



Project: Weld County, CO
Site: Sec 29-T10N-R58W
Well: Razor #29H-2046
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



FORMATION TOP DETAILS
Azimuths to True North
Magnetic North: 7.88°
Magnetic Field
Strength: 52822.3snT
Dip Angle: 67.35°
Date: 5/4/2016
Model: IGRF2015

FORMATION TOP DETAILS	MDPath	Formation
	1550.00	Upper Pierre
	3500.00	Hygiene
	3650.00	Lower Pierre
	5794.00	P200 Marker
	5829.00	P300 Marker
	5853.00	P350 Marker
	5865.00	Sharon Springs
	5868.00	Niobrara
	5888.00	Top A Chalk
	5923.00	Top A Marl
	5944.00	A Marl
	5949.00	Top Upper B
	5969.00	Base Upper B
	5981.00	Top Lower B
	6001.00	Base Lower B
	6011.00	Top B Marl
	6063.00	Top C Chalk
	6070.00	Middle C Chalk
	6082.00	Middle C Marl
	6096.00	Lower C Chalk

WELL DETAILS: Razor #29H-2046

+N/-S	+E/-W	Northing	Ground Level:	Easting	Latitude	Longitude	Slot
0.00	0.00	1542139.12	4766.80	3447509.57	40° 48' 37.280 N	103° 52' 59.980 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	879.19	11.58	188.32	875.25	-57.74	-8.45	2.00	188.32	-57.58	
4	4767.38	11.58	188.32	4694.25	-830.26	-121.47	0.00	0.00	-828.01	
5	5346.57	0.00	0.00	5259.50	-888.00	-129.91	2.00	180.00	-885.58	
6	5546.57	0.00	0.00	5459.50	-888.00	-129.91	0.00	0.00	-885.58	
7	6546.38	90.00	360.00	6096.00	-251.50	-129.91	9.00	360.00	-249.18	
8	14202.09	90.00	360.00	6096.00	7404.21	-129.91	0.00	0.00	7405.35	Razor 29H-2046

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'
875.25	879.19	11.58	188.32	-57.74	-8.45	-57.58	58.35	Hold 11.58° Inc
4694.25	4767.38	11.58	188.32	-830.26	-121.47	-828.01	839.10	Drop 2°/100'
5259.50	5346.57	0.00	0.00	-888.00	-129.91	-885.58	897.45	Hold Vertical
5459.50	5546.57	0.00	0.00	-888.00	-129.91	-885.58	897.45	KOP, Build 9°/100'
6096.00	6546.38	90.00	360.00	-251.50	-129.91	-249.18	1533.95	LP @ 90° Inc, Hold
6096.00	14202.09	90.00	360.00	7404.21	-129.91	7405.35	9189.66	TD at 14202.09

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Razor 29H-2046	6096.00	7404.21	-129.91	1549539.73	3447244.70	40° 49' 50.440 N 103° 53' 1.670 W	
Nelson Ranches A-7	6615.80	4536.59	-1364.00	1546650.09	3446063.10	40° 49' 22.105 N 103° 53' 17.722 W	
Nelson #1	6700.80	2788.82	267.87	1544932.36	3447726.56	40° 49' 4.836 N 103° 52' 56.496 W	

SHL:
2286' FNL, 948' FEL
Sec29-T10N-R58W

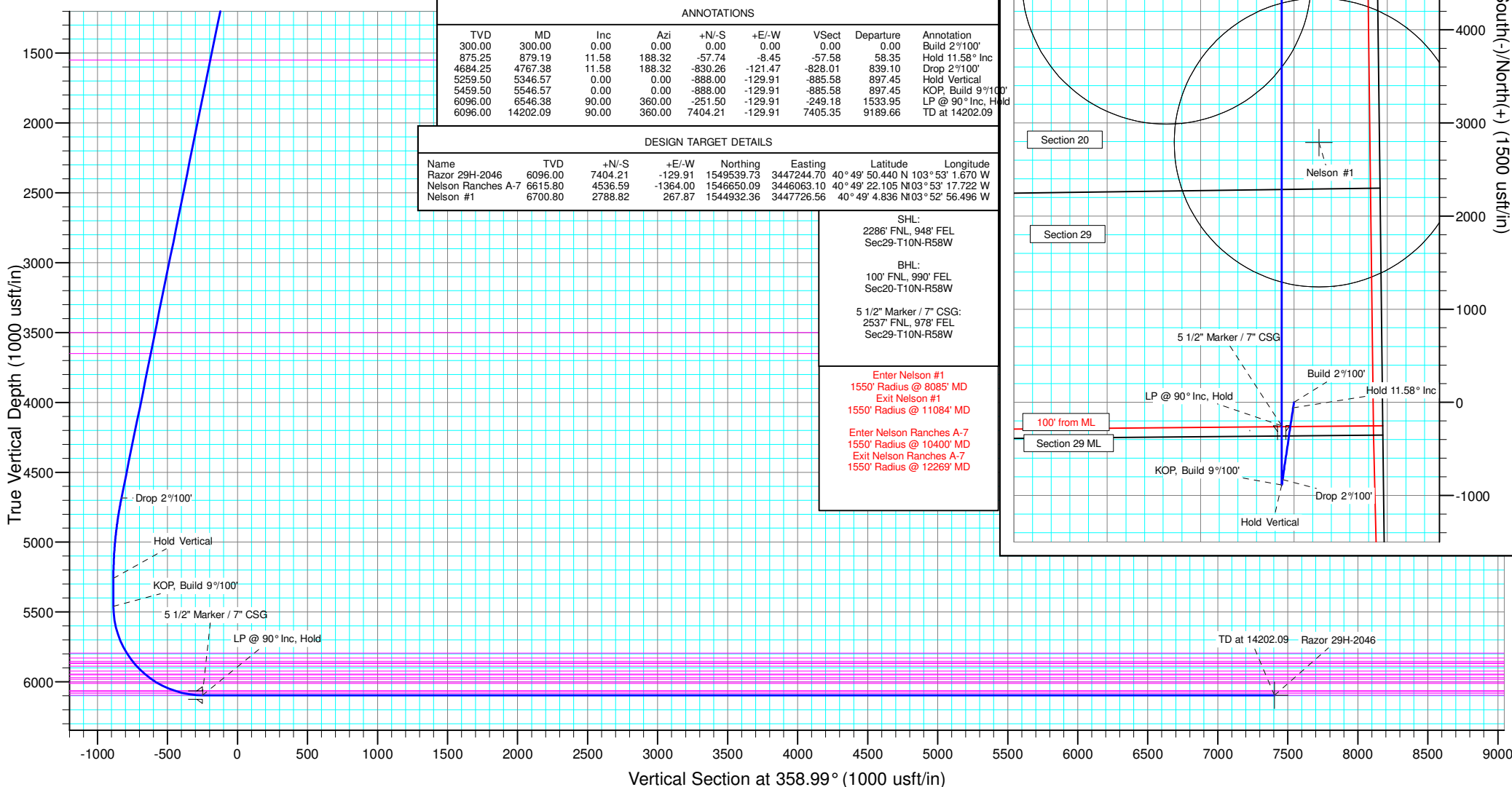
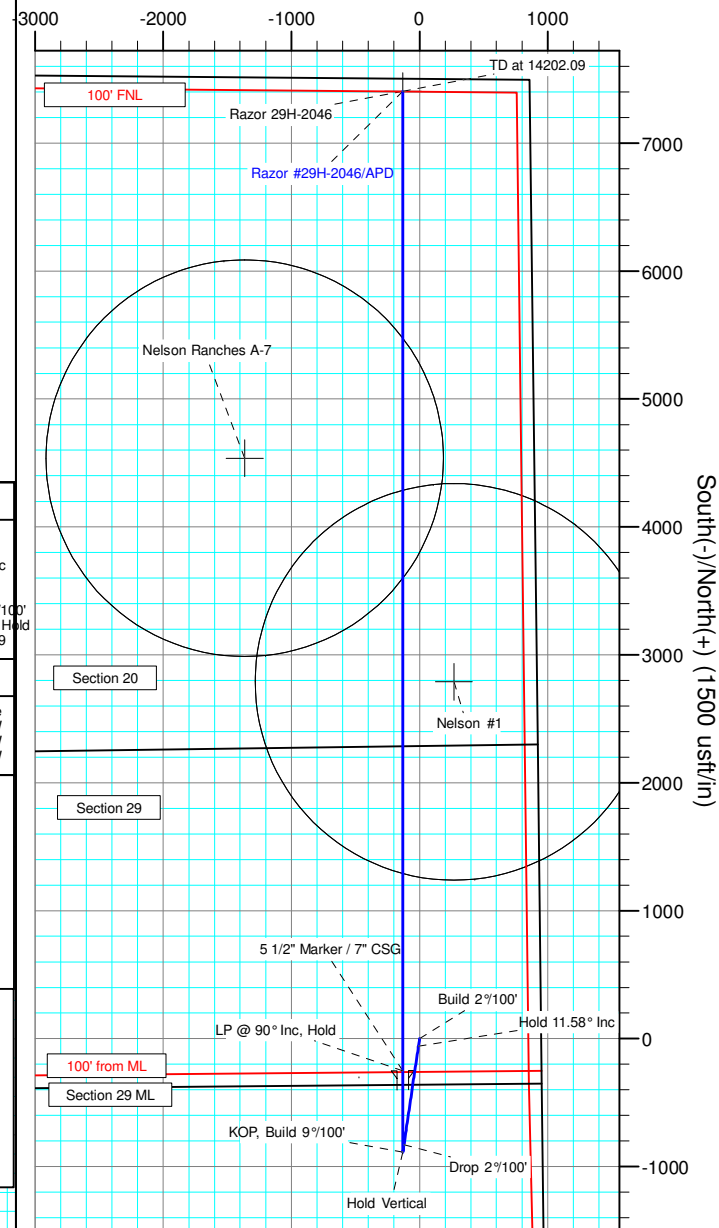
BHL:
100' FNL, 990' FEL
Sec20-T10N-R58W

5 1/2" Marker / 7" CSG:
2537' FNL, 978' FEL
Sec29-T10N-R58W

Enter Nelson #1
1550' Radius @ 8085' MD
Exit Nelson #1
1550' Radius @ 11084' MD

Enter Nelson Ranches A-7
1550' Radius @ 10400' MD
Exit Nelson Ranches A-7
1550' Radius @ 12269' MD

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





Whiting Petroleum Corp.

**Weld County, CO
Sec 29-T10N-R58W
Razor #29H-2046**

Hz

Plan: APD

Standard Planning Report

09 May, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	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 29-T10N-R58W			
Site Position:		Northing:	1,544,286.15 usft	Latitude:	40° 48' 59.281 N
From:	Lat/Long	Easting:	3,443,100.91 usft	Longitude:	103° 53' 56.800 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.03 °

Well	Razor #29H-2046					
Well Position	+N/-S	-2,226.26 usft	Northing:	1,542,139.12 usft	Latitude:	40° 48' 37.280 N
	+E/-W	4,369.18 usft	Easting:	3,447,509.57 usft	Longitude:	103° 52' 59.980 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,766.80 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/4/2016	7.88	67.35	52,822

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	358.99

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	
879.19	11.58	188.32	875.25	-57.74	-8.45	2.00	2.00	0.00	188.32	
4,767.38	11.58	188.32	4,684.25	-830.26	-121.47	0.00	0.00	0.00	0.00	
5,346.57	0.00	0.00	5,259.50	-888.00	-129.91	2.00	-2.00	0.00	180.00	
5,546.57	0.00	0.00	5,459.50	-888.00	-129.91	0.00	0.00	0.00	0.00	
6,546.38	90.00	360.00	6,096.00	-251.50	-129.91	9.00	9.00	0.00	360.00	
14,202.09	90.00	360.00	6,096.00	7,404.21	-129.91	0.00	0.00	0.00	0.00	Razor 29H-2046



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	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	188.32	399.98	-1.73	-0.25	-1.72	2.00	2.00	0.00
500.00	4.00	188.32	499.84	-6.90	-1.01	-6.89	2.00	2.00	0.00
600.00	6.00	188.32	599.45	-15.53	-2.27	-15.49	2.00	2.00	0.00
700.00	8.00	188.32	698.70	-27.59	-4.04	-27.51	2.00	2.00	0.00
800.00	10.00	188.32	797.47	-43.06	-6.30	-42.95	2.00	2.00	0.00
879.19	11.58	188.32	875.25	-57.74	-8.45	-57.58	2.00	2.00	0.00
Hold 11.58° Inc									
900.00	11.58	188.32	895.64	-61.87	-9.05	-61.70	0.00	0.00	0.00
1,000.00	11.58	188.32	993.60	-81.74	-11.96	-81.52	0.00	0.00	0.00
1,100.00	11.58	188.32	1,091.56	-101.61	-14.87	-101.33	0.00	0.00	0.00
1,200.00	11.58	188.32	1,189.53	-121.48	-17.77	-121.15	0.00	0.00	0.00
1,300.00	11.58	188.32	1,287.49	-141.34	-20.68	-140.96	0.00	0.00	0.00
1,400.00	11.58	188.32	1,385.45	-161.21	-23.59	-160.77	0.00	0.00	0.00
1,500.00	11.58	188.32	1,483.42	-181.08	-26.49	-180.59	0.00	0.00	0.00
1,567.97	11.58	188.32	1,550.00	-194.59	-28.47	-194.06	0.00	0.00	0.00
Upper Pierre									
1,600.00	11.58	188.32	1,581.38	-200.95	-29.40	-200.40	0.00	0.00	0.00
1,700.00	11.58	188.32	1,679.34	-220.82	-32.31	-220.22	0.00	0.00	0.00
1,800.00	11.58	188.32	1,777.31	-240.69	-35.21	-240.03	0.00	0.00	0.00
1,900.00	11.58	188.32	1,875.27	-260.56	-38.12	-259.85	0.00	0.00	0.00
2,000.00	11.58	188.32	1,973.23	-280.42	-41.03	-279.66	0.00	0.00	0.00
2,100.00	11.58	188.32	2,071.20	-300.29	-43.93	-299.48	0.00	0.00	0.00
2,200.00	11.58	188.32	2,169.16	-320.16	-46.84	-319.29	0.00	0.00	0.00
2,300.00	11.58	188.32	2,267.12	-340.03	-49.75	-339.11	0.00	0.00	0.00
2,400.00	11.58	188.32	2,365.09	-359.90	-52.65	-358.92	0.00	0.00	0.00
2,500.00	11.58	188.32	2,463.05	-379.77	-55.56	-378.73	0.00	0.00	0.00
2,600.00	11.58	188.32	2,561.01	-399.64	-58.47	-398.55	0.00	0.00	0.00
2,700.00	11.58	188.32	2,658.98	-419.50	-61.37	-418.36	0.00	0.00	0.00
2,800.00	11.58	188.32	2,756.94	-439.37	-64.28	-438.18	0.00	0.00	0.00
2,900.00	11.58	188.32	2,854.90	-459.24	-67.19	-457.99	0.00	0.00	0.00
3,000.00	11.58	188.32	2,952.87	-479.11	-70.09	-477.81	0.00	0.00	0.00
3,100.00	11.58	188.32	3,050.83	-498.98	-73.00	-497.62	0.00	0.00	0.00
3,200.00	11.58	188.32	3,148.79	-518.85	-75.91	-517.44	0.00	0.00	0.00
3,300.00	11.58	188.32	3,246.76	-538.72	-78.81	-537.25	0.00	0.00	0.00
3,400.00	11.58	188.32	3,344.72	-558.59	-81.72	-557.07	0.00	0.00	0.00
3,500.00	11.58	188.32	3,442.68	-578.45	-84.63	-576.88	0.00	0.00	0.00
3,558.51	11.58	188.32	3,500.00	-590.08	-86.33	-588.47	0.00	0.00	0.00
Hygiene									
3,600.00	11.58	188.32	3,540.64	-598.32	-87.53	-596.69	0.00	0.00	0.00
3,700.00	11.58	188.32	3,638.61	-618.19	-90.44	-616.51	0.00	0.00	0.00
3,711.63	11.58	188.32	3,650.00	-620.50	-90.78	-618.81	0.00	0.00	0.00
Lower Pierre									
3,800.00	11.58	188.32	3,736.57	-638.06	-93.35	-636.32	0.00	0.00	0.00
3,900.00	11.58	188.32	3,834.53	-657.93	-96.25	-656.14	0.00	0.00	0.00
4,000.00	11.58	188.32	3,932.50	-677.80	-99.16	-675.95	0.00	0.00	0.00
4,100.00	11.58	188.32	4,030.46	-697.67	-102.07	-695.77	0.00	0.00	0.00
4,200.00	11.58	188.32	4,128.42	-717.53	-104.98	-715.58	0.00	0.00	0.00
4,300.00	11.58	188.32	4,226.39	-737.40	-107.88	-735.40	0.00	0.00	0.00
4,400.00	11.58	188.32	4,324.35	-757.27	-110.79	-755.21	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	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	11.58	188.32	4,422.31	-777.14	-113.70	-775.03	0.00	0.00	0.00
4,600.00	11.58	188.32	4,520.28	-797.01	-116.60	-794.84	0.00	0.00	0.00
4,700.00	11.58	188.32	4,618.24	-816.88	-119.51	-814.65	0.00	0.00	0.00
4,767.38	11.58	188.32	4,684.25	-830.26	-121.47	-828.01	0.00	0.00	0.00
Drop 2°/100'									
4,800.00	10.93	188.32	4,716.24	-836.57	-122.39	-834.29	2.00	-2.00	0.00
4,900.00	8.93	188.32	4,814.74	-853.63	-124.89	-851.31	2.00	-2.00	0.00
5,000.00	6.93	188.32	4,913.77	-867.28	-126.88	-864.92	2.00	-2.00	0.00
5,100.00	4.93	188.32	5,013.23	-877.51	-128.38	-875.12	2.00	-2.00	0.00
5,200.00	2.93	188.32	5,112.99	-884.29	-129.37	-881.89	2.00	-2.00	0.00
5,300.00	0.93	188.32	5,212.93	-887.63	-129.86	-885.21	2.00	-2.00	0.00
5,346.57	0.00	0.00	5,259.50	-888.00	-129.91	-885.58	2.00	-2.00	0.00
Hold Vertical									
5,400.00	0.00	0.00	5,312.93	-888.00	-129.91	-885.58	0.00	0.00	0.00
5,500.00	0.00	0.00	5,412.93	-888.00	-129.91	-885.58	0.00	0.00	0.00
5,546.57	0.00	0.00	5,459.50	-888.00	-129.91	-885.58	0.00	0.00	0.00
KOP, Build 9°/100'									
5,600.00	4.81	360.00	5,512.87	-885.76	-129.91	-883.34	9.00	9.00	0.00
5,700.00	13.81	360.00	5,611.45	-869.60	-129.91	-867.18	9.00	9.00	0.00
5,800.00	22.81	360.00	5,706.29	-838.21	-129.91	-835.80	9.00	9.00	0.00
5,898.77	31.70	360.00	5,794.00	-793.02	-129.91	-790.62	9.00	9.00	0.00
P200 Marker									
5,900.00	31.81	360.00	5,795.05	-792.37	-129.91	-789.97	9.00	9.00	0.00
5,940.80	35.49	360.00	5,829.00	-769.77	-129.91	-767.37	9.00	9.00	0.00
P300 Marker									
5,970.79	38.19	360.00	5,853.00	-751.79	-129.91	-749.40	9.00	9.00	0.00
P350 Marker									
5,986.20	39.57	360.00	5,865.00	-742.11	-129.91	-739.72	9.00	9.00	0.00
Sharon Springs									
5,990.10	39.93	360.00	5,868.00	-739.62	-129.91	-737.23	9.00	9.00	0.00
Niobrara									
6,000.00	40.82	360.00	5,875.54	-733.21	-129.91	-730.82	9.00	9.00	0.00
6,016.65	42.32	360.00	5,888.00	-722.16	-129.91	-719.77	9.00	9.00	0.00
Top A Chalk									
6,065.76	46.74	360.00	5,923.00	-687.73	-129.91	-685.35	9.00	9.00	0.00
Top A Marl									
6,097.24	49.57	360.00	5,944.00	-664.29	-129.91	-661.90	9.00	9.00	0.00
A Marl									
6,100.00	49.82	360.00	5,945.79	-662.18	-129.91	-659.80	9.00	9.00	0.00
6,105.01	50.27	360.00	5,949.00	-658.34	-129.91	-655.96	9.00	9.00	0.00
Top Upper B									
6,137.29	53.18	360.00	5,969.00	-633.00	-129.91	-630.62	9.00	9.00	0.00
Base Upper B									
6,157.76	55.02	360.00	5,981.00	-616.42	-129.91	-614.05	9.00	9.00	0.00
Top Lower B									
6,194.15	58.29	360.00	6,001.00	-586.03	-129.91	-583.66	9.00	9.00	0.00
Base Lower B									
6,200.00	58.82	360.00	6,004.05	-581.04	-129.91	-578.67	9.00	9.00	0.00
6,213.66	60.05	360.00	6,011.00	-569.27	-129.91	-566.91	9.00	9.00	0.00
Top B Marl									
6,300.00	67.82	360.00	6,048.91	-491.77	-129.91	-489.42	9.00	9.00	0.00
6,340.52	71.47	360.00	6,063.00	-453.79	-129.91	-451.44	9.00	9.00	0.00



WOG
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	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 C Chalk									
6,363.83	73.57	360.00	6,070.00	-431.56	-129.91	-429.22	9.00	9.00	0.00
Middle C Chalk									
6,400.00	76.82	360.00	6,079.24	-396.59	-129.91	-394.25	9.00	9.00	0.00
6,412.64	77.96	360.00	6,082.00	-384.26	-129.91	-381.92	9.00	9.00	0.00
Middle C Marl									
6,500.00	85.82	360.00	6,094.31	-297.84	-129.91	-295.52	9.00	9.00	0.00
6,546.38	90.00	360.00	6,096.00	-251.50	-129.91	-249.18	9.00	9.00	0.00
LP @ 90° Inc, Hold - Lower C Chalk - 5 1/2" Marker / 7" CSG									
6,600.00	90.00	360.00	6,096.00	-197.88	-129.91	-195.57	0.00	0.00	0.00
6,700.00	90.00	360.00	6,096.00	-97.88	-129.91	-95.59	0.00	0.00	0.00
6,800.00	90.00	360.00	6,096.00	2.12	-129.91	4.40	0.00	0.00	0.00
6,900.00	90.00	360.00	6,096.00	102.12	-129.91	104.38	0.00	0.00	0.00
7,000.00	90.00	360.00	6,096.00	202.12	-129.91	204.37	0.00	0.00	0.00
7,100.00	90.00	360.00	6,096.00	302.12	-129.91	304.35	0.00	0.00	0.00
7,200.00	90.00	360.00	6,096.00	402.12	-129.91	404.34	0.00	0.00	0.00
7,300.00	90.00	360.00	6,096.00	502.12	-129.91	504.32	0.00	0.00	0.00
7,400.00	90.00	360.00	6,096.00	602.12	-129.91	604.30	0.00	0.00	0.00
7,500.00	90.00	360.00	6,096.00	702.12	-129.91	704.29	0.00	0.00	0.00
7,600.00	90.00	360.00	6,096.00	802.12	-129.91	804.27	0.00	0.00	0.00
7,700.00	90.00	360.00	6,096.00	902.12	-129.91	904.26	0.00	0.00	0.00
7,800.00	90.00	360.00	6,096.00	1,002.12	-129.91	1,004.24	0.00	0.00	0.00
7,900.00	90.00	360.00	6,096.00	1,102.12	-129.91	1,104.23	0.00	0.00	0.00
8,000.00	90.00	360.00	6,096.00	1,202.12	-129.91	1,204.21	0.00	0.00	0.00
8,100.00	90.00	360.00	6,096.00	1,302.12	-129.91	1,304.20	0.00	0.00	0.00
8,200.00	90.00	360.00	6,096.00	1,402.12	-129.91	1,404.18	0.00	0.00	0.00
8,300.00	90.00	360.00	6,096.00	1,502.12	-129.91	1,504.17	0.00	0.00	0.00
8,400.00	90.00	360.00	6,096.00	1,602.12	-129.91	1,604.15	0.00	0.00	0.00
8,500.00	90.00	360.00	6,096.00	1,702.12	-129.91	1,704.14	0.00	0.00	0.00
8,600.00	90.00	360.00	6,096.00	1,802.12	-129.91	1,804.12	0.00	0.00	0.00
8,700.00	90.00	360.00	6,096.00	1,902.12	-129.91	1,904.10	0.00	0.00	0.00
8,800.00	90.00	360.00	6,096.00	2,002.12	-129.91	2,004.09	0.00	0.00	0.00
8,900.00	90.00	360.00	6,096.00	2,102.12	-129.91	2,104.07	0.00	0.00	0.00
9,000.00	90.00	360.00	6,096.00	2,202.12	-129.91	2,204.06	0.00	0.00	0.00
9,100.00	90.00	360.00	6,096.00	2,302.12	-129.91	2,304.04	0.00	0.00	0.00
9,200.00	90.00	360.00	6,096.00	2,402.12	-129.91	2,404.03	0.00	0.00	0.00
9,300.00	90.00	360.00	6,096.00	2,502.12	-129.91	2,504.01	0.00	0.00	0.00
9,400.00	90.00	360.00	6,096.00	2,602.12	-129.91	2,604.00	0.00	0.00	0.00
9,500.00	90.00	360.00	6,096.00	2,702.12	-129.91	2,703.98	0.00	0.00	0.00
9,600.00	90.00	360.00	6,096.00	2,802.12	-129.91	2,803.97	0.00	0.00	0.00
9,700.00	90.00	360.00	6,096.00	2,902.12	-129.91	2,903.95	0.00	0.00	0.00
9,800.00	90.00	360.00	6,096.00	3,002.12	-129.91	3,003.94	0.00	0.00	0.00
9,900.00	90.00	360.00	6,096.00	3,102.12	-129.91	3,103.92	0.00	0.00	0.00
10,000.00	90.00	360.00	6,096.00	3,202.12	-129.91	3,203.90	0.00	0.00	0.00
10,100.00	90.00	360.00	6,096.00	3,302.12	-129.91	3,303.89	0.00	0.00	0.00
10,200.00	90.00	360.00	6,096.00	3,402.12	-129.91	3,403.87	0.00	0.00	0.00
10,300.00	90.00	360.00	6,096.00	3,502.12	-129.91	3,503.86	0.00	0.00	0.00
10,400.00	90.00	360.00	6,096.00	3,602.12	-129.91	3,603.84	0.00	0.00	0.00
10,500.00	90.00	360.00	6,096.00	3,702.12	-129.91	3,703.83	0.00	0.00	0.00
10,600.00	90.00	360.00	6,096.00	3,802.12	-129.91	3,803.81	0.00	0.00	0.00
10,700.00	90.00	360.00	6,096.00	3,902.12	-129.91	3,903.80	0.00	0.00	0.00
10,800.00	90.00	360.00	6,096.00	4,002.12	-129.91	4,003.78	0.00	0.00	0.00
10,900.00	90.00	360.00	6,096.00	4,102.12	-129.91	4,103.77	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	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)	
11,000.00	90.00	360.00	6,096.00	4,202.12	-129.91	4,203.75	0.00	0.00	0.00	
11,100.00	90.00	360.00	6,096.00	4,302.12	-129.91	4,303.74	0.00	0.00	0.00	
11,200.00	90.00	360.00	6,096.00	4,402.12	-129.91	4,403.72	0.00	0.00	0.00	
11,300.00	90.00	360.00	6,096.00	4,502.12	-129.91	4,503.70	0.00	0.00	0.00	
11,400.00	90.00	360.00	6,096.00	4,602.12	-129.91	4,603.69	0.00	0.00	0.00	
11,500.00	90.00	360.00	6,096.00	4,702.12	-129.91	4,703.67	0.00	0.00	0.00	
11,600.00	90.00	360.00	6,096.00	4,802.12	-129.91	4,803.66	0.00	0.00	0.00	
11,700.00	90.00	360.00	6,096.00	4,902.12	-129.91	4,903.64	0.00	0.00	0.00	
11,800.00	90.00	360.00	6,096.00	5,002.12	-129.91	5,003.63	0.00	0.00	0.00	
11,900.00	90.00	360.00	6,096.00	5,102.12	-129.91	5,103.61	0.00	0.00	0.00	
12,000.00	90.00	360.00	6,096.00	5,202.12	-129.91	5,203.60	0.00	0.00	0.00	
12,100.00	90.00	360.00	6,096.00	5,302.12	-129.91	5,303.58	0.00	0.00	0.00	
12,200.00	90.00	360.00	6,096.00	5,402.12	-129.91	5,403.57	0.00	0.00	0.00	
12,300.00	90.00	360.00	6,096.00	5,502.12	-129.91	5,503.55	0.00	0.00	0.00	
12,400.00	90.00	360.00	6,096.00	5,602.12	-129.91	5,603.54	0.00	0.00	0.00	
12,500.00	90.00	360.00	6,096.00	5,702.12	-129.91	5,703.52	0.00	0.00	0.00	
12,600.00	90.00	360.00	6,096.00	5,802.12	-129.91	5,803.50	0.00	0.00	0.00	
12,700.00	90.00	360.00	6,096.00	5,902.12	-129.91	5,903.49	0.00	0.00	0.00	
12,800.00	90.00	360.00	6,096.00	6,002.12	-129.91	6,003.47	0.00	0.00	0.00	
12,900.00	90.00	360.00	6,096.00	6,102.12	-129.91	6,103.46	0.00	0.00	0.00	
13,000.00	90.00	360.00	6,096.00	6,202.12	-129.91	6,203.44	0.00	0.00	0.00	
13,100.00	90.00	360.00	6,096.00	6,302.12	-129.91	6,303.43	0.00	0.00	0.00	
13,200.00	90.00	360.00	6,096.00	6,402.12	-129.91	6,403.41	0.00	0.00	0.00	
13,300.00	90.00	360.00	6,096.00	6,502.12	-129.91	6,503.40	0.00	0.00	0.00	
13,400.00	90.00	360.00	6,096.00	6,602.12	-129.91	6,603.38	0.00	0.00	0.00	
13,500.00	90.00	360.00	6,096.00	6,702.12	-129.91	6,703.37	0.00	0.00	0.00	
13,600.00	90.00	360.00	6,096.00	6,802.12	-129.91	6,803.35	0.00	0.00	0.00	
13,700.00	90.00	360.00	6,096.00	6,902.12	-129.91	6,903.34	0.00	0.00	0.00	
13,800.00	90.00	360.00	6,096.00	7,002.12	-129.91	7,003.32	0.00	0.00	0.00	
13,900.00	90.00	360.00	6,096.00	7,102.12	-129.91	7,103.30	0.00	0.00	0.00	
14,000.00	90.00	360.00	6,096.00	7,202.12	-129.91	7,203.29	0.00	0.00	0.00	
14,100.00	90.00	360.00	6,096.00	7,302.12	-129.91	7,303.27	0.00	0.00	0.00	
14,200.00	90.00	360.00	6,096.00	7,402.12	-129.91	7,403.26	0.00	0.00	0.00	
14,202.09	90.00	360.00	6,096.00	7,404.21	-129.91	7,405.35	0.00	0.00	0.00	
TD at 14202.09										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
Razor 29H-2046	0.00	0.00	6,096.00	7,404.21	-129.91	1,549,539.74	3,447,244.70	40° 49' 50.440 N		103° 53' 1.670 W
- plan hits target center										
- Point										
Nelson Ranches A-7	0.00	0.00	6,615.80	4,536.59	-1,364.00	1,546,650.10	3,446,063.09	40° 49' 22.105 N		103° 53' 17.722 W
- plan misses target center by 1339.09usft at 11334.48usft MD (6096.00 TVD, 4536.59 N, -129.91 E)										
- Circle (radius 1,550.00)										
Nelson #1	0.00	0.00	6,700.80	2,788.82	267.87	1,544,932.36	3,447,726.56	40° 49' 4.836 N		103° 52' 56.496 W
- plan misses target center by 723.89usft at 9586.70usft MD (6096.00 TVD, 2788.82 N, -129.91 E)										
- Circle (radius 1,550.00)										



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-2046
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4787.80usft
Project:	Weld County, CO	MD Reference:	KBE @ 4787.80usft
Site:	Sec 29-T10N-R58W	North Reference:	True
Well:	Razor #29H-2046	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,546.38	6,096.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,567.97	1,550.00	Upper Pierre				
3,558.51	3,500.00	Hygiene				
3,711.63	3,650.00	Lower Pierre				
5,898.77	5,794.00	P200 Marker				
5,940.80	5,829.00	P300 Marker				
5,970.79	5,853.00	P350 Marker				
5,986.20	5,865.00	Sharon Springs				
5,990.10	5,868.00	Niobrara				
6,016.65	5,888.00	Top A Chalk				
6,065.76	5,923.00	Top A Marl				
6,097.24	5,944.00	A Marl				
6,105.01	5,949.00	Top Upper B				
6,137.29	5,969.00	Base Upper B				
6,157.76	5,981.00	Top Lower B				
6,194.15	6,001.00	Base Lower B				
6,213.66	6,011.00	Top B Marl				
6,340.52	6,063.00	Top C Chalk				
6,363.83	6,070.00	Middle C Chalk				
6,412.64	6,082.00	Middle C Marl				
6,546.38	6,096.00	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'	
879.19	875.25	-57.74	-8.45	Hold 11.58° Inc	
4,767.38	4,684.25	-830.26	-121.47	Drop 2°/100'	
5,346.57	5,259.50	-888.00	-129.91	Hold Vertical	
5,546.57	5,459.50	-888.00	-129.91	KOP, Build 9°/100'	
6,546.38	6,096.00	-251.50	-129.91	LP @ 90° Inc, Hold	
14,202.09	6,096.00	7,404.21	-129.91	TD at 14202.09	