





Whiting Petroleum Corp.

**Weld County, CO
Sec 12-T10N-R58W
Razor #12H-0113A**

Hz

Plan: APD

Standard Planning Report

09 October, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #12H-0113A
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4968.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4968.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	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 12-T10N-R58W			
Site Position:		Northing:	1,560,767.76 usft	Latitude:	40° 51' 38.329 N
From:	Lat/Long	Easting:	3,463,779.63 usft	Longitude:	103° 49' 23.851 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.08 °

Well		Razor #12H-0113A				
Well Position	+N/-S	-2,437.60 usft	Northing:	1,558,416.90 usft	Latitude:	40° 51' 14.240 N
	+E/-W	4,564.74 usft	Easting:	3,468,389.64 usft	Longitude:	103° 48' 24.450 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,947.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/1/2015	7.90	67.41	52,919

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	356.39

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	
617.60	9.53	216.03	616.14	-21.31	-15.50	3.00	3.00	0.00	216.03	
4,858.76	9.53	216.03	4,798.79	-589.04	-428.47	0.00	0.00	0.00	0.00	
5,335.16	0.00	0.00	5,273.00	-621.00	-451.72	2.00	-2.00	0.00	180.00	
5,535.16	0.00	0.00	5,473.00	-621.00	-451.72	0.00	0.00	0.00	0.00	
6,353.55	90.00	360.00	5,994.00	-100.00	-451.72	11.00	11.00	0.00	360.00	
13,621.07	90.00	360.00	5,994.00	7,167.52	-451.72	0.00	0.00	0.00	0.00	PBHL 0113A



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Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	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 3°/100'									
400.00	3.00	216.03	399.95	-2.12	-1.54	-2.02	3.00	3.00	0.00
500.00	6.00	216.03	499.63	-8.46	-6.15	-8.06	3.00	3.00	0.00
600.00	9.00	216.03	598.77	-19.02	-13.83	-18.11	3.00	3.00	0.00
617.60	9.53	216.03	616.14	-21.31	-15.50	-20.29	3.00	3.00	0.00
Hold 9.53° Inc									
700.00	9.53	216.03	697.40	-32.34	-23.52	-30.79	0.00	0.00	0.00
800.00	9.53	216.03	796.02	-45.72	-33.26	-43.54	0.00	0.00	0.00
900.00	9.53	216.03	894.64	-59.11	-43.00	-56.29	0.00	0.00	0.00
1,000.00	9.53	216.03	993.26	-72.50	-52.73	-69.04	0.00	0.00	0.00
1,100.00	9.53	216.03	1,091.88	-85.88	-62.47	-81.78	0.00	0.00	0.00
1,200.00	9.53	216.03	1,190.50	-99.27	-72.21	-94.53	0.00	0.00	0.00
1,300.00	9.53	216.03	1,289.12	-112.65	-81.95	-107.28	0.00	0.00	0.00
1,400.00	9.53	216.03	1,387.74	-126.04	-91.68	-120.02	0.00	0.00	0.00
1,500.00	9.53	216.03	1,486.37	-139.43	-101.42	-132.77	0.00	0.00	0.00
1,600.00	9.53	216.03	1,584.99	-152.81	-111.16	-145.52	0.00	0.00	0.00
1,615.22	9.53	216.03	1,600.00	-154.85	-112.64	-147.46	0.00	0.00	0.00
Upper Pierre									
1,700.00	9.53	216.03	1,683.61	-166.20	-120.89	-158.27	0.00	0.00	0.00
1,800.00	9.53	216.03	1,782.23	-179.59	-130.63	-171.01	0.00	0.00	0.00
1,900.00	9.53	216.03	1,880.85	-192.97	-140.37	-183.76	0.00	0.00	0.00
2,000.00	9.53	216.03	1,979.47	-206.36	-150.11	-196.51	0.00	0.00	0.00
2,100.00	9.53	216.03	2,078.09	-219.74	-159.84	-209.26	0.00	0.00	0.00
2,200.00	9.53	216.03	2,176.71	-233.13	-169.58	-222.00	0.00	0.00	0.00
2,300.00	9.53	216.03	2,275.33	-246.52	-179.32	-234.75	0.00	0.00	0.00
2,400.00	9.53	216.03	2,373.95	-259.90	-189.06	-247.50	0.00	0.00	0.00
2,500.00	9.53	216.03	2,472.57	-273.29	-198.79	-260.25	0.00	0.00	0.00
2,600.00	9.53	216.03	2,571.19	-286.68	-208.53	-272.99	0.00	0.00	0.00
2,700.00	9.53	216.03	2,669.81	-300.06	-218.27	-285.74	0.00	0.00	0.00
2,800.00	9.53	216.03	2,768.43	-313.45	-228.00	-298.49	0.00	0.00	0.00
2,900.00	9.53	216.03	2,867.05	-326.83	-237.74	-311.24	0.00	0.00	0.00
3,000.00	9.53	216.03	2,965.67	-340.22	-247.48	-323.98	0.00	0.00	0.00
3,100.00	9.53	216.03	3,064.29	-353.61	-257.22	-336.73	0.00	0.00	0.00
3,200.00	9.53	216.03	3,162.91	-366.99	-266.95	-349.48	0.00	0.00	0.00
3,300.00	9.53	216.03	3,261.53	-380.38	-276.69	-362.23	0.00	0.00	0.00
3,400.00	9.53	216.03	3,360.15	-393.77	-286.43	-374.97	0.00	0.00	0.00
3,500.00	9.53	216.03	3,458.77	-407.15	-296.17	-387.72	0.00	0.00	0.00
3,541.80	9.53	216.03	3,500.00	-412.75	-300.24	-393.05	0.00	0.00	0.00
Hygiene									
3,600.00	9.53	216.03	3,557.39	-420.54	-305.90	-400.47	0.00	0.00	0.00
3,693.90	9.53	216.03	3,650.00	-433.11	-315.05	-412.44	0.00	0.00	0.00
Lower Pierre									
3,700.00	9.53	216.03	3,656.01	-433.93	-315.64	-413.21	0.00	0.00	0.00
3,800.00	9.53	216.03	3,754.64	-447.31	-325.38	-425.96	0.00	0.00	0.00
3,900.00	9.53	216.03	3,853.26	-460.70	-335.11	-438.71	0.00	0.00	0.00
4,000.00	9.53	216.03	3,951.88	-474.08	-344.85	-451.46	0.00	0.00	0.00
4,100.00	9.53	216.03	4,050.50	-487.47	-354.59	-464.20	0.00	0.00	0.00
4,200.00	9.53	216.03	4,149.12	-500.86	-364.33	-476.95	0.00	0.00	0.00
4,300.00	9.53	216.03	4,247.74	-514.24	-374.06	-489.70	0.00	0.00	0.00
4,400.00	9.53	216.03	4,346.36	-527.63	-383.80	-502.45	0.00	0.00	0.00



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Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	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	9.53	216.03	4,444.98	-541.02	-393.54	-515.19	0.00	0.00	0.00	
4,600.00	9.53	216.03	4,543.60	-554.40	-403.28	-527.94	0.00	0.00	0.00	
4,700.00	9.53	216.03	4,642.22	-567.79	-413.01	-540.69	0.00	0.00	0.00	
4,800.00	9.53	216.03	4,740.84	-581.17	-422.75	-553.44	0.00	0.00	0.00	
4,858.76	9.53	216.03	4,798.79	-589.04	-428.47	-560.93	0.00	0.00	0.00	
Drop 2°/100'										
4,900.00	8.70	216.03	4,839.51	-594.32	-432.32	-565.96	2.00	-2.00	0.00	
5,000.00	6.70	216.03	4,938.60	-605.16	-440.20	-576.28	2.00	-2.00	0.00	
5,100.00	4.70	216.03	5,038.10	-613.20	-446.05	-583.93	2.00	-2.00	0.00	
5,200.00	2.70	216.03	5,137.89	-618.42	-449.84	-588.91	2.00	-2.00	0.00	
5,300.00	0.70	216.03	5,237.84	-620.83	-451.59	-591.19	2.00	-2.00	0.00	
5,335.16	0.00	0.00	5,273.00	-621.00	-451.72	-591.36	2.00	-2.00	0.00	
Hold Vertical										
5,400.00	0.00	0.00	5,337.84	-621.00	-451.72	-591.36	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,437.84	-621.00	-451.72	-591.36	0.00	0.00	0.00	
5,535.16	0.00	0.00	5,473.00	-621.00	-451.72	-591.36	0.00	0.00	0.00	
KOP, Build 11°/100'										
5,550.00	1.63	360.00	5,487.83	-620.79	-451.72	-591.15	11.00	11.00	0.00	
5,600.00	7.13	360.00	5,537.67	-616.97	-451.72	-587.34	11.00	11.00	0.00	
5,650.00	12.63	360.00	5,586.91	-608.40	-451.72	-578.78	11.00	11.00	0.00	
5,700.00	18.13	360.00	5,635.10	-595.14	-451.72	-565.55	11.00	11.00	0.00	
5,743.69	22.93	360.00	5,676.00	-579.82	-451.72	-550.27	11.00	11.00	0.00	
P200 Marker										
5,750.00	23.63	360.00	5,681.80	-577.33	-451.72	-547.78	11.00	11.00	0.00	
5,777.84	26.69	360.00	5,707.00	-565.49	-451.72	-535.97	11.00	11.00	0.00	
P300 Marker										
5,793.64	28.42	360.00	5,721.00	-558.19	-451.72	-528.67	11.00	11.00	0.00	
P350 Marker										
5,800.00	29.12	360.00	5,726.58	-555.13	-451.72	-525.62	11.00	11.00	0.00	
5,803.93	29.56	360.00	5,730.00	-553.20	-451.72	-523.70	11.00	11.00	0.00	
Sharon Springs										
5,812.01	30.45	360.00	5,737.00	-549.16	-451.72	-519.66	11.00	11.00	0.00	
Niobrara										
5,837.92	33.29	360.00	5,759.00	-535.48	-451.72	-506.01	11.00	11.00	0.00	
Top A Chalk										
5,850.00	34.62	360.00	5,769.02	-528.73	-451.72	-499.28	11.00	11.00	0.00	
5,886.11	38.59	360.00	5,798.00	-507.21	-451.72	-477.79	11.00	11.00	0.00	
Top A Marl										
5,900.00	40.12	360.00	5,808.74	-498.39	-451.72	-469.00	11.00	11.00	0.00	
5,906.92	40.88	360.00	5,814.00	-493.90	-451.72	-464.52	11.00	11.00	0.00	
A Marl										
5,921.65	42.50	360.00	5,825.00	-484.11	-451.72	-454.74	11.00	11.00	0.00	
Top Upper B										
5,950.00	45.62	360.00	5,845.37	-464.39	-451.72	-435.06	11.00	11.00	0.00	
5,958.11	46.51	360.00	5,851.00	-458.55	-451.72	-429.23	11.00	11.00	0.00	
Base Upper B										
5,981.94	49.13	360.00	5,867.00	-440.89	-451.72	-411.61	11.00	11.00	0.00	
Top Lower B										
6,000.00	51.12	360.00	5,878.58	-427.03	-451.72	-397.78	11.00	11.00	0.00	
6,033.93	54.85	360.00	5,899.00	-399.94	-451.72	-370.74	11.00	11.00	0.00	
Base Lower B										
6,046.30	56.21	360.00	5,906.00	-389.74	-451.72	-360.56	11.00	11.00	0.00	



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Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	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)	
Top B Marl										
6,050.00	56.62	360.00	5,908.05	-386.66	-451.72	-357.49	11.00	11.00	0.00	
6,100.00	62.12	360.00	5,933.51	-343.66	-451.72	-314.57	11.00	11.00	0.00	
6,130.55	65.48	360.00	5,947.00	-316.25	-451.72	-287.22	11.00	11.00	0.00	
Top C Chalk										
6,150.00	67.62	360.00	5,954.74	-298.41	-451.72	-269.41	11.00	11.00	0.00	
6,156.02	68.28	360.00	5,957.00	-292.83	-451.72	-263.84	11.00	11.00	0.00	
Middle C Chalk										
6,200.00	73.11	360.00	5,971.54	-251.34	-451.72	-222.43	11.00	11.00	0.00	
6,201.60	73.29	360.00	5,972.00	-249.80	-451.72	-220.90	11.00	11.00	0.00	
Middle C Marl										
6,250.00	78.61	360.00	5,983.74	-202.87	-451.72	-174.06	11.00	11.00	0.00	
6,300.00	84.11	360.00	5,991.25	-153.45	-451.72	-124.74	11.00	11.00	0.00	
6,353.55	90.00	360.00	5,994.00	-100.00	-451.72	-71.39	11.00	11.00	0.00	
LP @ 90° Inc, Marker Joint, Hold Azm - Lower C Chalk										
6,400.00	90.00	360.00	5,994.00	-53.55	-451.72	-25.03	0.00	0.00	0.00	
6,500.00	90.00	360.00	5,994.00	46.45	-451.72	74.77	0.00	0.00	0.00	
6,600.00	90.00	360.00	5,994.00	146.45	-451.72	174.57	0.00	0.00	0.00	
6,700.00	90.00	360.00	5,994.00	246.45	-451.72	274.37	0.00	0.00	0.00	
6,800.00	90.00	360.00	5,994.00	346.45	-451.72	374.18	0.00	0.00	0.00	
6,900.00	90.00	360.00	5,994.00	446.45	-451.72	473.98	0.00	0.00	0.00	
7,000.00	90.00	360.00	5,994.00	546.45	-451.72	573.78	0.00	0.00	0.00	
7,100.00	90.00	360.00	5,994.00	646.45	-451.72	673.58	0.00	0.00	0.00	
7,200.00	90.00	360.00	5,994.00	746.45	-451.72	773.38	0.00	0.00	0.00	
7,300.00	90.00	360.00	5,994.00	846.45	-451.72	873.19	0.00	0.00	0.00	
7,400.00	90.00	360.00	5,994.00	946.45	-451.72	972.99	0.00	0.00	0.00	
7,500.00	90.00	360.00	5,994.00	1,046.45	-451.72	1,072.79	0.00	0.00	0.00	
7,600.00	90.00	360.00	5,994.00	1,146.45	-451.72	1,172.59	0.00	0.00	0.00	
7,700.00	90.00	360.00	5,994.00	1,246.45	-451.72	1,272.39	0.00	0.00	0.00	
7,800.00	90.00	360.00	5,994.00	1,346.45	-451.72	1,372.20	0.00	0.00	0.00	
7,900.00	90.00	360.00	5,994.00	1,446.45	-451.72	1,472.00	0.00	0.00	0.00	
8,000.00	90.00	360.00	5,994.00	1,546.45	-451.72	1,571.80	0.00	0.00	0.00	
8,100.00	90.00	360.00	5,994.00	1,646.45	-451.72	1,671.60	0.00	0.00	0.00	
8,200.00	90.00	360.00	5,994.00	1,746.45	-451.72	1,771.40	0.00	0.00	0.00	
8,300.00	90.00	360.00	5,994.00	1,846.45	-451.72	1,871.21	0.00	0.00	0.00	
8,400.00	90.00	360.00	5,994.00	1,946.45	-451.72	1,971.01	0.00	0.00	0.00	
8,500.00	90.00	360.00	5,994.00	2,046.45	-451.72	2,070.81	0.00	0.00	0.00	
8,600.00	90.00	360.00	5,994.00	2,146.45	-451.72	2,170.61	0.00	0.00	0.00	
8,700.00	90.00	360.00	5,994.00	2,246.45	-451.72	2,270.41	0.00	0.00	0.00	
8,800.00	90.00	360.00	5,994.00	2,346.45	-451.72	2,370.22	0.00	0.00	0.00	
8,900.00	90.00	360.00	5,994.00	2,446.45	-451.72	2,470.02	0.00	0.00	0.00	
9,000.00	90.00	360.00	5,994.00	2,546.45	-451.72	2,569.82	0.00	0.00	0.00	
9,100.00	90.00	360.00	5,994.00	2,646.45	-451.72	2,669.62	0.00	0.00	0.00	
9,200.00	90.00	360.00	5,994.00	2,746.45	-451.72	2,769.42	0.00	0.00	0.00	
9,300.00	90.00	360.00	5,994.00	2,846.45	-451.72	2,869.23	0.00	0.00	0.00	
9,400.00	90.00	360.00	5,994.00	2,946.45	-451.72	2,969.03	0.00	0.00	0.00	
9,500.00	90.00	360.00	5,994.00	3,046.45	-451.72	3,068.83	0.00	0.00	0.00	
9,600.00	90.00	360.00	5,994.00	3,146.45	-451.72	3,168.63	0.00	0.00	0.00	
9,700.00	90.00	360.00	5,994.00	3,246.45	-451.72	3,268.43	0.00	0.00	0.00	
9,800.00	90.00	360.00	5,994.00	3,346.45	-451.72	3,368.24	0.00	0.00	0.00	
9,900.00	90.00	360.00	5,994.00	3,446.45	-451.72	3,468.04	0.00	0.00	0.00	
10,000.00	90.00	360.00	5,994.00	3,546.45	-451.72	3,567.84	0.00	0.00	0.00	
10,100.00	90.00	360.00	5,994.00	3,646.45	-451.72	3,667.64	0.00	0.00	0.00	
10,200.00	90.00	360.00	5,994.00	3,746.45	-451.72	3,767.44	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #12H-0113A
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4968.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4968.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	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)
10,300.00	90.00	360.00	5,994.00	3,846.45	-451.72	3,867.25	0.00	0.00	0.00
10,400.00	90.00	360.00	5,994.00	3,946.45	-451.72	3,967.05	0.00	0.00	0.00
10,500.00	90.00	360.00	5,994.00	4,046.45	-451.72	4,066.85	0.00	0.00	0.00
10,600.00	90.00	360.00	5,994.00	4,146.45	-451.72	4,166.65	0.00	0.00	0.00
10,700.00	90.00	360.00	5,994.00	4,246.45	-451.72	4,266.45	0.00	0.00	0.00
10,800.00	90.00	360.00	5,994.00	4,346.45	-451.72	4,366.26	0.00	0.00	0.00
10,900.00	90.00	360.00	5,994.00	4,446.45	-451.72	4,466.06	0.00	0.00	0.00
11,000.00	90.00	360.00	5,994.00	4,546.45	-451.72	4,565.86	0.00	0.00	0.00
11,100.00	90.00	360.00	5,994.00	4,646.45	-451.72	4,665.66	0.00	0.00	0.00
11,200.00	90.00	360.00	5,994.00	4,746.45	-451.72	4,765.46	0.00	0.00	0.00
11,300.00	90.00	360.00	5,994.00	4,846.45	-451.72	4,865.27	0.00	0.00	0.00
11,400.00	90.00	360.00	5,994.00	4,946.45	-451.72	4,965.07	0.00	0.00	0.00
11,500.00	90.00	360.00	5,994.00	5,046.45	-451.72	5,064.87	0.00	0.00	0.00
11,600.00	90.00	360.00	5,994.00	5,146.45	-451.72	5,164.67	0.00	0.00	0.00
11,700.00	90.00	360.00	5,994.00	5,246.45	-451.72	5,264.48	0.00	0.00	0.00
11,800.00	90.00	360.00	5,994.00	5,346.45	-451.72	5,364.28	0.00	0.00	0.00
11,900.00	90.00	360.00	5,994.00	5,446.45	-451.72	5,464.08	0.00	0.00	0.00
12,000.00	90.00	360.00	5,994.00	5,546.45	-451.72	5,563.88	0.00	0.00	0.00
12,100.00	90.00	360.00	5,994.00	5,646.45	-451.72	5,663.68	0.00	0.00	0.00
12,200.00	90.00	360.00	5,994.00	5,746.45	-451.72	5,763.49	0.00	0.00	0.00
12,300.00	90.00	360.00	5,994.00	5,846.45	-451.72	5,863.29	0.00	0.00	0.00
12,400.00	90.00	360.00	5,994.00	5,946.45	-451.72	5,963.09	0.00	0.00	0.00
12,500.00	90.00	360.00	5,994.00	6,046.45	-451.72	6,062.89	0.00	0.00	0.00
12,600.00	90.00	360.00	5,994.00	6,146.45	-451.72	6,162.69	0.00	0.00	0.00
12,700.00	90.00	360.00	5,994.00	6,246.45	-451.72	6,262.50	0.00	0.00	0.00
12,800.00	90.00	360.00	5,994.00	6,346.45	-451.72	6,362.30	0.00	0.00	0.00
12,900.00	90.00	360.00	5,994.00	6,446.45	-451.72	6,462.10	0.00	0.00	0.00
13,000.00	90.00	360.00	5,994.00	6,546.45	-451.72	6,561.90	0.00	0.00	0.00
13,100.00	90.00	360.00	5,994.00	6,646.45	-451.72	6,661.70	0.00	0.00	0.00
13,200.00	90.00	360.00	5,994.00	6,746.45	-451.72	6,761.51	0.00	0.00	0.00
13,300.00	90.00	360.00	5,994.00	6,846.45	-451.72	6,861.31	0.00	0.00	0.00
13,400.00	90.00	360.00	5,994.00	6,946.45	-451.72	6,961.11	0.00	0.00	0.00
13,500.00	90.00	360.00	5,994.00	7,046.45	-451.72	7,060.91	0.00	0.00	0.00
13,600.00	90.00	360.00	5,994.00	7,146.45	-451.72	7,160.71	0.00	0.00	0.00
13,621.07	90.00	360.00	5,994.00	7,167.52	-451.72	7,181.74	0.00	0.00	0.00
TD at 13621.07' MD									

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 0113A	0.00	0.00	5,994.00	7,167.52	-451.72	1,565,574.49	3,467,801.15	40° 52' 25.060 N	103° 48' 30.330 W
- plan hits target center									
- Point									



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #12H-0113A
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4968.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4968.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor #12H-0113A	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,615.22	1,600.00	Upper Pierre				
3,541.80	3,500.00	Hygiene				
3,693.90	3,650.00	Lower Pierre				
5,743.69	5,676.00	P200 Marker				
5,777.84	5,707.00	P300 Marker				
5,793.64	5,721.00	P350 Marker				
5,803.93	5,730.00	Sharon Springs				
5,812.01	5,737.00	Niobrara				
5,837.92	5,759.00	Top A Chalk				
5,886.11	5,798.00	Top A Marl				
5,906.92	5,814.00	A Marl				
5,921.65	5,825.00	Top Upper B				
5,958.11	5,851.00	Base Upper B				
5,981.94	5,867.00	Top Lower B				
6,033.93	5,899.00	Base Lower B				
6,046.30	5,906.00	Top B Marl				
6,130.55	5,947.00	Top C Chalk				
6,156.02	5,957.00	Middle C Chalk				
6,201.60	5,972.00	Middle C Marl				
6,353.55	5,994.00	Lower C Chalk				

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 3°/100'	
617.60	616.14	-21.31	-15.50	Hold 9.53° Inc	
4,858.76	4,798.79	-589.04	-428.47	Drop 2°/100'	
5,335.16	5,273.00	-621.00	-451.72	Hold Vertical	
5,535.16	5,473.00	-621.00	-451.72	KOP, Build 11°/100'	
6,353.55	5,994.00	-100.00	-451.72	LP @ 90° Inc, Marker Joint, Hold Azm	
13,621.07	5,994.00	7,167.52	-451.72	TD at 13621.07' MD	