



Project: Weld County, CO
Site: Sec 12-T10N-R58W
Well: Razor Federal #12H-1313A
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: 7.91°
Magnetic Field
Strength: 52918.6snT
Dip Angle: 67.41°
Date: 10/1/2015
Model: IGRF2015

WELL DETAILS: Razor Federal #12H-1313A

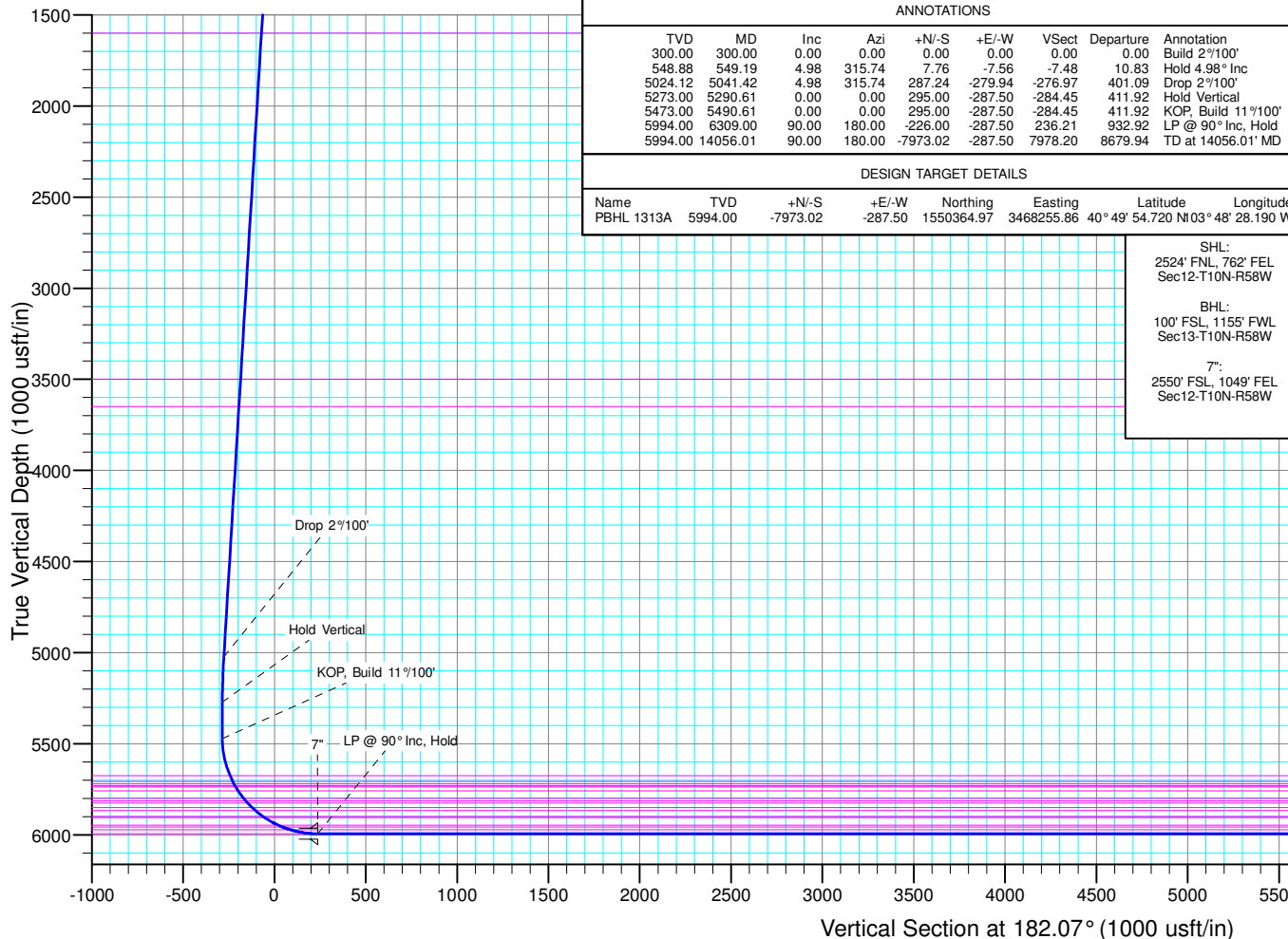
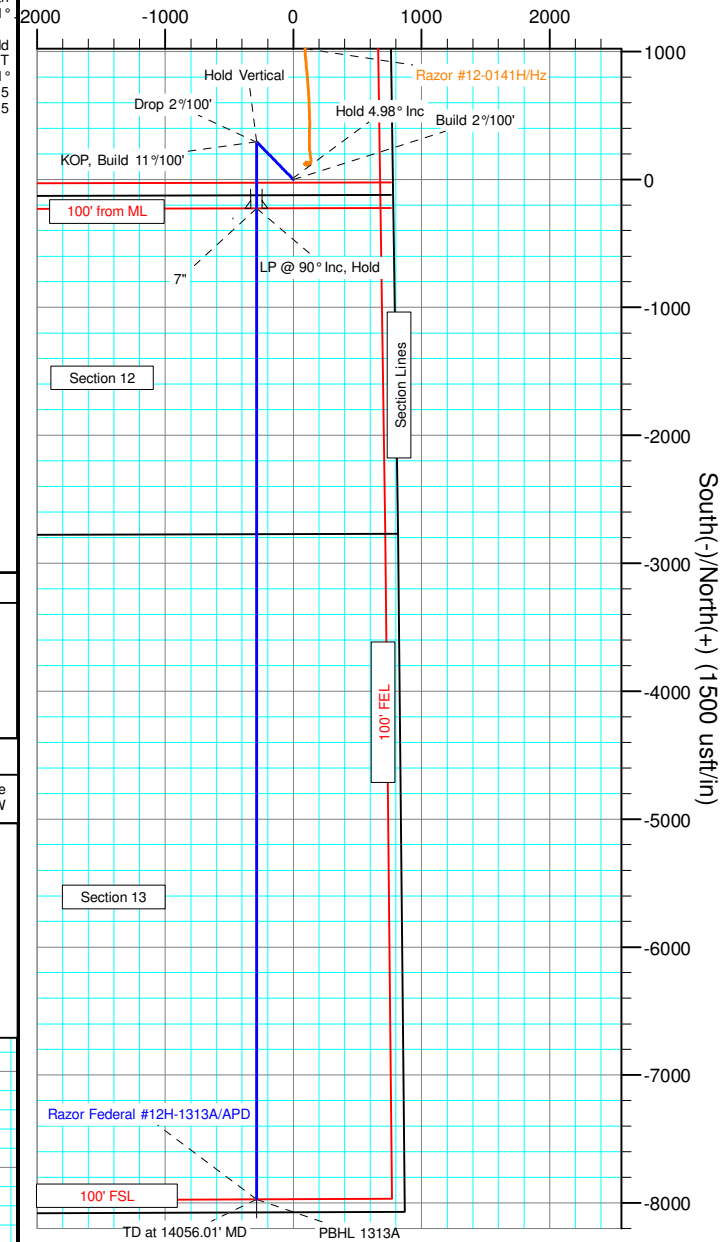
+N/-S	+E/-W	Northing	Ground Level:	4947.00	Latitude	Longitude	Slot
0.00	0.00	1558342.02	Easting	3468391.08	40° 51' 13.500 N	103° 48' 24.450 W	

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	549.19	4.98	315.74	548.88	7.76	-7.56	2.00	315.74	-7.48	
4	5041.42	4.98	315.74	5024.12	287.24	-279.94	0.00	0.00	-276.97	
5	5290.61	0.00	0.00	5273.00	295.00	-287.50	2.00	180.00	-284.45	
6	5490.61	0.00	0.00	5473.00	295.00	-287.50	0.00	0.00	-284.45	
7	6309.00	90.00	180.00	5994.00	-226.00	-287.50	11.00	180.00	236.21	
8	14056.01	90.00	180.00	5994.00	-7973.02	-287.50	0.00	0.00	7978.20	PBHL 1313A

TVDPATH	MDPATH	Formation
1600.00	1604.30	Upper Pierre
3500.00	3511.51	Hygiene
3650.00	3662.08	Lower Pierre
5676.00	5699.14	P200 Marker
5707.00	5733.29	P300 Marker
5721.00	5749.09	P350 Marker
5730.00	5759.37	Sharon Springs
5737.00	5767.46	Niobrara
5759.00	5793.37	Top A Chalk
5798.00	5841.56	Top A Marl
5814.00	5862.36	A Marl
5825.00	5877.10	Top Upper B
5851.00	5913.56	Base Upper B
5867.00	5937.39	Top Lower B
5899.00	5989.38	Base Lower B
5906.00	6001.75	Top B Marl
5947.00	6086.00	Top C Chalk
5957.00	6111.46	Middle C Chalk
5972.00	6157.05	Middle C Marl
5994.00	6309.00	Lower C Chalk

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



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'
548.88	549.19	4.98	315.74	7.76	-7.56	-7.48	10.83	Hold 4.98° Inc
5024.12	5041.42	4.98	315.74	287.24	-279.94	-276.97	401.09	Drop 2°/100'
5273.00	5290.61	0.00	0.00	295.00	-287.50	-284.45	411.92	Hold Vertical
5473.00	5490.61	0.00	0.00	295.00	-287.50	-284.45	411.92	KOP, Build 11°/100'
5994.00	6309.00	90.00	180.00	-226.00	-287.50	236.21	932.92	LP @ 90° Inc, Hold
5994.00	14056.01	90.00	180.00	-7973.02	-287.50	7978.20	8679.94	TD at 14056.01' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1313A	5994.00	-7973.02	-287.50	1550364.97	3468255.86	40° 49' 54.720 N	103° 48' 28.190 W

SHL:
2524' FNL, 762' FEL
Sec12-T10N-R58W
BHL:
100' FSL, 1155' FWL
Sec13-T10N-R58W
7":
2550' FSL, 1049' FEL
Sec12-T10N-R58W



Whiting Petroleum Corp.

Weld County, CO

Sec 12-T10N-R58W

Razor Federal #12H-1313A

Hz

Plan: APD

Standard Planning Report

01 October, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12H-1313A
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 Federal #12H-1313A	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 #12H-1313A				
Well Position	+N/-S	-2,512.49 usft	Northing:	1,558,342.03 usft	Latitude:	40° 51' 13.500 N
	+E/-W	4,564.75 usft	Easting:	3,468,391.07 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	182.07	

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	
549.19	4.98	315.74	548.88	7.76	-7.56	2.00	2.00	0.00	315.74	
5,041.42	4.98	315.74	5,024.12	287.24	-279.94	0.00	0.00	0.00	0.00	
5,290.61	0.00	0.00	5,273.00	295.00	-287.50	2.00	-2.00	0.00	180.00	
5,490.61	0.00	0.00	5,473.00	295.00	-287.50	0.00	0.00	0.00	0.00	
6,309.00	90.00	180.00	5,994.00	-226.00	-287.50	11.00	11.00	0.00	180.00	
14,056.01	90.00	180.00	5,994.00	-7,973.02	-287.50	0.00	0.00	0.00	0.00	PBHL 1313A



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12H-1313A
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 Federal #12H-1313A	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	315.74	399.98	1.25	-1.22	-1.21	2.00	2.00	0.00
500.00	4.00	315.74	499.84	5.00	-4.87	-4.82	2.00	2.00	0.00
549.19	4.98	315.74	548.88	7.76	-7.56	-7.48	2.00	2.00	0.00
Hold 4.98° Inc									
600.00	4.98	315.74	599.49	10.92	-10.64	-10.53	0.00	0.00	0.00
700.00	4.98	315.74	699.12	17.14	-16.70	-16.53	0.00	0.00	0.00
800.00	4.98	315.74	798.74	23.36	-22.77	-22.53	0.00	0.00	0.00
900.00	4.98	315.74	898.36	29.58	-28.83	-28.52	0.00	0.00	0.00
1,000.00	4.98	315.74	997.98	35.80	-34.89	-34.52	0.00	0.00	0.00
1,100.00	4.98	315.74	1,097.60	42.03	-40.96	-40.52	0.00	0.00	0.00
1,200.00	4.98	315.74	1,197.23	48.25	-47.02	-46.52	0.00	0.00	0.00
1,300.00	4.98	315.74	1,296.85	54.47	-53.08	-52.52	0.00	0.00	0.00
1,400.00	4.98	315.74	1,396.47	60.69	-59.15	-58.52	0.00	0.00	0.00
1,500.00	4.98	315.74	1,496.09	66.91	-65.21	-64.52	0.00	0.00	0.00
1,600.00	4.98	315.74	1,595.71	73.13	-71.27	-70.52	0.00	0.00	0.00
1,604.30	4.98	315.74	1,600.00	73.40	-71.53	-70.78	0.00	0.00	0.00
Upper Pierre									
1,700.00	4.98	315.74	1,695.33	79.35	-77.34	-76.52	0.00	0.00	0.00
1,800.00	4.98	315.74	1,794.96	85.58	-83.40	-82.52	0.00	0.00	0.00
1,900.00	4.98	315.74	1,894.58	91.80	-89.46	-88.51	0.00	0.00	0.00
2,000.00	4.98	315.74	1,994.20	98.02	-95.53	-94.51	0.00	0.00	0.00
2,100.00	4.98	315.74	2,093.82	104.24	-101.59	-100.51	0.00	0.00	0.00
2,200.00	4.98	315.74	2,193.44	110.46	-107.65	-106.51	0.00	0.00	0.00
2,300.00	4.98	315.74	2,293.07	116.68	-113.72	-112.51	0.00	0.00	0.00
2,400.00	4.98	315.74	2,392.69	122.91	-119.78	-118.51	0.00	0.00	0.00
2,500.00	4.98	315.74	2,492.31	129.13	-125.84	-124.51	0.00	0.00	0.00
2,600.00	4.98	315.74	2,591.93	135.35	-131.91	-130.51	0.00	0.00	0.00
2,700.00	4.98	315.74	2,691.55	141.57	-137.97	-136.51	0.00	0.00	0.00
2,800.00	4.98	315.74	2,791.18	147.79	-144.03	-142.51	0.00	0.00	0.00
2,900.00	4.98	315.74	2,890.80	154.01	-150.10	-148.50	0.00	0.00	0.00
3,000.00	4.98	315.74	2,990.42	160.24	-156.16	-154.50	0.00	0.00	0.00
3,100.00	4.98	315.74	3,090.04	166.46	-162.22	-160.50	0.00	0.00	0.00
3,200.00	4.98	315.74	3,189.66	172.68	-168.29	-166.50	0.00	0.00	0.00
3,300.00	4.98	315.74	3,289.29	178.90	-174.35	-172.50	0.00	0.00	0.00
3,400.00	4.98	315.74	3,388.91	185.12	-180.41	-178.50	0.00	0.00	0.00
3,500.00	4.98	315.74	3,488.53	191.34	-186.48	-184.50	0.00	0.00	0.00
3,511.51	4.98	315.74	3,500.00	192.06	-187.18	-185.19	0.00	0.00	0.00
Hygiene									
3,600.00	4.98	315.74	3,588.15	197.56	-192.54	-190.50	0.00	0.00	0.00
3,662.08	4.98	315.74	3,650.00	201.43	-196.31	-194.22	0.00	0.00	0.00
Lower Pierre									
3,700.00	4.98	315.74	3,687.77	203.79	-198.61	-196.50	0.00	0.00	0.00
3,800.00	4.98	315.74	3,787.40	210.01	-204.67	-202.50	0.00	0.00	0.00
3,900.00	4.98	315.74	3,887.02	216.23	-210.73	-208.49	0.00	0.00	0.00
4,000.00	4.98	315.74	3,986.64	222.45	-216.80	-214.49	0.00	0.00	0.00
4,100.00	4.98	315.74	4,086.26	228.67	-222.86	-220.49	0.00	0.00	0.00
4,200.00	4.98	315.74	4,185.88	234.89	-228.92	-226.49	0.00	0.00	0.00
4,300.00	4.98	315.74	4,285.51	241.12	-234.99	-232.49	0.00	0.00	0.00
4,400.00	4.98	315.74	4,385.13	247.34	-241.05	-238.49	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12H-1313A
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 Federal #12H-1313A	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	4.98	315.74	4,484.75	253.56	-247.11	-244.49	0.00	0.00	0.00
4,600.00	4.98	315.74	4,584.37	259.78	-253.18	-250.49	0.00	0.00	0.00
4,700.00	4.98	315.74	4,683.99	266.00	-259.24	-256.49	0.00	0.00	0.00
4,800.00	4.98	315.74	4,783.61	272.22	-265.30	-262.49	0.00	0.00	0.00
4,900.00	4.98	315.74	4,883.24	278.44	-271.37	-268.49	0.00	0.00	0.00
5,000.00	4.98	315.74	4,982.86	284.67	-277.43	-274.48	0.00	0.00	0.00
5,041.42	4.98	315.74	5,024.12	287.24	-279.94	-276.97	0.00	0.00	0.00
Drop 2°/100'									
5,100.00	3.81	315.74	5,082.53	290.46	-283.08	-280.07	2.00	-2.00	0.00
5,200.00	1.81	315.74	5,182.40	293.97	-286.50	-283.46	2.00	-2.00	0.00
5,290.61	0.00	0.00	5,273.00	295.00	-287.50	-284.45	2.00	-2.00	0.00
Hold Vertical									
5,300.00	0.00	0.00	5,282.39	295.00	-287.50	-284.45	0.00	0.00	0.00
5,400.00	0.00	0.00	5,382.39	295.00	-287.50	-284.45	0.00	0.00	0.00
5,490.61	0.00	0.00	5,473.00	295.00	-287.50	-284.45	0.00	0.00	0.00
KOP, Build 11°/100'									
5,500.00	1.03	180.00	5,482.39	294.92	-287.50	-284.36	11.00	11.00	0.00
5,550.00	6.53	180.00	5,532.26	291.62	-287.50	-281.07	11.00	11.00	0.00
5,600.00	12.03	180.00	5,581.59	283.56	-287.50	-273.01	11.00	11.00	0.00
5,650.00	17.53	180.00	5,629.91	270.81	-287.50	-260.27	11.00	11.00	0.00
5,699.14	22.93	180.00	5,676.00	253.82	-287.50	-243.30	11.00	11.00	0.00
P200 Marker									
5,700.00	23.03	180.00	5,676.80	253.49	-287.50	-242.96	11.00	11.00	0.00
5,733.29	26.69	180.00	5,707.00	239.49	-287.50	-228.98	11.00	11.00	0.00
P300 Marker									
5,749.09	28.42	180.00	5,721.00	232.19	-287.50	-221.68	11.00	11.00	0.00
P350 Marker									
5,750.00	28.53	180.00	5,721.80	231.75	-287.50	-221.24	11.00	11.00	0.00
5,759.37	29.56	180.00	5,730.00	227.20	-287.50	-216.69	11.00	11.00	0.00
Sharon Springs									
5,767.46	30.45	180.00	5,737.00	223.16	-287.50	-212.66	11.00	11.00	0.00
Niobrara									
5,793.37	33.29	180.00	5,759.00	209.48	-287.50	-198.99	11.00	11.00	0.00
Top A Chalk									
5,800.00	34.02	180.00	5,764.52	205.81	-287.50	-195.31	11.00	11.00	0.00
5,841.56	38.59	180.00	5,798.00	181.21	-287.50	-170.73	11.00	11.00	0.00
Top A Marl									
5,850.00	39.52	180.00	5,804.56	175.88	-287.50	-165.41	11.00	11.00	0.00
5,862.36	40.88	180.00	5,814.00	167.90	-287.50	-157.43	11.00	11.00	0.00
A Marl									
5,877.10	42.50	180.00	5,825.00	158.11	-287.50	-147.64	11.00	11.00	0.00
Top Upper B									
5,900.00	45.02	180.00	5,841.54	142.26	-287.50	-131.81	11.00	11.00	0.00
5,913.56	46.51	180.00	5,851.00	132.55	-287.50	-122.10	11.00	11.00	0.00
Base Upper B									
5,937.39	49.13	180.00	5,867.00	114.89	-287.50	-104.45	11.00	11.00	0.00
Top Lower B									
5,950.00	50.52	180.00	5,875.13	105.26	-287.50	-94.83	11.00	11.00	0.00
5,989.38	54.85	180.00	5,899.00	73.94	-287.50	-63.53	11.00	11.00	0.00
Base Lower B									
6,000.00	56.02	180.00	5,905.02	65.20	-287.50	-54.80	11.00	11.00	0.00
6,001.75	56.21	180.00	5,906.00	63.74	-287.50	-53.34	11.00	11.00	0.00



WOG

Planning Report

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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 Federal #12H-1313A	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	61.52	180.00	5,930.94	22.46	-287.50	-12.09	11.00	11.00	0.00	
6,086.00	65.48	180.00	5,947.00	-9.75	-287.50	20.10	11.00	11.00	0.00	
Top C Chalk										
6,100.00	67.02	180.00	5,952.64	-22.56	-287.50	32.91	11.00	11.00	0.00	
6,111.46	68.28	180.00	5,957.00	-33.17	-287.50	43.50	11.00	11.00	0.00	
Middle C Chalk										
6,150.00	72.51	180.00	5,969.93	-69.46	-287.50	79.77	11.00	11.00	0.00	
6,157.05	73.29	180.00	5,972.00	-76.20	-287.50	86.51	11.00	11.00	0.00	
Middle C Marl										
6,200.00	78.01	180.00	5,982.64	-117.80	-287.50	128.08	11.00	11.00	0.00	
6,250.00	83.51	180.00	5,990.66	-167.13	-287.50	177.38	11.00	11.00	0.00	
6,300.00	89.01	180.00	5,993.92	-217.00	-287.50	227.22	11.00	11.00	0.00	
6,309.00	90.00	180.00	5,994.00	-226.00	-287.50	236.22	10.99	10.99	0.00	
LP @ 90° Inc, Hold - Lower C Chalk - 7"										
6,400.00	90.00	180.00	5,994.00	-317.00	-287.50	327.16	0.00	0.00	0.00	
6,500.00	90.00	180.00	5,994.00	-417.00	-287.50	427.09	0.00	0.00	0.00	
6,600.00	90.00	180.00	5,994.00	-517.00	-287.50	527.03	0.00	0.00	0.00	
6,700.00	90.00	180.00	5,994.00	-617.00	-287.50	626.96	0.00	0.00	0.00	
6,800.00	90.00	180.00	5,994.00	-717.00	-287.50	726.90	0.00	0.00	0.00	
6,900.00	90.00	180.00	5,994.00	-817.00	-287.50	826.83	0.00	0.00	0.00	
7,000.00	90.00	180.00	5,994.00	-917.00	-287.50	926.77	0.00	0.00	0.00	
7,100.00	90.00	180.00	5,994.00	-1,017.00	-287.50	1,026.70	0.00	0.00	0.00	
7,200.00	90.00	180.00	5,994.00	-1,117.00	-287.50	1,126.64	0.00	0.00	0.00	
7,300.00	90.00	180.00	5,994.00	-1,217.00	-287.50	1,226.57	0.00	0.00	0.00	
7,400.00	90.00	180.00	5,994.00	-1,317.00	-287.50	1,326.51	0.00	0.00	0.00	
7,500.00	90.00	180.00	5,994.00	-1,417.00	-287.50	1,426.44	0.00	0.00	0.00	
7,600.00	90.00	180.00	5,994.00	-1,517.00	-287.50	1,526.38	0.00	0.00	0.00	
7,700.00	90.00	180.00	5,994.00	-1,617.00	-287.50	1,626.31	0.00	0.00	0.00	
7,800.00	90.00	180.00	5,994.00	-1,717.00	-287.50	1,726.25	0.00	0.00	0.00	
7,900.00	90.00	180.00	5,994.00	-1,817.00	-287.50	1,826.18	0.00	0.00	0.00	
8,000.00	90.00	180.00	5,994.00	-1,917.00	-287.50	1,926.12	0.00	0.00	0.00	
8,100.00	90.00	180.00	5,994.00	-2,017.00	-287.50	2,026.05	0.00	0.00	0.00	
8,200.00	90.00	180.00	5,994.00	-2,117.00	-287.50	2,125.99	0.00	0.00	0.00	
8,300.00	90.00	180.00	5,994.00	-2,217.00	-287.50	2,225.92	0.00	0.00	0.00	
8,400.00	90.00	180.00	5,994.00	-2,317.00	-287.50	2,325.86	0.00	0.00	0.00	
8,500.00	90.00	180.00	5,994.00	-2,417.00	-287.50	2,425.79	0.00	0.00	0.00	
8,600.00	90.00	180.00	5,994.00	-2,517.00	-287.50	2,525.73	0.00	0.00	0.00	
8,700.00	90.00	180.00	5,994.00	-2,617.00	-287.50	2,625.66	0.00	0.00	0.00	
8,800.00	90.00	180.00	5,994.00	-2,717.00	-287.50	2,725.60	0.00	0.00	0.00	
8,900.00	90.00	180.00	5,994.00	-2,817.00	-287.50	2,825.53	0.00	0.00	0.00	
9,000.00	90.00	180.00	5,994.00	-2,917.00	-287.50	2,925.47	0.00	0.00	0.00	
9,100.00	90.00	180.00	5,994.00	-3,017.00	-287.50	3,025.40	0.00	0.00	0.00	
9,200.00	90.00	180.00	5,994.00	-3,117.00	-287.50	3,125.34	0.00	0.00	0.00	
9,300.00	90.00	180.00	5,994.00	-3,217.00	-287.50	3,225.27	0.00	0.00	0.00	
9,400.00	90.00	180.00	5,994.00	-3,317.00	-287.50	3,325.21	0.00	0.00	0.00	
9,500.00	90.00	180.00	5,994.00	-3,417.00	-287.50	3,425.14	0.00	0.00	0.00	
9,600.00	90.00	180.00	5,994.00	-3,517.00	-287.50	3,525.08	0.00	0.00	0.00	
9,700.00	90.00	180.00	5,994.00	-3,617.00	-287.50	3,625.01	0.00	0.00	0.00	
9,800.00	90.00	180.00	5,994.00	-3,717.00	-287.50	3,724.95	0.00	0.00	0.00	
9,900.00	90.00	180.00	5,994.00	-3,817.00	-287.50	3,824.88	0.00	0.00	0.00	
10,000.00	90.00	180.00	5,994.00	-3,917.00	-287.50	3,924.82	0.00	0.00	0.00	
10,100.00	90.00	180.00	5,994.00	-4,017.00	-287.50	4,024.75	0.00	0.00	0.00	
10,200.00	90.00	180.00	5,994.00	-4,117.00	-287.50	4,124.69	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12H-1313A
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 Federal #12H-1313A	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	180.00	5,994.00	-4,217.00	-287.50	4,224.62	0.00	0.00	0.00
10,400.00	90.00	180.00	5,994.00	-4,317.00	-287.50	4,324.56	0.00	0.00	0.00
10,500.00	90.00	180.00	5,994.00	-4,417.00	-287.50	4,424.49	0.00	0.00	0.00
10,600.00	90.00	180.00	5,994.00	-4,517.00	-287.50	4,524.43	0.00	0.00	0.00
10,700.00	90.00	180.00	5,994.00	-4,617.00	-287.50	4,624.36	0.00	0.00	0.00
10,800.00	90.00	180.00	5,994.00	-4,717.00	-287.50	4,724.30	0.00	0.00	0.00
10,900.00	90.00	180.00	5,994.00	-4,817.00	-287.50	4,824.23	0.00	0.00	0.00
11,000.00	90.00	180.00	5,994.00	-4,917.00	-287.50	4,924.17	0.00	0.00	0.00
11,100.00	90.00	180.00	5,994.00	-5,017.00	-287.50	5,024.10	0.00	0.00	0.00
11,200.00	90.00	180.00	5,994.00	-5,117.00	-287.50	5,124.04	0.00	0.00	0.00
11,300.00	90.00	180.00	5,994.00	-5,217.00	-287.50	5,223.97	0.00	0.00	0.00
11,400.00	90.00	180.00	5,994.00	-5,317.00	-287.50	5,323.91	0.00	0.00	0.00
11,500.00	90.00	180.00	5,994.00	-5,417.00	-287.50	5,423.84	0.00	0.00	0.00
11,600.00	90.00	180.00	5,994.00	-5,517.00	-287.50	5,523.78	0.00	0.00	0.00
11,700.00	90.00	180.00	5,994.00	-5,617.00	-287.50	5,623.71	0.00	0.00	0.00
11,800.00	90.00	180.00	5,994.00	-5,717.00	-287.50	5,723.65	0.00	0.00	0.00
11,900.00	90.00	180.00	5,994.00	-5,817.00	-287.50	5,823.58	0.00	0.00	0.00
12,000.00	90.00	180.00	5,994.00	-5,917.00	-287.50	5,923.52	0.00	0.00	0.00
12,100.00	90.00	180.00	5,994.00	-6,017.00	-287.50	6,023.46	0.00	0.00	0.00
12,200.00	90.00	180.00	5,994.00	-6,117.00	-287.50	6,123.39	0.00	0.00	0.00
12,300.00	90.00	180.00	5,994.00	-6,217.00	-287.50	6,223.33	0.00	0.00	0.00
12,400.00	90.00	180.00	5,994.00	-6,317.00	-287.50	6,323.26	0.00	0.00	0.00
12,500.00	90.00	180.00	5,994.00	-6,417.00	-287.50	6,423.20	0.00	0.00	0.00
12,600.00	90.00	180.00	5,994.00	-6,517.00	-287.50	6,523.13	0.00	0.00	0.00
12,700.00	90.00	180.00	5,994.00	-6,617.00	-287.50	6,623.07	0.00	0.00	0.00
12,800.00	90.00	180.00	5,994.00	-6,717.00	-287.50	6,723.00	0.00	0.00	0.00
12,900.00	90.00	180.00	5,994.00	-6,817.00	-287.50	6,822.94	0.00	0.00	0.00
13,000.00	90.00	180.00	5,994.00	-6,917.00	-287.50	6,922.87	0.00	0.00	0.00
13,100.00	90.00	180.00	5,994.00	-7,017.00	-287.50	7,022.81	0.00	0.00	0.00
13,200.00	90.00	180.00	5,994.00	-7,117.00	-287.50	7,122.74	0.00	0.00	0.00
13,300.00	90.00	180.00	5,994.00	-7,217.00	-287.50	7,222.68	0.00	0.00	0.00
13,400.00	90.00	180.00	5,994.00	-7,317.00	-287.50	7,322.61	0.00	0.00	0.00
13,500.00	90.00	180.00	5,994.00	-7,417.00	-287.50	7,422.55	0.00	0.00	0.00
13,600.00	90.00	180.00	5,994.00	-7,517.00	-287.50	7,522.48	0.00	0.00	0.00
13,700.00	90.00	180.00	5,994.00	-7,617.00	-287.50	7,622.42	0.00	0.00	0.00
13,800.00	90.00	180.00	5,994.00	-7,717.00	-287.50	7,722.35	0.00	0.00	0.00
13,900.00	90.00	180.00	5,994.00	-7,817.00	-287.50	7,822.29	0.00	0.00	0.00
14,000.00	90.00	180.00	5,994.00	-7,917.00	-287.50	7,922.22	0.00	0.00	0.00
14,056.01	90.00	180.00	5,994.00	-7,973.02	-287.50	7,978.20	0.00	0.00	0.00
TD at 14056.01' 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 1313A - plan hits target center - Point	0.00	0.00	5,994.00	-7,973.02	-287.50	1,550,364.97	3,468,255.86	40° 49' 54.720 N	103° 48' 28.190 W



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor Federal #12H-1313A
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 Federal #12H-1313A	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,309.00	5,994.00	7"	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,604.30	1,600.00	Upper Pierre				
3,511.51	3,500.00	Hygiene				
3,662.08	3,650.00	Lower Pierre				
5,699.14	5,676.00	P200 Marker				
5,733.29	5,707.00	P300 Marker				
5,749.09	5,721.00	P350 Marker				
5,759.37	5,730.00	Sharon Springs				
5,767.46	5,737.00	Niobrara				
5,793.37	5,759.00	Top A Chalk				
5,841.56	5,798.00	Top A Marl				
5,862.36	5,814.00	A Marl				
5,877.10	5,825.00	Top Upper B				
5,913.56	5,851.00	Base Upper B				
5,937.39	5,867.00	Top Lower B				
5,989.38	5,899.00	Base Lower B				
6,001.75	5,906.00	Top B Marl				
6,086.00	5,947.00	Top C Chalk				
6,111.46	5,957.00	Middle C Chalk				
6,157.05	5,972.00	Middle C Marl				
6,309.00	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 2°/100'	
549.19	548.88	7.76	-7.56	Hold 4.98° Inc	
5,041.42	5,024.12	287.24	-279.94	Drop 2°/100'	
5,290.61	5,273.00	295.00	-287.50	Hold Vertical	
5,490.61	5,473.00	295.00	-287.50	KOP, Build 11°/100'	
6,309.00	5,994.00	-226.00	-287.50	LP @ 90° Inc, Hold	
14,056.01	5,994.00	-7,973.02	-287.50	TD at 14056.01' MD	