



Project: Weld County, CO
Site: Sec 30-T10N-R58W
Well: Razor #301-1914
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: 7.88°
Magnetic Field
Strength: 52805.8nT
Dip Angle: 67.34°
Date: 6/14/2016
Model: IGRF2015

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1550.00	1553.29	Upper Pierre
3500.00	3509.12	Hygiene
3650.00	3659.56	Lower Pierre
5712.00	5770.99	P200 Marker
5747.00	5821.33	P300 Marker
5771.00	5858.58	P350 Marker
5783.00	5878.27	Sharon Springs
5786.00	5883.32	Niobrara
5808.00	5922.19	Top A Chalk
5841.00	5968.78	Top A Marl
5862.00	6039.55	A Marl
5867.00	6053.17	Top Upper B
5887.00	6117.85	Base Upper B
5899.00	6172.71	Top Lower B

WELL DETAILS: Razor #301-1914

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.00	0.00	1541320.94	4862.00	3442525.29	40° 48' 30.090 N	103° 54' 4.980 W	

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	521.12	4.42	124.53	520.90	-4.83	7.03	2.00	124.53	-4.61	
4	4864.75	4.42	124.53	4851.60	-194.67	282.97	0.00	0.00	-185.57	
5	5085.87	0.00	0.00	5072.50	-199.50	290.00	2.00	180.00	-190.18	
6	5285.87	0.00	0.00	5272.50	-199.50	290.00	0.00	0.00	-190.18	
7	6285.68	90.00	359.79	5909.00	437.00	287.71	9.00	359.79	445.92	
8	14018.08	90.00	359.79	5909.00	8169.34	259.83	0.00	0.00	8173.48	PBHL 301-1914

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'
520.90	521.12	4.42	124.53	-4.83	7.03	-4.61	8.53	Hold 4.42° Inc
4851.60	4864.75	4.42	124.53	-194.67	282.97	-185.57	343.47	Drop 2°/100'
5072.50	5085.87	0.00	0.00	-199.50	290.00	-190.18	351.99	Hold Vertical
5272.50	5285.87	0.00	0.00	-199.50	290.00	-190.18	351.99	KOP, Build 9°/100'
5909.00	6285.68	90.00	359.79	437.00	287.71	445.92	988.49	LP @ 90° Inc, Hold
5909.00	14018.08	90.00	359.79	8169.34	259.83	8173.48	8720.89	TD at 14018.08

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 301-1914	5909.00	8169.34	259.83	1549493.64	3442637.81	40° 49' 50.810 N	103° 54' 1.600 W
Nelson Ranches A-5	6655.00	7613.91	1257.35	1548956.28	3443645.19	40° 49' 45.321 N	103° 53' 48.624 W

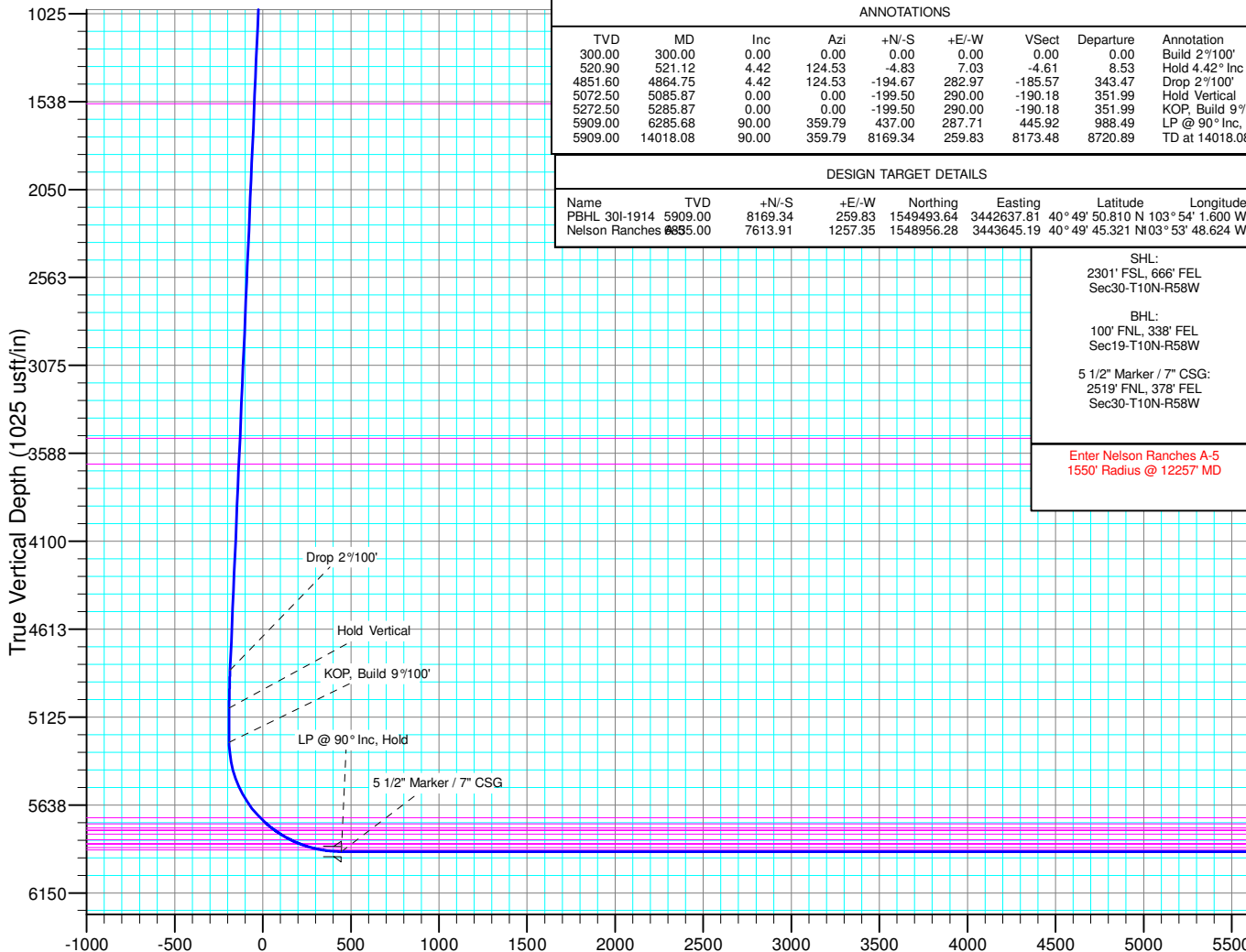
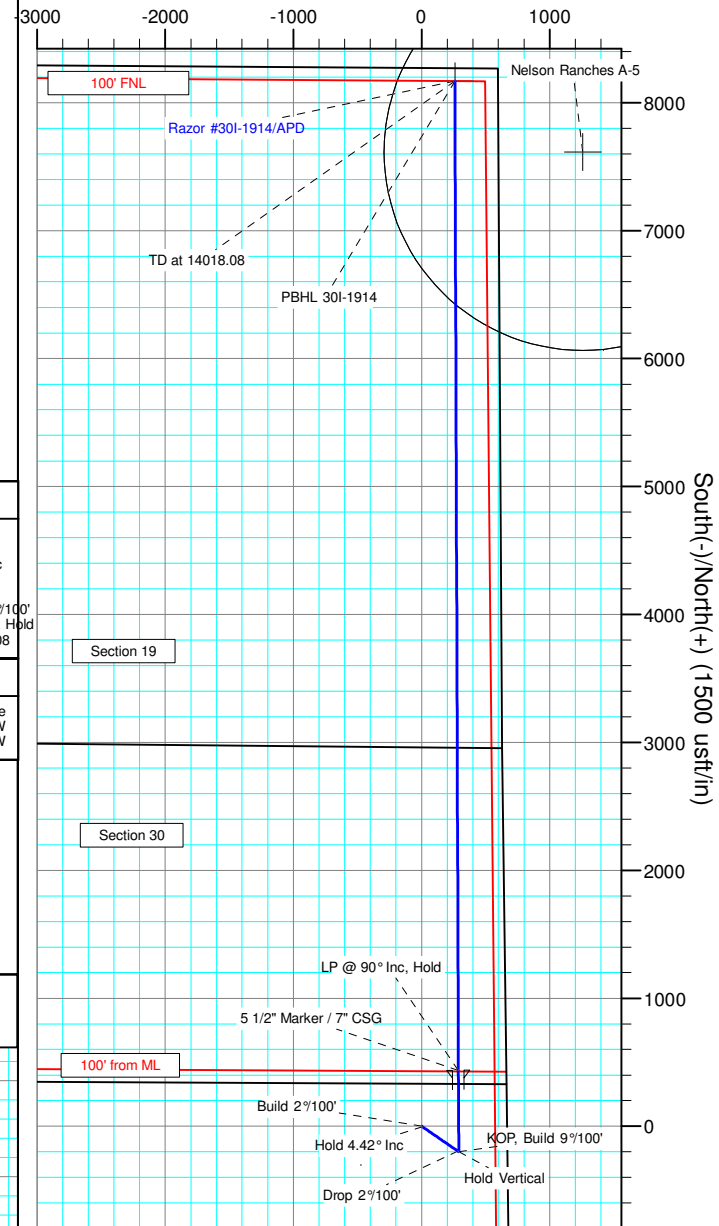
SHL:
2301' FSL, 666' FEL
Sec30-T10N-R58W

BHL:
100' FNL, 338' FEL
Sec19-T10N-R58W

5 1/2" Marker / 7" CSG:
2519' FNL, 378' FEL
Sec30-T10N-R58W

Enter Nelson Ranches A-5
1550' Radius @ 1225' MD

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



Vertical Section at 1.82° (1000 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 30-T10N-R58W
Razor #30I-1914**

Hz

Plan: APD

Standard Planning Report

15 June, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	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 30-T10N-R58W			
Site Position:		Northing:	1,538,948.03 usft	Latitude: 40° 48' 7.409 N
From:	Lat/Long	Easting:	3,438,226.87 usft	Longitude: 103° 55' 1.420 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 1.02 °

Well	Razor #30I-1914			
Well Position	+N/-S	2,295.81 usft	Northing:	1,541,320.95 usft
	+E/-W	4,340.09 usft	Easting:	3,442,525.29 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 4,862.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/14/2016	7.88	67.34	52,806

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	1.82

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	
521.12	4.42	124.53	520.90	-4.83	7.03	2.00	2.00	0.00	124.53	
4,864.75	4.42	124.53	4,851.60	-194.67	282.97	0.00	0.00	0.00	0.00	
5,085.87	0.00	0.00	5,072.50	-199.50	290.00	2.00	-2.00	0.00	180.00	
5,285.87	0.00	0.00	5,272.50	-199.50	290.00	0.00	0.00	0.00	0.00	
6,285.68	90.00	359.79	5,909.00	437.00	287.71	9.00	9.00	0.00	359.79	
14,018.08	90.00	359.79	5,909.00	8,169.34	259.83	0.00	0.00	0.00	0.00	PBHL 30I-1914



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	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	124.53	399.98	-0.99	1.44	-0.94	2.00	2.00	0.00	
500.00	4.00	124.53	499.84	-3.96	5.75	-3.77	2.00	2.00	0.00	
521.12	4.42	124.53	520.90	-4.83	7.03	-4.61	2.00	2.00	0.00	
Hold 4.42° Inc										
600.00	4.42	124.53	599.55	-8.28	12.04	-7.89	0.00	0.00	0.00	
700.00	4.42	124.53	699.25	-12.65	18.39	-12.06	0.00	0.00	0.00	
800.00	4.42	124.53	798.95	-17.02	24.74	-16.23	0.00	0.00	0.00	
900.00	4.42	124.53	898.65	-21.39	31.10	-20.39	0.00	0.00	0.00	
1,000.00	4.42	124.53	998.35	-25.76	37.45	-24.56	0.00	0.00	0.00	
1,100.00	4.42	124.53	1,098.06	-30.13	43.80	-28.73	0.00	0.00	0.00	
1,200.00	4.42	124.53	1,197.76	-34.50	50.16	-32.89	0.00	0.00	0.00	
1,300.00	4.42	124.53	1,297.46	-38.87	56.51	-37.06	0.00	0.00	0.00	
1,400.00	4.42	124.53	1,397.16	-43.24	62.86	-41.22	0.00	0.00	0.00	
1,500.00	4.42	124.53	1,496.87	-47.61	69.21	-45.39	0.00	0.00	0.00	
1,553.29	4.42	124.53	1,550.00	-49.94	72.60	-47.61	0.00	0.00	0.00	
Upper Pierre										
1,600.00	4.42	124.53	1,596.57	-51.98	75.57	-49.56	0.00	0.00	0.00	
1,700.00	4.42	124.53	1,696.27	-56.36	81.92	-53.72	0.00	0.00	0.00	
1,800.00	4.42	124.53	1,795.97	-60.73	88.27	-57.89	0.00	0.00	0.00	
1,900.00	4.42	124.53	1,895.68	-65.10	94.63	-62.06	0.00	0.00	0.00	
2,000.00	4.42	124.53	1,995.38	-69.47	100.98	-66.22	0.00	0.00	0.00	
2,100.00	4.42	124.53	2,095.08	-73.84	107.33	-70.39	0.00	0.00	0.00	
2,200.00	4.42	124.53	2,194.78	-78.21	113.68	-74.55	0.00	0.00	0.00	
2,300.00	4.42	124.53	2,294.48	-82.58	120.04	-78.72	0.00	0.00	0.00	
2,400.00	4.42	124.53	2,394.19	-86.95	126.39	-82.89	0.00	0.00	0.00	
2,500.00	4.42	124.53	2,493.89	-91.32	132.74	-87.05	0.00	0.00	0.00	
2,600.00	4.42	124.53	2,593.59	-95.69	139.10	-91.22	0.00	0.00	0.00	
2,700.00	4.42	124.53	2,693.29	-100.06	145.45	-95.38	0.00	0.00	0.00	
2,800.00	4.42	124.53	2,793.00	-104.43	151.80	-99.55	0.00	0.00	0.00	
2,900.00	4.42	124.53	2,892.70	-108.80	158.15	-103.72	0.00	0.00	0.00	
3,000.00	4.42	124.53	2,992.40	-113.17	164.51	-107.88	0.00	0.00	0.00	
3,100.00	4.42	124.53	3,092.10	-117.54	170.86	-112.05	0.00	0.00	0.00	
3,200.00	4.42	124.53	3,191.80	-121.91	177.21	-116.22	0.00	0.00	0.00	
3,300.00	4.42	124.53	3,291.51	-126.28	183.57	-120.38	0.00	0.00	0.00	
3,400.00	4.42	124.53	3,391.21	-130.65	189.92	-124.55	0.00	0.00	0.00	
3,500.00	4.42	124.53	3,490.91	-135.02	196.27	-128.71	0.00	0.00	0.00	
3,509.12	4.42	124.53	3,500.00	-135.42	196.85	-129.09	0.00	0.00	0.00	
Hygiene										
3,600.00	4.42	124.53	3,590.61	-139.39	202.62	-132.88	0.00	0.00	0.00	
3,659.56	4.42	124.53	3,650.00	-141.99	206.41	-135.36	0.00	0.00	0.00	
Lower Pierre										
3,700.00	4.42	124.53	3,690.32	-143.76	208.98	-137.05	0.00	0.00	0.00	
3,800.00	4.42	124.53	3,790.02	-148.13	215.33	-141.21	0.00	0.00	0.00	
3,900.00	4.42	124.53	3,889.72	-152.50	221.68	-145.38	0.00	0.00	0.00	
4,000.00	4.42	124.53	3,989.42	-156.87	228.04	-149.54	0.00	0.00	0.00	
4,100.00	4.42	124.53	4,089.12	-161.24	234.39	-153.71	0.00	0.00	0.00	
4,200.00	4.42	124.53	4,188.83	-165.61	240.74	-157.88	0.00	0.00	0.00	
4,300.00	4.42	124.53	4,288.53	-169.98	247.09	-162.04	0.00	0.00	0.00	
4,400.00	4.42	124.53	4,388.23	-174.35	253.45	-166.21	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	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	4.42	124.53	4,487.93	-178.72	259.80	-170.38	0.00	0.00	0.00
4,600.00	4.42	124.53	4,587.64	-183.10	266.15	-174.54	0.00	0.00	0.00
4,700.00	4.42	124.53	4,687.34	-187.47	272.51	-178.71	0.00	0.00	0.00
4,800.00	4.42	124.53	4,787.04	-191.84	278.86	-182.87	0.00	0.00	0.00
4,864.75	4.42	124.53	4,851.60	-194.67	282.97	-185.57	0.00	0.00	0.00
Drop 2°/100'									
4,900.00	3.72	124.53	4,886.76	-196.08	285.03	-186.92	2.00	-2.00	0.00
5,000.00	1.72	124.53	4,986.64	-198.77	288.94	-189.48	2.00	-2.00	0.00
5,085.87	0.00	0.00	5,072.50	-199.50	290.00	-190.18	2.00	-2.00	0.00
Hold Vertical									
5,100.00	0.00	0.00	5,086.63	-199.50	290.00	-190.18	0.00	0.00	0.00
5,200.00	0.00	0.00	5,186.63	-199.50	290.00	-190.18	0.00	0.00	0.00
5,285.87	0.00	0.00	5,272.50	-199.50	290.00	-190.18	0.00	0.00	0.00
KOP, Build 9°/100'									
5,300.00	1.27	359.79	5,286.63	-199.34	290.00	-190.02	9.00	9.00	0.00
5,400.00	10.27	359.79	5,386.02	-189.30	289.96	-179.98	9.00	9.00	0.00
5,500.00	19.28	359.79	5,482.61	-163.82	289.87	-154.52	9.00	9.00	0.00
5,600.00	28.28	359.79	5,574.03	-123.55	289.73	-114.27	9.00	9.00	0.00
5,700.00	37.28	359.79	5,658.02	-69.46	289.53	-60.22	9.00	9.00	0.00
5,770.99	43.67	359.79	5,712.00	-23.41	289.37	-14.19	9.00	9.00	0.00
P200 Marker									
5,800.00	46.28	359.79	5,732.52	-2.91	289.29	6.29	9.00	9.00	0.00
5,821.33	48.20	359.79	5,747.00	12.76	289.23	21.94	9.00	9.00	0.00
P300 Marker									
5,858.58	51.55	359.79	5,771.00	41.23	289.13	50.40	9.00	9.00	0.00
P350 Marker									
5,878.27	53.33	359.79	5,783.00	56.84	289.08	66.00	9.00	9.00	0.00
Sharon Springs									
5,883.32	53.78	359.79	5,786.00	60.90	289.06	70.06	9.00	9.00	0.00
Niobrara									
5,900.00	55.28	359.79	5,795.68	74.49	289.01	83.64	9.00	9.00	0.00
5,922.19	57.28	359.79	5,808.00	92.95	288.95	102.08	9.00	9.00	0.00
Top A Chalk									
5,988.78	63.27	359.79	5,841.00	150.75	288.74	159.85	9.00	9.00	0.00
Top A Marl									
6,000.00	64.28	359.79	5,845.96	160.81	288.70	169.91	9.00	9.00	0.00
6,039.55	67.84	359.79	5,862.00	196.95	288.57	206.03	9.00	9.00	0.00
A Marl									
6,053.17	69.07	359.79	5,867.00	209.62	288.53	218.68	9.00	9.00	0.00
Top Upper B									
6,100.00	73.29	359.79	5,882.11	253.94	288.37	262.97	9.00	9.00	0.00
6,117.85	74.89	359.79	5,887.00	271.10	288.30	280.13	9.00	9.00	0.00
Base Upper B									
6,172.71	79.83	359.79	5,899.00	324.61	288.11	333.61	9.00	9.00	0.00
Top Lower B									
6,200.00	82.29	359.79	5,903.24	351.57	288.01	360.55	9.00	9.00	0.00
6,285.68	90.00	359.79	5,909.00	436.99	287.71	445.92	9.00	9.00	0.00
LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG									
6,300.00	90.00	359.79	5,909.00	451.31	287.65	460.23	0.00	0.00	0.00
6,400.00	90.00	359.79	5,909.00	551.31	287.29	560.17	0.00	0.00	0.00
6,500.00	90.00	359.79	5,909.00	651.31	286.93	660.10	0.00	0.00	0.00
6,600.00	90.00	359.79	5,909.00	751.31	286.57	760.04	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	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)
6,700.00	90.00	359.79	5,909.00	851.31	286.21	859.98	0.00	0.00	0.00
6,800.00	90.00	359.79	5,909.00	951.31	285.85	959.92	0.00	0.00	0.00
6,900.00	90.00	359.79	5,909.00	1,051.31	285.49	1,059.85	0.00	0.00	0.00
7,000.00	90.00	359.79	5,909.00	1,151.31	285.13	1,159.79	0.00	0.00	0.00
7,100.00	90.00	359.79	5,909.00	1,251.31	284.77	1,259.73	0.00	0.00	0.00
7,200.00	90.00	359.79	5,909.00	1,351.31	284.41	1,359.66	0.00	0.00	0.00
7,300.00	90.00	359.79	5,909.00	1,451.31	284.05	1,459.60	0.00	0.00	0.00
7,400.00	90.00	359.79	5,909.00	1,551.31	283.69	1,559.54	0.00	0.00	0.00
7,500.00	90.00	359.79	5,909.00	1,651.30	283.33	1,659.48	0.00	0.00	0.00
7,600.00	90.00	359.79	5,909.00	1,751.30	282.97	1,759.41	0.00	0.00	0.00
7,700.00	90.00	359.79	5,909.00	1,851.30	282.61	1,859.35	0.00	0.00	0.00
7,800.00	90.00	359.79	5,909.00	1,951.30	282.25	1,959.29	0.00	0.00	0.00
7,900.00	90.00	359.79	5,909.00	2,051.30	281.89	2,059.23	0.00	0.00	0.00
8,000.00	90.00	359.79	5,909.00	2,151.30	281.52	2,159.16	0.00	0.00	0.00
8,100.00	90.00	359.79	5,909.00	2,251.30	281.16	2,259.10	0.00	0.00	0.00
8,200.00	90.00	359.79	5,909.00	2,351.30	280.80	2,359.04	0.00	0.00	0.00
8,300.00	90.00	359.79	5,909.00	2,451.30	280.44	2,458.98	0.00	0.00	0.00
8,400.00	90.00	359.79	5,909.00	2,551.30	280.08	2,558.91	0.00	0.00	0.00
8,500.00	90.00	359.79	5,909.00	2,651.30	279.72	2,658.85	0.00	0.00	0.00
8,600.00	90.00	359.79	5,909.00	2,751.30	279.36	2,758.79	0.00	0.00	0.00
8,700.00	90.00	359.79	5,909.00	2,851.30	279.00	2,858.72	0.00	0.00	0.00
8,800.00	90.00	359.79	5,909.00	2,951.30	278.64	2,958.66	0.00	0.00	0.00
8,900.00	90.00	359.79	5,909.00	3,051.30	278.28	3,058.60	0.00	0.00	0.00
9,000.00	90.00	359.79	5,909.00	3,151.29	277.92	3,158.54	0.00	0.00	0.00
9,100.00	90.00	359.79	5,909.00	3,251.29	277.56	3,258.47	0.00	0.00	0.00
9,200.00	90.00	359.79	5,909.00	3,351.29	277.20	3,358.41	0.00	0.00	0.00
9,300.00	90.00	359.79	5,909.00	3,451.29	276.84	3,458.35	0.00	0.00	0.00
9,400.00	90.00	359.79	5,909.00	3,551.29	276.48	3,558.29	0.00	0.00	0.00
9,500.00	90.00	359.79	5,909.00	3,651.29	276.12	3,658.22	0.00	0.00	0.00
9,600.00	90.00	359.79	5,909.00	3,751.29	275.76	3,758.16	0.00	0.00	0.00
9,700.00	90.00	359.79	5,909.00	3,851.29	275.40	3,858.10	0.00	0.00	0.00
9,800.00	90.00	359.79	5,909.00	3,951.29	275.04	3,958.04	0.00	0.00	0.00
9,900.00	90.00	359.79	5,909.00	4,051.29	274.68	4,057.97	0.00	0.00	0.00
10,000.00	90.00	359.79	5,909.00	4,151.29	274.31	4,157.91	0.00	0.00	0.00
10,100.00	90.00	359.79	5,909.00	4,251.29	273.95	4,257.85	0.00	0.00	0.00
10,200.00	90.00	359.79	5,909.00	4,351.29	273.59	4,357.79	0.00	0.00	0.00
10,300.00	90.00	359.79	5,909.00	4,451.29	273.23	4,457.72	0.00	0.00	0.00
10,400.00	90.00	359.79	5,909.00	4,551.29	272.87	4,557.66	0.00	0.00	0.00
10,500.00	90.00	359.79	5,909.00	4,651.29	272.51	4,657.60	0.00	0.00	0.00
10,600.00	90.00	359.79	5,909.00	4,751.28	272.15	4,757.53	0.00	0.00	0.00
10,700.00	90.00	359.79	5,909.00	4,851.28	271.79	4,857.47	0.00	0.00	0.00
10,800.00	90.00	359.79	5,909.00	4,951.28	271.43	4,957.41	0.00	0.00	0.00
10,900.00	90.00	359.79	5,909.00	5,051.28	271.07	5,057.35	0.00	0.00	0.00
11,000.00	90.00	359.79	5,909.00	5,151.28	270.71	5,157.28	0.00	0.00	0.00
11,100.00	90.00	359.79	5,909.00	5,251.28	270.35	5,257.22	0.00	0.00	0.00
11,200.00	90.00	359.79	5,909.00	5,351.28	269.99	5,357.16	0.00	0.00	0.00
11,300.00	90.00	359.79	5,909.00	5,451.28	269.63	5,457.10	0.00	0.00	0.00
11,400.00	90.00	359.79	5,909.00	5,551.28	269.27	5,557.03	0.00	0.00	0.00
11,500.00	90.00	359.79	5,909.00	5,651.28	268.91	5,656.97	0.00	0.00	0.00
11,600.00	90.00	359.79	5,909.00	5,751.28	268.55	5,756.91	0.00	0.00	0.00
11,700.00	90.00	359.79	5,909.00	5,851.28	268.19	5,856.85	0.00	0.00	0.00
11,800.00	90.00	359.79	5,909.00	5,951.28	267.83	5,956.78	0.00	0.00	0.00
11,900.00	90.00	359.79	5,909.00	6,051.28	267.46	6,056.72	0.00	0.00	0.00
12,000.00	90.00	359.79	5,909.00	6,151.28	267.10	6,156.66	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	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)
12,100.00	90.00	359.79	5,909.00	6,251.27	266.74	6,256.59	0.00	0.00	0.00
12,200.00	90.00	359.79	5,909.00	6,351.27	266.38	6,356.53	0.00	0.00	0.00
12,300.00	90.00	359.79	5,909.00	6,451.27	266.02	6,456.47	0.00	0.00	0.00
12,400.00	90.00	359.79	5,909.00	6,551.27	265.66	6,556.41	0.00	0.00	0.00
12,500.00	90.00	359.79	5,909.00	6,651.27	265.30	6,656.34	0.00	0.00	0.00
12,600.00	90.00	359.79	5,909.00	6,751.27	264.94	6,756.28	0.00	0.00	0.00
12,700.00	90.00	359.79	5,909.00	6,851.27	264.58	6,856.22	0.00	0.00	0.00
12,800.00	90.00	359.79	5,909.00	6,951.27	264.22	6,956.16	0.00	0.00	0.00
12,900.00	90.00	359.79	5,909.00	7,051.27	263.86	7,056.09	0.00	0.00	0.00
13,000.00	90.00	359.79	5,909.00	7,151.27	263.50	7,156.03	0.00	0.00	0.00
13,100.00	90.00	359.79	5,909.00	7,251.27	263.14	7,255.97	0.00	0.00	0.00
13,200.00	90.00	359.79	5,909.00	7,351.27	262.78	7,355.91	0.00	0.00	0.00
13,300.00	90.00	359.79	5,909.00	7,451.27	262.42	7,455.84	0.00	0.00	0.00
13,400.00	90.00	359.79	5,909.00	7,551.27	262.06	7,555.78	0.00	0.00	0.00
13,500.00	90.00	359.79	5,909.00	7,651.27	261.70	7,655.72	0.00	0.00	0.00
13,600.00	90.00	359.79	5,909.00	7,751.27	261.34	7,755.66	0.00	0.00	0.00
13,700.00	90.00	359.79	5,909.00	7,851.26	260.98	7,855.59	0.00	0.00	0.00
13,800.00	90.00	359.79	5,909.00	7,951.26	260.61	7,955.53	0.00	0.00	0.00
13,900.00	90.00	359.79	5,909.00	8,051.26	260.25	8,055.47	0.00	0.00	0.00
14,000.00	90.00	359.79	5,909.00	8,151.26	259.89	8,155.40	0.00	0.00	0.00
14,018.08	90.00	359.79	5,909.00	8,169.34	259.83	8,173.48	0.00	0.00	0.00
TD at 14018.08									

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 30I-1914	0.00	0.00	5,909.00	8,169.34	259.83	1,549,493.65	3,442,637.81	40° 49' 50.810 N	103° 54' 1.600 W
- plan hits target center									
- Point									
Nelson Ranches A-5	0.00	0.00	6,835.00	7,613.91	1,257.35	1,548,956.28	3,443,645.19	40° 49' 45.321 N	103° 53' 48.624 W
- plan misses target center by 1359.61usft at 13459.05usft MD (5909.00 TVD, 7610.32 N, 261.84 E)									
- Circle (radius 1,550.00)									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,285.68	5,909.00	5 1/2" Marker / 7" CSG	7.000	8.750	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #30I-1914
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4883.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4883.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor #30I-1914	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,553.29	1,550.00	Upper Pierre				
3,509.12	3,500.00	Hygiene				
3,659.56	3,650.00	Lower Pierre				
5,770.99	5,712.00	P200 Marker				
5,821.33	5,747.00	P300 Marker				
5,858.58	5,771.00	P350 Marker				
5,878.27	5,783.00	Sharon Springs				
5,883.32	5,786.00	Niobrara				
5,922.19	5,808.00	Top A Chalk				
5,988.78	5,841.00	Top A Marl				
6,039.55	5,862.00	A Marl				
6,053.17	5,867.00	Top Upper B				
6,117.85	5,887.00	Base Upper B				
6,172.71	5,899.00	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'	
521.12	520.90	-4.83	7.03	Hold 4.42° Inc	
4,864.75	4,851.60	-194.67	282.97	Drop 2°/100'	
5,085.87	5,072.50	-199.50	290.00	Hold Vertical	
5,285.87	5,272.50	-199.50	290.00	KOP, Build 9°/100'	
6,285.68	5,909.00	437.00	287.71	LP @ 90° Inc, Hold	
14,018.08	5,909.00	8,169.34	259.83	TD at 14018.08	