



Project: Weld County, CO
Site: Sec 30-T10N-R58W
Well: Razor Federal #30K-1905
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: 7.95°
Magnetic Field
Strength: 52880.4nT
Dip Angle: 67.35°
Date: 10/19/2015
Model: IGRF2015

FORMATION TOP DETAILS		
	TVDPath	MDPath
Upper Pierre	1550.00	1551.72
Hygiene	3500.00	3504.66
Lower Pierre	3650.00	3654.89
P200 Marker	5701.00	5795.95
P300 Marker	5740.00	5869.63
P350 Marker	5761.00	5916.62
Sharon Springs	5774.00	5949.99
Niobrara	5778.00	5961.19
Top A Chalk	5789.00	5995.17

WELL DETAILS: Razor Federal #30K-1905

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.00	0.00	1541298.00	4828.00	3439993.31	40° 48' 30.313 N	103° 54' 37.907 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	457.13	3.14	217.15	457.05	-3.43	-2.60	2.00	217.15	-3.38	
4	4831.11	3.14	217.15	4824.45	-194.57	-147.40	0.00	0.00	-191.60	
5	4988.24	0.00	0.00	4981.50	-198.00	-150.00	2.00	180.00	-194.99	
6	5188.24	0.00	0.00	5181.50	-198.00	-150.00	0.00	0.00	-194.99	
7	6188.05	90.00	359.92	5818.00	438.50	-150.91	9.00	359.92	441.41	
8	13916.56	90.00	359.92	5818.00	8167.00	-162.00	0.00	0.00	8168.61	PBHL 1905

ANNOTATIONS

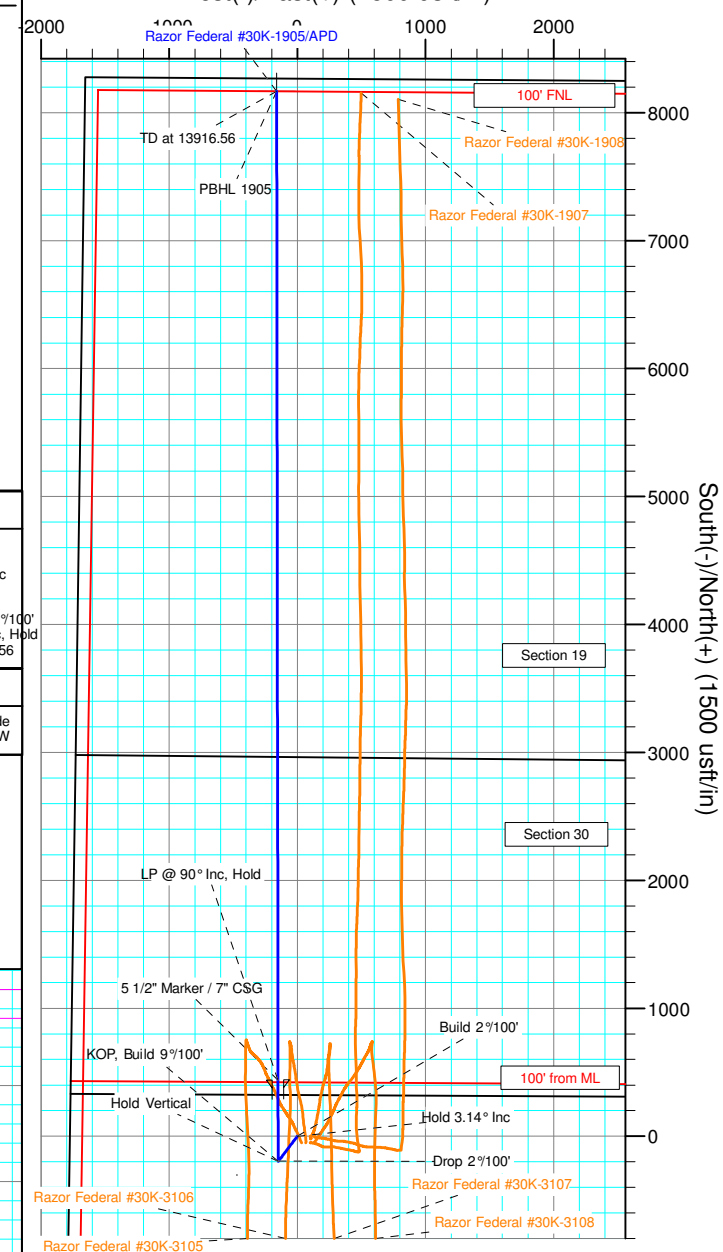
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
457.05	457.13	3.14	217.15	-3.43	-2.60	-3.38	4.31	Hold 3.14° Inc
4824.45	4831.11	3.14	217.15	-194.57	-147.40	-191.60	244.09	Drop 2°/100'
4981.50	4988.24	0.00	0.00	-198.00	-150.00	-194.99	248.40	Hold Vertical
5181.50	5188.24	0.00	0.00	-198.00	-150.00	-194.99	248.40	KOP Build 9°/100'
5818.00	6188.05	90.00	359.92	438.50	-150.91	441.41	884.90	LP @ 90° Inc, Hold
5818.00	13916.56	90.00	359.92	8167.00	-162.00	8168.61	8613.41	TD at 13916.56

DESIGN TARGET DETAILS

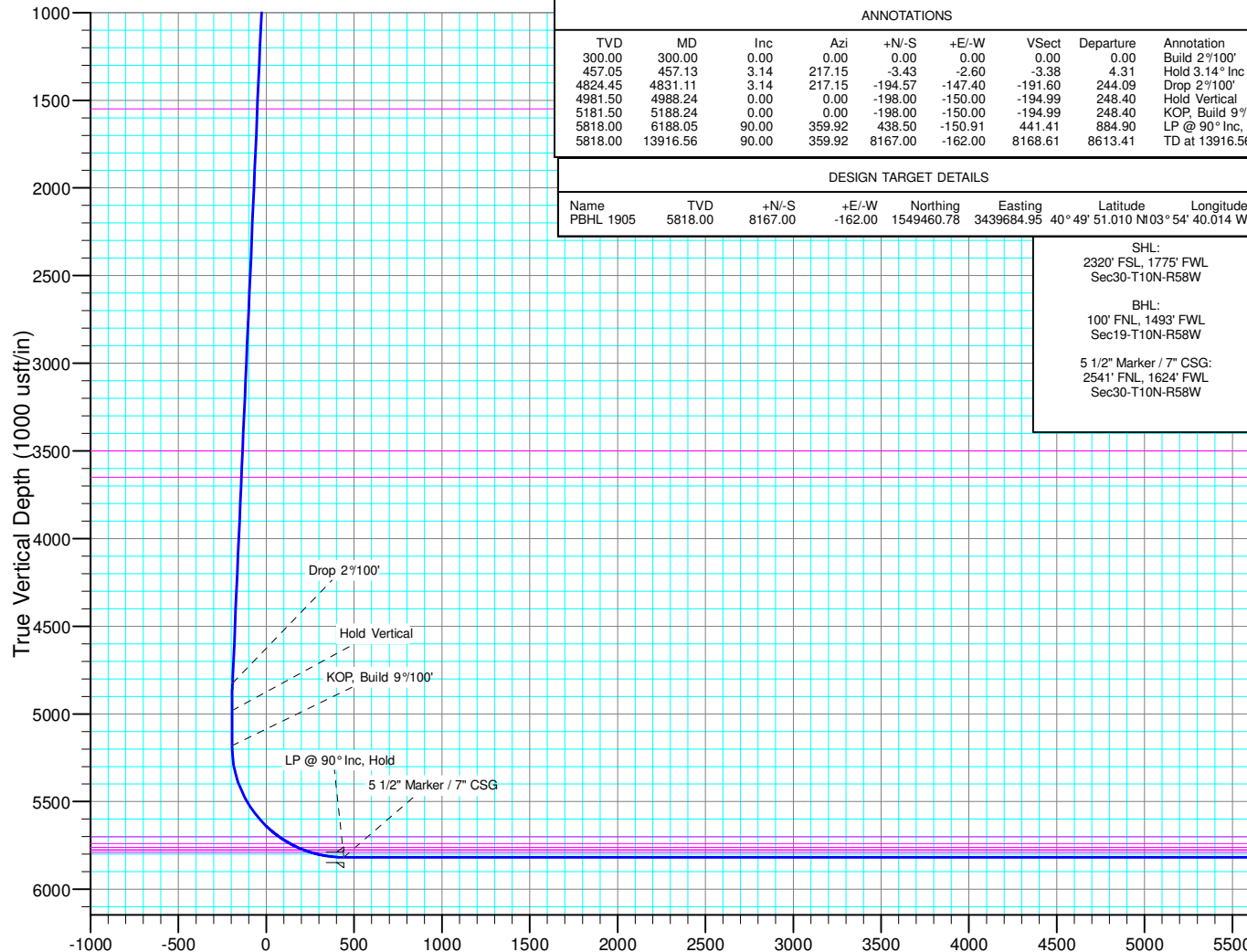
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1905	5818.00	8167.00	-162.00	1549460.78	3439684.95	40° 49' 51.010 N	103° 54' 40.014 W

SHL:
2320' FSL, 1775' FWL
Sec30-T10N-R58W
BHL:
100' FNL, 1493' FWL
Sec19-T10N-R58W
5 1/2" Marker / 7" CSG:
2541' FNL, 1624' FWL
Sec30-T10N-R58W

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



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



Vertical Section at 358.86° (1000 usft/in)



Whiting Petroleum Corp.

Weld County, CO

Sec 30-T10N-R58W

Razor Federal #30K-1905

Hz

Plan: APD

Standard Planning Report

17 May, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #30K-1905
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	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:	1,541,302.28 usft	Latitude:	40° 48' 30.570 N
From:	Lat/Long	Easting:	3,438,779.33 usft	Longitude:	103° 54' 53.690 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.02 °

Well	Razor Federal #30K-1905					
Well Position	+N/-S	-25.97 usft	Northing:	1,541,298.00 usft	Latitude:	40° 48' 30.313 N
	+E/-W	1,213.71 usft	Easting:	3,439,993.31 usft	Longitude:	103° 54' 37.907 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	10/19/2015	7.95	67.35	52,880

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	358.86

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	
457.13	3.14	217.15	457.05	-3.43	-2.60	2.00	2.00	0.00	217.15	
4,831.11	3.14	217.15	4,824.45	-194.57	-147.40	0.00	0.00	0.00	0.00	
4,988.24	0.00	0.00	4,981.50	-198.00	-150.00	2.00	-2.00	0.00	180.00	
5,188.24	0.00	0.00	5,181.50	-198.00	-150.00	0.00	0.00	0.00	0.00	
6,188.05	90.00	359.92	5,818.00	438.50	-150.91	9.00	9.00	0.00	359.92	
13,916.56	90.00	359.92	5,818.00	8,167.00	-162.00	0.00	0.00	0.00	0.00	PBHL 1905



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #30K-1905
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	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	217.15	399.98	-1.39	-1.05	-1.37	2.00	2.00	0.00
457.13	3.14	217.15	457.05	-3.43	-2.60	-3.38	2.00	2.00	0.00
Hold 3.14° Inc									
500.00	3.14	217.15	499.86	-5.31	-4.02	-5.23	0.00	0.00	0.00
600.00	3.14	217.15	599.71	-9.68	-7.33	-9.53	0.00	0.00	0.00
700.00	3.14	217.15	699.56	-14.05	-10.64	-13.83	0.00	0.00	0.00
800.00	3.14	217.15	799.41	-18.42	-13.95	-18.14	0.00	0.00	0.00
900.00	3.14	217.15	899.26	-22.79	-17.26	-22.44	0.00	0.00	0.00
1,000.00	3.14	217.15	999.10	-27.16	-20.57	-26.74	0.00	0.00	0.00
1,100.00	3.14	217.15	1,098.95	-31.53	-23.88	-31.05	0.00	0.00	0.00
1,200.00	3.14	217.15	1,198.80	-35.90	-27.19	-35.35	0.00	0.00	0.00
1,300.00	3.14	217.15	1,298.65	-40.27	-30.50	-39.65	0.00	0.00	0.00
1,400.00	3.14	217.15	1,398.50	-44.64	-33.81	-43.96	0.00	0.00	0.00
1,500.00	3.14	217.15	1,498.35	-49.00	-37.12	-48.26	0.00	0.00	0.00
1,551.72	3.14	217.15	1,550.00	-51.27	-38.84	-50.48	0.00	0.00	0.00
Upper Pierre									
1,600.00	3.14	217.15	1,598.20	-53.37	-40.44	-52.56	0.00	0.00	0.00
1,700.00	3.14	217.15	1,698.05	-57.74	-43.75	-56.87	0.00	0.00	0.00
1,800.00	3.14	217.15	1,797.90	-62.11	-47.06	-61.17	0.00	0.00	0.00
1,900.00	3.14	217.15	1,897.75	-66.48	-50.37	-65.47	0.00	0.00	0.00
2,000.00	3.14	217.15	1,997.60	-70.85	-53.68	-69.78	0.00	0.00	0.00
2,100.00	3.14	217.15	2,097.45	-75.22	-56.99	-74.08	0.00	0.00	0.00
2,200.00	3.14	217.15	2,197.30	-79.59	-60.30	-78.38	0.00	0.00	0.00
2,300.00	3.14	217.15	2,297.15	-83.96	-63.61	-82.68	0.00	0.00	0.00
2,400.00	3.14	217.15	2,397.00	-88.33	-66.92	-86.99	0.00	0.00	0.00
2,500.00	3.14	217.15	2,496.85	-92.70	-70.23	-91.29	0.00	0.00	0.00
2,600.00	3.14	217.15	2,596.70	-97.07	-73.54	-95.59	0.00	0.00	0.00
2,700.00	3.14	217.15	2,696.55	-101.44	-76.85	-99.90	0.00	0.00	0.00
2,800.00	3.14	217.15	2,796.40	-105.81	-80.16	-104.20	0.00	0.00	0.00
2,900.00	3.14	217.15	2,896.25	-110.18	-83.47	-108.50	0.00	0.00	0.00
3,000.00	3.14	217.15	2,996.10	-114.55	-86.78	-112.81	0.00	0.00	0.00
3,100.00	3.14	217.15	3,095.95	-118.92	-90.09	-117.11	0.00	0.00	0.00
3,200.00	3.14	217.15	3,195.80	-123.29	-93.40	-121.41	0.00	0.00	0.00
3,300.00	3.14	217.15	3,295.65	-127.66	-96.71	-125.72	0.00	0.00	0.00
3,400.00	3.14	217.15	3,395.50	-132.03	-100.02	-130.02	0.00	0.00	0.00
3,500.00	3.14	217.15	3,495.35	-136.40	-103.33	-134.32	0.00	0.00	0.00
3,504.66	3.14	217.15	3,500.00	-136.60	-103.49	-134.52	0.00	0.00	0.00
Hygiene									
3,600.00	3.14	217.15	3,595.20	-140.77	-106.64	-138.63	0.00	0.00	0.00
3,654.89	3.14	217.15	3,650.00	-143.17	-108.46	-140.99	0.00	0.00	0.00
Lower Pierre									
3,700.00	3.14	217.15	3,695.04	-145.14	-109.95	-142.93	0.00	0.00	0.00
3,800.00	3.14	217.15	3,794.89	-149.51	-113.26	-147.23	0.00	0.00	0.00
3,900.00	3.14	217.15	3,894.74	-153.88	-116.58	-151.54	0.00	0.00	0.00
4,000.00	3.14	217.15	3,994.59	-158.25	-119.89	-155.84	0.00	0.00	0.00
4,100.00	3.14	217.15	4,094.44	-162.62	-123.20	-160.14	0.00	0.00	0.00
4,200.00	3.14	217.15	4,194.29	-166.99	-126.51	-164.45	0.00	0.00	0.00
4,300.00	3.14	217.15	4,294.14	-171.36	-129.82	-168.75	0.00	0.00	0.00
4,400.00	3.14	217.15	4,393.99	-175.73	-133.13	-173.05	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 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	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	3.14	217.15	4,493.84	-180.10	-136.44	-177.36	0.00	0.00	0.00	
4,600.00	3.14	217.15	4,593.69	-184.47	-139.75	-181.66	0.00	0.00	0.00	
4,700.00	3.14	217.15	4,693.54	-188.84	-143.06	-185.96	0.00	0.00	0.00	
4,800.00	3.14	217.15	4,793.39	-193.21	-146.37	-190.27	0.00	0.00	0.00	
4,831.11	3.14	217.15	4,824.45	-194.57	-147.40	-191.60	0.00	0.00	0.00	
Drop 2°/100'										
4,900.00	1.76	217.15	4,893.28	-196.92	-149.18	-193.92	2.00	-2.00	0.00	
4,988.24	0.00	0.00	4,981.50	-198.00	-150.00	-194.99	2.00	-2.00	0.00	
Hold Vertical										
5,000.00	0.00	0.00	4,993.26	-198.00	-150.00	-194.99	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,093.26	-198.00	-150.00	-194.99	0.00	0.00	0.00	
5,188.24	0.00	0.00	5,181.50	-198.00	-150.00	-194.99	0.00	0.00	0.00	
KOP, Build 9°/100'										
5,200.00	1.06	359.92	5,193.26	-197.89	-150.00	-194.88	9.00	9.00	0.00	
5,300.00	10.06	359.92	5,292.69	-188.21	-150.01	-185.20	9.00	9.00	0.00	
5,400.00	19.06	359.92	5,389.38	-163.10	-150.05	-160.09	9.00	9.00	0.00	
5,500.00	28.06	359.92	5,480.95	-123.16	-150.11	-120.16	9.00	9.00	0.00	
5,600.00	37.07	359.92	5,565.14	-69.39	-150.18	-66.40	9.00	9.00	0.00	
5,700.00	46.07	359.92	5,639.88	-3.11	-150.28	-0.13	9.00	9.00	0.00	
5,795.95	54.70	359.92	5,701.00	70.73	-150.39	73.70	9.00	9.00	0.00	
P200 Marker										
5,800.00	55.07	359.92	5,703.33	74.05	-150.39	77.02	9.00	9.00	0.00	
5,869.63	61.34	359.92	5,740.00	133.20	-150.48	136.15	9.00	9.00	0.00	
P300 Marker										
5,900.00	64.07	359.92	5,753.93	160.18	-150.51	163.14	9.00	9.00	0.00	
5,916.62	65.57	359.92	5,761.00	175.23	-150.54	178.18	9.00	9.00	0.00	
P350 Marker										
5,949.99	68.57	359.92	5,774.00	205.96	-150.58	208.90	9.00	9.00	0.00	
Sharon Springs										
5,961.19	69.58	359.92	5,778.00	216.42	-150.59	219.36	9.00	9.00	0.00	
Niobrara										
5,995.17	72.64	359.92	5,789.00	248.56	-150.64	251.50	9.00	9.00	0.00	
Top A Chalk										
6,000.00	73.07	359.92	5,790.42	253.18	-150.65	256.11	9.00	9.00	0.00	
6,100.00	82.07	359.92	5,811.92	350.73	-150.79	353.65	9.00	9.00	0.00	
6,188.05	90.00	359.92	5,818.00	438.50	-150.91	441.41	9.00	9.00	0.00	
LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG										
6,200.00	90.00	359.92	5,818.00	450.45	-150.93	453.36	0.00	0.00	0.00	
6,300.00	90.00	359.92	5,818.00	550.45	-151.07	553.34	0.00	0.00	0.00	
6,400.00	90.00	359.92	5,818.00	650.45	-151.22	653.32	0.00	0.00	0.00	
6,500.00	90.00	359.92	5,818.00	750.45	-151.36	753.31	0.00	0.00	0.00	
6,600.00	90.00	359.92	5,818.00	850.45	-151.50	853.29	0.00	0.00	0.00	
6,700.00	90.00	359.92	5,818.00	950.45	-151.65	953.27	0.00	0.00	0.00	
6,800.00	90.00	359.92	5,818.00	1,050.45	-151.79	1,053.26	0.00	0.00	0.00	
6,900.00	90.00	359.92	5,818.00	1,150.45	-151.93	1,153.24	0.00	0.00	0.00	
7,000.00	90.00	359.92	5,818.00	1,250.45	-152.08	1,253.22	0.00	0.00	0.00	
7,100.00	90.00	359.92	5,818.00	1,350.45	-152.22	1,353.20	0.00	0.00	0.00	
7,200.00	90.00	359.92	5,818.00	1,450.45	-152.36	1,453.19	0.00	0.00	0.00	
7,300.00	90.00	359.92	5,818.00	1,550.45	-152.51	1,553.17	0.00	0.00	0.00	
7,400.00	90.00	359.92	5,818.00	1,650.45	-152.65	1,653.15	0.00	0.00	0.00	
7,500.00	90.00	359.92	5,818.00	1,750.45	-152.80	1,753.14	0.00	0.00	0.00	
7,600.00	90.00	359.92	5,818.00	1,850.45	-152.94	1,853.12	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #30K-1905
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	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)
7,700.00	90.00	359.92	5,818.00	1,950.45	-153.08	1,953.10	0.00	0.00	0.00
7,800.00	90.00	359.92	5,818.00	2,050.45	-153.23	2,053.09	0.00	0.00	0.00
7,900.00	90.00	359.92	5,818.00	2,150.45	-153.37	2,153.07	0.00	0.00	0.00
8,000.00	90.00	359.92	5,818.00	2,250.45	-153.51	2,253.05	0.00	0.00	0.00
8,100.00	90.00	359.92	5,818.00	2,350.45	-153.66	2,353.04	0.00	0.00	0.00
8,200.00	90.00	359.92	5,818.00	2,450.45	-153.80	2,453.02	0.00	0.00	0.00
8,300.00	90.00	359.92	5,818.00	2,550.45	-153.94	2,553.00	0.00	0.00	0.00
8,400.00	90.00	359.92	5,818.00	2,650.45	-154.09	2,652.98	0.00	0.00	0.00
8,500.00	90.00	359.92	5,818.00	2,750.45	-154.23	2,752.97	0.00	0.00	0.00
8,600.00	90.00	359.92	5,818.00	2,850.45	-154.37	2,852.95	0.00	0.00	0.00
8,700.00	90.00	359.92	5,818.00	2,950.45	-154.52	2,952.93	0.00	0.00	0.00
8,800.00	90.00	359.92	5,818.00	3,050.45	-154.66	3,052.92	0.00	0.00	0.00
8,900.00	90.00	359.92	5,818.00	3,150.45	-154.80	3,152.90	0.00	0.00	0.00
9,000.00	90.00	359.92	5,818.00	3,250.45	-154.95	3,252.88	0.00	0.00	0.00
9,100.00	90.00	359.92	5,818.00	3,350.45	-155.09	3,352.87	0.00	0.00	0.00
9,200.00	90.00	359.92	5,818.00	3,450.45	-155.23	3,452.85	0.00	0.00	0.00
9,300.00	90.00	359.92	5,818.00	3,550.45	-155.38	3,552.83	0.00	0.00	0.00
9,400.00	90.00	359.92	5,818.00	3,650.45	-155.52	3,652.82	0.00	0.00	0.00
9,500.00	90.00	359.92	5,818.00	3,750.45	-155.66	3,752.80	0.00	0.00	0.00
9,600.00	90.00	359.92	5,818.00	3,850.45	-155.81	3,852.78	0.00	0.00	0.00
9,700.00	90.00	359.92	5,818.00	3,950.45	-155.95	3,952.76	0.00	0.00	0.00
9,800.00	90.00	359.92	5,818.00	4,050.45	-156.09	4,052.75	0.00	0.00	0.00
9,900.00	90.00	359.92	5,818.00	4,150.45	-156.24	4,152.73	0.00	0.00	0.00
10,000.00	90.00	359.92	5,818.00	4,250.45	-156.38	4,252.71	0.00	0.00	0.00
10,100.00	90.00	359.92	5,818.00	4,350.45	-156.52	4,352.70	0.00	0.00	0.00
10,200.00	90.00	359.92	5,818.00	4,450.45	-156.67	4,452.68	0.00	0.00	0.00
10,300.00	90.00	359.92	5,818.00	4,550.45	-156.81	4,552.66	0.00	0.00	0.00
10,400.00	90.00	359.92	5,818.00	4,650.45	-156.96	4,652.65	0.00	0.00	0.00
10,500.00	90.00	359.92	5,818.00	4,750.45	-157.10	4,752.63	0.00	0.00	0.00
10,600.00	90.00	359.92	5,818.00	4,850.45	-157.24	4,852.61	0.00	0.00	0.00
10,700.00	90.00	359.92	5,818.00	4,950.45	-157.39	4,952.60	0.00	0.00	0.00
10,800.00	90.00	359.92	5,818.00	5,050.45	-157.53	5,052.58	0.00	0.00	0.00
10,900.00	90.00	359.92	5,818.00	5,150.45	-157.67	5,152.56	0.00	0.00	0.00
11,000.00	90.00	359.92	5,818.00	5,250.45	-157.82	5,252.54	0.00	0.00	0.00
11,100.00	90.00	359.92	5,818.00	5,350.45	-157.96	5,352.53	0.00	0.00	0.00
11,200.00	90.00	359.92	5,818.00	5,450.45	-158.10	5,452.51	0.00	0.00	0.00
11,300.00	90.00	359.92	5,818.00	5,550.45	-158.25	5,552.49	0.00	0.00	0.00
11,400.00	90.00	359.92	5,818.00	5,650.45	-158.39	5,652.48	0.00	0.00	0.00
11,500.00	90.00	359.92	5,818.00	5,750.45	-158.53	5,752.46	0.00	0.00	0.00
11,600.00	90.00	359.92	5,818.00	5,850.45	-158.68	5,852.44	0.00	0.00	0.00
11,700.00	90.00	359.92	5,818.00	5,950.45	-158.82	5,952.43	0.00	0.00	0.00
11,800.00	90.00	359.92	5,818.00	6,050.45	-158.96	6,052.41	0.00	0.00	0.00
11,900.00	90.00	359.92	5,818.00	6,150.45	-159.11	6,152.39	0.00	0.00	0.00
12,000.00	90.00	359.92	5,818.00	6,250.45	-159.25	6,252.38	0.00	0.00	0.00
12,100.00	90.00	359.92	5,818.00	6,350.45	-159.39	6,352.36	0.00	0.00	0.00
12,200.00	90.00	359.92	5,818.00	6,450.45	-159.54	6,452.34	0.00	0.00	0.00
12,300.00	90.00	359.92	5,818.00	6,550.45	-159.68	6,552.32	0.00	0.00	0.00
12,400.00	90.00	359.92	5,818.00	6,650.45	-159.82	6,652.31	0.00	0.00	0.00
12,500.00	90.00	359.92	5,818.00	6,750.45	-159.97	6,752.29	0.00	0.00	0.00
12,600.00	90.00	359.92	5,818.00	6,850.45	-160.11	6,852.27	0.00	0.00	0.00
12,700.00	90.00	359.92	5,818.00	6,950.45	-160.25	6,952.26	0.00	0.00	0.00
12,800.00	90.00	359.92	5,818.00	7,050.45	-160.40	7,052.24	0.00	0.00	0.00
12,900.00	90.00	359.92	5,818.00	7,150.45	-160.54	7,152.22	0.00	0.00	0.00
13,000.00	90.00	359.92	5,818.00	7,250.45	-160.69	7,252.21	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #30K-1905
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	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)
13,100.00	90.00	359.92	5,818.00	7,350.45	-160.83	7,352.19	0.00	0.00	0.00
13,200.00	90.00	359.92	5,818.00	7,450.45	-160.97	7,452.17	0.00	0.00	0.00
13,300.00	90.00	359.92	5,818.00	7,550.45	-161.12	7,552.16	0.00	0.00	0.00
13,400.00	90.00	359.92	5,818.00	7,650.45	-161.26	7,652.14	0.00	0.00	0.00
13,500.00	90.00	359.92	5,818.00	7,750.44	-161.40	7,752.12	0.00	0.00	0.00
13,600.00	90.00	359.92	5,818.00	7,850.44	-161.55	7,852.10	0.00	0.00	0.00
13,700.00	90.00	359.92	5,818.00	7,950.44	-161.69	7,952.09	0.00	0.00	0.00
13,800.00	90.00	359.92	5,818.00	8,050.44	-161.83	8,052.07	0.00	0.00	0.00
13,900.00	90.00	359.92	5,818.00	8,150.44	-161.98	8,152.05	0.00	0.00	0.00
13,916.56	90.00	359.92	5,818.00	8,167.00	-162.00	8,168.61	0.00	0.00	0.00
TD at 13916.56									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL 1905 - plan hits target center - Point	0.00	0.00	5,818.00	8,167.00	-162.00	1,549,460.79	3,439,684.95	40° 49' 51.010 N	103° 54' 40.014 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,188.05	5,818.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,551.72	1,550.00	Upper Pierre				
3,504.66	3,500.00	Hygiene				
3,654.89	3,650.00	Lower Pierre				
5,795.95	5,701.00	P200 Marker				
5,869.63	5,740.00	P300 Marker				
5,916.62	5,761.00	P350 Marker				
5,949.99	5,774.00	Sharon Springs				
5,961.19	5,778.00	Niobrara				
5,995.17	5,789.00	Top A Chalk				



WOG
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #30K-1905
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4849.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4849.00usft
Site:	Sec 30-T10N-R58W	North Reference:	True
Well:	Razor Federal #30K-1905	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	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'
457.13	457.05	-3.43	-2.60	Hold 3.14° Inc
4,831.11	4,824.45	-194.57	-147.40	Drop 2°/100'
4,988.24	4,981.50	-198.00	-150.00	Hold Vertical
5,188.24	5,181.50	-198.00	-150.00	KOP, Build 9°/100'
6,188.05	5,818.00	438.50	-150.91	LP @ 90° Inc, Hold
13,916.56	5,818.00	8,167.00	-162.00	TD at 13916.56