



Project: Weld County, CO  
Site: Sec 12-T10N-R58W  
Well: Razor Federal #12G-1309A  
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: 53021.6snT  
Dip Angle: 67.42°  
Date: 8/12/2015  
Model: IGRF2010

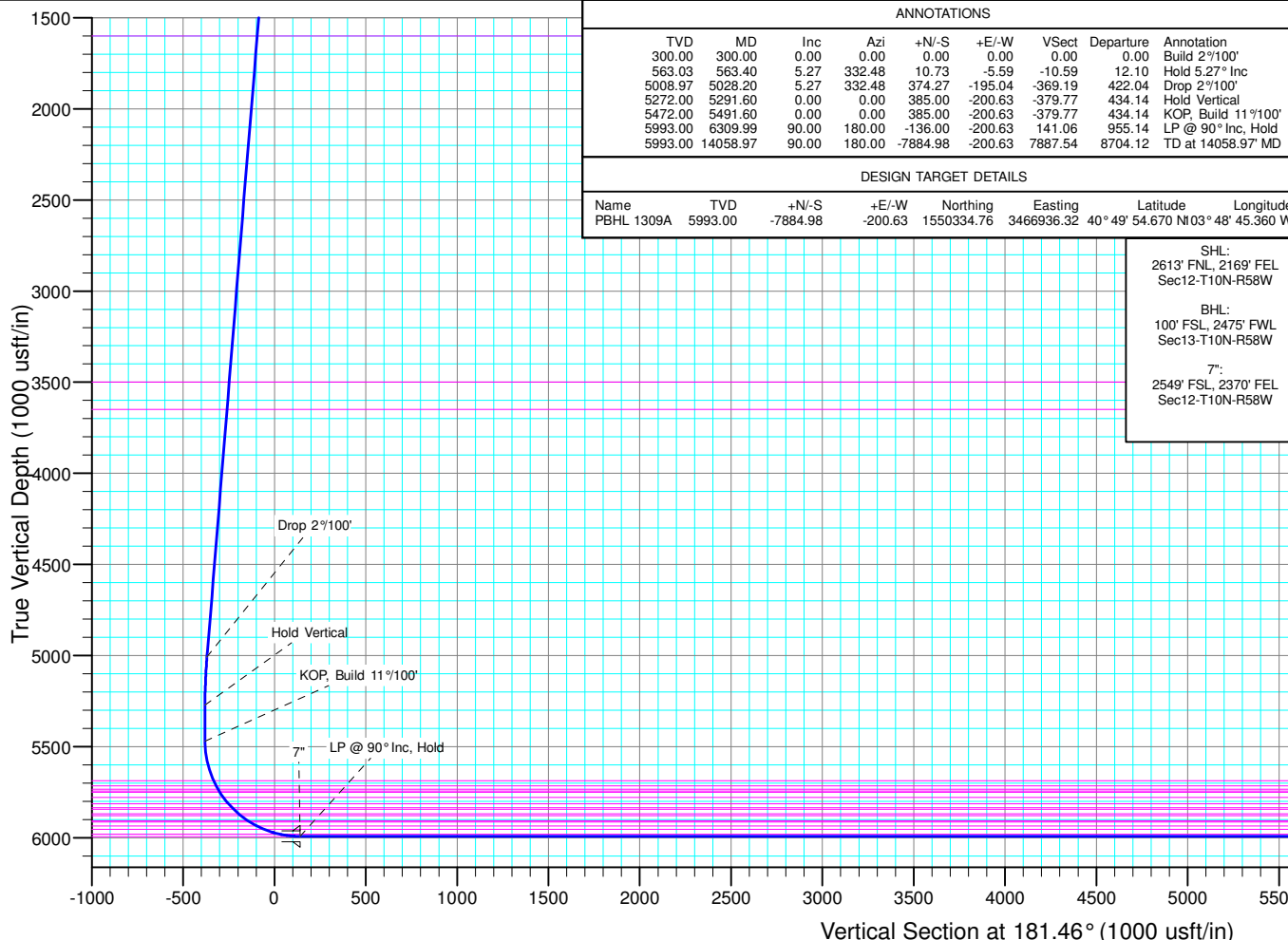
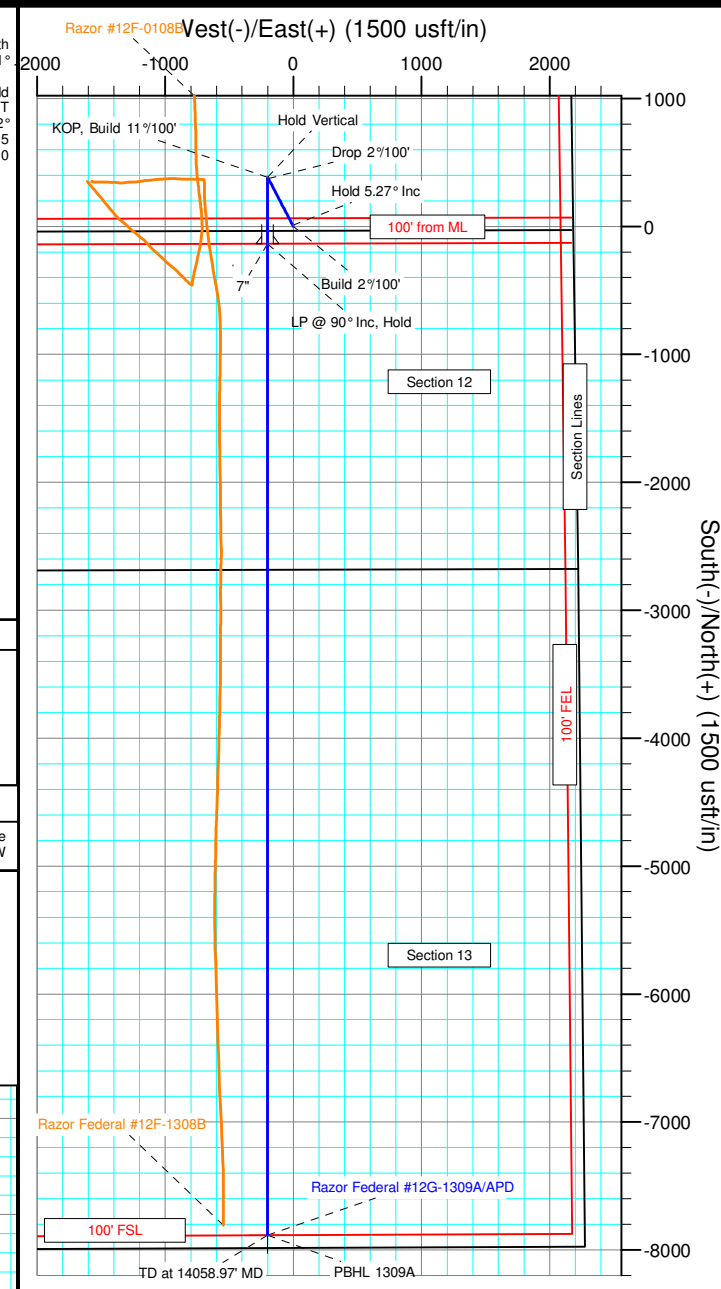
#### WELL DETAILS: Razor Federal #12G-1309A

+N/-S	+E/-W	Northing	Ground Level:	4954.00	Latitude	Longitude	Slot
0.00	0.00	1558222.13	Easting	3466986.82	40° 51' 12.580 N	103° 48' 42.750 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	563.40	5.27	332.48	563.03	10.73	-5.59	2.00	332.48	-10.59	
4	5028.20	5.27	332.48	5008.97	374.27	-195.04	0.00	0.00	-369.19	
5	5291.60	0.00	0.00	5272.00	385.00	-200.63	2.00	180.00	-379.77	
6	5491.60	0.00	0.00	5472.00	385.00	-200.63	0.00	0.00	-379.77	
7	6309.99	90.00	180.00	5993.00	-136.00	-200.63	11.00	180.00	141.06	
8	14058.97	90.00	180.00	5993.00	-7884.98	-200.63	0.00	0.00	7887.54	PBHL 1309A

TVDPath	MDPath	Formation
1600.00	1604.77	Upper Pierre
3500.00	3512.83	Hygiene
3650.00	3663.47	Lower Pierre
5687.00	5713.22	P200 Marker
5716.00	5745.54	P300 Marker
5733.00	5764.97	P350 Marker
5743.00	5776.60	Sharon Springs
5750.00	5784.84	Niobrara
5779.00	5819.90	Top A Chalk
5814.00	5864.68	Top A Marl
5835.00	5893.21	A Marl
5844.00	5905.91	Top Upper B
5868.00	5941.45	Base Upper B
5878.00	5957.12	Top Lower B
5907.00	6006.35	Base Lower B
5913.00	6017.44	Top B Marl
5936.00	6064.00	Middle C Chalk
5954.00	6107.12	Top C Chalk
5980.00	6193.36	Middle C Marl
5993.00	6309.99	Lower C Chalk



#### 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'
563.03	563.40	5.27	332.48	10.73	-5.59	-10.59	12.10	Hold 5.27° Inc
5008.97	5028.20	5.27	332.48	374.27	-195.04	-369.19	422.04	Drop 2°/100'
5272.00	5291.60	0.00	0.00	385.00	-200.63	-379.77	434.14	Hold Vertical
5472.00	5491.60	0.00	0.00	385.00	-200.63	-379.77	434.14	KOP, Build 11°/100'
5993.00	6309.99	90.00	180.00	-136.00	-200.63	141.06	955.14	LP @ 90° Inc, Hold
5993.00	14058.97	90.00	180.00	-7884.98	-200.63	7887.54	8704.12	TD at 14058.97' MD

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1309A	5993.00	-7884.98	-200.63	1550334.76	3466936.32	40° 49' 54.670 N	103° 48' 45.360 W

SHL:  
2613' FNL, 2169' FEL  
Sec12-T10N-R58W  
BHL:  
100' FSL, 2475' FWL  
Sec13-T10N-R58W  
7":  
2549' FSL, 2370' FEL  
Sec12-T10N-R58W

TD at 14058.97' MD PBHL 1309A

# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 12-T10N-R58W**

**Razor Federal #12G-1309A**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**12 August, 2015**

# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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-1309A				
Well Position	+N/-S	-2,605.80 usft	Northing:	1,558,222.14 usft	Latitude:	40° 51' 12.580 N
	+E/-W	3,158.48 usft	Easting:	3,466,986.82 usft	Longitude:	103° 48' 42.750 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,954.00 usft

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

<b>Design</b>	APD			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	181.46

<b>Plan Sections</b>										
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	
563.40	5.27	332.48	563.03	10.73	-5.59	2.00	2.00	0.00	332.48	
5,028.20	5.27	332.48	5,008.97	374.27	-195.04	0.00	0.00	0.00	0.00	
5,291.60	0.00	0.00	5,272.00	385.00	-200.63	2.00	-2.00	0.00	180.00	
5,491.60	0.00	0.00	5,472.00	385.00	-200.63	0.00	0.00	0.00	0.00	
6,309.99	90.00	180.00	5,993.00	-136.00	-200.63	11.00	11.00	0.00	180.00	
14,058.97	90.00	180.00	5,993.00	-7,884.98	-200.63	0.00	0.00	0.00	0.00	PBHL 1309A

**WOG**  
Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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
<b>Build 2°/100'</b>									
400.00	2.00	332.48	399.98	1.55	-0.81	-1.53	2.00	2.00	0.00
500.00	4.00	332.48	499.84	6.19	-3.22	-6.10	2.00	2.00	0.00
563.40	5.27	332.48	563.03	10.73	-5.59	-10.59	2.00	2.00	0.00
<b>Hold 5.27° Inc</b>									
600.00	5.27	332.48	599.47	13.71	-7.15	-13.52	0.00	0.00	0.00
700.00	5.27	332.48	699.05	21.85	-11.39	-21.56	0.00	0.00	0.00
800.00	5.27	332.48	798.63	30.00	-15.63	-29.59	0.00	0.00	0.00
900.00	5.27	332.48	898.21	38.14	-19.87	-37.62	0.00	0.00	0.00
1,000.00	5.27	332.48	997.78	46.28	-24.12	-45.65	0.00	0.00	0.00
1,100.00	5.27	332.48	1,097.36	54.42	-28.36	-53.68	0.00	0.00	0.00
1,200.00	5.27	332.48	1,196.94	62.56	-32.60	-61.72	0.00	0.00	0.00
1,300.00	5.27	332.48	1,296.52	70.71	-36.85	-69.75	0.00	0.00	0.00
1,400.00	5.27	332.48	1,396.10	78.85	-41.09	-77.78	0.00	0.00	0.00
1,500.00	5.27	332.48	1,495.67	86.99	-45.33	-85.81	0.00	0.00	0.00
1,600.00	5.27	332.48	1,595.25	95.13	-49.58	-93.84	0.00	0.00	0.00
1,604.77	5.27	332.48	1,600.00	95.52	-49.78	-94.23	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,700.00	5.27	332.48	1,694.83	103.28	-53.82	-101.87	0.00	0.00	0.00
1,800.00	5.27	332.48	1,794.41	111.42	-58.06	-109.91	0.00	0.00	0.00
1,900.00	5.27	332.48	1,893.98	119.56	-62.31	-117.94	0.00	0.00	0.00
2,000.00	5.27	332.48	1,993.56	127.70	-66.55	-125.97	0.00	0.00	0.00
2,100.00	5.27	332.48	2,093.14	135.85	-70.79	-134.00	0.00	0.00	0.00
2,200.00	5.27	332.48	2,192.72	143.99	-75.03	-142.03	0.00	0.00	0.00
2,300.00	5.27	332.48	2,292.29	152.13	-79.28	-150.06	0.00	0.00	0.00
2,400.00	5.27	332.48	2,391.87	160.27	-83.52	-158.10	0.00	0.00	0.00
2,500.00	5.27	332.48	2,491.45	168.41	-87.76	-166.13	0.00	0.00	0.00
2,600.00	5.27	332.48	2,591.03	176.56	-92.01	-174.16	0.00	0.00	0.00
2,700.00	5.27	332.48	2,690.60	184.70	-96.25	-182.19	0.00	0.00	0.00
2,800.00	5.27	332.48	2,790.18	192.84	-100.49	-190.22	0.00	0.00	0.00
2,900.00	5.27	332.48	2,889.76	200.98	-104.74	-198.26	0.00	0.00	0.00
3,000.00	5.27	332.48	2,989.34	209.13	-108.98	-206.29	0.00	0.00	0.00
3,100.00	5.27	332.48	3,088.91	217.27	-113.22	-214.32	0.00	0.00	0.00
3,200.00	5.27	332.48	3,188.49	225.41	-117.47	-222.35	0.00	0.00	0.00
3,300.00	5.27	332.48	3,288.07	233.55	-121.71	-230.38	0.00	0.00	0.00
3,400.00	5.27	332.48	3,387.65	241.70	-125.95	-238.41	0.00	0.00	0.00
3,500.00	5.27	332.48	3,487.22	249.84	-130.19	-246.45	0.00	0.00	0.00
3,512.83	5.27	332.48	3,500.00	250.88	-130.74	-247.48	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	5.27	332.48	3,586.80	257.98	-134.44	-254.48	0.00	0.00	0.00
3,663.47	5.27	332.48	3,650.00	263.15	-137.13	-259.57	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	5.27	332.48	3,686.38	266.12	-138.68	-262.51	0.00	0.00	0.00
3,800.00	5.27	332.48	3,785.96	274.27	-142.92	-270.54	0.00	0.00	0.00
3,900.00	5.27	332.48	3,885.54	282.41	-147.17	-278.57	0.00	0.00	0.00
4,000.00	5.27	332.48	3,985.11	290.55	-151.41	-286.60	0.00	0.00	0.00
4,100.00	5.27	332.48	4,084.69	298.69	-155.65	-294.64	0.00	0.00	0.00
4,200.00	5.27	332.48	4,184.27	306.83	-159.90	-302.67	0.00	0.00	0.00
4,300.00	5.27	332.48	4,283.85	314.98	-164.14	-310.70	0.00	0.00	0.00
4,400.00	5.27	332.48	4,383.42	323.12	-168.38	-318.73	0.00	0.00	0.00

**WOG**  
Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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	5.27	332.48	4,483.00	331.26	-172.63	-326.76	0.00	0.00	0.00	
4,600.00	5.27	332.48	4,582.58	339.40	-176.87	-334.79	0.00	0.00	0.00	
4,700.00	5.27	332.48	4,682.16	347.55	-181.11	-342.83	0.00	0.00	0.00	
4,800.00	5.27	332.48	4,781.73	355.69	-185.36	-350.86	0.00	0.00	0.00	
4,900.00	5.27	332.48	4,881.31	363.83	-189.60	-358.89	0.00	0.00	0.00	
5,000.00	5.27	332.48	4,980.89	371.97	-193.84	-366.92	0.00	0.00	0.00	
5,028.20	5.27	332.48	5,008.97	374.27	-195.04	-369.19	0.00	0.00	0.00	
<b>Drop 2°/100'</b>										
5,100.00	3.83	332.48	5,080.54	379.32	-197.67	-374.17	2.00	-2.00	0.00	
5,200.00	1.83	332.48	5,180.41	383.70	-199.95	-378.49	2.00	-2.00	0.00	
5,291.60	0.00	0.00	5,272.00	385.00	-200.63	-379.77	2.00	-2.00	0.00	
<b>Hold Vertical</b>										
5,300.00	0.00	0.00	5,280.40	385.00	-200.63	-379.77	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,380.40	385.00	-200.63	-379.77	0.00	0.00	0.00	
5,491.60	0.00	0.00	5,472.00	385.00	-200.63	-379.77	0.00	0.00	0.00	
<b>KOP, Build 11°/100'</b>										
5,500.00	0.92	180.00	5,480.40	384.93	-200.63	-379.70	11.00	11.00	0.00	
5,550.00	6.42	180.00	5,530.28	381.73	-200.63	-376.50	11.00	11.00	0.00	
5,600.00	11.92	180.00	5,579.62	373.76	-200.63	-368.54	11.00	11.00	0.00	
5,650.00	17.42	180.00	5,627.97	361.11	-200.63	-355.89	11.00	11.00	0.00	
5,700.00	22.92	180.00	5,674.89	343.87	-200.63	-338.66	11.00	11.00	0.00	
5,713.22	24.37	180.00	5,687.00	338.57	-200.63	-333.36	11.00	11.00	0.00	
<b>P200 Marker</b>										
5,745.54	27.93	180.00	5,716.00	324.33	-200.63	-319.12	11.00	11.00	0.00	
<b>P300 Marker</b>										
5,750.00	28.42	180.00	5,719.93	322.22	-200.63	-317.02	11.00	11.00	0.00	
5,764.97	30.06	180.00	5,733.00	314.91	-200.63	-309.70	11.00	11.00	0.00	
<b>P350 Marker</b>										
5,776.60	31.34	180.00	5,743.00	308.97	-200.63	-303.77	11.00	11.00	0.00	
<b>Sharon Springs</b>										
5,784.84	32.25	180.00	5,750.00	304.63	-200.63	-299.43	11.00	11.00	0.00	
<b>Niobrara</b>										
5,800.00	33.92	180.00	5,762.70	296.36	-200.63	-291.16	11.00	11.00	0.00	
5,819.90	36.10	180.00	5,779.00	284.94	-200.63	-279.75	11.00	11.00	0.00	
<b>Top A Chalk</b>										
5,850.00	39.41	180.00	5,802.79	266.51	-200.63	-261.32	11.00	11.00	0.00	
5,864.68	41.03	180.00	5,814.00	257.04	-200.63	-251.85	11.00	11.00	0.00	
<b>Top A Marl</b>										
5,893.21	44.17	180.00	5,835.00	237.73	-200.63	-232.55	11.00	11.00	0.00	
<b>A Marl</b>										
5,900.00	44.91	180.00	5,839.84	232.96	-200.63	-227.78	11.00	11.00	0.00	
5,905.91	45.56	180.00	5,844.00	228.77	-200.63	-223.59	11.00	11.00	0.00	
<b>Top Upper B</b>										
5,941.45	49.47	180.00	5,868.00	202.56	-200.63	-197.39	11.00	11.00	0.00	
<b>Base Upper B</b>										
5,950.00	50.41	180.00	5,873.50	196.02	-200.63	-190.85	11.00	11.00	0.00	
5,957.12	51.19	180.00	5,878.00	190.50	-200.63	-185.34	11.00	11.00	0.00	
<b>Top Lower B</b>										
6,000.00	55.91	180.00	5,903.47	156.02	-200.63	-150.86	11.00	11.00	0.00	
6,006.35	56.61	180.00	5,907.00	150.73	-200.63	-145.58	11.00	11.00	0.00	
<b>Base Lower B</b>										
6,017.44	57.83	180.00	5,913.00	141.42	-200.63	-136.27	11.00	11.00	0.00	

# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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)
<b>Top B Marl</b>									
6,050.00	61.41	180.00	5,929.47	113.33	-200.63	-108.19	11.00	11.00	0.00
6,064.00	62.95	180.00	5,936.00	100.95	-200.63	-95.81	11.00	11.00	0.00
<b>Middle C Chalk</b>									
6,100.00	66.91	180.00	5,951.25	68.35	-200.63	-63.22	11.00	11.00	0.00
6,107.12	67.69	180.00	5,954.00	61.78	-200.63	-56.66	11.00	11.00	0.00
<b>Top C Chalk</b>									
6,150.00	72.41	180.00	5,968.63	21.48	-200.63	-16.37	11.00	11.00	0.00
6,193.36	77.17	180.00	5,980.00	-20.34	-200.63	25.44	11.00	11.00	0.00
<b>Middle C Marl</b>									
6,200.00	77.90	180.00	5,981.43	-26.83	-200.63	31.92	11.00	11.00	0.00
6,250.00	83.40	180.00	5,989.55	-76.15	-200.63	81.23	11.00	11.00	0.00
6,300.00	88.90	180.00	5,992.90	-126.01	-200.63	131.08	11.00	11.00	0.00
6,309.99	90.00	180.00	5,993.00	-136.00	-200.63	141.06	10.99	10.99	0.00
<b>LP @ 90° Inc, Hold - Lower C Chalk - 7"</b>									
6,400.00	90.00	180.00	5,993.00	-226.01	-200.63	231.04	0.00	0.00	0.00
6,500.00	90.00	180.00	5,993.00	-326.01	-200.63	331.01	0.00	0.00	0.00
6,600.00	90.00	180.00	5,993.00	-426.01	-200.63	430.98	0.00	0.00	0.00
6,700.00	90.00	180.00	5,993.00	-526.01	-200.63	530.95	0.00	0.00	0.00
6,800.00	90.00	180.00	5,993.00	-626.01	-200.63	630.91	0.00	0.00	0.00
6,900.00	90.00	180.00	5,993.00	-726.01	-200.63	730.88	0.00	0.00	0.00
7,000.00	90.00	180.00	5,993.00	-826.01	-200.63	830.85	0.00	0.00	0.00
7,100.00	90.00	180.00	5,993.00	-926.01	-200.63	930.82	0.00	0.00	0.00
7,200.00	90.00	180.00	5,993.00	-1,026.01	-200.63	1,030.79	0.00	0.00	0.00
7,300.00	90.00	180.00	5,993.00	-1,126.01	-200.63	1,130.75	0.00	0.00	0.00
7,400.00	90.00	180.00	5,993.00	-1,226.01	-200.63	1,230.72	0.00	0.00	0.00
7,500.00	90.00	180.00	5,993.00	-1,326.01	-200.63	1,330.69	0.00	0.00	0.00
7,600.00	90.00	180.00	5,993.00	-1,426.01	-200.63	1,430.66	0.00	0.00	0.00
7,700.00	90.00	180.00	5,993.00	-1,526.01	-200.63	1,530.62	0.00	0.00	0.00
7,800.00	90.00	180.00	5,993.00	-1,626.01	-200.63	1,630.59	0.00	0.00	0.00
7,900.00	90.00	180.00	5,993.00	-1,726.01	-200.63	1,730.56	0.00	0.00	0.00
8,000.00	90.00	180.00	5,993.00	-1,826.01	-200.63	1,830.53	0.00	0.00	0.00
8,100.00	90.00	180.00	5,993.00	-1,926.01	-200.63	1,930.49	0.00	0.00	0.00
8,200.00	90.00	180.00	5,993.00	-2,026.01	-200.63	2,030.46	0.00	0.00	0.00
8,300.00	90.00	180.00	5,993.00	-2,126.01	-200.63	2,130.43	0.00	0.00	0.00
8,400.00	90.00	180.00	5,993.00	-2,226.01	-200.63	2,230.40	0.00	0.00	0.00
8,500.00	90.00	180.00	5,993.00	-2,326.01	-200.63	2,330.36	0.00	0.00	0.00
8,600.00	90.00	180.00	5,993.00	-2,426.01	-200.63	2,430.33	0.00	0.00	0.00
8,700.00	90.00	180.00	5,993.00	-2,526.01	-200.63	2,530.30	0.00	0.00	0.00
8,800.00	90.00	180.00	5,993.00	-2,626.01	-200.63	2,630.27	0.00	0.00	0.00
8,900.00	90.00	180.00	5,993.00	-2,726.01	-200.63	2,730.24	0.00	0.00	0.00
9,000.00	90.00	180.00	5,993.00	-2,826.01	-200.63	2,830.20	0.00	0.00	0.00
9,100.00	90.00	180.00	5,993.00	-2,926.01	-200.63	2,930.17	0.00	0.00	0.00
9,200.00	90.00	180.00	5,993.00	-3,026.01	-200.63	3,030.14	0.00	0.00	0.00
9,300.00	90.00	180.00	5,993.00	-3,126.01	-200.63	3,130.11	0.00	0.00	0.00
9,400.00	90.00	180.00	5,993.00	-3,226.01	-200.63	3,230.07	0.00	0.00	0.00
9,500.00	90.00	180.00	5,993.00	-3,326.01	-200.63	3,330.04	0.00	0.00	0.00
9,600.00	90.00	180.00	5,993.00	-3,426.01	-200.63	3,430.01	0.00	0.00	0.00
9,700.00	90.00	180.00	5,993.00	-3,526.01	-200.63	3,529.98	0.00	0.00	0.00
9,800.00	90.00	180.00	5,993.00	-3,626.01	-200.63	3,629.94	0.00	0.00	0.00
9,900.00	90.00	180.00	5,993.00	-3,726.01	-200.63	3,729.91	0.00	0.00	0.00
10,000.00	90.00	180.00	5,993.00	-3,826.01	-200.63	3,829.88	0.00	0.00	0.00
10,100.00	90.00	180.00	5,993.00	-3,926.01	-200.63	3,929.85	0.00	0.00	0.00
10,200.00	90.00	180.00	5,993.00	-4,026.01	-200.63	4,029.81	0.00	0.00	0.00

# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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	180.00	5,993.00	-4,126.01	-200.63	4,129.78	0.00	0.00	0.00	
10,400.00	90.00	180.00	5,993.00	-4,226.01	-200.63	4,229.75	0.00	0.00	0.00	
10,500.00	90.00	180.00	5,993.00	-4,326.01	-200.63	4,329.72	0.00	0.00	0.00	
10,600.00	90.00	180.00	5,993.00	-4,426.01	-200.63	4,429.69	0.00	0.00	0.00	
10,700.00	90.00	180.00	5,993.00	-4,526.01	-200.63	4,529.65	0.00	0.00	0.00	
10,800.00	90.00	180.00	5,993.00	-4,626.01	-200.63	4,629.62	0.00	0.00	0.00	
10,900.00	90.00	180.00	5,993.00	-4,726.01	-200.63	4,729.59	0.00	0.00	0.00	
11,000.00	90.00	180.00	5,993.00	-4,826.01	-200.63	4,829.56	0.00	0.00	0.00	
11,100.00	90.00	180.00	5,993.00	-4,926.01	-200.63	4,929.52	0.00	0.00	0.00	
11,200.00	90.00	180.00	5,993.00	-5,026.01	-200.63	5,029.49	0.00	0.00	0.00	
11,300.00	90.00	180.00	5,993.00	-5,126.01	-200.63	5,129.46	0.00	0.00	0.00	
11,400.00	90.00	180.00	5,993.00	-5,226.01	-200.63	5,229.43	0.00	0.00	0.00	
11,500.00	90.00	180.00	5,993.00	-5,326.01	-200.63	5,329.39	0.00	0.00	0.00	
11,600.00	90.00	180.00	5,993.00	-5,426.01	-200.63	5,429.36	0.00	0.00	0.00	
11,700.00	90.00	180.00	5,993.00	-5,526.01	-200.63	5,529.33	0.00	0.00	0.00	
11,800.00	90.00	180.00	5,993.00	-5,626.01	-200.63	5,629.30	0.00	0.00	0.00	
11,900.00	90.00	180.00	5,993.00	-5,726.01	-200.63	5,729.26	0.00	0.00	0.00	
12,000.00	90.00	180.00	5,993.00	-5,826.01	-200.63	5,829.23	0.00	0.00	0.00	
12,100.00	90.00	180.00	5,993.00	-5,926.01	-200.63	5,929.20	0.00	0.00	0.00	
12,200.00	90.00	180.00	5,993.00	-6,026.01	-200.63	6,029.17	0.00	0.00	0.00	
12,300.00	90.00	180.00	5,993.00	-6,126.01	-200.63	6,129.14	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,993.00	-6,226.01	-200.63	6,229.10	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,993.00	-6,326.01	-200.63	6,329.07	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,993.00	-6,426.01	-200.63	6,429.04	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,993.00	-6,526.01	-200.63	6,529.01	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,993.00	-6,626.01	-200.63	6,628.97	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,993.00	-6,726.01	-200.63	6,728.94	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,993.00	-6,826.01	-200.63	6,828.91	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,993.00	-6,926.01	-200.63	6,928.88	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,993.00	-7,026.01	-200.63	7,028.84	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,993.00	-7,126.01	-200.63	7,128.81	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,993.00	-7,226.01	-200.63	7,228.78	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,993.00	-7,326.01	-200.63	7,328.75	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,993.00	-7,426.01	-200.63	7,428.71	0.00	0.00	0.00	
13,700.00	90.00	180.00	5,993.00	-7,526.01	-200.63	7,528.68	0.00	0.00	0.00	
13,800.00	90.00	180.00	5,993.00	-7,626.01	-200.63	7,628.65	0.00	0.00	0.00	
13,900.00	90.00	180.00	5,993.00	-7,726.01	-200.63	7,728.62	0.00	0.00	0.00	
14,000.00	90.00	180.00	5,993.00	-7,826.01	-200.63	7,828.59	0.00	0.00	0.00	
14,058.97	90.00	180.00	5,993.00	-7,884.98	-200.63	7,887.54	0.00	0.00	0.00	
TD at 14058.97' 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 1309A	0.00	0.00	5,993.00	-7,884.98	-200.63	1,550,334.76	3,466,936.32	40° 49' 54.670 N	103° 48' 45.360 W	
- plan hits target center										
- Point										

# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Razor Federal #12G-1309A
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4975.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4975.00usft
<b>Site:</b>	Sec 12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor Federal #12G-1309A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,309.99	5,993.00	7"	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,604.77	1,600.00	Upper Pierre				
3,512.83	3,500.00	Hygiene				
3,663.47	3,650.00	Lower Pierre				
5,713.22	5,687.00	P200 Marker				
5,745.54	5,716.00	P300 Marker				
5,764.97	5,733.00	P350 Marker				
5,776.60	5,743.00	Sharon Springs				
5,784.84	5,750.00	Niobrara				
5,819.90	5,779.00	Top A Chalk				
5,864.68	5,814.00	Top A Marl				
5,893.21	5,835.00	A Marl				
5,905.91	5,844.00	Top Upper B				
5,941.45	5,868.00	Base Upper B				
5,957.12	5,878.00	Top Lower B				
6,006.35	5,907.00	Base Lower B				
6,017.44	5,913.00	Top B Marl				
6,064.00	5,936.00	Middle C Chalk				
6,107.12	5,954.00	Top C Chalk				
6,193.36	5,980.00	Middle C Marl				
6,309.99	5,993.00	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 2°/100'	
563.40	563.03	10.73	-5.59	Hold 5.27° Inc	
5,028.20	5,008.97	374.27	-195.04	Drop 2°/100'	
5,291.60	5,272.00	385.00	-200.63	Hold Vertical	
5,491.60	5,472.00	385.00	-200.63	KOP, Build 11°/100'	
6,309.99	5,993.00	-136.00	-200.63	LP @ 90° Inc, Hold	
14,058.97	5,993.00	-7,884.98	-200.63	TD at 14058.97' MD	