.95	0.00	0.00	0.00
3,700.00	12.15	39.33	3,632.91	504.29	413.14	-470.13	0.00	0.00	0.00
3,717.49	12.15	39.33	3,650.00	507.13	415.47	-472.78	0.00	0.00	0.00
Lower Pierre									
3,800.00	12.15	39.33	3,730.67	520.57	426.48	-485.31	0.00	0.00	0.00
3,900.00	12.15	39.33	3,828.43	536.85	439.81	-500.48	0.00	0.00	0.00
4,000.00	12.15	39.33	3,926.19	553.13	453.15	-515.66	0.00	0.00	0.00
4,100.00	12.15	39.33	4,023.95	569.41	466.49	-530.84	0.00	0.00	0.00
4,200.00	12.15	39.33	4,121.71	585.69	479.83	-546.02	0.00	0.00	0.00
4,300.00	12.15	39.33	4,219.47	601.97	493.17	-561.20	0.00	0.00	0.00
4,400.00	12.15	39.33	4,317.23	618.25	506.50	-576.37	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #29L-3204
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	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)
4,500.00	12.15	39.33	4,414.99	634.53	519.84	-591.55	0.00	0.00	0.00
4,600.00	12.15	39.33	4,512.75	650.82	533.18	-606.73	0.00	0.00	0.00
4,640.20	12.15	39.33	4,552.05	657.36	538.54	-612.83	0.00	0.00	0.00
Drop 2°/100'									
4,700.00	10.95	39.33	4,610.63	666.62	546.13	-621.47	2.00	-2.00	0.00
4,800.00	8.95	39.33	4,709.12	679.99	557.09	-633.93	2.00	-2.00	0.00
4,900.00	6.95	39.33	4,808.16	690.70	565.85	-643.91	2.00	-2.00	0.00
5,000.00	4.95	39.33	4,907.61	698.72	572.43	-651.39	2.00	-2.00	0.00
5,100.00	2.95	39.33	5,007.37	704.06	576.80	-656.36	2.00	-2.00	0.00
5,200.00	0.95	39.33	5,107.31	706.69	578.96	-658.82	2.00	-2.00	0.00
5,247.70	0.00	0.00	5,155.00	707.00	579.21	-659.11	2.00	-2.00	0.00
Hold Vertical									
5,300.00	0.00	0.00	5,207.30	707.00	579.21	-659.11	0.00	0.00	0.00
5,400.00	0.00	0.00	5,307.30	707.00	579.21	-659.11	0.00	0.00	0.00
5,447.70	0.00	0.00	5,355.00	707.00	579.21	-659.11	0.00	0.00	0.00
KOP, Build 11°/100'									
5,500.00	5.75	180.00	5,407.22	704.38	579.21	-656.49	11.00	11.00	0.00
5,600.00	16.75	180.00	5,505.14	684.90	579.21	-637.08	11.00	11.00	0.00
5,700.00	27.75	180.00	5,597.56	647.09	579.21	-599.39	11.00	11.00	0.00
5,800.00	38.74	180.00	5,681.06	592.36	579.21	-544.82	11.00	11.00	0.00
5,810.26	39.87	180.00	5,689.00	585.86	579.21	-538.34	11.00	11.00	0.00
P200 Marker									
5,857.74	45.09	180.00	5,724.00	553.80	579.21	-506.39	11.00	11.00	0.00
P300 Marker									
5,892.95	48.97	180.00	5,748.00	528.04	579.21	-480.71	11.00	11.00	0.00
P350 Marker									
5,900.00	49.74	180.00	5,752.59	522.69	579.21	-475.38	11.00	11.00	0.00
5,911.62	51.02	180.00	5,760.00	513.74	579.21	-466.46	11.00	11.00	0.00
Sharon Springs									
5,916.42	51.55	180.00	5,763.00	510.00	579.21	-462.72	11.00	11.00	0.00
Niobrara									
5,949.96	55.23	180.00	5,783.00	483.08	579.21	-435.89	11.00	11.00	0.00
Top A Chalk									
6,000.00	60.74	180.00	5,809.52	440.67	579.21	-393.60	11.00	11.00	0.00
6,017.91	62.71	180.00	5,818.00	424.90	579.21	-377.89	11.00	11.00	0.00
Top A Marl									
6,068.55	68.28	180.00	5,839.00	378.83	579.21	-331.97	11.00	11.00	0.00
A Marl									
6,082.53	69.81	180.00	5,844.00	365.78	579.21	-318.95	11.00	11.00	0.00
Top Upper B									
6,100.00	71.74	180.00	5,849.75	349.28	579.21	-302.51	11.00	11.00	0.00
6,154.05	77.68	180.00	5,864.00	297.18	579.21	-250.56	11.00	11.00	0.00
Base Upper B									
6,200.00	82.73	180.00	5,871.81	251.91	579.21	-205.43	11.00	11.00	0.00
6,266.08	90.00	180.00	5,876.00	186.00	579.21	-139.73	11.00	11.00	0.00
LP @ 90° Inc, Hold - Top Lower B - 5 1/2" Marker / 7" CSG									
6,300.00	90.00	180.00	5,876.00	152.08	579.21	-105.92	0.00	0.00	0.00
6,400.00	90.00	180.00	5,876.00	52.08	579.21	-6.23	0.00	0.00	0.00
6,500.00	90.00	180.00	5,876.00	-47.92	579.21	93.46	0.00	0.00	0.00
6,600.00	90.00	180.00	5,876.00	-147.92	579.21	193.14	0.00	0.00	0.00
6,700.00	90.00	180.00	5,876.00	-247.92	579.21	292.83	0.00	0.00	0.00
6,800.00	90.00	180.00	5,876.00	-347.92	579.21	392.52	0.00	0.00	0.00



WOG

Planning Report

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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	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)
6,900.00	90.00	180.00	5,876.00	-447.92	579.21	492.21	0.00	0.00	0.00
7,000.00	90.00	180.00	5,876.00	-547.92	579.21	591.90	0.00	0.00	0.00
7,100.00	90.00	180.00	5,876.00	-647.92	579.21	691.59	0.00	0.00	0.00
7,200.00	90.00	180.00	5,876.00	-747.92	579.21	791.28	0.00	0.00	0.00
7,300.00	90.00	180.00	5,876.00	-847.92	579.21	890.96	0.00	0.00	0.00
7,400.00	90.00	180.00	5,876.00	-947.92	579.21	990.65	0.00	0.00	0.00
7,500.00	90.00	180.00	5,876.00	-1,047.92	579.21	1,090.34	0.00	0.00	0.00
7,600.00	90.00	180.00	5,876.00	-1,147.92	579.21	1,190.03	0.00	0.00	0.00
7,700.00	90.00	180.00	5,876.00	-1,247.92	579.21	1,289.72	0.00	0.00	0.00
7,800.00	90.00	180.00	5,876.00	-1,347.92	579.21	1,389.41	0.00	0.00	0.00
7,900.00	90.00	180.00	5,876.00	-1,447.92	579.21	1,489.09	0.00	0.00	0.00
8,000.00	90.00	180.00	5,876.00	-1,547.92	579.21	1,588.78	0.00	0.00	0.00
8,100.00	90.00	180.00	5,876.00	-1,647.92	579.21	1,688.47	0.00	0.00	0.00
8,200.00	90.00	180.00	5,876.00	-1,747.92	579.21	1,788.16	0.00	0.00	0.00
8,300.00	90.00	180.00	5,876.00	-1,847.92	579.21	1,887.85	0.00	0.00	0.00
8,400.00	90.00	180.00	5,876.00	-1,947.92	579.21	1,987.54	0.00	0.00	0.00
8,500.00	90.00	180.00	5,876.00	-2,047.92	579.21	2,087.22	0.00	0.00	0.00
8,600.00	90.00	180.00	5,876.00	-2,147.92	579.21	2,186.91	0.00	0.00	0.00
8,700.00	90.00	180.00	5,876.00	-2,247.92	579.21	2,286.60	0.00	0.00	0.00
8,800.00	90.00	180.00	5,876.00	-2,347.92	579.21	2,386.29	0.00	0.00	0.00
8,900.00	90.00	180.00	5,876.00	-2,447.92	579.21	2,485.98	0.00	0.00	0.00
9,000.00	90.00	180.00	5,876.00	-2,547.92	579.21	2,585.67	0.00	0.00	0.00
9,100.00	90.00	180.00	5,876.00	-2,647.92	579.21	2,685.36	0.00	0.00	0.00
9,200.00	90.00	180.00	5,876.00	-2,747.92	579.21	2,785.04	0.00	0.00	0.00
9,300.00	90.00	180.00	5,876.00	-2,847.92	579.21	2,884.73	0.00	0.00	0.00
9,400.00	90.00	180.00	5,876.00	-2,947.92	579.21	2,984.42	0.00	0.00	0.00
9,500.00	90.00	180.00	5,876.00	-3,047.92	579.21	3,084.11	0.00	0.00	0.00
9,600.00	90.00	180.00	5,876.00	-3,147.92	579.21	3,183.80	0.00	0.00	0.00
9,700.00	90.00	180.00	5,876.00	-3,247.92	579.21	3,283.49	0.00	0.00	0.00
9,800.00	90.00	180.00	5,876.00	-3,347.92	579.21	3,383.17	0.00	0.00	0.00
9,900.00	90.00	180.00	5,876.00	-3,447.92	579.21	3,482.86	0.00	0.00	0.00
10,000.00	90.00	180.00	5,876.00	-3,547.92	579.21	3,582.55	0.00	0.00	0.00
10,100.00	90.00	180.00	5,876.00	-3,647.92	579.21	3,682.24	0.00	0.00	0.00
10,200.00	90.00	180.00	5,876.00	-3,747.92	579.21	3,781.93	0.00	0.00	0.00
10,300.00	90.00	180.00	5,876.00	-3,847.92	579.21	3,881.62	0.00	0.00	0.00
10,400.00	90.00	180.00	5,876.00	-3,947.92	579.21	3,981.30	0.00	0.00	0.00
10,500.00	90.00	180.00	5,876.00	-4,047.92	579.21	4,080.99	0.00	0.00	0.00
10,600.00	90.00	180.00	5,876.00	-4,147.92	579.21	4,180.68	0.00	0.00	0.00
10,700.00	90.00	180.00	5,876.00	-4,247.92	579.21	4,280.37	0.00	0.00	0.00
10,800.00	90.00	180.00	5,876.00	-4,347.92	579.21	4,380.06	0.00	0.00	0.00
10,900.00	90.00	180.00	5,876.00	-4,447.92	579.21	4,479.75	0.00	0.00	0.00
11,000.00	90.00	180.00	5,876.00	-4,547.92	579.21	4,579.44	0.00	0.00	0.00
11,100.00	90.00	180.00	5,876.00	-4,647.92	579.21	4,679.12	0.00	0.00	0.00
11,200.00	90.00	180.00	5,876.00	-4,747.92	579.21	4,778.81	0.00	0.00	0.00
11,300.00	90.00	180.00	5,876.00	-4,847.92	579.21	4,878.50	0.00	0.00	0.00
11,400.00	90.00	180.00	5,876.00	-4,947.92	579.21	4,978.19	0.00	0.00	0.00
11,500.00	90.00	180.00	5,876.00	-5,047.92	579.21	5,077.88	0.00	0.00	0.00
11,600.00	90.00	180.00	5,876.00	-5,147.92	579.21	5,177.57	0.00	0.00	0.00
11,700.00	90.00	180.00	5,876.00	-5,247.92	579.21	5,277.25	0.00	0.00	0.00
11,800.00	90.00	180.00	5,876.00	-5,347.92	579.21	5,376.94	0.00	0.00	0.00
11,900.00	90.00	180.00	5,876.00	-5,447.92	579.21	5,476.63	0.00	0.00	0.00
12,000.00	90.00	180.00	5,876.00	-5,547.92	579.21	5,576.32	0.00	0.00	0.00
12,100.00	90.00	180.00	5,876.00	-5,647.92	579.21	5,676.01	0.00	0.00	0.00
12,200.00	90.00	180.00	5,876.00	-5,747.92	579.21	5,775.70	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #29L-3204
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	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)	
12,300.00	90.00	180.00	5,876.00	-5,847.92	579.21	5,875.38	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,876.00	-5,947.92	579.21	5,975.07	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,876.00	-6,047.92	579.21	6,074.76	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,876.00	-6,147.92	579.21	6,174.45	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,876.00	-6,247.92	579.21	6,274.14	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,876.00	-6,347.92	579.21	6,373.83	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,876.00	-6,447.92	579.21	6,473.52	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,876.00	-6,547.92	579.21	6,573.20	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,876.00	-6,647.92	579.21	6,672.89	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,876.00	-6,747.92	579.21	6,772.58	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,876.00	-6,847.92	579.21	6,872.27	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,876.00	-6,947.92	579.21	6,971.96	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,876.00	-7,047.92	579.21	7,071.65	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,876.00	-7,147.92	579.21	7,171.33	0.00	0.00	0.00	
13,700.00	90.00	180.00	5,876.00	-7,247.92	579.21	7,271.02	0.00	0.00	0.00	
13,772.22	90.00	180.00	5,876.00	-7,320.13	579.21	7,343.01	0.00	0.00	0.00	
TD at 13772.21										

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 3204	0.00	0.00	5,876.00	-7,320.13	579.21	1,534,091.24	3,444,682.06	40° 47' 18.280 N	103° 53' 38.640 W	
- plan hits target center										
- Point										
Brennan #1	0.00	0.00	6,647.00	-2,989.68	245.67	1,538,414.96	3,444,270.26	40° 48' 1.069 N	103° 53' 42.976 W	
- plan misses target center by 840.05usft at 9441.76usft MD (5876.00 TVD, -2989.68 N, 579.21 E)										
- Circle (radius 1,550.00)										
UHL #1	0.00	0.00	6,691.00	-395.23	-122.27	1,541,002.33	3,443,855.45	40° 48' 26.705 N	103° 53' 47.760 W	
- plan misses target center by 1075.31usft at 6847.31usft MD (5876.00 TVD, -395.23 N, 579.21 E)										
- Circle (radius 1,550.00)										
Johnston #1	0.00	0.00	6,709.00	-5,678.12	-50.03	1,535,721.60	3,444,023.23	40° 47' 34.505 N	103° 53' 46.820 W	
- plan misses target center by 1043.95usft at 12130.21usft MD (5876.00 TVD, -5678.12 N, 579.21 E)										
- Circle (radius 1,550.00)										
DeWitt-Brennan #32-1	0.00	0.00	6,798.00	-3,049.07	-5.17	1,538,351.04	3,444,020.53	40° 48' 0.482 N	103° 53' 46.237 W	
- plan misses target center by 1091.60usft at 9501.15usft MD (5876.00 TVD, -3049.07 N, 579.21 E)										
- Circle (radius 1,550.00)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,266.08	5,876.00	5 1/2" Marker / 7" CSG	7.000	8.750	



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #29L-3204
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor Federal #29L-3204	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,569.37	1,550.00	Upper Pierre			
3,564.05	3,500.00	Hygiene			
3,717.49	3,650.00	Lower Pierre			
5,810.26	5,689.00	P200 Marker			
5,857.74	5,724.00	P300 Marker			
5,892.95	5,748.00	P350 Marker			
5,911.62	5,760.00	Sharon Springs			
5,916.42	5,763.00	Niobrara			
5,949.96	5,783.00	Top A Chalk			
6,017.91	5,818.00	Top A Marl			
6,068.55	5,839.00	A Marl			
6,082.53	5,844.00	Top Upper B			
6,154.05	5,864.00	Base Upper B			
6,266.08	5,876.00	Top Lower B			

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'
907.49	902.95	49.64	40.67	Hold 12.15° Inc
4,640.20	4,552.05	657.36	538.54	Drop 2°/100'
5,247.70	5,155.00	707.00	579.21	Hold Vertical
5,447.70	5,355.00	707.00	579.21	KOP, Build 11°/100'
6,266.08	5,876.00	186.00	579.21	LP @ 90° Inc, Hold
13,772.22	5,876.00	-7,320.13	579.21	TD at 13772.21