



Project: Weld County, CO
Site: Sec 12-T10N-R58W
Well: Razor Federal #12G-1312B
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: 7.81°
Magnetic Field
Strength: 53021.7snT
Dip Angle: 67.42°
Date: 8/12/2015
Model: IGRF2010

WELL DETAILS: Razor Federal #12G-1312B

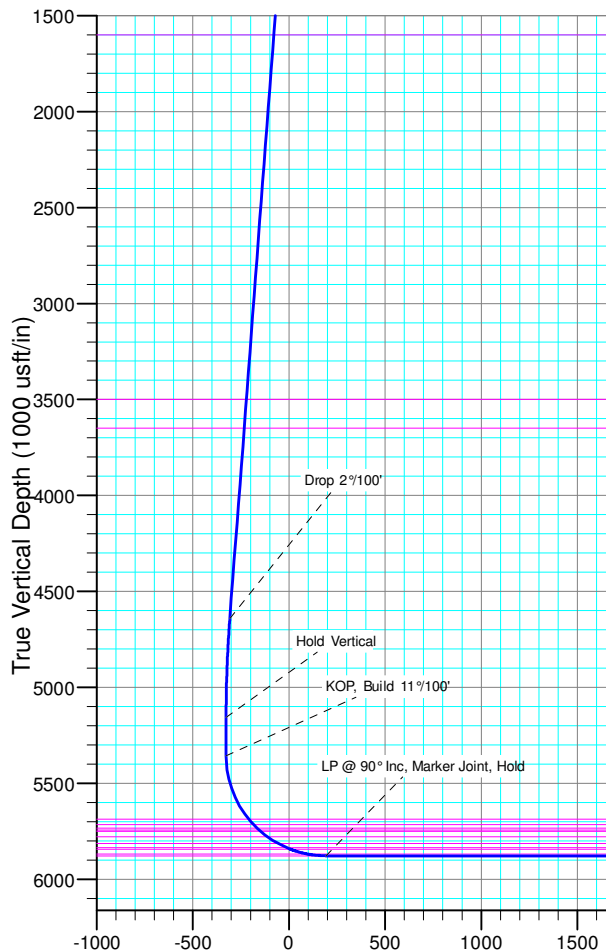
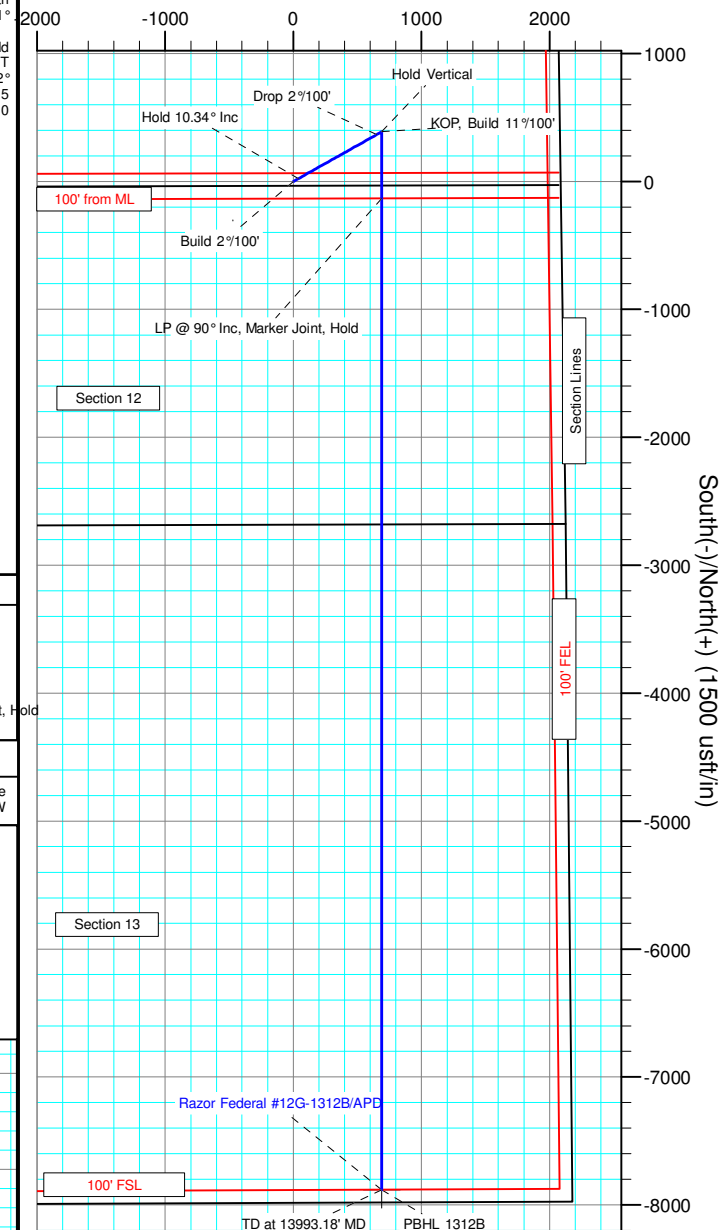
+N/-S	+E/-W	Northing	Ground Level: Easting	4954.00 Latitude	Longitude	Slot
0.00	0.00	1558224.02	3467085.93	40° 51' 12.580 N	103° 48' 41.460 W	

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	817.21	10.34	60.66	814.40	22.81	40.59	2.00	60.66	-19.19	
4	4708.65	10.34	60.66	4642.60	365.19	649.71	0.00	0.00	-307.11	
5	5225.86	0.00	0.00	5157.00	388.00	690.30	2.00	180.00	-326.29	
6	5425.86	0.00	0.00	5357.00	388.00	690.30	0.00	0.00	-326.29	
7	6244.24	90.00	180.00	5878.00	-133.00	690.30	11.00	180.00	192.72	
8	13993.18	90.00	180.00	5878.00	-7881.94	690.30	0.00	0.00	7912.11	PBHL 1312B

TVDPath	MDPath	Formation
1600.00	1615.78	Upper Pierre
3500.00	3547.18	Hygiene
3650.00	3699.65	Lower Pierre
5687.00	5783.23	P200 Marker
5716.00	5821.92	P300 Marker
5733.00	5845.91	P350 Marker
5743.00	5860.57	Sharon Springs
5750.00	5871.11	Niobrara
5779.00	5917.74	Top A Chalk
5814.00	5983.28	Top A Marl
5835.00	6031.08	A Marl
5844.00	6054.98	Top Upper B
5868.00	6142.00	Base Upper B
5878.00	6244.24	Top Lower B

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



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'
814.40	817.21	10.34	60.66	22.81	40.59	-19.19	46.56	Hold 10.34° Inc
4642.60	4708.65	10.34	60.66	365.19	649.71	-307.11	745.31	Drop 2°/100'
5157.00	5225.86	0.00	0.00	388.00	690.30	-326.29	791.87	Hold Vertical
5357.00	5425.86	0.00	0.00	388.00	690.30	-326.29	791.87	KOP, Build 11°/100'
5878.00	6244.24	90.00	180.00	-133.00	690.30	192.72	1312.87	LP @ 90° Inc, Marker Joint, Hold
5878.00	13993.18	90.00	180.00	-7881.94	690.30	7912.11	9061.81	TD at 13993.18' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1312B	5878.00	-7881.94	690.30	1550356.65	3467926.18	40° 49' 54.700 N	103° 48' 32.480 W

SHL:
2614' FNL, 2070' FEL
Sec12-T10N-R58W

BHL:
100' FSL, 1485' FEL
Sec13-T10N-R58W

Marker Joint:
2549' FSL, 1380' FEL
Sec12-T10N-R58W



Whiting Petroleum Corp.

Weld County, CO

Sec 12-T10N-R58W

Razor Federal #12G-1312B

Hz

Plan: APD

Standard Planning Report

18 August, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	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 Federal #12G-1312B				
Well Position	+N/-S	-2,605.79 usft	Northing:	1,558,224.03 usft	Latitude:	40° 51' 12.580 N
	+E/-W	3,257.61 usft	Easting:	3,467,085.93 usft	Longitude:	103° 48' 41.460 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,954.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/12/2015	7.81	67.42	53,022

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	174.99

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	
817.21	10.34	60.66	814.40	22.81	40.59	2.00	2.00	0.00	60.66	
4,708.65	10.34	60.66	4,642.60	365.19	649.71	0.00	0.00	0.00	0.00	
5,225.86	0.00	0.00	5,157.00	388.00	690.30	2.00	-2.00	0.00	180.00	
5,425.86	0.00	0.00	5,357.00	388.00	690.30	0.00	0.00	0.00	0.00	
6,244.24	90.00	180.00	5,878.00	-133.00	690.30	11.00	11.00	0.00	180.00	
13,993.18	90.00	180.00	5,878.00	-7,881.94	690.30	0.00	0.00	0.00	0.00	PBHL 1312B



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	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	60.66	399.98	0.86	1.52	-0.72	2.00	2.00	0.00
500.00	4.00	60.66	499.84	3.42	6.08	-2.88	2.00	2.00	0.00
600.00	6.00	60.66	599.45	7.69	13.68	-6.47	2.00	2.00	0.00
700.00	8.00	60.66	698.70	13.66	24.30	-11.49	2.00	2.00	0.00
800.00	10.00	60.66	797.47	21.33	37.94	-17.93	2.00	2.00	0.00
817.21	10.34	60.66	814.40	22.81	40.59	-19.19	2.00	2.00	0.00
Hold 10.34° Inc									
900.00	10.34	60.66	895.85	30.10	53.55	-25.31	0.00	0.00	0.00
1,000.00	10.34	60.66	994.22	38.90	69.20	-32.71	0.00	0.00	0.00
1,100.00	10.34	60.66	1,092.60	47.69	84.85	-40.11	0.00	0.00	0.00
1,200.00	10.34	60.66	1,190.97	56.49	100.51	-47.51	0.00	0.00	0.00
1,300.00	10.34	60.66	1,289.35	65.29	116.16	-54.91	0.00	0.00	0.00
1,400.00	10.34	60.66	1,387.72	74.09	131.81	-62.31	0.00	0.00	0.00
1,500.00	10.34	60.66	1,486.10	82.89	147.47	-69.70	0.00	0.00	0.00
1,600.00	10.34	60.66	1,584.47	91.68	163.12	-77.10	0.00	0.00	0.00
1,615.78	10.34	60.66	1,600.00	93.07	165.59	-78.27	0.00	0.00	0.00
Upper Pierre									
1,700.00	10.34	60.66	1,682.85	100.48	178.77	-84.50	0.00	0.00	0.00
1,800.00	10.34	60.66	1,781.22	109.28	194.42	-91.90	0.00	0.00	0.00
1,900.00	10.34	60.66	1,879.60	118.08	210.08	-99.30	0.00	0.00	0.00
2,000.00	10.34	60.66	1,977.97	126.88	225.73	-106.70	0.00	0.00	0.00
2,100.00	10.34	60.66	2,076.35	135.68	241.38	-114.10	0.00	0.00	0.00
2,200.00	10.34	60.66	2,174.72	144.47	257.04	-121.50	0.00	0.00	0.00
2,300.00	10.34	60.66	2,273.10	153.27	272.69	-128.90	0.00	0.00	0.00
2,400.00	10.34	60.66	2,371.47	162.07	288.34	-136.29	0.00	0.00	0.00
2,500.00	10.34	60.66	2,469.84	170.87	303.99	-143.69	0.00	0.00	0.00
2,600.00	10.34	60.66	2,568.22	179.67	319.65	-151.09	0.00	0.00	0.00
2,700.00	10.34	60.66	2,666.59	188.46	335.30	-158.49	0.00	0.00	0.00
2,800.00	10.34	60.66	2,764.97	197.26	350.95	-165.89	0.00	0.00	0.00
2,900.00	10.34	60.66	2,863.34	206.06	366.61	-173.29	0.00	0.00	0.00
3,000.00	10.34	60.66	2,961.72	214.86	382.26	-180.69	0.00	0.00	0.00
3,100.00	10.34	60.66	3,060.09	223.66	397.91	-188.09	0.00	0.00	0.00
3,200.00	10.34	60.66	3,158.47	232.45	413.56	-195.49	0.00	0.00	0.00
3,300.00	10.34	60.66	3,256.84	241.25	429.22	-202.88	0.00	0.00	0.00
3,400.00	10.34	60.66	3,355.22	250.05	444.87	-210.28	0.00	0.00	0.00
3,500.00	10.34	60.66	3,453.59	258.85	460.52	-217.68	0.00	0.00	0.00
3,547.18	10.34	60.66	3,500.00	263.00	467.91	-221.17	0.00	0.00	0.00
Hygiene									
3,600.00	10.34	60.66	3,551.97	267.65	476.18	-225.08	0.00	0.00	0.00
3,699.65	10.34	60.66	3,650.00	276.41	491.77	-232.45	0.00	0.00	0.00
Lower Pierre									
3,700.00	10.34	60.66	3,650.34	276.44	491.83	-232.48	0.00	0.00	0.00
3,800.00	10.34	60.66	3,748.72	285.24	507.48	-239.88	0.00	0.00	0.00
3,900.00	10.34	60.66	3,847.09	294.04	523.13	-247.28	0.00	0.00	0.00
4,000.00	10.34	60.66	3,945.47	302.84	538.79	-254.68	0.00	0.00	0.00
4,100.00	10.34	60.66	4,043.84	311.64	554.44	-262.08	0.00	0.00	0.00
4,200.00	10.34	60.66	4,142.21	320.43	570.09	-269.47	0.00	0.00	0.00
4,300.00	10.34	60.66	4,240.59	329.23	585.75	-276.87	0.00	0.00	0.00
4,400.00	10.34	60.66	4,338.96	338.03	601.40	-284.27	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	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	10.34	60.66	4,437.34	346.83	617.05	-291.67	0.00	0.00	0.00
4,600.00	10.34	60.66	4,535.71	355.63	632.70	-299.07	0.00	0.00	0.00
4,708.65	10.34	60.66	4,642.60	365.19	649.71	-307.11	0.00	0.00	0.00
Drop 2°/100'									
4,800.00	8.52	60.66	4,732.71	372.52	662.76	-313.28	2.00	-2.00	0.00
4,900.00	6.52	60.66	4,831.84	378.93	674.16	-318.67	2.00	-2.00	0.00
5,000.00	4.52	60.66	4,931.38	383.64	682.54	-322.63	2.00	-2.00	0.00
5,100.00	2.52	60.66	5,031.18	386.65	687.89	-325.16	2.00	-2.00	0.00
5,200.00	0.52	60.66	5,131.14	387.94	690.20	-326.25	2.00	-2.00	0.00
5,225.86	0.00	0.00	5,157.00	388.00	690.30	-326.29	2.00	-2.00	-234.59
Hold Vertical									
5,300.00	0.00	0.00	5,231.14	388.00	690.30	-326.29	0.00	0.00	0.00
5,400.00	0.00	0.00	5,331.14	388.00	690.30	-326.29	0.00	0.00	0.00
5,425.86	0.00	0.00	5,357.00	388.00	690.30	-326.29	0.00	0.00	0.00
KOP, Build 11°/100'									
5,450.00	2.65	180.00	5,381.13	387.44	690.30	-325.74	11.00	11.00	0.00
5,500.00	8.15	180.00	5,430.89	382.73	690.30	-321.05	11.00	11.00	0.00
5,550.00	13.65	180.00	5,479.97	373.28	690.30	-311.63	11.00	11.00	0.00
5,600.00	19.15	180.00	5,527.92	359.17	690.30	-297.57	11.00	11.00	0.00
5,650.00	24.65	180.00	5,574.29	340.52	690.30	-279.00	11.00	11.00	0.00
5,700.00	30.15	180.00	5,618.67	317.52	690.30	-256.09	11.00	11.00	0.00
5,750.00	35.65	180.00	5,660.63	290.38	690.30	-229.04	11.00	11.00	0.00
5,783.23	39.30	180.00	5,687.00	270.16	690.30	-208.91	11.00	11.00	0.00
P200 Marker									
5,800.00	41.15	180.00	5,699.80	259.33	690.30	-198.12	11.00	11.00	0.00
5,821.92	43.56	180.00	5,716.00	244.57	690.30	-183.41	11.00	11.00	0.00
P300 Marker									
5,845.91	46.19	180.00	5,733.00	227.65	690.30	-166.55	11.00	11.00	0.00
P350 Marker									
5,850.00	46.64	180.00	5,735.82	224.68	690.30	-163.60	11.00	11.00	0.00
5,860.57	47.81	180.00	5,743.00	216.92	690.30	-155.87	11.00	11.00	0.00
Sharon Springs									
5,871.11	48.97	180.00	5,750.00	209.04	690.30	-148.02	11.00	11.00	0.00
Niobrara									
5,900.00	52.14	180.00	5,768.35	186.74	690.30	-125.80	11.00	11.00	0.00
5,917.74	54.09	180.00	5,779.00	172.54	690.30	-111.66	11.00	11.00	0.00
Top A Chalk									
5,950.00	57.64	180.00	5,797.10	145.85	690.30	-85.07	11.00	11.00	0.00
5,983.28	61.30	180.00	5,814.00	117.18	690.30	-56.51	11.00	11.00	0.00
Top A Marl									
6,000.00	63.14	180.00	5,821.79	102.39	690.30	-41.78	11.00	11.00	0.00
6,031.08	66.56	180.00	5,835.00	74.26	690.30	-13.75	11.00	11.00	0.00
A Marl									
6,050.00	68.64	180.00	5,842.21	56.77	690.30	3.67	11.00	11.00	0.00
6,054.98	69.19	180.00	5,844.00	52.13	690.30	8.30	11.00	11.00	0.00
Top Upper B									
6,100.00	74.14	180.00	5,858.16	9.41	690.30	50.86	11.00	11.00	0.00
6,142.00	78.76	180.00	5,868.00	-31.41	690.30	91.52	11.00	11.00	0.00
Base Upper B									
6,150.00	79.64	180.00	5,869.50	-39.27	690.30	99.35	11.00	11.00	0.00
6,200.00	85.13	180.00	5,876.12	-88.81	690.30	148.70	11.00	11.00	0.00
6,244.24	90.00	180.00	5,878.00	-133.00	690.30	192.72	11.00	11.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	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)
LP @ 90° Inc, Marker Joint, Hold - Top Lower B									
6,300.00	90.00	180.00	5,878.00	-188.76	690.30	248.26	0.00	0.00	0.00
6,400.00	90.00	180.00	5,878.00	-288.76	690.30	347.88	0.00	0.00	0.00
6,500.00	90.00	180.00	5,878.00	-388.76	690.30	447.50	0.00	0.00	0.00
6,600.00	90.00	180.00	5,878.00	-488.76	690.30	547.12	0.00	0.00	0.00
6,700.00	90.00	180.00	5,878.00	-588.76	690.30	646.74	0.00	0.00	0.00
6,800.00	90.00	180.00	5,878.00	-688.76	690.30	746.36	0.00	0.00	0.00
6,900.00	90.00	180.00	5,878.00	-788.76	690.30	845.98	0.00	0.00	0.00
7,000.00	90.00	180.00	5,878.00	-888.76	690.30	945.59	0.00	0.00	0.00
7,100.00	90.00	180.00	5,878.00	-988.76	690.30	1,045.21	0.00	0.00	0.00
7,200.00	90.00	180.00	5,878.00	-1,088.76	690.30	1,144.83	0.00	0.00	0.00
7,300.00	90.00	180.00	5,878.00	-1,188.76	690.30	1,244.45	0.00	0.00	0.00
7,400.00	90.00	180.00	5,878.00	-1,288.76	690.30	1,344.07	0.00	0.00	0.00
7,500.00	90.00	180.00	5,878.00	-1,388.76	690.30	1,443.69	0.00	0.00	0.00
7,600.00	90.00	180.00	5,878.00	-1,488.76	690.30	1,543.31	0.00	0.00	0.00
7,700.00	90.00	180.00	5,878.00	-1,588.76	690.30	1,642.93	0.00	0.00	0.00
7,800.00	90.00	180.00	5,878.00	-1,688.76	690.30	1,742.54	0.00	0.00	0.00
7,900.00	90.00	180.00	5,878.00	-1,788.76	690.30	1,842.16	0.00	0.00	0.00
8,000.00	90.00	180.00	5,878.00	-1,888.76	690.30	1,941.78	0.00	0.00	0.00
8,100.00	90.00	180.00	5,878.00	-1,988.76	690.30	2,041.40	0.00	0.00	0.00
8,200.00	90.00	180.00	5,878.00	-2,088.76	690.30	2,141.02	0.00	0.00	0.00
8,300.00	90.00	180.00	5,878.00	-2,188.76	690.30	2,240.64	0.00	0.00	0.00
8,400.00	90.00	180.00	5,878.00	-2,288.76	690.30	2,340.26	0.00	0.00	0.00
8,500.00	90.00	180.00	5,878.00	-2,388.76	690.30	2,439.87	0.00	0.00	0.00
8,600.00	90.00	180.00	5,878.00	-2,488.76	690.30	2,539.49	0.00	0.00	0.00
8,700.00	90.00	180.00	5,878.00	-2,588.76	690.30	2,639.11	0.00	0.00	0.00
8,800.00	90.00	180.00	5,878.00	-2,688.76	690.30	2,738.73	0.00	0.00	0.00
8,900.00	90.00	180.00	5,878.00	-2,788.76	690.30	2,838.35	0.00	0.00	0.00
9,000.00	90.00	180.00	5,878.00	-2,888.76	690.30	2,937.97	0.00	0.00	0.00
9,100.00	90.00	180.00	5,878.00	-2,988.76	690.30	3,037.59	0.00	0.00	0.00
9,200.00	90.00	180.00	5,878.00	-3,088.76	690.30	3,137.21	0.00	0.00	0.00
9,300.00	90.00	180.00	5,878.00	-3,188.76	690.30	3,236.82	0.00	0.00	0.00
9,400.00	90.00	180.00	5,878.00	-3,288.76	690.30	3,336.44	0.00	0.00	0.00
9,500.00	90.00	180.00	5,878.00	-3,388.76	690.30	3,436.06	0.00	0.00	0.00
9,600.00	90.00	180.00	5,878.00	-3,488.76	690.30	3,535.68	0.00	0.00	0.00
9,700.00	90.00	180.00	5,878.00	-3,588.76	690.30	3,635.30	0.00	0.00	0.00
9,800.00	90.00	180.00	5,878.00	-3,688.76	690.30	3,734.92	0.00	0.00	0.00
9,900.00	90.00	180.00	5,878.00	-3,788.76	690.30	3,834.54	0.00	0.00	0.00
10,000.00	90.00	180.00	5,878.00	-3,888.76	690.30	3,934.16	0.00	0.00	0.00
10,100.00	90.00	180.00	5,878.00	-3,988.76	690.30	4,033.77	0.00	0.00	0.00
10,200.00	90.00	180.00	5,878.00	-4,088.76	690.30	4,133.39	0.00	0.00	0.00
10,300.00	90.00	180.00	5,878.00	-4,188.76	690.30	4,233.01	0.00	0.00	0.00
10,400.00	90.00	180.00	5,878.00	-4,288.76	690.30	4,332.63	0.00	0.00	0.00
10,500.00	90.00	180.00	5,878.00	-4,388.76	690.30	4,432.25	0.00	0.00	0.00
10,600.00	90.00	180.00	5,878.00	-4,488.76	690.30	4,531.87	0.00	0.00	0.00
10,700.00	90.00	180.00	5,878.00	-4,588.76	690.30	4,631.49	0.00	0.00	0.00
10,800.00	90.00	180.00	5,878.00	-4,688.76	690.30	4,731.10	0.00	0.00	0.00
10,900.00	90.00	180.00	5,878.00	-4,788.76	690.30	4,830.72	0.00	0.00	0.00
11,000.00	90.00	180.00	5,878.00	-4,888.76	690.30	4,930.34	0.00	0.00	0.00
11,100.00	90.00	180.00	5,878.00	-4,988.76	690.30	5,029.96	0.00	0.00	0.00
11,200.00	90.00	180.00	5,878.00	-5,088.76	690.30	5,129.58	0.00	0.00	0.00
11,300.00	90.00	180.00	5,878.00	-5,188.76	690.30	5,229.20	0.00	0.00	0.00
11,400.00	90.00	180.00	5,878.00	-5,288.76	690.30	5,328.82	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	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)	
11,500.00	90.00	180.00	5,878.00	-5,388.76	690.30	5,428.44	0.00	0.00	0.00	
11,600.00	90.00	180.00	5,878.00	-5,488.76	690.30	5,528.05	0.00	0.00	0.00	
11,700.00	90.00	180.00	5,878.00	-5,588.76	690.30	5,627.67	0.00	0.00	0.00	
11,800.00	90.00	180.00	5,878.00	-5,688.76	690.30	5,727.29	0.00	0.00	0.00	
11,900.00	90.00	180.00	5,878.00	-5,788.76	690.30	5,826.91	0.00	0.00	0.00	
12,000.00	90.00	180.00	5,878.00	-5,888.76	690.30	5,926.53	0.00	0.00	0.00	
12,100.00	90.00	180.00	5,878.00	-5,988.76	690.30	6,026.15	0.00	0.00	0.00	
12,200.00	90.00	180.00	5,878.00	-6,088.76	690.30	6,125.77	0.00	0.00	0.00	
12,300.00	90.00	180.00	5,878.00	-6,188.76	690.30	6,225.38	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,878.00	-6,288.76	690.30	6,325.00	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,878.00	-6,388.76	690.30	6,424.62	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,878.00	-6,488.76	690.30	6,524.24	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,878.00	-6,588.76	690.30	6,623.86	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,878.00	-6,688.76	690.30	6,723.48	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,878.00	-6,788.76	690.30	6,823.10	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,878.00	-6,888.76	690.30	6,922.72	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,878.00	-6,988.76	690.30	7,022.33	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,878.00	-7,088.76	690.30	7,121.95	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,878.00	-7,188.76	690.30	7,221.57	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,878.00	-7,288.76	690.30	7,321.19	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,878.00	-7,388.76	690.30	7,420.81	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,878.00	-7,488.76	690.30	7,520.43	0.00	0.00	0.00	
13,700.00	90.00	180.00	5,878.00	-7,588.76	690.30	7,620.05	0.00	0.00	0.00	
13,800.00	90.00	180.00	5,878.00	-7,688.76	690.30	7,719.66	0.00	0.00	0.00	
13,900.00	90.00	180.00	5,878.00	-7,788.76	690.30	7,819.28	0.00	0.00	0.00	
13,993.18	90.00	180.00	5,878.00	-7,881.94	690.30	7,912.11	0.00	0.00	0.00	
TD at 13993.18' 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 1312B	0.00	0.00	5,878.00	-7,881.94	690.30	1,550,356.66	3,467,926.18	40° 49' 54.700 N	103° 48' 32.480 W
- plan hits target center									
- Point									



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12G-1312B
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4975.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4975.00usft
Site:	Sec 12-T10N-R58W	North Reference:	True
Well:	Razor Federal #12G-1312B	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,615.78	1,600.00	Upper Pierre				
3,547.18	3,500.00	Hygiene				
3,699.65	3,650.00	Lower Pierre				
5,783.23	5,687.00	P200 Marker				
5,821.92	5,716.00	P300 Marker				
5,845.91	5,733.00	P350 Marker				
5,860.57	5,743.00	Sharon Springs				
5,871.11	5,750.00	Niobrara				
5,917.74	5,779.00	Top A Chalk				
5,983.28	5,814.00	Top A Marl				
6,031.08	5,835.00	A Marl				
6,054.98	5,844.00	Top Upper B				
6,142.00	5,868.00	Base Upper B				
6,244.24	5,878.00	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'
817.21	814.40	22.81	40.59	Hold 10.34° Inc
4,708.65	4,642.60	365.19	649.71	Drop 2°/100'
5,225.86	5,157.00	388.00	690.30	Hold Vertical
5,425.86	5,357.00	388.00	690.30	KOP, Build 11°/100'
6,244.24	5,878.00	-133.00	690.30	LP @ 90° Inc, Marker Joint, Hold
13,993.18	5,878.00	-7,881.94	690.30	TD at 13993.18' MD