



Project: Weld County, CO
Site: Sec 29-T10N-R58W
Well: Razor #29L-2004
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: 7.94°
Magnetic Field
Strength: 52878.3nT
Dip Angle: 67.36°
Date: 10/30/2015
Model: IGRF2015

FORMATION TOP DETAILS		
MDPath	MDPath	Formation
1550.00	1552.60	Upper Pierre
3500.00	3507.13	Hygiene
3650.00	3657.48	Lower Pierre
5689.00	5728.24	P200 Marker
5724.00	5775.71	P300 Marker
5748.00	5810.93	P350 Marker
5760.00	5829.60	Sharon Springs
5763.00	5834.39	Niobrara
5783.00	5867.93	Top A Chalk
5818.00	5935.88	Top A Marl
5839.00	5986.53	A Marl
5844.00	6000.51	Top Upper B
5864.00	6072.02	Base Upper B
5876.00	6184.06	Top Lower B

WELL DETAILS: Razor #29L-2004

+N/-S	+E/-W	Northing	Ground Level:	4828.00	Longitude	Slot
0.00	0.00	1541350.11	Easting	3443971.45	40° 48' 30.120 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	495.08	3.90	105.70	494.93	-1.80	6.39	2.00	105.70	-1.56	
4	4970.59	3.90	105.70	4960.07	-84.20	299.56	0.00	0.00	-72.91	
5	5165.67	0.00	0.00	5155.00	-86.00	305.95	2.00	180.00	-74.47	
6	5365.67	0.00	0.00	5355.00	-86.00	305.95	0.00	0.00	-74.47	
7	6184.06	90.00	0.00	5876.00	435.00	305.95	11.00	0.00	446.17	
8	13903.21	90.00	0.00	5876.00	8154.15	305.95	0.00	0.00	8159.89	PBHL 2004

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'
494.93	495.08	3.90	105.70	-1.80	6.39	-1.56	6.64	Hold 3.90° Inc
4960.07	4970.59	3.90	105.70	-84.20	299.56	-72.91	311.17	Drop 2°100'
5155.00	5165.67	0.00	0.00	-86.00	305.95	-74.47	317.81	Hold Vertical
5355.00	5365.67	0.00	0.00	-86.00	305.95	-74.47	317.81	KOP, Build 11°100'
5876.00	6184.06	90.00	0.00	435.00	305.95	446.17	838.81	LP @ 90° Inc, Hold
5876.00	13903.21	90.00	0.00	8154.15	305.95	8159.89	8557.96	TD at 13903.21

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 2004	5876.00	8154.15	305.95	1549508.46	3444129.88	40° 49' 50.690 N 103° 53' 42.190 W	
UHL #1	6691.00	-345.63	-122.27	1541002.32	3443855.46	40° 48' 26.705 N 103° 53' 47.760 W	
UHL #2	6751.00	2295.83	-132.50	1543643.17	3443797.46	40° 48' 52.805 N 103° 53' 47.893 W	
Nelson Ranches A-5	6801.00	7610.83	-188.65	1548956.28	3443645.19	40° 49' 45.321 N 103° 53' 48.624 W	

SHL:
2301' FSL, 780' FWL
Sec29-T10N-R58W

BHL:
100' FNL, 1155' FWL
Sec20-T10N-R58W

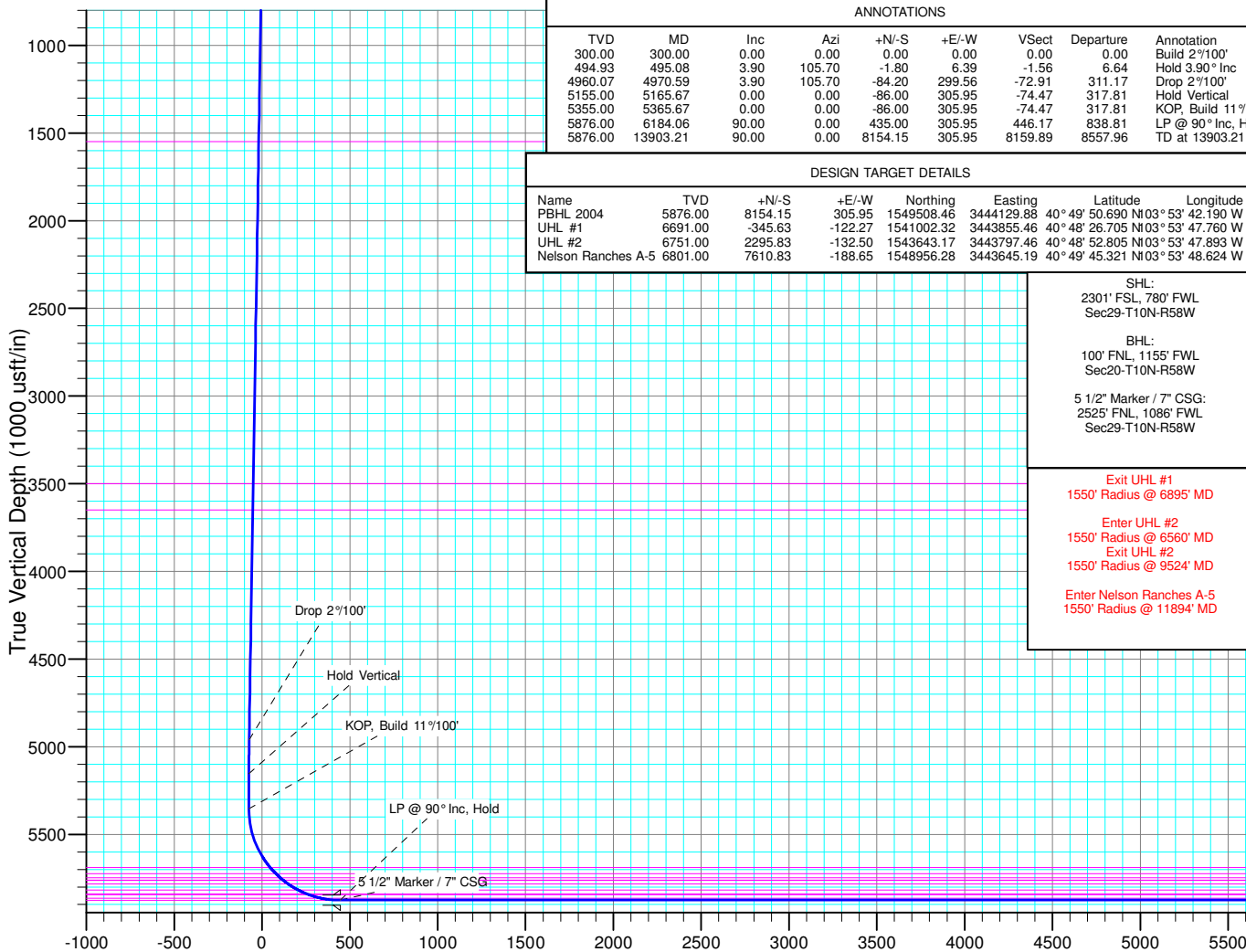
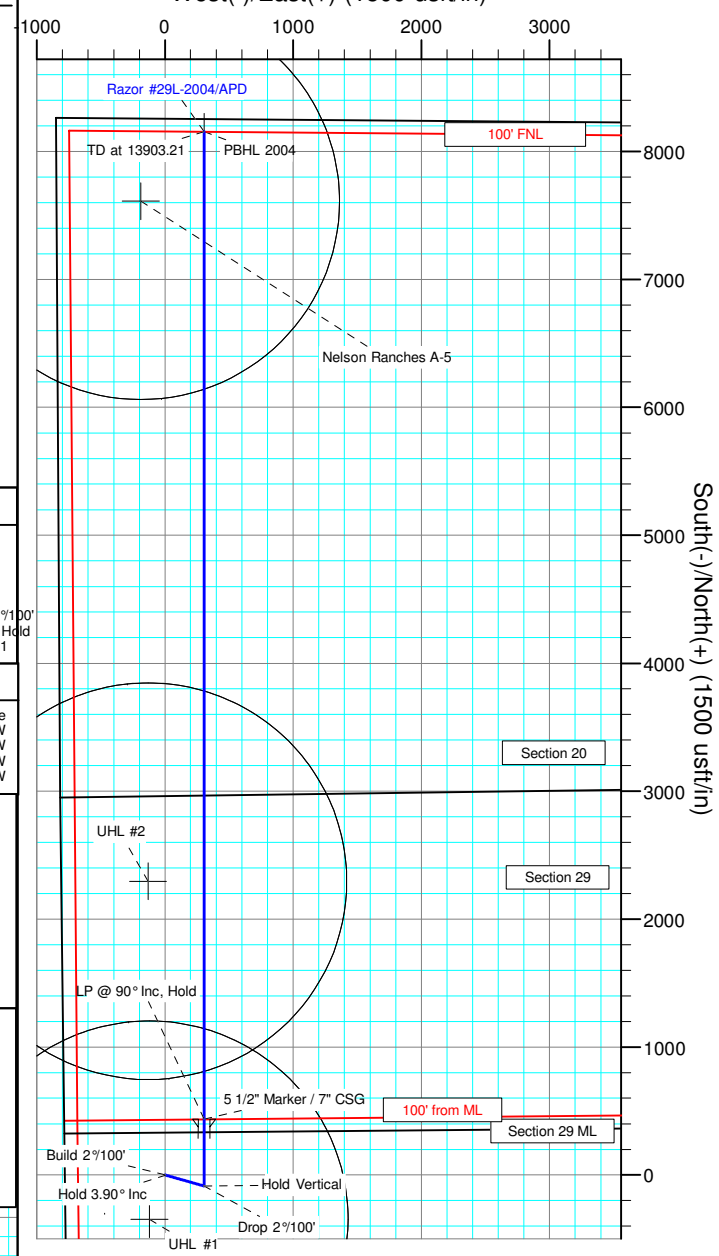
5 1/2" Marker / 7" CSG:
2525' FNL, 1086' FWL
Sec29-T10N-R58W

Exit UHL #1
1550' Radius @ 6895' MD

Enter UHL #2
1550' Radius @ 6560' MD
Exit UHL #2
1550' Radius @ 9524' MD

Enter Nelson Ranches A-5
1550' Radius @ 11894' MD

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



Vertical Section at 2.15° (1000 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 29-T10N-R58W
Razor #29L-2004**

Hz

Plan: APD

Standard Planning Report

27 April, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29L-2004
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 #29L-2004	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 #29L-2004				
Well Position	+N/-S	-2,951.27 usft	Northing:	1,541,350.12 usft	Latitude:	40° 48' 30.120 N
	+E/-W	817.39 usft	Easting:	3,443,971.45 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	2.15

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	
495.08	3.90	105.70	494.93	-1.80	6.39	2.00	2.00	0.00	105.70	
4,970.59	3.90	105.70	4,960.07	-84.20	299.56	0.00	0.00	0.00	0.00	
5,165.67	0.00	0.00	5,155.00	-86.00	305.95	2.00	-2.00	0.00	180.00	
5,365.67	0.00	0.00	5,355.00	-86.00	305.95	0.00	0.00	0.00	0.00	
6,184.06	90.00	0.00	5,876.00	435.00	305.95	11.00	11.00	0.00	0.00	
13,903.21	90.00	0.00	5,876.00	8,154.15	305.95	0.00	0.00	0.00	0.00	PBHL 2004



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29L-2004
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 #29L-2004	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	105.70	399.98	-0.47	1.68	-0.41	2.00	2.00	0.00
495.08	3.90	105.70	494.93	-1.80	6.39	-1.56	2.00	2.00	0.00
Hold 3.90° Inc									
500.00	3.90	105.70	499.84	-1.89	6.71	-1.63	0.00	0.00	0.00
600.00	3.90	105.70	599.61	-3.73	13.26	-3.23	0.00	0.00	0.00
700.00	3.90	105.70	699.37	-5.57	19.81	-4.82	0.00	0.00	0.00
800.00	3.90	105.70	799.14	-7.41	26.37	-6.42	0.00	0.00	0.00
900.00	3.90	105.70	898.91	-9.25	32.92	-8.01	0.00	0.00	0.00
1,000.00	3.90	105.70	998.68	-11.09	39.47	-9.61	0.00	0.00	0.00
1,100.00	3.90	105.70	1,098.45	-12.93	46.02	-11.20	0.00	0.00	0.00
1,200.00	3.90	105.70	1,198.22	-14.78	52.57	-12.79	0.00	0.00	0.00
1,300.00	3.90	105.70	1,297.98	-16.62	59.12	-14.39	0.00	0.00	0.00
1,400.00	3.90	105.70	1,397.75	-18.46	65.67	-15.98	0.00	0.00	0.00
1,500.00	3.90	105.70	1,497.52	-20.30	72.22	-17.58	0.00	0.00	0.00
1,552.60	3.90	105.70	1,550.00	-21.27	75.66	-18.42	0.00	0.00	0.00
Upper Pierre									
1,600.00	3.90	105.70	1,597.29	-22.14	78.77	-19.17	0.00	0.00	0.00
1,700.00	3.90	105.70	1,697.06	-23.98	85.32	-20.77	0.00	0.00	0.00
1,800.00	3.90	105.70	1,796.82	-25.82	91.87	-22.36	0.00	0.00	0.00
1,900.00	3.90	105.70	1,896.59	-27.67	98.42	-23.96	0.00	0.00	0.00
2,000.00	3.90	105.70	1,996.36	-29.51	104.97	-25.55	0.00	0.00	0.00
2,100.00	3.90	105.70	2,096.13	-31.35	111.52	-27.14	0.00	0.00	0.00
2,200.00	3.90	105.70	2,195.90	-33.19	118.07	-28.74	0.00	0.00	0.00
2,300.00	3.90	105.70	2,295.67	-35.03	124.62	-30.33	0.00	0.00	0.00
2,400.00	3.90	105.70	2,395.43	-36.87	131.17	-31.93	0.00	0.00	0.00
2,500.00	3.90	105.70	2,495.20	-38.71	137.72	-33.52	0.00	0.00	0.00
2,600.00	3.90	105.70	2,594.97	-40.55	144.27	-35.12	0.00	0.00	0.00
2,700.00	3.90	105.70	2,694.74	-42.40	150.82	-36.71	0.00	0.00	0.00
2,800.00	3.90	105.70	2,794.51	-44.24	157.37	-38.30	0.00	0.00	0.00
2,900.00	3.90	105.70	2,894.28	-46.08	163.92	-39.90	0.00	0.00	0.00
3,000.00	3.90	105.70	2,994.04	-47.92	170.48	-41.49	0.00	0.00	0.00
3,100.00	3.90	105.70	3,093.81	-49.76	177.03	-43.09	0.00	0.00	0.00
3,200.00	3.90	105.70	3,193.58	-51.60	183.58	-44.68	0.00	0.00	0.00
3,300.00	3.90	105.70	3,293.35	-53.44	190.13	-46.28	0.00	0.00	0.00
3,400.00	3.90	105.70	3,393.12	-55.28	196.68	-47.87	0.00	0.00	0.00
3,500.00	3.90	105.70	3,492.89	-57.13	203.23	-49.47	0.00	0.00	0.00
3,507.13	3.90	105.70	3,500.00	-57.26	203.69	-49.58	0.00	0.00	0.00
Hygiene									
3,600.00	3.90	105.70	3,592.65	-58.97	209.78	-51.06	0.00	0.00	0.00
3,657.48	3.90	105.70	3,650.00	-60.03	213.54	-51.98	0.00	0.00	0.00
Lower Pierre									
3,700.00	3.90	105.70	3,692.42	-60.81	216.33	-52.65	0.00	0.00	0.00
3,800.00	3.90	105.70	3,792.19	-62.65	222.88	-54.25	0.00	0.00	0.00
3,900.00	3.90	105.70	3,891.96	-64.49	229.43	-55.84	0.00	0.00	0.00
4,000.00	3.90	105.70	3,991.73	-66.33	235.98	-57.44	0.00	0.00	0.00
4,100.00	3.90	105.70	4,091.49	-68.17	242.53	-59.03	0.00	0.00	0.00
4,200.00	3.90	105.70	4,191.26	-70.01	249.08	-60.63	0.00	0.00	0.00
4,300.00	3.90	105.70	4,291.03	-71.86	255.63	-62.22	0.00	0.00	0.00
4,400.00	3.90	105.70	4,390.80	-73.70	262.18	-63.81	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 #29L-2004	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	3.90	105.70	4,490.57	-75.54	268.73	-65.41	0.00	0.00	0.00
4,600.00	3.90	105.70	4,590.34	-77.38	275.28	-67.00	0.00	0.00	0.00
4,700.00	3.90	105.70	4,690.10	-79.22	281.83	-68.60	0.00	0.00	0.00
4,800.00	3.90	105.70	4,789.87	-81.06	288.38	-70.19	0.00	0.00	0.00
4,900.00	3.90	105.70	4,889.64	-82.90	294.93	-71.79	0.00	0.00	0.00
4,970.59	3.90	105.70	4,960.07	-84.20	299.56	-72.91	0.00	0.00	0.00
Drop 2°/100'									
5,000.00	3.31	105.70	4,989.42	-84.70	301.34	-73.35	2.00	-2.00	0.00
5,100.00	1.31	105.70	5,089.33	-85.80	305.23	-74.29	2.00	-2.00	0.00
5,165.67	0.00	0.00	5,155.00	-86.00	305.95	-74.47	2.00	-2.00	0.00
Hold Vertical									
5,200.00	0.00	0.00	5,189.33	-86.00	305.95	-74.47	0.00	0.00	0.00
5,300.00	0.00	0.00	5,289.33	-86.00	305.95	-74.47	0.00	0.00	0.00
5,365.67	0.00	0.00	5,355.00	-86.00	305.95	-74.47	0.00	0.00	0.00
KOP, Build 11°/100'									
5,400.00	3.77	0.00	5,389.30	-84.87	305.95	-73.34	11.00	11.00	0.00
5,500.00	14.77	0.00	5,487.84	-68.78	305.95	-57.26	11.00	11.00	0.00
5,600.00	25.77	0.00	5,581.51	-34.19	305.95	-22.69	11.00	11.00	0.00
5,700.00	36.77	0.00	5,666.85	17.64	305.95	29.10	11.00	11.00	0.00
5,728.24	39.87	0.00	5,689.00	35.14	305.95	46.59	11.00	11.00	0.00
P200 Marker									
5,775.71	45.09	0.00	5,724.00	67.20	305.95	78.62	11.00	11.00	0.00
P300 Marker									
5,800.00	47.76	0.00	5,740.74	84.79	305.95	96.20	11.00	11.00	0.00
5,810.93	48.97	0.00	5,748.00	92.96	305.95	104.37	11.00	11.00	0.00
P350 Marker									
5,829.60	51.02	0.00	5,760.00	107.26	305.95	118.65	11.00	11.00	0.00
Sharon Springs									
5,834.39	51.55	0.00	5,763.00	111.00	305.95	122.39	11.00	11.00	0.00
Niobrara									
5,867.93	55.23	0.00	5,783.00	137.92	305.95	149.29	11.00	11.00	0.00
Top A Chalk									
5,900.00	58.76	0.00	5,800.46	164.81	305.95	176.16	11.00	11.00	0.00
5,935.88	62.71	0.00	5,818.00	196.10	305.95	207.44	11.00	11.00	0.00
Top A Marl									
5,986.53	68.28	0.00	5,839.00	242.17	305.95	253.47	11.00	11.00	0.00
A Marl									
6,000.00	69.76	0.00	5,843.82	254.75	305.95	266.04	11.00	11.00	0.00
6,000.51	69.81	0.00	5,844.00	255.22	305.95	266.51	11.00	11.00	0.00
Top Upper B									
6,072.02	77.68	0.00	5,864.00	323.82	305.95	335.07	11.00	11.00	0.00
Base Upper B									
6,100.00	80.76	0.00	5,869.23	351.31	305.95	362.53	11.00	11.00	0.00
6,184.06	90.00	0.00	5,876.00	435.00	305.95	446.17	11.00	11.00	0.00
LP @ 90° Inc, Hold - Top Lower B - 5 1/2" Marker / 7" CSG									
6,200.00	90.00	0.00	5,876.00	450.94	305.95	462.10	0.00	0.00	0.00
6,300.00	90.00	0.00	5,876.00	550.94	305.95	562.03	0.00	0.00	0.00
6,400.00	90.00	0.00	5,876.00	650.94	305.95	661.95	0.00	0.00	0.00
6,500.00	90.00	0.00	5,876.00	750.94	305.95	761.88	0.00	0.00	0.00
6,600.00	90.00	0.00	5,876.00	850.94	305.95	861.81	0.00	0.00	0.00
6,700.00	90.00	0.00	5,876.00	950.94	305.95	961.74	0.00	0.00	0.00
6,800.00	90.00	0.00	5,876.00	1,050.94	305.95	1,061.67	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 #29L-2004	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	0.00	5,876.00	1,150.94	305.95	1,161.60	0.00	0.00	0.00	
7,000.00	90.00	0.00	5,876.00	1,250.94	305.95	1,261.53	0.00	0.00	0.00	
7,100.00	90.00	0.00	5,876.00	1,350.94	305.95	1,361.46	0.00	0.00	0.00	
7,200.00	90.00	0.00	5,876.00	1,450.94	305.95	1,461.39	0.00	0.00	0.00	
7,300.00	90.00	0.00	5,876.00	1,550.94	305.95	1,561.32	0.00	0.00	0.00	
7,400.00	90.00	0.00	5,876.00	1,650.94	305.95	1,661.25	0.00	0.00	0.00	
7,500.00	90.00	0.00	5,876.00	1,750.94	305.95	1,761.18	0.00	0.00	0.00	
7,600.00	90.00	0.00	5,876.00	1,850.94	305.95	1,861.11	0.00	0.00	0.00	
7,700.00	90.00	0.00	5,876.00	1,950.94	305.95	1,961.04	0.00	0.00	0.00	
7,800.00	90.00	0.00	5,876.00	2,050.94	305.95	2,060.97	0.00	0.00	0.00	
7,900.00	90.00	0.00	5,876.00	2,150.94	305.95	2,160.90	0.00	0.00	0.00	
8,000.00	90.00	0.00	5,876.00	2,250.94	305.95	2,260.83	0.00	0.00	0.00	
8,100.00	90.00	0.00	5,876.00	2,350.94	305.95	2,360.76	0.00	0.00	0.00	
8,200.00	90.00	0.00	5,876.00	2,450.94	305.95	2,460.69	0.00	0.00	0.00	
8,300.00	90.00	0.00	5,876.00	2,550.94	305.95	2,560.62	0.00	0.00	0.00	
8,400.00	90.00	0.00	5,876.00	2,650.94	305.95	2,660.55	0.00	0.00	0.00	
8,500.00	90.00	0.00	5,876.00	2,750.94	305.95	2,760.48	0.00	0.00	0.00	
8,600.00	90.00	0.00	5,876.00	2,850.94	305.95	2,860.41	0.00	0.00	0.00	
8,700.00	90.00	0.00	5,876.00	2,950.94	305.95	2,960.34	0.00	0.00	0.00	
8,800.00	90.00	0.00	5,876.00	3,050.94	305.95	3,060.27	0.00	0.00	0.00	
8,900.00	90.00	0.00	5,876.00	3,150.94	305.95	3,160.20	0.00	0.00	0.00	
9,000.00	90.00	0.00	5,876.00	3,250.94	305.95	3,260.13	0.00	0.00	0.00	
9,100.00	90.00	0.00	5,876.00	3,350.94	305.95	3,360.06	0.00	0.00	0.00	
9,200.00	90.00	0.00	5,876.00	3,450.94	305.95	3,459.99	0.00	0.00	0.00	
9,300.00	90.00	0.00	5,876.00	3,550.94	305.95	3,559.92	0.00	0.00	0.00	
9,400.00	90.00	0.00	5,876.00	3,650.94	305.95	3,659.85	0.00	0.00	0.00	
9,500.00	90.00	0.00	5,876.00	3,750.94	305.95	3,759.78	0.00	0.00	0.00	
9,600.00	90.00	0.00	5,876.00	3,850.94	305.95	3,859.70	0.00	0.00	0.00	
9,700.00	90.00	0.00	5,876.00	3,950.94	305.95	3,959.63	0.00	0.00	0.00	
9,800.00	90.00	0.00	5,876.00	4,050.94	305.95	4,059.56	0.00	0.00	0.00	
9,900.00	90.00	0.00	5,876.00	4,150.94	305.95	4,159.49	0.00	0.00	0.00	
10,000.00	90.00	0.00	5,876.00	4,250.94	305.95	4,259.42	0.00	0.00	0.00	
10,100.00	90.00	0.00	5,876.00	4,350.94	305.95	4,359.35	0.00	0.00	0.00	
10,200.00	90.00	0.00	5,876.00	4,450.94	305.95	4,459.28	0.00	0.00	0.00	
10,300.00	90.00	0.00	5,876.00	4,550.94	305.95	4,559.21	0.00	0.00	0.00	
10,400.00	90.00	0.00	5,876.00	4,650.94	305.95	4,659.14	0.00	0.00	0.00	
10,500.00	90.00	0.00	5,876.00	4,750.94	305.95	4,759.07	0.00	0.00	0.00	
10,600.00	90.00	0.00	5,876.00	4,850.94	305.95	4,859.00	0.00	0.00	0.00	
10,700.00	90.00	0.00	5,876.00	4,950.94	305.95	4,958.93	0.00	0.00	0.00	
10,800.00	90.00	0.00	5,876.00	5,050.94	305.95	5,058.86	0.00	0.00	0.00	
10,900.00	90.00	0.00	5,876.00	5,150.94	305.95	5,158.79	0.00	0.00	0.00	
11,000.00	90.00	0.00	5,876.00	5,250.94	305.95	5,258.72	0.00	0.00	0.00	
11,100.00	90.00	0.00	5,876.00	5,350.94	305.95	5,358.65	0.00	0.00	0.00	
11,200.00	90.00	0.00	5,876.00	5,450.94	305.95	5,458.58	0.00	0.00	0.00	
11,300.00	90.00	0.00	5,876.00	5,550.94	305.95	5,558.51	0.00	0.00	0.00	
11,400.00	90.00	0.00	5,876.00	5,650.94	305.95	5,658.44	0.00	0.00	0.00	
11,500.00	90.00	0.00	5,876.00	5,750.94	305.95	5,758.37	0.00	0.00	0.00	
11,600.00	90.00	0.00	5,876.00	5,850.94	305.95	5,858.30	0.00	0.00	0.00	
11,700.00	90.00	0.00	5,876.00	5,950.94	305.95	5,958.23	0.00	0.00	0.00	
11,800.00	90.00	0.00	5,876.00	6,050.94	305.95	6,058.16	0.00	0.00	0.00	
11,900.00	90.00	0.00	5,876.00	6,150.94	305.95	6,158.09	0.00	0.00	0.00	
12,000.00	90.00	0.00	5,876.00	6,250.94	305.95	6,258.02	0.00	0.00	0.00	
12,100.00	90.00	0.00	5,876.00	6,350.94	305.95	6,357.95	0.00	0.00	0.00	
12,200.00	90.00	0.00	5,876.00	6,450.94	305.95	6,457.88	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29L-2004
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 #29L-2004	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	0.00	5,876.00	6,550.94	305.95	6,557.81	0.00	0.00	0.00
12,400.00	90.00	0.00	5,876.00	6,650.94	305.95	6,657.74	0.00	0.00	0.00
12,500.00	90.00	0.00	5,876.00	6,750.94	305.95	6,757.67	0.00	0.00	0.00
12,600.00	90.00	0.00	5,876.00	6,850.94	305.95	6,857.60	0.00	0.00	0.00
12,700.00	90.00	0.00	5,876.00	6,950.94	305.95	6,957.53	0.00	0.00	0.00
12,800.00	90.00	0.00	5,876.00	7,050.94	305.95	7,057.45	0.00	0.00	0.00
12,900.00	90.00	0.00	5,876.00	7,150.94	305.95	7,157.38	0.00	0.00	0.00
13,000.00	90.00	0.00	5,876.00	7,250.94	305.95	7,257.31	0.00	0.00	0.00
13,100.00	90.00	0.00	5,876.00	7,350.94	305.95	7,357.24	0.00	0.00	0.00
13,200.00	90.00	0.00	5,876.00	7,450.94	305.95	7,457.17	0.00	0.00	0.00
13,300.00	90.00	0.00	5,876.00	7,550.94	305.95	7,557.10	0.00	0.00	0.00
13,400.00	90.00	0.00	5,876.00	7,650.94	305.95	7,657.03	0.00	0.00	0.00
13,500.00	90.00	0.00	5,876.00	7,750.94	305.95	7,756.96	0.00	0.00	0.00
13,600.00	90.00	0.00	5,876.00	7,850.94	305.95	7,856.89	0.00	0.00	0.00
13,700.00	90.00	0.00	5,876.00	7,950.94	305.95	7,956.82	0.00	0.00	0.00
13,800.00	90.00	0.00	5,876.00	8,050.94	305.95	8,056.75	0.00	0.00	0.00
13,900.00	90.00	0.00	5,876.00	8,150.94	305.95	8,156.68	0.00	0.00	0.00
13,903.21	90.00	0.00	5,876.00	8,154.15	305.95	8,159.89	0.00	0.00	0.00
TD at 13903.21									

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 2004	0.00	0.00	5,876.00	8,154.15	305.95	1,549,508.46	3,444,129.88	40° 49' 50.690 N	103° 53' 42.190 W
- plan hits target center									
- Point									
UHL #1	0.00	0.00	6,691.00	-345.63	-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 1112.19usft at 5900.00usft MD (5800.46 TVD, 164.81 N, 305.95 E)									
- Circle (radius 1,550.00)									
UHL #2	0.00	0.00	6,751.00	2,295.83	-132.50	1,543,643.17	3,443,797.45	40° 48' 52.805 N	103° 53' 47.893 W
- plan misses target center by 978.70usft at 8044.89usft MD (5876.00 TVD, 2295.83 N, 305.95 E)									
- Circle (radius 1,550.00)									
Nelson Ranches A-5	0.00	0.00	6,801.00	7,610.83	-188.65	1,548,956.28	3,443,645.19	40° 49' 45.321 N	103° 53' 48.624 W
- plan misses target center by 1048.93usft at 13359.88usft MD (5876.00 TVD, 7610.83 N, 305.95 E)									
- Circle (radius 1,550.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,184.06	5,876.00	5 1/2" Marker / 7" CSG	7.000	8.750	



WOG
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29L-2004
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 #29L-2004	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,552.60	1,550.00	Upper Pierre			
3,507.13	3,500.00	Hygiene			
3,657.48	3,650.00	Lower Pierre			
5,728.24	5,689.00	P200 Marker			
5,775.71	5,724.00	P300 Marker			
5,810.93	5,748.00	P350 Marker			
5,829.60	5,760.00	Sharon Springs			
5,834.39	5,763.00	Niobrara			
5,867.93	5,783.00	Top A Chalk			
5,935.88	5,818.00	Top A Marl			
5,986.53	5,839.00	A Marl			
6,000.51	5,844.00	Top Upper B			
6,072.02	5,864.00	Base Upper B			
6,184.06	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'
495.08	494.93	-1.80	6.39	Hold 3.90° Inc
4,970.59	4,960.07	-84.20	299.56	Drop 2°/100'
5,165.67	5,155.00	-86.00	305.95	Hold Vertical
5,365.67	5,355.00	-86.00	305.95	KOP, Build 11°/100'
6,184.06	5,876.00	435.00	305.95	LP @ 90° Inc, Hold
13,903.21	5,876.00	8,154.15	305.95	TD at 13903.21