



Project: Weld County, CO
Site: Sec 25-T10N-R58W
Well: Razor #25P-2448
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: 7.83°
Magnetic Field
Strength: 53020.7nT
Dip Angle: 67.38°
Date: 5/27/2015
Model: IGRF2010

FORMATION TOP DETAILS

MDPath	Formation
1550.00	Upper Pierre
1551.58	Hygiene
3500.00	Lower Pierre
3650.00	P200 Marker
3654.46	P300 Marker
5444.00	P350 Marker
5450.76	Sharon Springs
5471.56	Niobrara
5480.00	Top A Chalk
5489.38	Top A Marl
5503.26	A Marl
5507.54	Top Upper B
5525.88	Base Upper B
5558.95	Top Lower B
5572.47	Base Lower B
5581.58	Top B Marl
5609.50	Top C Chalk
5628.64	Middle C Chalk
5664.65	Middle C Marl
5681.43	Lower C Chalk
5739.20	Lower C Marl
5750.96	Lower C Marker
5772.29	Top Fl. Hays
5801.37	Fl. Hays Marker
5830.99	Top Codell
5842.55	
5904.49	
5942.55	
6132.89	

WELL DETAILS: Razor #25P-2448

+N/-S	+E/-W	Northing	Ground Level:	4741.00	Longitude	Slot
0.00	0.00	1539999.04	Easting	3469179.03	40° 48' 12.140 N	103° 48' 18.760 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	450.00	3.00	150.00	449.93	-3.40	1.96	2.00	150.00	-3.38	
4	4200.00	3.00	150.00	4194.79	-173.37	100.09	0.00	0.00	-172.36	
5	4350.00	0.00	0.00	4344.72	-176.77	102.06	2.00	180.00	-175.74	
6	5316.41	0.00	0.00	5311.13	-176.77	102.06	0.00	0.00	-175.74	
7	6134.59	90.00	360.00	5832.00	344.10	102.03	11.00	360.00	345.10	PBHL 2448
8	15974.81	90.00	360.00	5832.00	10184.32	101.47	0.00	0.00	10184.82	PBHL 2448

ANNOTATIONS

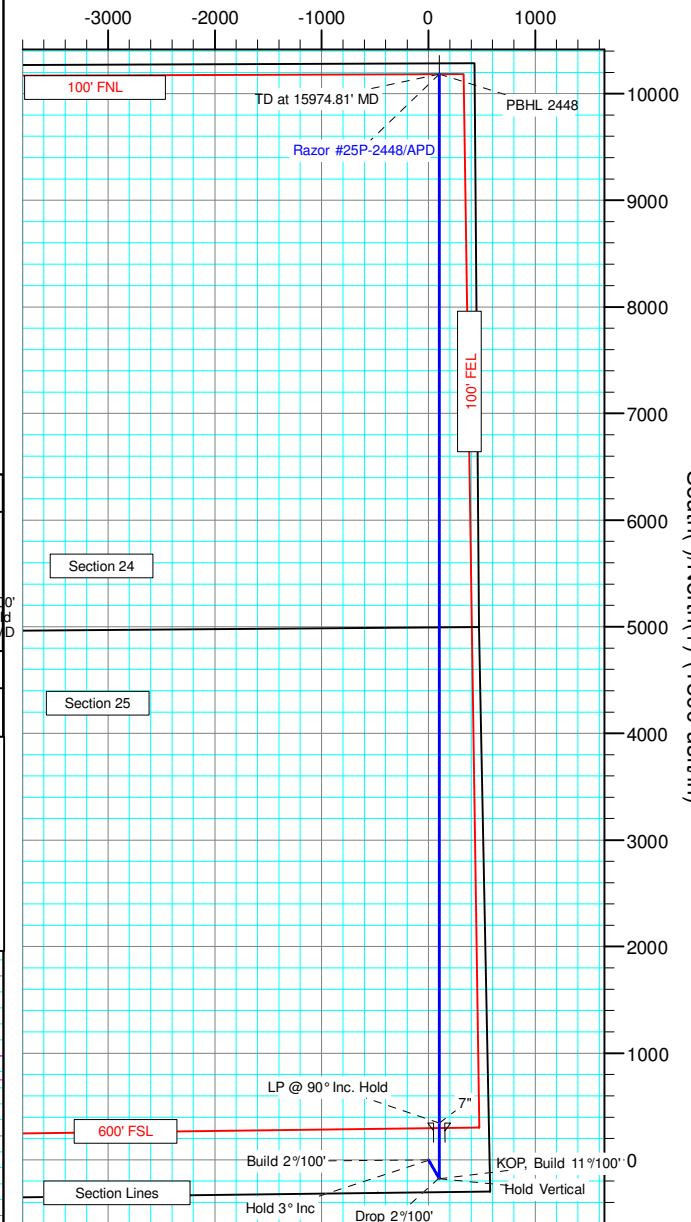
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
449.93	450.00	3.00	150.00	-3.40	1.96	-3.38	3.93	Hold 3° Inc
4194.79	4200.00	3.00	150.00	-173.37	100.09	-172.36	200.19	Drop 2°/100'
4344.72	4350.00	0.00	0.00	-176.77	102.06	-175.74	204.11	Hold Vertical
5311.13	5316.41	0.00	0.00	-176.77	102.06	-175.74	204.11	KOP, Build 11°/100'
5832.00	6134.59	90.00	360.00	344.10	102.03	345.10	724.98	LP @ 90° Inc. Hold
5832.00	15974.81	90.00	360.00	10184.32	101.47	10184.82	10565.20	TD at 15974.81' MD

DESIGN TARGET DETAILS

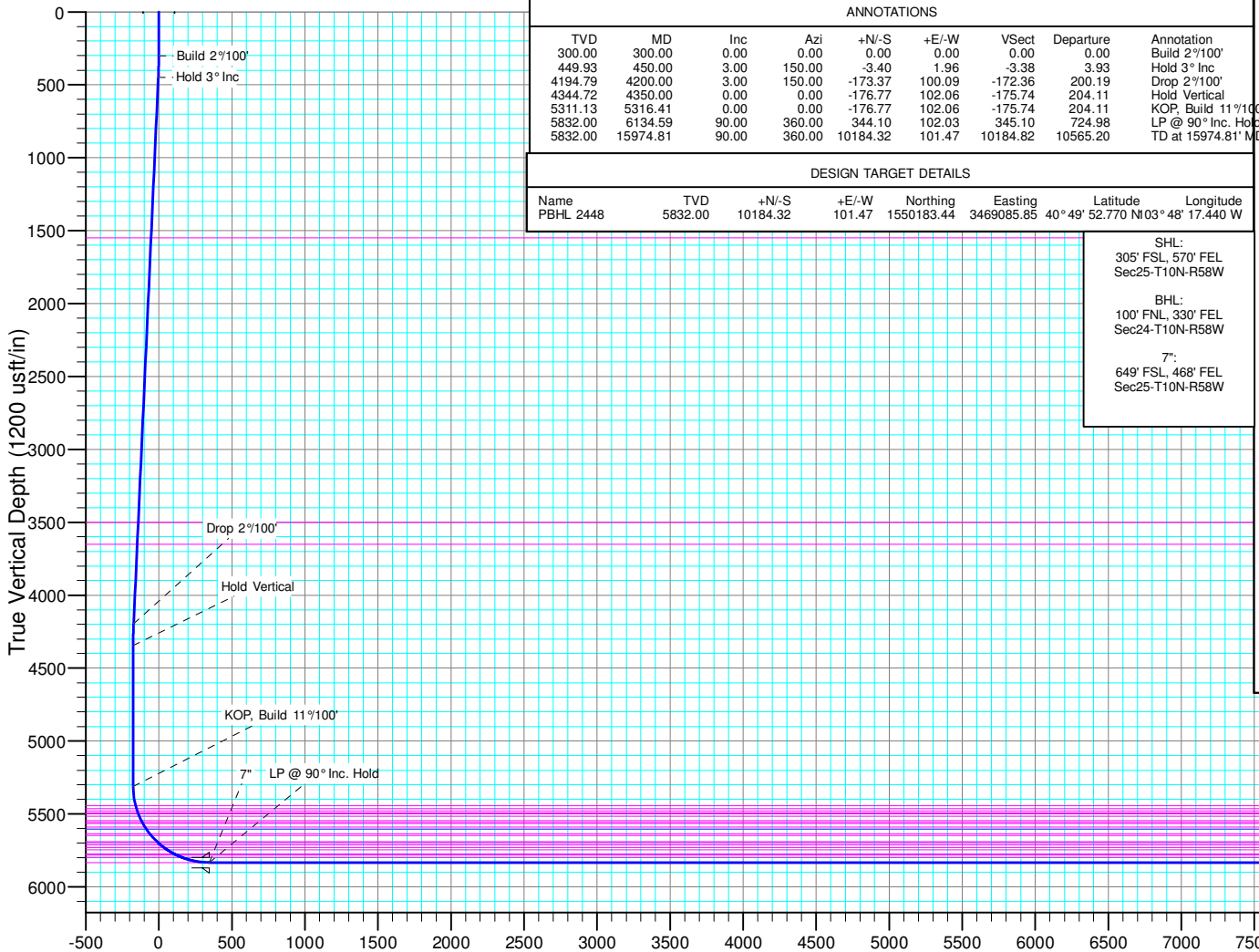
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 2448	5832.00	10184.32	101.47	1550183.44	3469085.85	40° 49' 52.770 N	103° 48' 17.440 W

SHL:
305' FSL, 570' FEL
Sec25-T10N-R58W
BHL:
100' FNL, 330' FEL
Sec24-T10N-R58W
7":
649' FSL, 468' FEL
Sec25-T10N-R58W

West(-)/East(+) (1800 usft/in)



South(-)/North(+) (1800 usft/in)



Vertical Section at 0.57° (1200 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 25-T10N-R58W
Razor #25P-2448**

Hz

Plan: APD

Standard Planning Report

27 May, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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 25-T10N-R58W			
Site Position:		Northing:	1,544,564.45 usft	Latitude: 40° 48' 58.050 N
From:	Lat/Long	Easting:	3,464,883.62 usft	Longitude: 103° 49' 13.480 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 1.09 °

Well	Razor #25P-2448			
Well Position	+N/-S	-4,645.95 usft	Northing:	1,539,999.04 usft
	+E/-W	4,208.17 usft	Easting:	3,469,179.03 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level: 4,741.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/27/2015	7.83	67.38	53,021

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	0.57

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	
450.00	3.00	150.00	449.93	-3.40	1.96	2.00	2.00	0.00	150.00	
4,200.00	3.00	150.00	4,194.79	-173.37	100.09	0.00	0.00	0.00	0.00	
4,350.00	0.00	0.00	4,344.72	-176.77	102.06	2.00	-2.00	0.00	180.00	
5,316.41	0.00	0.00	5,311.13	-176.77	102.06	0.00	0.00	0.00	0.00	
6,134.59	90.00	360.00	5,832.00	344.10	102.03	11.00	11.00	0.00	360.00	PBHL 2448
15,974.81	90.00	360.00	5,832.00	10,184.32	101.47	0.00	0.00	0.00	0.00	PBHL 2448



WOG

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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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	150.00	399.98	-1.51	0.87	-1.50	2.00	2.00	0.00
450.00	3.00	150.00	449.93	-3.40	1.96	-3.38	2.00	2.00	0.00
Hold 3° Inc									
500.00	3.00	150.00	499.86	-5.67	3.27	-5.63	0.00	0.00	0.00
600.00	3.00	150.00	599.73	-10.20	5.89	-10.14	0.00	0.00	0.00
700.00	3.00	150.00	699.59	-14.73	8.51	-14.65	0.00	0.00	0.00
800.00	3.00	150.00	799.45	-19.26	11.12	-19.15	0.00	0.00	0.00
900.00	3.00	150.00	899.31	-23.80	13.74	-23.66	0.00	0.00	0.00
1,000.00	3.00	150.00	999.18	-28.33	16.36	-28.16	0.00	0.00	0.00
1,100.00	3.00	150.00	1,099.04	-32.86	18.97	-32.67	0.00	0.00	0.00
1,200.00	3.00	150.00	1,198.90	-37.39	21.59	-37.18	0.00	0.00	0.00
1,300.00	3.00	150.00	1,298.77	-41.93	24.21	-41.68	0.00	0.00	0.00
1,400.00	3.00	150.00	1,398.63	-46.46	26.82	-46.19	0.00	0.00	0.00
1,500.00	3.00	150.00	1,498.49	-50.99	29.44	-50.69	0.00	0.00	0.00
1,551.58	3.00	150.00	1,550.00	-53.33	30.79	-53.02	0.00	0.00	0.00
Upper Pierre									
1,600.00	3.00	150.00	1,598.36	-55.52	32.06	-55.20	0.00	0.00	0.00
1,700.00	3.00	150.00	1,698.22	-60.06	34.67	-59.71	0.00	0.00	0.00
1,800.00	3.00	150.00	1,798.08	-64.59	37.29	-64.21	0.00	0.00	0.00
1,900.00	3.00	150.00	1,897.94	-69.12	39.91	-68.72	0.00	0.00	0.00
2,000.00	3.00	150.00	1,997.81	-73.65	42.52	-73.23	0.00	0.00	0.00
2,100.00	3.00	150.00	2,097.67	-78.19	45.14	-77.73	0.00	0.00	0.00
2,200.00	3.00	150.00	2,197.53	-82.72	47.76	-82.24	0.00	0.00	0.00
2,300.00	3.00	150.00	2,297.40	-87.25	50.37	-86.74	0.00	0.00	0.00
2,400.00	3.00	150.00	2,397.26	-91.78	52.99	-91.25	0.00	0.00	0.00
2,500.00	3.00	150.00	2,497.12	-96.31	55.61	-95.76	0.00	0.00	0.00
2,600.00	3.00	150.00	2,596.99	-100.85	58.22	-100.26	0.00	0.00	0.00
2,700.00	3.00	150.00	2,696.85	-105.38	60.84	-104.77	0.00	0.00	0.00
2,800.00	3.00	150.00	2,796.71	-109.91	63.46	-109.27	0.00	0.00	0.00
2,900.00	3.00	150.00	2,896.57	-114.44	66.07	-113.78	0.00	0.00	0.00
3,000.00	3.00	150.00	2,996.44	-118.98	68.69	-118.29	0.00	0.00	0.00
3,100.00	3.00	150.00	3,096.30	-123.51	71.31	-122.79	0.00	0.00	0.00
3,200.00	3.00	150.00	3,196.16	-128.04	73.92	-127.30	0.00	0.00	0.00
3,300.00	3.00	150.00	3,296.03	-132.57	76.54	-131.81	0.00	0.00	0.00
3,400.00	3.00	150.00	3,395.89	-137.11	79.16	-136.31	0.00	0.00	0.00
3,500.00	3.00	150.00	3,495.75	-141.64	81.78	-140.82	0.00	0.00	0.00
3,504.25	3.00	150.00	3,500.00	-141.83	81.89	-141.01	0.00	0.00	0.00
Hygiene									
3,600.00	3.00	150.00	3,595.61	-146.17	84.39	-145.32	0.00	0.00	0.00
3,654.46	3.00	150.00	3,650.00	-148.64	85.82	-147.78	0.00	0.00	0.00
Lower Pierre									
3,700.00	3.00	150.00	3,695.48	-150.70	87.01	-149.83	0.00	0.00	0.00
3,800.00	3.00	150.00	3,795.34	-155.24	89.63	-154.34	0.00	0.00	0.00
3,900.00	3.00	150.00	3,895.20	-159.77	92.24	-158.84	0.00	0.00	0.00
4,000.00	3.00	150.00	3,995.07	-164.30	94.86	-163.35	0.00	0.00	0.00
4,100.00	3.00	150.00	4,094.93	-168.83	97.48	-167.85	0.00	0.00	0.00
4,200.00	3.00	150.00	4,194.79	-173.37	100.09	-172.36	0.00	0.00	0.00
Drop 2°/100'									



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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)
4,300.00	1.00	150.00	4,294.73	-176.39	101.84	-175.36	2.00	-2.00	0.00
4,350.00	0.00	0.00	4,344.72	-176.77	102.06	-175.74	2.00	-2.00	0.00
Hold Vertical									
4,400.00	0.00	0.00	4,394.72	-176.77	102.06	-175.74	0.00	0.00	0.00
4,500.00	0.00	0.00	4,494.72	-176.77	102.06	-175.74	0.00	0.00	0.00
4,600.00	0.00	0.00	4,594.72	-176.77	102.06	-175.74	0.00	0.00	0.00
4,700.00	0.00	0.00	4,694.72	-176.77	102.06	-175.74	0.00	0.00	0.00
4,800.00	0.00	0.00	4,794.72	-176.77	102.06	-175.74	0.00	0.00	0.00
4,900.00	0.00	0.00	4,894.72	-176.77	102.06	-175.74	0.00	0.00	0.00
5,000.00	0.00	0.00	4,994.72	-176.77	102.06	-175.74	0.00	0.00	0.00
5,100.00	0.00	0.00	5,094.72	-176.77	102.06	-175.74	0.00	0.00	0.00
5,200.00	0.00	0.00	5,194.72	-176.77	102.06	-175.74	0.00	0.00	0.00
5,300.00	0.00	0.00	5,294.72	-176.77	102.06	-175.74	0.00	0.00	0.00
5,316.41	0.00	0.00	5,311.13	-176.77	102.06	-175.74	0.00	0.00	0.00
KOP, Build 11°/100'									
5,350.00	3.69	360.00	5,344.70	-175.68	102.06	-174.66	11.00	11.00	0.00
5,400.00	9.19	360.00	5,394.37	-170.07	102.06	-169.05	11.00	11.00	0.00
5,450.00	14.69	360.00	5,443.26	-159.73	102.06	-158.70	11.00	11.00	0.00
5,450.76	14.78	360.00	5,444.00	-159.53	102.06	-158.51	11.00	11.00	0.00
P200 Marker									
5,471.56	17.07	360.00	5,464.00	-153.83	102.05	-152.80	11.00	11.00	0.00
P300 Marker									
5,488.38	18.92	360.00	5,480.00	-148.63	102.05	-147.61	11.00	11.00	0.00
P350 Marker									
5,500.00	20.20	360.00	5,490.95	-144.74	102.05	-143.72	11.00	11.00	0.00
5,503.26	20.55	360.00	5,494.00	-143.61	102.05	-142.59	11.00	11.00	0.00
Sharon Springs									
5,507.54	21.02	360.00	5,498.00	-142.09	102.05	-141.07	11.00	11.00	0.00
Niobrara									
5,525.88	23.04	360.00	5,515.00	-135.21	102.05	-134.19	11.00	11.00	0.00
Top A Chalk									
5,550.00	25.70	360.00	5,536.97	-125.26	102.05	-124.24	11.00	11.00	0.00
5,558.95	26.68	360.00	5,545.00	-121.31	102.05	-120.29	11.00	11.00	0.00
Top A Marl									
5,572.47	28.17	360.00	5,557.00	-115.09	102.05	-114.06	11.00	11.00	0.00
A Marl									
5,581.58	29.17	360.00	5,565.00	-110.71	102.05	-109.69	11.00	11.00	0.00
Top Upper B									
5,600.00	31.20	360.00	5,580.92	-101.45	102.05	-100.43	11.00	11.00	0.00
5,609.50	32.24	360.00	5,589.00	-96.46	102.05	-95.44	11.00	11.00	0.00
Base Upper B									
5,628.64	34.35	360.00	5,605.00	-85.95	102.05	-84.93	11.00	11.00	0.00
Top Lower B									
5,650.00	36.70	360.00	5,622.38	-73.54	102.05	-72.52	11.00	11.00	0.00
5,664.65	38.31	360.00	5,634.00	-64.63	102.05	-63.61	11.00	11.00	0.00
Base Lower B									
5,681.43	40.15	360.00	5,647.00	-54.02	102.05	-53.00	11.00	11.00	0.00
Top B Marl									
5,700.00	42.20	360.00	5,660.98	-41.79	102.05	-40.77	11.00	11.00	0.00
5,739.20	46.51	360.00	5,689.00	-14.40	102.05	-13.38	11.00	11.00	0.00
Top C Chalk									
5,750.00	47.70	360.00	5,696.35	-6.48	102.05	-5.46	11.00	11.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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)	
5,750.96	47.80	360.00	5,697.00	-5.77	102.05	-4.75	11.00	11.00	0.00	
Middle C Chalk										
5,772.29	50.15	360.00	5,711.00	10.32	102.05	11.34	11.00	11.00	0.00	
Middle C Marl										
5,800.00	53.20	360.00	5,728.18	32.05	102.04	33.07	11.00	11.00	0.00	
5,801.37	53.35	360.00	5,729.00	33.15	102.04	34.16	11.00	11.00	0.00	
Lower C Chalk										
5,830.99	56.60	360.00	5,746.00	57.41	102.04	58.42	11.00	11.00	0.00	
Lower C Marl										
5,850.00	58.70	360.00	5,756.17	73.46	102.04	74.48	11.00	11.00	0.00	
5,884.27	62.46	360.00	5,773.00	103.30	102.04	104.32	11.00	11.00	0.00	
Lower C Marker										
5,900.00	64.20	360.00	5,780.06	117.36	102.04	118.38	11.00	11.00	0.00	
5,904.49	64.69	360.00	5,782.00	121.42	102.04	122.43	11.00	11.00	0.00	
Top Ft. Hays										
5,942.55	68.88	360.00	5,797.00	156.38	102.04	157.39	11.00	11.00	0.00	
Ft. Hays Marker										
5,950.00	69.70	360.00	5,799.64	163.35	102.04	164.36	11.00	11.00	0.00	
6,000.00	75.20	360.00	5,814.71	211.01	102.03	212.01	11.00	11.00	0.00	
6,050.00	80.70	360.00	5,825.15	259.89	102.03	260.89	11.00	11.00	0.00	
6,100.00	86.20	360.00	5,830.85	309.54	102.03	310.54	11.00	11.00	0.00	
6,132.89	89.81	360.00	5,832.00	342.40	102.03	343.40	11.00	11.00	0.00	
Top Codell										
6,134.59	90.00	360.00	5,832.00	344.10	102.03	345.10	11.00	11.00	0.00	
LP @ 90° Inc. Hold - 7"										
6,200.00	90.00	360.00	5,832.00	409.51	102.02	410.51	0.00	0.00	0.00	
6,300.00	90.00	360.00	5,832.00	509.51	102.02	510.51	0.00	0.00	0.00	
6,400.00	90.00	360.00	5,832.00	609.51	102.01	610.50	0.00	0.00	0.00	
6,500.00	90.00	360.00	5,832.00	709.51	102.01	710.49	0.00	0.00	0.00	
6,600.00	90.00	360.00	5,832.00	809.51	102.00	810.49	0.00	0.00	0.00	
6,700.00	90.00	360.00	5,832.00	909.51	101.99	910.48	0.00	0.00	0.00	
6,800.00	90.00	360.00	5,832.00	1,009.51	101.99	1,010.48	0.00	0.00	0.00	
6,900.00	90.00	360.00	5,832.00	1,109.51	101.98	1,110.47	0.00	0.00	0.00	
7,000.00	90.00	360.00	5,832.00	1,209.51	101.98	1,210.47	0.00	0.00	0.00	
7,100.00	90.00	360.00	5,832.00	1,309.51	101.97	1,310.46	0.00	0.00	0.00	
7,200.00	90.00	360.00	5,832.00	1,409.51	101.97	1,410.46	0.00	0.00	0.00	
7,300.00	90.00	360.00	5,832.00	1,509.51	101.96	1,510.45	0.00	0.00	0.00	
7,400.00	90.00	360.00	5,832.00	1,609.51	101.96	1,610.45	0.00	0.00	0.00	
7,500.00	90.00	360.00	5,832.00	1,709.51	101.95	1,710.44	0.00	0.00	0.00	
7,600.00	90.00	360.00	5,832.00	1,809.51	101.94	1,810.44	0.00	0.00	0.00	
7,700.00	90.00	360.00	5,832.00	1,909.51	101.94	1,910.43	0.00	0.00	0.00	
7,800.00	90.00	360.00	5,832.00	2,009.51	101.93	2,010.43	0.00	0.00	0.00	
7,900.00	90.00	360.00	5,832.00	2,109.51	101.93	2,110.42	0.00	0.00	0.00	
8,000.00	90.00	360.00	5,832.00	2,209.51	101.92	2,210.42	0.00	0.00	0.00	
8,100.00	90.00	360.00	5,832.00	2,309.51	101.92	2,310.41	0.00	0.00	0.00	
8,200.00	90.00	360.00	5,832.00	2,409.51	101.91	2,410.41	0.00	0.00	0.00	
8,300.00	90.00	360.00	5,832.00	2,509.51	101.90	2,510.40	0.00	0.00	0.00	
8,400.00	90.00	360.00	5,832.00	2,609.51	101.90	2,610.40	0.00	0.00	0.00	
8,500.00	90.00	360.00	5,832.00	2,709.51	101.89	2,710.39	0.00	0.00	0.00	
8,600.00	90.00	360.00	5,832.00	2,809.51	101.89	2,810.39	0.00	0.00	0.00	
8,700.00	90.00	360.00	5,832.00	2,909.51	101.88	2,910.38	0.00	0.00	0.00	
8,800.00	90.00	360.00	5,832.00	3,009.51	101.88	3,010.38	0.00	0.00	0.00	
8,900.00	90.00	360.00	5,832.00	3,109.51	101.87	3,110.37	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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)	
9,000.00	90.00	360.00	5,832.00	3,209.51	101.86	3,210.37	0.00	0.00	0.00	
9,100.00	90.00	360.00	5,832.00	3,309.51	101.86	3,310.36	0.00	0.00	0.00	
9,200.00	90.00	360.00	5,832.00	3,409.51	101.85	3,410.36	0.00	0.00	0.00	
9,300.00	90.00	360.00	5,832.00	3,509.51	101.85	3,510.35	0.00	0.00	0.00	
9,400.00	90.00	360.00	5,832.00	3,609.51	101.84	3,610.35	0.00	0.00	0.00	
9,500.00	90.00	360.00	5,832.00	3,709.51	101.84	3,710.34	0.00	0.00	0.00	
9,600.00	90.00	360.00	5,832.00	3,809.51	101.83	3,810.34	0.00	0.00	0.00	
9,700.00	90.00	360.00	5,832.00	3,909.51	101.83	3,910.33	0.00	0.00	0.00	
9,800.00	90.00	360.00	5,832.00	4,009.51	101.82	4,010.33	0.00	0.00	0.00	
9,900.00	90.00	360.00	5,832.00	4,109.51	101.81	4,110.32	0.00	0.00	0.00	
10,000.00	90.00	360.00	5,832.00	4,209.51	101.81	4,210.32	0.00	0.00	0.00	
10,100.00	90.00	360.00	5,832.00	4,309.51	101.80	4,310.31	0.00	0.00	0.00	
10,200.00	90.00	360.00	5,832.00	4,409.51	101.80	4,410.31	0.00	0.00	0.00	
10,300.00	90.00	360.00	5,832.00	4,509.51	101.79	4,510.30	0.00	0.00	0.00	
10,400.00	90.00	360.00	5,832.00	4,609.51	101.79	4,610.30	0.00	0.00	0.00	
10,500.00	90.00	360.00	5,832.00	4,709.51	101.78	4,710.29	0.00	0.00	0.00	
10,600.00	90.00	360.00	5,832.00	4,809.51	101.77	4,810.29	0.00	0.00	0.00	
10,700.00	90.00	360.00	5,832.00	4,909.51	101.77	4,910.28	0.00	0.00	0.00	
10,800.00	90.00	360.00	5,832.00	5,009.51	101.76	5,010.28	0.00	0.00	0.00	
10,900.00	90.00	360.00	5,832.00	5,109.51	101.76	5,110.27	0.00	0.00	0.00	
11,000.00	90.00	360.00	5,832.00	5,209.51	101.75	5,210.27	0.00	0.00	0.00	
11,100.00	90.00	360.00	5,832.00	5,309.51	101.75	5,310.26	0.00	0.00	0.00	
11,200.00	90.00	360.00	5,832.00	5,409.51	101.74	5,410.26	0.00	0.00	0.00	
11,300.00	90.00	360.00	5,832.00	5,509.51	101.73	5,510.25	0.00	0.00	0.00	
11,400.00	90.00	360.00	5,832.00	5,609.51	101.73	5,610.25	0.00	0.00	0.00	
11,500.00	90.00	360.00	5,832.00	5,709.51	101.72	5,710.24	0.00	0.00	0.00	
11,600.00	90.00	360.00	5,832.00	5,809.51	101.72	5,810.24	0.00	0.00	0.00	
11,700.00	90.00	360.00	5,832.00	5,909.51	101.71	5,910.23	0.00	0.00	0.00	
11,800.00	90.00	360.00	5,832.00	6,009.51	101.71	6,010.23	0.00	0.00	0.00	
11,900.00	90.00	360.00	5,832.00	6,109.51	101.70	6,110.22	0.00	0.00	0.00	
12,000.00	90.00	360.00	5,832.00	6,209.51	101.70	6,210.22	0.00	0.00	0.00	
12,100.00	90.00	360.00	5,832.00	6,309.51	101.69	6,310.21	0.00	0.00	0.00	
12,200.00	90.00	360.00	5,832.00	6,409.51	101.68	6,410.21	0.00	0.00	0.00	
12,300.00	90.00	360.00	5,832.00	6,509.51	101.68	6,510.20	0.00	0.00	0.00	
12,400.00	90.00	360.00	5,832.00	6,609.51	101.67	6,610.20	0.00	0.00	0.00	
12,500.00	90.00	360.00	5,832.00	6,709.51	101.67	6,710.19	0.00	0.00	0.00	
12,600.00	90.00	360.00	5,832.00	6,809.51	101.66	6,810.19	0.00	0.00	0.00	
12,700.00	90.00	360.00	5,832.00	6,909.51	101.66	6,910.18	0.00	0.00	0.00	
12,800.00	90.00	360.00	5,832.00	7,009.51	101.65	7,010.18	0.00	0.00	0.00	
12,900.00	90.00	360.00	5,832.00	7,109.51	101.64	7,110.17	0.00	0.00	0.00	
13,000.00	90.00	360.00	5,832.00	7,209.51	101.64	7,210.17	0.00	0.00	0.00	
13,100.00	90.00	360.00	5,832.00	7,309.51	101.63	7,310.16	0.00	0.00	0.00	
13,200.00	90.00	360.00	5,832.00	7,409.51	101.63	7,410.16	0.00	0.00	0.00	
13,300.00	90.00	360.00	5,832.00	7,509.51	101.62	7,510.15	0.00	0.00	0.00	
13,400.00	90.00	360.00	5,832.00	7,609.51	101.62	7,610.15	0.00	0.00	0.00	
13,500.00	90.00	360.00	5,832.00	7,709.51	101.61	7,710.14	0.00	0.00	0.00	
13,600.00	90.00	360.00	5,832.00	7,809.51	101.60	7,810.14	0.00	0.00	0.00	
13,700.00	90.00	360.00	5,832.00	7,909.51	101.60	7,910.13	0.00	0.00	0.00	
13,800.00	90.00	360.00	5,832.00	8,009.51	101.59	8,010.13	0.00	0.00	0.00	
13,900.00	90.00	360.00	5,832.00	8,109.51	101.59	8,110.12	0.00	0.00	0.00	
14,000.00	90.00	360.00	5,832.00	8,209.51	101.58	8,210.12	0.00	0.00	0.00	
14,100.00	90.00	360.00	5,832.00	8,309.51	101.58	8,310.11	0.00	0.00	0.00	
14,200.00	90.00	360.00	5,832.00	8,409.51	101.57	8,410.11	0.00	0.00	0.00	
14,300.00	90.00	360.00	5,832.00	8,509.51	101.57	8,510.10	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	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)
14,400.00	90.00	360.00	5,832.00	8,609.51	101.56	8,610.10	0.00	0.00	0.00
14,500.00	90.00	360.00	5,832.00	8,709.51	101.55	8,710.09	0.00	0.00	0.00
14,600.00	90.00	360.00	5,832.00	8,809.51	101.55	8,810.09	0.00	0.00	0.00
14,700.00	90.00	360.00	5,832.00	8,909.51	101.54	8,910.08	0.00	0.00	0.00
14,800.00	90.00	360.00	5,832.00	9,009.51	101.54	9,010.08	0.00	0.00	0.00
14,900.00	90.00	360.00	5,832.00	9,109.51	101.53	9,110.07	0.00	0.00	0.00
15,000.00	90.00	360.00	5,832.00	9,209.51	101.53	9,210.07	0.00	0.00	0.00
15,100.00	90.00	360.00	5,832.00	9,309.51	101.52	9,310.06	0.00	0.00	0.00
15,200.00	90.00	360.00	5,832.00	9,409.51	101.51	9,410.06	0.00	0.00	0.00
15,300.00	90.00	360.00	5,832.00	9,509.51	101.51	9,510.05	0.00	0.00	0.00
15,400.00	90.00	360.00	5,832.00	9,609.51	101.50	9,610.05	0.00	0.00	0.00
15,500.00	90.00	360.00	5,832.00	9,709.51	101.50	9,710.04	0.00	0.00	0.00
15,600.00	90.00	360.00	5,832.00	9,809.51	101.49	9,810.04	0.00	0.00	0.00
15,700.00	90.00	360.00	5,832.00	9,909.51	101.49	9,910.03	0.00	0.00	0.00
15,800.00	90.00	360.00	5,832.00	10,009.51	101.48	10,010.03	0.00	0.00	0.00
15,900.00	90.00	360.00	5,832.00	10,109.51	101.47	10,110.02	0.00	0.00	0.00
15,974.81	90.00	360.00	5,832.00	10,184.32	101.47	10,184.83	0.00	0.00	0.00
TD at 15974.81' 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 2448	0.00	0.00	5,832.00	10,184.32	101.47	1,550,183.44	3,469,085.85	40° 49' 52.770 N	103° 48' 17.440 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,134.59	5,832.00	7"	7.000	8.750	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25P-2448
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4762.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4762.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25P-2448	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,551.58	1,550.00	Upper Pierre				
3,504.25	3,500.00	Hygiene				
3,654.46	3,650.00	Lower Pierre				
5,450.76	5,444.00	P200 Marker				
5,471.56	5,464.00	P300 Marker				
5,488.38	5,480.00	P350 Marker				
5,503.26	5,494.00	Sharon Springs				
5,507.54	5,498.00	Niobrara				
5,525.88	5,515.00	Top A Chalk				
5,558.95	5,545.00	Top A Marl				
5,572.47	5,557.00	A Marl				
5,581.58	5,565.00	Top Upper B				
5,609.50	5,589.00	Base Upper B				
5,628.64	5,605.00	Top Lower B				
5,664.65	5,634.00	Base Lower B				
5,681.43	5,647.00	Top B Marl				
5,739.20	5,689.00	Top C Chalk				
5,750.96	5,697.00	Middle C Chalk				
5,772.29	5,711.00	Middle C Marl				
5,801.37	5,729.00	Lower C Chalk				
5,830.99	5,746.00	Lower C Marl				
5,884.27	5,773.00	Lower C Marker				
5,904.49	5,782.00	Top Ft. Hays				
5,942.55	5,797.00	Ft. Hays Marker				
6,132.89	5,832.00	Top Codell				

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'	
450.00	449.93	-3.40	1.96	Hold 3° Inc	
4,200.00	4,194.79	-173.37	100.09	Drop 2°/100'	
4,350.00	4,344.72	-176.77	102.06	Hold Vertical	
5,316.41	5,311.13	-176.77	102.06	KOP, Build 11°/100'	
6,134.59	5,832.00	344.10	102.03	LP @ 90° Inc. Hold	
15,974.81	5,832.00	10,184.32	101.47	TD at 15974.81' MD	