



Project: Weld County, CO
Site: Sec 29-T10N-R58W
Well: Razor #29H-3246
Wellbore: Hz
Design: APD

PROJECT DETAILS: Weld County, C
Geodetic System: US State Plane 1983
Datum: North American Datum
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level



Azimuths to True North
Magnetic North: 7.88°
Magnetic Field
Strength: 52822.4nT
Dip Angle: 67.35°
Date: 5/4/2016
Model: IGRF2015

FORMATION TOP DETAILS		
	MDPath	Formation
TVDPath	1550.00	1550.42
	3500.00	3501.11
	3650.00	3651.16
	5794.00	5813.41
	5829.00	5855.44
	5853.00	5885.43
	5865.00	5900.84
	5868.00	5904.75
	5888.00	5931.30
	5923.00	5980.40
	5944.00	6011.88
	5949.00	6019.65
	5969.00	6051.94
	5981.00	6072.40
	6001.00	6108.79
	6011.00	6128.30
	6063.00	6255.17
	6070.00	6278.47
	6082.00	6327.28
	6096.00	6461.02
		Lower C Chalk

WELL DETAILS: Razor #29H-3246

+N/-S	+E/-W	Northing	Ground Level:	4766.80	Longitude	Slot
0.00	0.00	1542188.69	Easting	3447508.67	40° 48' 37.770 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	376.06	1.52	333.43	376.05	0.90	-0.45	2.00	333.43	-0.91	
4	5185.15	1.52	333.43	5183.45	115.10	-57.55	0.00	0.00	-116.25	
5	5261.21	0.00	0.00	5259.50	116.00	-58.00	2.00	180.00	-117.16	
6	5461.21	0.00	0.00	5459.50	116.00	-58.00	0.00	0.00	-117.16	
7	6461.02	90.00	178.44	6096.00	-520.26	-40.68	9.00	178.44	519.33	
8	13977.17	90.00	178.44	6096.00	-8033.62	163.84	0.00	0.00	8035.29	PBHL Razor 29H-3246

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'
376.05	376.06	1.52	333.43	0.90	-0.45	-0.91	1.01	Hold 1.52° Inc
5183.45	5185.15	1.52	333.43	115.10	-57.55	-116.25	128.68	Drop 2°100'
5259.50	5261.21	0.00	0.00	116.00	-58.00	-117.16	129.69	Hold Vertical
5459.50	5461.21	0.00	0.00	116.00	-58.00	-117.16	129.69	KOP, Build 9°100'
6096.00	6461.02	90.00	178.44	-520.26	-40.68	519.33	766.19	LP @ 90° Inc, Hold
6096.00	13977.17	90.00	178.44	-8033.62	163.84	8035.29	8282.34	TD at 13977.17

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL Razor 29H-3246	6096.00	-8033.62	163.84	1534159.39	3447818.94	40° 47' 18.390 N	103° 52' 57.850 W
Brennan #2	6648.80	-3780.95	-925.35	1538391.50	3446652.40	40° 48' 0.410 N	103° 53' 12.012 W

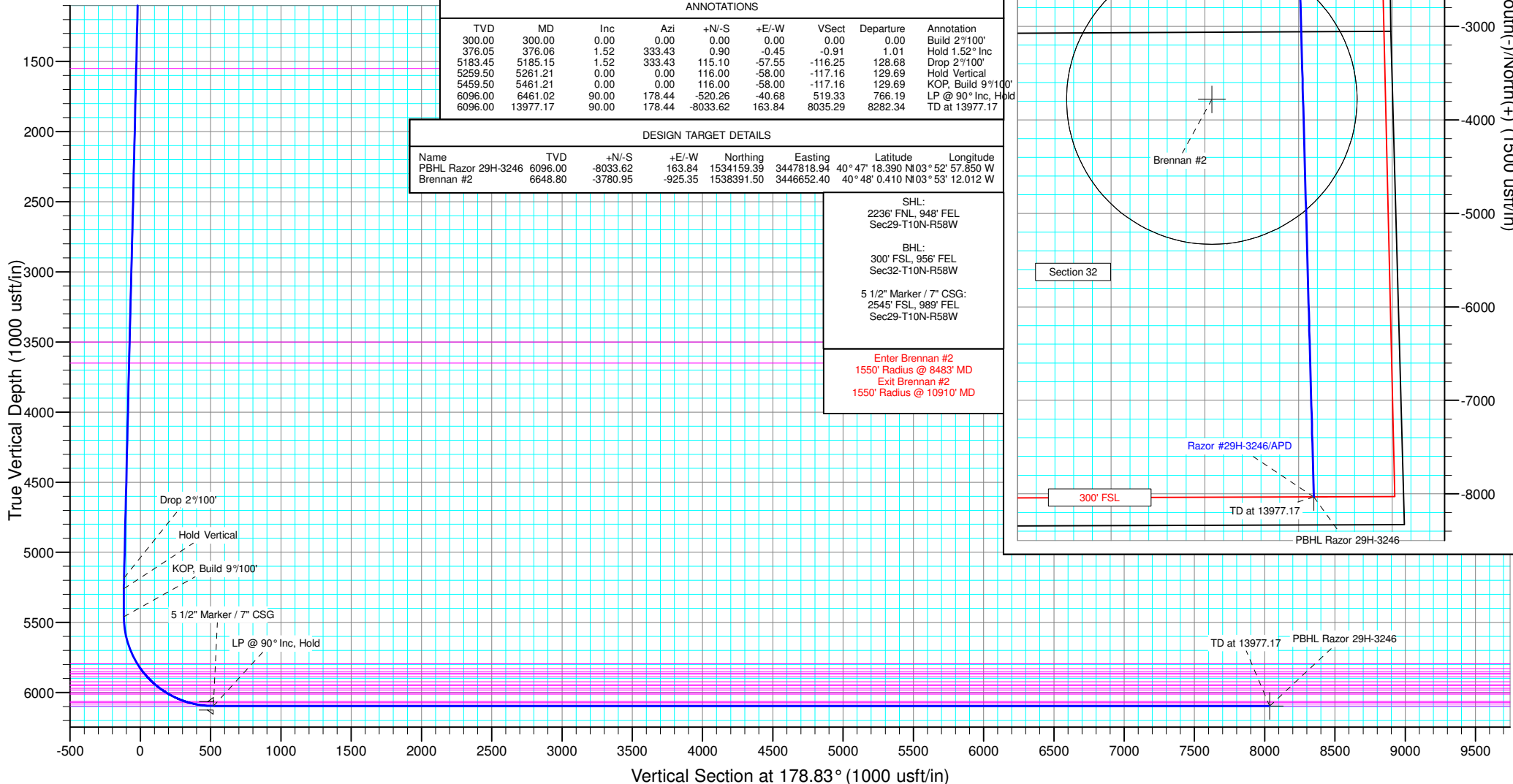
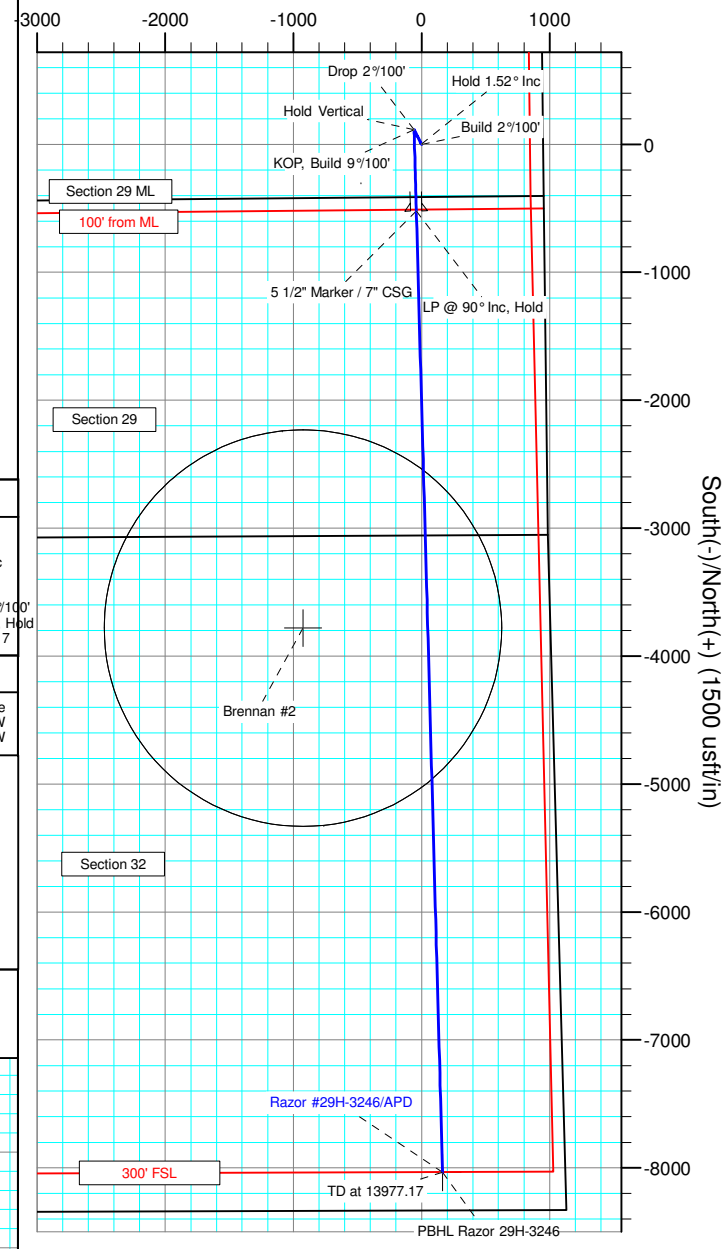
SHL:
2236' FNL, 948' FEL
Sec29-T10N-R58W

BHL:
300' FSL, 956' FEL
Sec32-T10N-R58W

5 1/2" Marker / 7" CSG:
2545' FSL, 989' FEL
Sec29-T10N-R58W

Enter Brennan #2
1550' Radius @ 8483' MD
Exit Brennan #2
1550' Radius @ 10910' MD

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





Whiting Petroleum Corp.

**Weld County, CO
Sec 29-T10N-R58W
Razor #29H-3246**

Hz

Plan: APD

Standard Planning Report

25 August, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-3246
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-3246	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-3246				
Well Position	+N/-S	-2,176.68 usft	Northing:	1,542,188.69 usft	Latitude:	40° 48' 37.770 N
	+E/-W	4,369.17 usft	Easting:	3,447,508.67 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	178.83

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	
376.06	1.52	333.43	376.05	0.90	-0.45	2.00	2.00	0.00	333.43	
5,185.15	1.52	333.43	5,183.45	115.10	-57.55	0.00	0.00	0.00	0.00	
5,261.21	0.00	0.00	5,259.50	116.00	-58.00	2.00	-2.00	0.00	180.00	
5,461.21	0.00	0.00	5,459.50	116.00	-58.00	0.00	0.00	0.00	0.00	
6,461.02	90.00	178.44	6,096.00	-520.26	-40.68	9.00	9.00	0.00	178.44	
13,977.17	90.00	178.44	6,096.00	-8,033.62	163.84	0.00	0.00	0.00	0.00	PBHL Razor 29H-324



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-3246
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-3246	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'									
376.06	1.52	333.43	376.05	0.90	-0.45	-0.91	2.00	2.00	0.00
Hold 1.52° Inc									
400.00	1.52	333.43	399.98	1.47	-0.74	-1.49	0.00	0.00	0.00
500.00	1.52	333.43	499.95	3.85	-1.92	-3.88	0.00	0.00	0.00
600.00	1.52	333.43	599.91	6.22	-3.11	-6.28	0.00	0.00	0.00
700.00	1.52	333.43	699.88	8.60	-4.30	-8.68	0.00	0.00	0.00
800.00	1.52	333.43	799.84	10.97	-5.48	-11.08	0.00	0.00	0.00
900.00	1.52	333.43	899.81	13.34	-6.67	-13.48	0.00	0.00	0.00
1,000.00	1.52	333.43	999.77	15.72	-7.86	-15.88	0.00	0.00	0.00
1,100.00	1.52	333.43	1,099.74	18.09	-9.05	-18.27	0.00	0.00	0.00
1,200.00	1.52	333.43	1,199.70	20.47	-10.23	-20.67	0.00	0.00	0.00
1,300.00	1.52	333.43	1,299.67	22.84	-11.42	-23.07	0.00	0.00	0.00
1,400.00	1.52	333.43	1,399.63	25.22	-12.61	-25.47	0.00	0.00	0.00
1,500.00	1.52	333.43	1,499.59	27.59	-13.80	-27.87	0.00	0.00	0.00
1,550.42	1.52	333.43	1,550.00	28.79	-14.39	-29.08	0.00	0.00	0.00
Upper Pierre									
1,600.00	1.52	333.43	1,599.56	29.97	-14.98	-30.27	0.00	0.00	0.00
1,700.00	1.52	333.43	1,699.52	32.34	-16.17	-32.66	0.00	0.00	0.00
1,800.00	1.52	333.43	1,799.49	34.72	-17.36	-35.06	0.00	0.00	0.00
1,900.00	1.52	333.43	1,899.45	37.09	-18.54	-37.46	0.00	0.00	0.00
2,000.00	1.52	333.43	1,999.42	39.46	-19.73	-39.86	0.00	0.00	0.00
2,100.00	1.52	333.43	2,099.38	41.84	-20.92	-42.26	0.00	0.00	0.00
2,200.00	1.52	333.43	2,199.35	44.21	-22.11	-44.65	0.00	0.00	0.00
2,300.00	1.52	333.43	2,299.31	46.59	-23.29	-47.05	0.00	0.00	0.00
2,400.00	1.52	333.43	2,399.28	48.96	-24.48	-49.45	0.00	0.00	0.00
2,500.00	1.52	333.43	2,499.24	51.34	-25.67	-51.85	0.00	0.00	0.00
2,600.00	1.52	333.43	2,599.21	53.71	-26.86	-54.25	0.00	0.00	0.00
2,700.00	1.52	333.43	2,699.17	56.09	-28.04	-56.65	0.00	0.00	0.00
2,800.00	1.52	333.43	2,799.14	58.46	-29.23	-59.04	0.00	0.00	0.00
2,900.00	1.52	333.43	2,899.10	60.84	-30.42	-61.44	0.00	0.00	0.00
3,000.00	1.52	333.43	2,999.07	63.21	-31.60	-63.84	0.00	0.00	0.00
3,100.00	1.52	333.43	3,099.03	65.58	-32.79	-66.24	0.00	0.00	0.00
3,200.00	1.52	333.43	3,199.00	67.96	-33.98	-68.64	0.00	0.00	0.00
3,300.00	1.52	333.43	3,298.96	70.33	-35.17	-71.04	0.00	0.00	0.00
3,400.00	1.52	333.43	3,398.93	72.71	-36.35	-73.43	0.00	0.00	0.00
3,500.00	1.52	333.43	3,498.89	75.08	-37.54	-75.83	0.00	0.00	0.00
3,501.11	1.52	333.43	3,500.00	75.11	-37.55	-75.86	0.00	0.00	0.00
Hygiene									
3,600.00	1.52	333.43	3,598.85	77.46	-38.73	-78.23	0.00	0.00	0.00
3,651.16	1.52	333.43	3,650.00	78.67	-39.34	-79.46	0.00	0.00	0.00
Lower Pierre									
3,700.00	1.52	333.43	3,698.82	79.83	-39.92	-80.63	0.00	0.00	0.00
3,800.00	1.52	333.43	3,798.78	82.21	-41.10	-83.03	0.00	0.00	0.00
3,900.00	1.52	333.43	3,898.75	84.58	-42.29	-85.43	0.00	0.00	0.00
4,000.00	1.52	333.43	3,998.71	86.96	-43.48	-87.82	0.00	0.00	0.00
4,100.00	1.52	333.43	4,098.68	89.33	-44.66	-90.22	0.00	0.00	0.00
4,200.00	1.52	333.43	4,198.64	91.70	-45.85	-92.62	0.00	0.00	0.00
4,300.00	1.52	333.43	4,298.61	94.08	-47.04	-95.02	0.00	0.00	0.00
4,400.00	1.52	333.43	4,398.57	96.45	-48.23	-97.42	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-3246
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-3246	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	1.52	333.43	4,498.54	98.83	-49.41	-99.81	0.00	0.00	0.00
4,600.00	1.52	333.43	4,598.50	101.20	-50.60	-102.21	0.00	0.00	0.00
4,700.00	1.52	333.43	4,698.47	103.58	-51.79	-104.61	0.00	0.00	0.00
4,800.00	1.52	333.43	4,798.43	105.95	-52.98	-107.01	0.00	0.00	0.00
4,900.00	1.52	333.43	4,898.40	108.33	-54.16	-109.41	0.00	0.00	0.00
5,000.00	1.52	333.43	4,998.36	110.70	-55.35	-111.81	0.00	0.00	0.00
5,100.00	1.52	333.43	5,098.33	113.07	-56.54	-114.20	0.00	0.00	0.00
5,185.15	1.52	333.43	5,183.45	115.10	-57.55	-116.25	0.00	0.00	0.00
Drop 2°/100'									
5,200.00	1.22	333.43	5,198.29	115.42	-57.71	-116.57	2.00	-2.00	0.00
5,261.21	0.00	0.00	5,259.50	116.00	-58.00	-117.16	2.00	-2.00	0.00
Hold Vertical									
5,300.00	0.00	0.00	5,298.29	116.00	-58.00	-117.16	0.00	0.00	0.00
5,400.00	0.00	0.00	5,398.29	116.00	-58.00	-117.16	0.00	0.00	0.00
5,461.21	0.00	0.00	5,459.50	116.00	-58.00	-117.16	0.00	0.00	0.00
KOP, Build 9°/100'									
5,500.00	3.49	178.44	5,498.26	114.82	-57.97	-115.98	9.00	9.00	0.00
5,600.00	12.49	178.44	5,597.19	100.93	-57.59	-102.09	9.00	9.00	0.00
5,700.00	21.49	178.44	5,692.73	71.75	-56.80	-72.89	9.00	9.00	0.00
5,800.00	30.50	178.44	5,782.52	27.98	-55.60	-29.11	9.00	9.00	0.00
5,813.41	31.70	178.44	5,794.00	21.05	-55.42	-22.18	9.00	9.00	0.00
P200 Marker									
5,855.44	35.49	178.44	5,829.00	-2.19	-54.78	1.07	9.00	9.00	0.00
P300 Marker									
5,885.43	38.19	178.44	5,853.00	-20.16	-54.29	19.05	9.00	9.00	0.00
P350 Marker									
5,900.00	39.50	178.44	5,864.35	-29.29	-54.04	28.19	9.00	9.00	0.00
5,900.84	39.57	178.44	5,865.00	-29.83	-54.03	28.72	9.00	9.00	0.00
Sharon Springs									
5,904.75	39.93	178.44	5,868.00	-32.33	-53.96	31.22	9.00	9.00	0.00
Niobrara									
5,931.30	42.32	178.44	5,888.00	-49.78	-53.49	48.68	9.00	9.00	0.00
Top A Chalk									
5,980.40	46.74	178.44	5,923.00	-84.19	-52.55	83.10	9.00	9.00	0.00
Top A Marl									
6,000.00	48.50	178.44	5,936.21	-98.66	-52.16	97.58	9.00	9.00	0.00
6,011.88	49.57	178.44	5,944.00	-107.63	-51.91	106.55	9.00	9.00	0.00
A Marl									
6,019.65	50.27	178.44	5,949.00	-113.57	-51.75	112.49	9.00	9.00	0.00
Top Upper B									
6,051.94	53.18	178.44	5,969.00	-138.91	-51.06	137.84	9.00	9.00	0.00
Base Upper B									
6,072.40	55.02	178.44	5,981.00	-155.47	-50.61	154.41	9.00	9.00	0.00
Top Lower B									
6,100.00	57.50	178.44	5,996.33	-178.42	-49.99	177.36	9.00	9.00	0.00
6,108.79	58.29	178.44	6,001.00	-185.86	-49.78	184.80	9.00	9.00	0.00
Base Lower B									
6,128.30	60.05	178.44	6,011.00	-202.61	-49.33	201.56	9.00	9.00	0.00
Top B Marl									
6,200.00	66.50	178.44	6,043.22	-266.59	-47.59	265.56	9.00	9.00	0.00
6,255.17	71.47	178.44	6,063.00	-318.05	-46.18	317.04	9.00	9.00	0.00
Top C Chalk									



WOG

Planning Report

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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-3246	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)
6,278.47	73.57	178.44	6,070.00	-340.27	-45.58	339.27	9.00	9.00	0.00
Middle C Chalk									
6,300.00	75.51	178.44	6,075.74	-361.01	-45.02	360.02	9.00	9.00	0.00
6,327.28	77.96	178.44	6,082.00	-387.55	-44.29	386.57	9.00	9.00	0.00
Middle C Marl									
6,400.00	84.51	178.44	6,093.08	-459.36	-42.34	458.40	9.00	9.00	0.00
6,461.02	90.00	178.44	6,096.00	-520.26	-40.68	519.32	9.00	9.00	0.00
LP @ 90° Inc, Hold - Lower C Chalk - 5 1/2" Marker / 7" CSG									
6,500.00	90.00	178.44	6,096.00	-559.23	-39.62	558.30	0.00	0.00	0.00
6,600.00	90.00	178.44	6,096.00	-659.19	-36.90	658.30	0.00	0.00	0.00
6,700.00	90.00	178.44	6,096.00	-759.15	-34.18	758.30	0.00	0.00	0.00
6,800.00	90.00	178.44	6,096.00	-859.11	-31.46	858.29	0.00	0.00	0.00
6,900.00	90.00	178.44	6,096.00	-959.08	-28.74	958.29	0.00	0.00	0.00
7,000.00	90.00	178.44	6,096.00	-1,059.04	-26.01	1,058.29	0.00	0.00	0.00
7,100.00	90.00	178.44	6,096.00	-1,159.00	-23.29	1,158.29	0.00	0.00	0.00
7,200.00	90.00	178.44	6,096.00	-1,258.97	-20.57	1,258.28	0.00	0.00	0.00
7,300.00	90.00	178.44	6,096.00	-1,358.93	-17.85	1,358.28	0.00	0.00	0.00
7,400.00	90.00	178.44	6,096.00	-1,458.89	-15.13	1,458.28	0.00	0.00	0.00
7,500.00	90.00	178.44	6,096.00	-1,558.85	-12.41	1,558.28	0.00	0.00	0.00
7,600.00	90.00	178.44	6,096.00	-1,658.82	-9.69	1,658.28	0.00	0.00	0.00
7,700.00	90.00	178.44	6,096.00	-1,758.78	-6.97	1,758.27	0.00	0.00	0.00
7,800.00	90.00	178.44	6,096.00	-1,858.74	-4.25	1,858.27	0.00	0.00	0.00
7,900.00	90.00	178.44	6,096.00	-1,958.71	-1.52	1,958.27	0.00	0.00	0.00
8,000.00	90.00	178.44	6,096.00	-2,058.67	1.20	2,058.27	0.00	0.00	0.00
8,100.00	90.00	178.44	6,096.00	-2,158.63	3.92	2,158.26	0.00	0.00	0.00
8,200.00	90.00	178.44	6,096.00	-2,258.60	6.64	2,258.26	0.00	0.00	0.00
8,300.00	90.00	178.44	6,096.00	-2,358.56	9.36	2,358.26	0.00	0.00	0.00
8,400.00	90.00	178.44	6,096.00	-2,458.52	12.08	2,458.26	0.00	0.00	0.00
8,500.00	90.00	178.44	6,096.00	-2,558.48	14.80	2,558.25	0.00	0.00	0.00
8,600.00	90.00	178.44	6,096.00	-2,658.45	17.52	2,658.25	0.00	0.00	0.00
8,700.00	90.00	178.44	6,096.00	-2,758.41	20.24	2,758.25	0.00	0.00	0.00
8,800.00	90.00	178.44	6,096.00	-2,858.37	22.97	2,858.25	0.00	0.00	0.00
8,900.00	90.00	178.44	6,096.00	-2,958.34	25.69	2,958.25	0.00	0.00	0.00
9,000.00	90.00	178.44	6,096.00	-3,058.30	28.41	3,058.24	0.00	0.00	0.00
9,100.00	90.00	178.44	6,096.00	-3,158.26	31.13	3,158.24	0.00	0.00	0.00
9,200.00	90.00	178.44	6,096.00	-3,258.23	33.85	3,258.24	0.00	0.00	0.00
9,300.00	90.00	178.44	6,096.00	-3,358.19	36.57	3,358.24	0.00	0.00	0.00
9,400.00	90.00	178.44	6,096.00	-3,458.15	39.29	3,458.23	0.00	0.00	0.00
9,500.00	90.00	178.44	6,096.00	-3,558.11	42.01	3,558.23	0.00	0.00	0.00
9,600.00	90.00	178.44	6,096.00	-3,658.08	44.73	3,658.23	0.00	0.00	0.00
9,700.00	90.00	178.44	6,096.00	-3,758.04	47.46	3,758.23	0.00	0.00	0.00
9,800.00	90.00	178.44	6,096.00	-3,858.00	50.18	3,858.22	0.00	0.00	0.00
9,900.00	90.00	178.44	6,096.00	-3,957.97	52.90	3,958.22	0.00	0.00	0.00
10,000.00	90.00	178.44	6,096.00	-4,057.93	55.62	4,058.22	0.00	0.00	0.00
10,100.00	90.00	178.44	6,096.00	-4,157.89	58.34	4,158.22	0.00	0.00	0.00
10,200.00	90.00	178.44	6,096.00	-4,257.86	61.06	4,258.21	0.00	0.00	0.00
10,300.00	90.00	178.44	6,096.00	-4,357.82	63.78	4,358.21	0.00	0.00	0.00
10,400.00	90.00	178.44	6,096.00	-4,457.78	66.50	4,458.21	0.00	0.00	0.00
10,500.00	90.00	178.44	6,096.00	-4,557.74	69.22	4,558.21	0.00	0.00	0.00
10,600.00	90.00	178.44	6,096.00	-4,657.71	71.95	4,658.21	0.00	0.00	0.00
10,700.00	90.00	178.44	6,096.00	-4,757.67	74.67	4,758.20	0.00	0.00	0.00
10,800.00	90.00	178.44	6,096.00	-4,857.63	77.39	4,858.20	0.00	0.00	0.00
10,900.00	90.00	178.44	6,096.00	-4,957.60	80.11	4,958.20	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-3246
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-3246	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	178.44	6,096.00	-5,057.56	82.83	5,058.20	0.00	0.00	0.00	
11,100.00	90.00	178.44	6,096.00	-5,157.52	85.55	5,158.19	0.00	0.00	0.00	
11,200.00	90.00	178.44	6,096.00	-5,257.48	88.27	5,258.19	0.00	0.00	0.00	
11,300.00	90.00	178.44	6,096.00	-5,357.45	90.99	5,358.19	0.00	0.00	0.00	
11,400.00	90.00	178.44	6,096.00	-5,457.41	93.71	5,458.19	0.00	0.00	0.00	
11,500.00	90.00	178.44	6,096.00	-5,557.37	96.44	5,558.18	0.00	0.00	0.00	
11,600.00	90.00	178.44	6,096.00	-5,657.34	99.16	5,658.18	0.00	0.00	0.00	
11,700.00	90.00	178.44	6,096.00	-5,757.30	101.88	5,758.18	0.00	0.00	0.00	
11,800.00	90.00	178.44	6,096.00	-5,857.26	104.60	5,858.18	0.00	0.00	0.00	
11,900.00	90.00	178.44	6,096.00	-5,957.23	107.32	5,958.18	0.00	0.00	0.00	
12,000.00	90.00	178.44	6,096.00	-6,057.19	110.04	6,058.17	0.00	0.00	0.00	
12,100.00	90.00	178.44	6,096.00	-6,157.15	112.76	6,158.17	0.00	0.00	0.00	
12,200.00	90.00	178.44	6,096.00	-6,257.11	115.48	6,258.17	0.00	0.00	0.00	
12,300.00	90.00	178.44	6,096.00	-6,357.08	118.20	6,358.17	0.00	0.00	0.00	
12,400.00	90.00	178.44	6,096.00	-6,457.04	120.92	6,458.16	0.00	0.00	0.00	
12,500.00	90.00	178.44	6,096.00	-6,557.00	123.65	6,558.16	0.00	0.00	0.00	
12,600.00	90.00	178.44	6,096.00	-6,656.97	126.37	6,658.16	0.00	0.00	0.00	
12,700.00	90.00	178.44	6,096.00	-6,756.93	129.09	6,758.16	0.00	0.00	0.00	
12,800.00	90.00	178.44	6,096.00	-6,856.89	131.81	6,858.15	0.00	0.00	0.00	
12,900.00	90.00	178.44	6,096.00	-6,956.86	134.53	6,958.15	0.00	0.00	0.00	
13,000.00	90.00	178.44	6,096.00	-7,056.82	137.25	7,058.15	0.00	0.00	0.00	
13,100.00	90.00	178.44	6,096.00	-7,156.78	139.97	7,158.15	0.00	0.00	0.00	
13,200.00	90.00	178.44	6,096.00	-7,256.74	142.69	7,258.15	0.00	0.00	0.00	
13,300.00	90.00	178.44	6,096.00	-7,356.71	145.41	7,358.14	0.00	0.00	0.00	
13,400.00	90.00	178.44	6,096.00	-7,456.67	148.14	7,458.14	0.00	0.00	0.00	
13,500.00	90.00	178.44	6,096.00	-7,556.63	150.86	7,558.14	0.00	0.00	0.00	
13,600.00	90.00	178.44	6,096.00	-7,656.60	153.58	7,658.14	0.00	0.00	0.00	
13,700.00	90.00	178.44	6,096.00	-7,756.56	156.30	7,758.13	0.00	0.00	0.00	
13,800.00	90.00	178.44	6,096.00	-7,856.52	159.02	7,858.13	0.00	0.00	0.00	
13,900.00	90.00	178.44	6,096.00	-7,956.49	161.74	7,958.13	0.00	0.00	0.00	
13,977.17	90.00	178.44	6,096.00	-8,033.62	163.84	8,035.30	0.00	0.00	0.00	
TD at 13977.17										

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 Razor 29H-3246	0.00	0.00	6,096.00	-8,033.62	163.84	1,534,159.39	3,447,818.94	40° 47' 18.390 N		103° 52' 57.850 W
- plan hits target center										
- Point										
Brennan #2	0.00	0.00	6,648.80	-3,780.95	-925.35	1,538,391.50	3,446,652.40	40° 48' 0.410 N		103° 53' 12.012 W
- plan misses target center by 1119.13usft at 9696.43usft MD (6096.00 TVD, -3754.47 N, 47.36 E)										
- Circle (radius 1,550.00)										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (in)	Hole Diameter (in)
6,461.02	6,096.00	5 1/2" Marker / 7" CSG		7.000	8.750



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #29H-3246
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-3246	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,550.42	1,550.00	Upper Pierre				
3,501.11	3,500.00	Hygiene				
3,651.16	3,650.00	Lower Pierre				
5,813.41	5,794.00	P200 Marker				
5,855.44	5,829.00	P300 Marker				
5,885.43	5,853.00	P350 Marker				
5,900.84	5,865.00	Sharon Springs				
5,904.75	5,868.00	Niobrara				
5,931.30	5,888.00	Top A Chalk				
5,980.40	5,923.00	Top A Marl				
6,011.88	5,944.00	A Marl				
6,019.65	5,949.00	Top Upper B				
6,051.94	5,969.00	Base Upper B				
6,072.40	5,981.00	Top Lower B				
6,108.79	6,001.00	Base Lower B				
6,128.30	6,011.00	Top B Marl				
6,255.17	6,063.00	Top C Chalk				
6,278.47	6,070.00	Middle C Chalk				
6,327.28	6,082.00	Middle C Marl				
6,461.02	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'	
376.06	376.05	0.90	-0.45	Hold 1.52° Inc	
5,185.15	5,183.45	115.10	-57.55	Drop 2°/100'	
5,261.21	5,259.50	116.00	-58.00	Hold Vertical	
5,461.21	5,459.50	116.00	-58.00	KOP, Build 9°/100'	
6,461.02	6,096.00	-520.26	-40.68	LP @ 90° Inc, Hold	
13,977.17	6,096.00	-8,033.62	163.84	TD at 13977.17	