



Project: Weld County, CO
Site: Sec 25-T10N-R58W
Well: Razor #25N-2440
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: 7.84°
Magnetic Field
Strength: 53024.2snT
Dip Angle: 67.38°
Date: 5/13/2015
Model: IGRF2010

FORMATION TOP DETAILS

	TVDPath	MDPath	Formation
1550.00	1552.73		Upper Pierre
3500.00	3507.42		Hygiene
3650.00	3657.45		Lower Pierre
5433.00	5441.93		P200 Marker
5453.00	5462.73		P300 Marker
5469.00	5479.56		P350 Marker
5483.00	5494.43		Sharon Springs
5487.00	5498.71		Niobrara
5504.00	5517.05		Top A Chalk
5534.00	5550.12		Top A Marl
5546.00	5563.64		A Marl
5554.00	5572.76		Top Upper B
5578.00	5600.67		Base Upper B
5594.00	5619.82		Top Lower B
5623.00	5655.82		Base Lower B
5636.00	5672.60		Top B Marl
5678.00	5730.37		Top C Chalk
5686.00	5742.14		Middle C Chalk
5700.00	5763.47		Middle C Marl
5718.00	5792.54		Lower C Chalk
5735.00	5822.17		Lower C Marl
5762.00	5875.44		Lower C Marker
5771.00	5895.67		Top Ft. Hays
5786.00	5933.73		Ft. Hays Marker
5821.00	6125.76		Top Codell

WELL DETAILS: Razor #25N-2440

+N/-S	+E/-W	Northing	Ground Level:	4701.00	Longitude	Slot
0.00	0.00	1539913.19	Easting	3466480.86	40° 48' 11.800 N	103° 48' 53.860 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	500.00	4.00	155.00	499.84	-6.32	2.95	2.00	155.00	-6.30	
4	3425.00	4.00	155.00	3417.71	-191.25	89.18	0.00	0.00	-190.44	
6	3625.00	0.00	0.00	3617.55	-197.57	92.13	2.00	180.00	-196.74	
6	5307.58	0.00	0.00	5300.13	-197.57	92.13	0.00	0.00	-196.74	
7	6125.76	90.00	360.00	5821.00	323.30	92.10	11.00	360.00	324.11	PBHL 2440
8	16011.07	90.00	360.00	5821.00	10208.61	91.48	0.00	0.00	10209.02	PBHL 2440

ANNOTATIONS

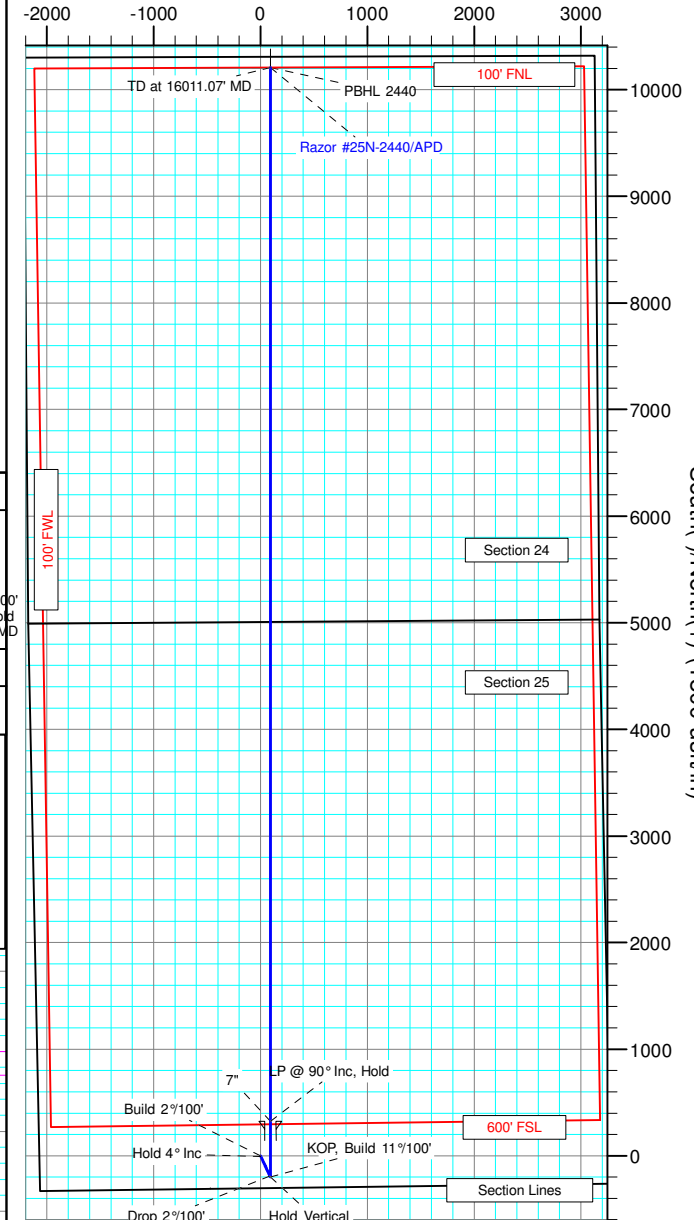
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
499.84	500.00	4.00	155.00	-6.32	2.95	-6.30	6.98	Hold 4° Inc
3417.71	3425.00	4.00	155.00	-191.25	89.18	-190.44	211.02	Drop 2°/100'
3617.55	3625.00	0.00	0.00	-197.57	92.13	-196.74	217.99	Hold Vertical
5300.13	5307.58	0.00	0.00	-197.57	92.13	-196.74	217.99	KOP, Build 11°/100'
5821.00	6125.76	90.00	360.00	323.30	92.10	324.11	738.86	LP @ 90° Inc, Hold
5821.00	16011.07	90.00	360.00	10208.61	91.48	10209.02	10624.17	TD at 16011.07' MD

DESIGN TARGET DETAILS

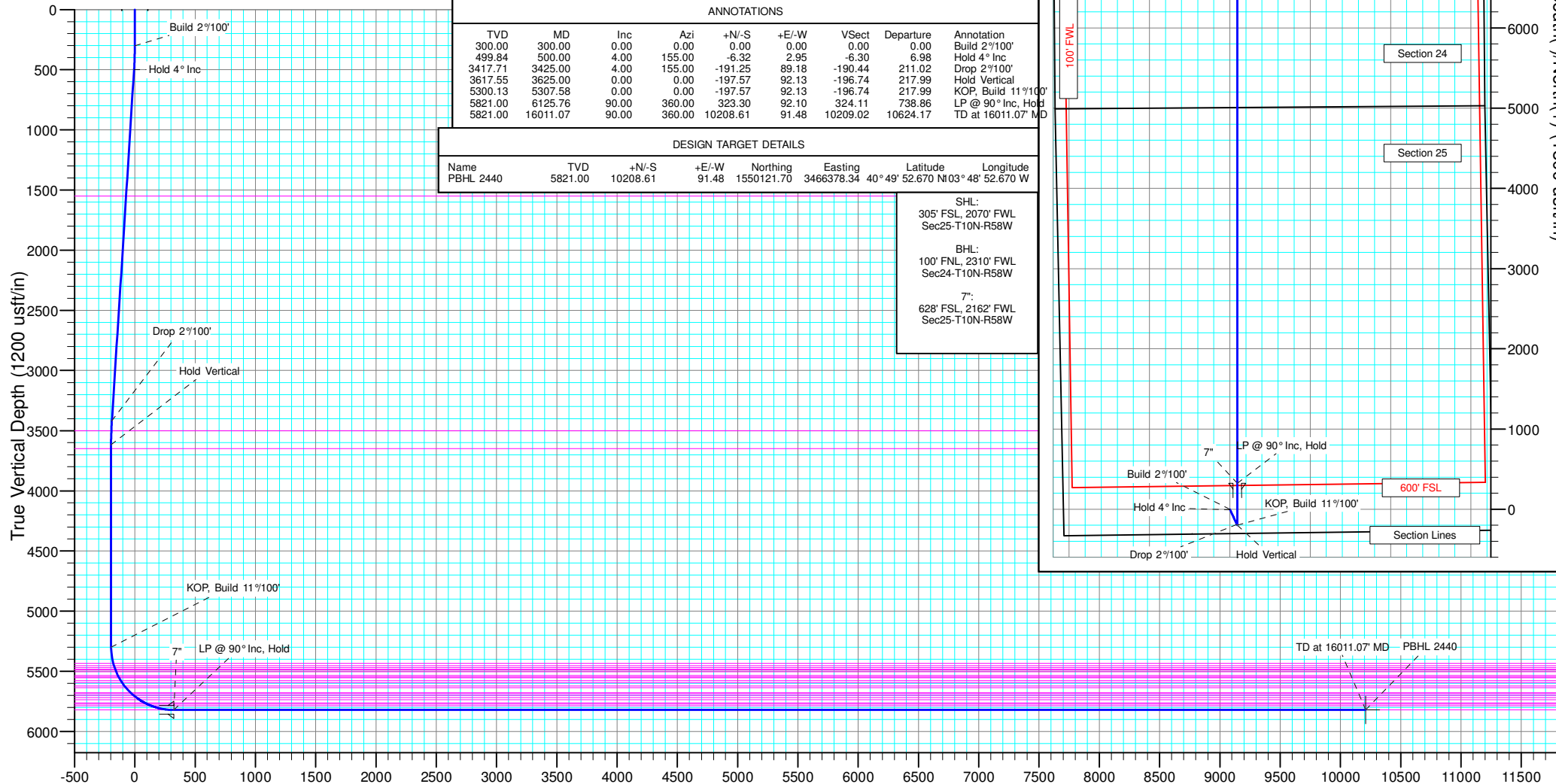
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 2440	5821.00	10208.61	91.48	1550121.70	3466378.34	40° 49' 52.670 N	103° 48' 52.670 W

SHL:
305' FSL, 2070' FWL
Sec25-T10N-R58W
BHL:
100' FNL, 2310' FWL
Sec24-T10N-R58W
7":
628' FSL, 2162' FWL
Sec25-T10N-R58W

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



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



Vertical Section at 0.51° (1200 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 25-T10N-R58W
Razor #25N-2440**

Hz

Plan: APD

Standard Planning Report

15 May, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25N-2440
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4722.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	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 #25N-2440			
Well Position	+N/-S	-4,680.67 usft	Northing:	1,539,913.20 usft
	+E/-W	1,508.85 usft	Easting:	3,466,480.85 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:		Ground Level: 4,701.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/13/2015	7.84	67.38	53,024

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	0.51

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	
500.00	4.00	155.00	499.84	-6.32	2.95	2.00	2.00	0.00	155.00	
3,425.00	4.00	155.00	3,417.71	-191.25	89.18	0.00	0.00	0.00	0.00	
3,625.00	0.00	0.00	3,617.55	-197.57	92.13	2.00	-2.00	0.00	180.00	
5,307.58	0.00	0.00	5,300.13	-197.57	92.13	0.00	0.00	0.00	0.00	
6,125.76	90.00	360.00	5,821.00	323.30	92.10	11.00	11.00	0.00	360.00	PBHL 2440
16,011.07	90.00	360.00	5,821.00	10,208.61	91.48	0.00	0.00	0.00	0.00	PBHL 2440



WOG

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Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	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	155.00	399.98	-1.58	0.74	-1.57	2.00	2.00	0.00
500.00	4.00	155.00	499.84	-6.32	2.95	-6.30	2.00	2.00	0.00
Hold 4° Inc									
600.00	4.00	155.00	599.59	-12.65	5.90	-12.59	0.00	0.00	0.00
700.00	4.00	155.00	699.35	-18.97	8.85	-18.89	0.00	0.00	0.00
800.00	4.00	155.00	799.11	-25.29	11.79	-25.18	0.00	0.00	0.00
900.00	4.00	155.00	898.86	-31.61	14.74	-31.48	0.00	0.00	0.00
1,000.00	4.00	155.00	998.62	-37.94	17.69	-37.78	0.00	0.00	0.00
1,100.00	4.00	155.00	1,098.38	-44.26	20.64	-44.07	0.00	0.00	0.00
1,200.00	4.00	155.00	1,198.13	-50.58	23.59	-50.37	0.00	0.00	0.00
1,300.00	4.00	155.00	1,297.89	-56.90	26.53	-56.66	0.00	0.00	0.00
1,400.00	4.00	155.00	1,397.65	-63.22	29.48	-62.96	0.00	0.00	0.00
1,500.00	4.00	155.00	1,497.40	-69.55	32.43	-69.25	0.00	0.00	0.00
1,552.73	4.00	155.00	1,550.00	-72.88	33.98	-72.57	0.00	0.00	0.00
Upper Pierre									
1,600.00	4.00	155.00	1,597.16	-75.87	35.38	-75.55	0.00	0.00	0.00
1,700.00	4.00	155.00	1,696.91	-82.19	38.33	-81.84	0.00	0.00	0.00
1,800.00	4.00	155.00	1,796.67	-88.51	41.27	-88.14	0.00	0.00	0.00
1,900.00	4.00	155.00	1,896.43	-94.83	44.22	-94.43	0.00	0.00	0.00
2,000.00	4.00	155.00	1,996.18	-101.16	47.17	-100.73	0.00	0.00	0.00
2,100.00	4.00	155.00	2,095.94	-107.48	50.12	-107.02	0.00	0.00	0.00
2,200.00	4.00	155.00	2,195.70	-113.80	53.07	-113.32	0.00	0.00	0.00
2,300.00	4.00	155.00	2,295.45	-120.12	56.01	-119.62	0.00	0.00	0.00
2,400.00	4.00	155.00	2,395.21	-126.44	58.96	-125.91	0.00	0.00	0.00
2,500.00	4.00	155.00	2,494.97	-132.77	61.91	-132.21	0.00	0.00	0.00
2,600.00	4.00	155.00	2,594.72	-139.09	64.86	-138.50	0.00	0.00	0.00
2,700.00	4.00	155.00	2,694.48	-145.41	67.81	-144.80	0.00	0.00	0.00
2,800.00	4.00	155.00	2,794.23	-151.73	70.75	-151.09	0.00	0.00	0.00
2,900.00	4.00	155.00	2,893.99	-158.05	73.70	-157.39	0.00	0.00	0.00
3,000.00	4.00	155.00	2,993.75	-164.38	76.65	-163.68	0.00	0.00	0.00
3,100.00	4.00	155.00	3,093.50	-170.70	79.60	-169.98	0.00	0.00	0.00
3,200.00	4.00	155.00	3,193.26	-177.02	82.55	-176.27	0.00	0.00	0.00
3,300.00	4.00	155.00	3,293.02	-183.34	85.49	-182.57	0.00	0.00	0.00
3,400.00	4.00	155.00	3,392.77	-189.67	88.44	-188.86	0.00	0.00	0.00
3,425.00	4.00	155.00	3,417.71	-191.25	89.18	-190.44	0.00	0.00	0.00
Drop 2°/100'									
3,500.00	2.50	155.00	3,492.59	-195.10	90.98	-194.28	2.00	-2.00	0.00
3,507.42	2.35	155.00	3,500.00	-195.38	91.11	-194.56	2.00	-2.00	0.00
Hygiene									
3,600.00	0.50	155.00	3,592.55	-197.47	92.08	-196.64	2.00	-2.00	0.00
3,625.00	0.00	0.00	3,617.55	-197.57	92.13	-196.74	2.00	-2.00	0.00
Hold Vertical									
3,657.45	0.00	0.00	3,650.00	-197.57	92.13	-196.74	0.00	0.00	0.00
Lower Pierre									
3,700.00	0.00	0.00	3,692.55	-197.57	92.13	-196.74	0.00	0.00	0.00
3,800.00	0.00	0.00	3,792.55	-197.57	92.13	-196.74	0.00	0.00	0.00
3,900.00	0.00	0.00	3,892.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,000.00	0.00	0.00	3,992.55	-197.57	92.13	-196.74	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25N-2440
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4722.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	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)
4,100.00	0.00	0.00	4,092.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,200.00	0.00	0.00	4,192.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,300.00	0.00	0.00	4,292.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,400.00	0.00	0.00	4,392.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,500.00	0.00	0.00	4,492.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,600.00	0.00	0.00	4,592.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,700.00	0.00	0.00	4,692.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,800.00	0.00	0.00	4,792.55	-197.57	92.13	-196.74	0.00	0.00	0.00
4,900.00	0.00	0.00	4,892.55	-197.57	92.13	-196.74	0.00	0.00	0.00
5,000.00	0.00	0.00	4,992.55	-197.57	92.13	-196.74	0.00	0.00	0.00
5,100.00	0.00	0.00	5,092.55	-197.57	92.13	-196.74	0.00	0.00	0.00
5,200.00	0.00	0.00	5,192.55	-197.57	92.13	-196.74	0.00	0.00	0.00
5,307.58	0.00	0.00	5,300.13	-197.57	92.13	-196.74	0.00	0.00	0.00
KOP, Build 11°/100'									
5,350.00	4.67	360.00	5,342.50	-195.84	92.13	-195.01	11.00	11.00	0.00
5,400.00	10.17	360.00	5,392.07	-189.39	92.13	-188.56	11.00	11.00	0.00
5,441.94	14.78	360.00	5,433.00	-180.34	92.13	-179.51	11.00	11.00	0.00
P200 Marker									
5,450.00	15.67	360.00	5,440.78	-178.22	92.13	-177.39	11.00	11.00	0.00
5,462.73	17.07	360.00	5,453.00	-174.63	92.13	-173.80	11.00	11.00	0.00
P300 Marker									
5,479.56	18.92	360.00	5,469.00	-169.44	92.13	-168.60	11.00	11.00	0.00
P350 Marker									
5,494.43	20.55	360.00	5,483.00	-164.41	92.13	-163.58	11.00	11.00	0.00
Sharon Springs									
5,498.71	21.02	360.00	5,487.00	-162.89	92.13	-162.06	11.00	11.00	0.00
Niobrara									
5,500.00	21.17	360.00	5,488.20	-162.43	92.13	-161.60	11.00	11.00	0.00
5,517.05	23.04	360.00	5,504.00	-156.01	92.13	-155.18	11.00	11.00	0.00
Top A Chalk									
5,550.00	26.67	360.00	5,533.89	-142.17	92.13	-141.34	11.00	11.00	0.00
5,550.12	26.67	360.00	5,534.00	-142.11	92.13	-141.28	0.00	0.00	0.00
Top A Marl									
5,563.64	28.17	360.00	5,546.00	-135.89	92.12	-135.06	11.10	11.10	0.00
A Marl									
5,572.76	29.17	360.00	5,554.00	-131.51	92.12	-130.68	11.00	11.00	0.00
Top Upper B									
5,600.00	32.17	360.00	5,577.43	-117.62	92.12	-116.79	11.00	11.00	0.00
5,600.67	32.24	360.00	5,578.00	-117.26	92.12	-116.43	11.00	11.00	0.00
Base Upper B									
5,619.82	34.35	360.00	5,594.00	-106.75	92.12	-105.92	11.00	11.00	0.00
Top Lower B									
5,650.00	37.67	360.00	5,618.41	-89.01	92.12	-88.18	11.00	11.00	0.00
5,655.82	38.31	360.00	5,623.00	-85.43	92.12	-84.60	11.00	11.00	0.00
Base Lower B									
5,672.60	40.15	360.00	5,636.00	-74.82	92.12	-73.99	11.00	11.00	0.00
Top B Marl									
5,700.00	43.17	360.00	5,656.47	-56.61	92.12	-55.78	11.00	11.00	0.00
5,730.37	46.51	360.00	5,678.00	-35.20	92.12	-34.37	11.00	11.00	0.00
Top C Chalk									
5,742.14	47.80	360.00	5,686.00	-26.57	92.12	-25.74	11.00	11.00	0.00
Middle C Chalk									



WOG
Planning Report

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Well:	Razor #25N-2440	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)	
5,750.00	48.67	360.00	5,691.24	-20.70	92.12	-19.88	11.00	11.00	0.00	
5,763.47	50.15	360.00	5,700.00	-10.48	92.12	-9.65	11.00	11.00	0.00	
Middle C Marl										
5,792.54	53.35	360.00	5,718.00	12.35	92.12	13.18	11.00	11.00	0.00	
Lower C Chalk										
5,800.00	54.17	360.00	5,722.41	18.37	92.11	19.19	11.00	11.00	0.00	
5,822.17	56.60	360.00	5,735.00	36.61	92.11	37.43	11.00	11.00	0.00	
Lower C Marl										
5,850.00	59.67	360.00	5,749.69	60.24	92.11	61.07	11.00	11.00	0.00	
5,875.44	62.47	360.00	5,762.00	82.51	92.11	83.33	11.00	11.00	0.00	
Lower C Marker										
5,895.67	64.69	360.00	5,771.00	100.62	92.11	101.44	11.00	11.00	0.00	
Top Ft. Hays										
5,900.00	65.17	360.00	5,772.83	104.54	92.11	105.36	11.00	11.00	0.00	
5,933.73	68.88	360.00	5,786.00	135.59	92.11	136.41	11.00	11.00	0.00	
Ft. Hays Marker										
5,950.00	70.67	360.00	5,791.63	150.86	92.11	151.68	11.00	11.00	0.00	
6,000.00	76.17	360.00	5,805.89	198.76	92.10	199.58	11.00	11.00	0.00	
6,050.00	81.67	360.00	5,815.50	247.81	92.10	248.62	11.00	11.00	0.00	
6,100.00	87.17	360.00	5,820.36	297.55	92.10	298.36	11.00	11.00	0.00	
6,125.76	90.00	360.00	5,821.00	323.30	92.10	324.11	11.00	11.00	0.00	
LP @ 90° Inc, Hold - Top Codell - 7"										
6,200.00	90.00	360.00	5,821.00	397.54	92.09	398.35	0.00	0.00	0.00	
6,300.00	90.00	360.00	5,821.00	497.54	92.09	498.35	0.00	0.00	0.00	
6,400.00	90.00	360.00	5,821.00	597.54	92.08	598.34	0.00	0.00	0.00	
6,500.00	90.00	360.00	5,821.00	697.54	92.07	698.34	0.00	0.00	0.00	
6,600.00	90.00	360.00	5,821.00	797.54	92.07	798.33	0.00	0.00	0.00	
6,700.00	90.00	360.00	5,821.00	897.54	92.06	898.33	0.00	0.00	0.00	
6,800.00	90.00	360.00	5,821.00	997.54	92.05	998.32	0.00	0.00	0.00	
6,900.00	90.00	360.00	5,821.00	1,097.54	92.05	1,098.32	0.00	0.00	0.00	
7,000.00	90.00	360.00	5,821.00	1,197.54	92.04	1,198.32	0.00	0.00	0.00	
7,100.00	90.00	360.00	5,821.00	1,297.54	92.03	1,298.31	0.00	0.00	0.00	
7,200.00	90.00	360.00	5,821.00	1,397.54	92.03	1,398.31	0.00	0.00	0.00	
7,300.00	90.00	360.00	5,821.00	1,497.54	92.02	1,498.30	0.00	0.00	0.00	
7,400.00	90.00	360.00	5,821.00	1,597.54	92.02	1,598.30	0.00	0.00	0.00	
7,500.00	90.00	360.00	5,821.00	1,697.54	92.01	1,698.30	0.00	0.00	0.00	
7,600.00	90.00	360.00	5,821.00	1,797.54	92.00	1,798.29	0.00	0.00	0.00	
7,700.00	90.00	360.00	5,821.00	1,897.54	92.00	1,898.29	0.00	0.00	0.00	
7,800.00	90.00	360.00	5,821.00	1,997.54	91.99	1,998.28	0.00	0.00	0.00	
7,900.00	90.00	360.00	5,821.00	2,097.54	91.98	2,098.28	0.00	0.00	0.00	
8,000.00	90.00	360.00	5,821.00	2,197.54	91.98	2,198.28	0.00	0.00	0.00	
8,100.00	90.00	360.00	5,821.00	2,297.54	91.97	2,298.27	0.00	0.00	0.00	
8,200.00	90.00	360.00	5,821.00	2,397.54	91.97	2,398.27	0.00	0.00	0.00	
8,300.00	90.00	360.00	5,821.00	2,497.54	91.96	2,498.26	0.00	0.00	0.00	
8,400.00	90.00	360.00	5,821.00	2,597.54	91.95	2,598.26	0.00	0.00	0.00	
8,500.00	90.00	360.00	5,821.00	2,697.54	91.95	2,698.26	0.00	0.00	0.00	
8,600.00	90.00	360.00	5,821.00	2,797.54	91.94	2,798.25	0.00	0.00	0.00	
8,700.00	90.00	360.00	5,821.00	2,897.54	91.93	2,898.25	0.00	0.00	0.00	
8,800.00	90.00	360.00	5,821.00	2,997.54	91.93	2,998.24	0.00	0.00	0.00	
8,900.00	90.00	360.00	5,821.00	3,097.54	91.92	3,098.24	0.00	0.00	0.00	
9,000.00	90.00	360.00	5,821.00	3,197.54	91.92	3,198.24	0.00	0.00	0.00	
9,100.00	90.00	360.00	5,821.00	3,297.54	91.91	3,298.23	0.00	0.00	0.00	
9,200.00	90.00	360.00	5,821.00	3,397.54	91.90	3,398.23	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25N-2440
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4722.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	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)	
9,300.00	90.00	360.00	5,821.00	3,497.54	91.90	3,498.22	0.00	0.00	0.00	
9,400.00	90.00	360.00	5,821.00	3,597.54	91.89	3,598.22	0.00	0.00	0.00	
9,500.00	90.00	360.00	5,821.00	3,697.54	91.88	3,698.22	0.00	0.00	0.00	
9,600.00	90.00	360.00	5,821.00	3,797.54	91.88	3,798.21	0.00	0.00	0.00	
9,700.00	90.00	360.00	5,821.00	3,897.54	91.87	3,898.21	0.00	0.00	0.00	
9,800.00	90.00	360.00	5,821.00	3,997.54	91.87	3,998.20	0.00	0.00	0.00	
9,900.00	90.00	360.00	5,821.00	4,097.54	91.86	4,098.20	0.00	0.00	0.00	
10,000.00	90.00	360.00	5,821.00	4,197.54	91.85	4,198.19	0.00	0.00	0.00	
10,100.00	90.00	360.00	5,821.00	4,297.54	91.85	4,298.19	0.00	0.00	0.00	
10,200.00	90.00	360.00	5,821.00	4,397.54	91.84	4,398.19	0.00	0.00	0.00	
10,300.00	90.00	360.00	5,821.00	4,497.54	91.83	4,498.18	0.00	0.00	0.00	
10,400.00	90.00	360.00	5,821.00	4,597.54	91.83	4,598.18	0.00	0.00	0.00	
10,500.00	90.00	360.00	5,821.00	4,697.54	91.82	4,698.17	0.00	0.00	0.00	
10,600.00	90.00	360.00	5,821.00	4,797.54	91.82	4,798.17	0.00	0.00	0.00	
10,700.00	90.00	360.00	5,821.00	4,897.54	91.81	4,898.17	0.00	0.00	0.00	
10,800.00	90.00	360.00	5,821.00	4,997.54	91.80	4,998.16	0.00	0.00	0.00	
10,900.00	90.00	360.00	5,821.00	5,097.54	91.80	5,098.16	0.00	0.00	0.00	
11,000.00	90.00	360.00	5,821.00	5,197.54	91.79	5,198.15	0.00	0.00	0.00	
11,100.00	90.00	360.00	5,821.00	5,297.54	91.78	5,298.15	0.00	0.00	0.00	
11,200.00	90.00	360.00	5,821.00	5,397.54	91.78	5,398.15	0.00	0.00	0.00	
11,300.00	90.00	360.00	5,821.00	5,497.54	91.77	5,498.14	0.00	0.00	0.00	
11,400.00	90.00	360.00	5,821.00	5,597.54	91.77	5,598.14	0.00	0.00	0.00	
11,500.00	90.00	360.00	5,821.00	5,697.54	91.76	5,698.13	0.00	0.00	0.00	
11,600.00	90.00	360.00	5,821.00	5,797.54	91.75	5,798.13	0.00	0.00	0.00	
11,700.00	90.00	360.00	5,821.00	5,897.54	91.75	5,898.13	0.00	0.00	0.00	
11,800.00	90.00	360.00	5,821.00	5,997.54	91.74	5,998.12	0.00	0.00	0.00	
11,900.00	90.00	360.00	5,821.00	6,097.54	91.73	6,098.12	0.00	0.00	0.00	
12,000.00	90.00	360.00	5,821.00	6,197.54	91.73	6,198.11	0.00	0.00	0.00	
12,100.00	90.00	360.00	5,821.00	6,297.54	91.72	6,298.11	0.00	0.00	0.00	
12,200.00	90.00	360.00	5,821.00	6,397.54	91.72	6,398.11	0.00	0.00	0.00	
12,300.00	90.00	360.00	5,821.00	6,497.54	91.71	6,498.10	0.00	0.00	0.00	
12,400.00	90.00	360.00	5,821.00	6,597.54	91.70	6,598.10	0.00	0.00	0.00	
12,500.00	90.00	360.00	5,821.00	6,697.54	91.70	6,698.09	0.00	0.00	0.00	
12,600.00	90.00	360.00	5,821.00	6,797.54	91.69	6,798.09	0.00	0.00	0.00	
12,700.00	90.00	360.00	5,821.00	6,897.54	91.68	6,898.08	0.00	0.00	0.00	
12,800.00	90.00	360.00	5,821.00	6,997.54	91.68	6,998.08	0.00	0.00	0.00	
12,900.00	90.00	360.00	5,821.00	7,097.54	91.67	7,098.08	0.00	0.00	0.00	
13,000.00	90.00	360.00	5,821.00	7,197.54	91.67	7,198.07	0.00	0.00	0.00	
13,100.00	90.00	360.00	5,821.00	7,297.54	91.66	7,298.07	0.00	0.00	0.00	
13,200.00	90.00	360.00	5,821.00	7,397.54	91.65	7,398.06	0.00	0.00	0.00	
13,300.00	90.00	360.00	5,821.00	7,497.54	91.65	7,498.06	0.00	0.00	0.00	
13,400.00	90.00	360.00	5,821.00	7,597.54	91.64	7,598.06	0.00	0.00	0.00	
13,500.00	90.00	360.00	5,821.00	7,697.54	91.63	7,698.05	0.00	0.00	0.00	
13,600.00	90.00	360.00	5,821.00	7,797.54	91.63	7,798.05	0.00	0.00	0.00	
13,700.00	90.00	360.00	5,821.00	7,897.54	91.62	7,898.04	0.00	0.00	0.00	
13,800.00	90.00	360.00	5,821.00	7,997.54	91.62	7,998.04	0.00	0.00	0.00	
13,900.00	90.00	360.00	5,821.00	8,097.54	91.61	8,098.04	0.00	0.00	0.00	
14,000.00	90.00	360.00	5,821.00	8,197.54	91.60	8,198.03	0.00	0.00	0.00	
14,100.00	90.00	360.00	5,821.00	8,297.54	91.60	8,298.03	0.00	0.00	0.00	
14,200.00	90.00	360.00	5,821.00	8,397.54	91.59	8,398.02	0.00	0.00	0.00	
14,300.00	90.00	360.00	5,821.00	8,497.54	91.58	8,498.02	0.00	0.00	0.00	
14,400.00	90.00	360.00	5,821.00	8,597.54	91.58	8,598.02	0.00	0.00	0.00	
14,500.00	90.00	360.00	5,821.00	8,697.54	91.57	8,698.01	0.00	0.00	0.00	
14,600.00	90.00	360.00	5,821.00	8,797.54	91.57	8,798.01	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25N-2440
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4722.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	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)	
14,700.00	90.00	360.00	5,821.00	8,897.54	91.56	8,898.00	0.00	0.00	0.00	
14,800.00	90.00	360.00	5,821.00	8,997.54	91.55	8,998.00	0.00	0.00	0.00	
14,900.00	90.00	360.00	5,821.00	9,097.54	91.55	9,098.00	0.00	0.00	0.00	
15,000.00	90.00	360.00	5,821.00	9,197.54	91.54	9,197.99	0.00	0.00	0.00	
15,100.00	90.00	360.00	5,821.00	9,297.54	91.53	9,297.99	0.00	0.00	0.00	
15,200.00	90.00	360.00	5,821.00	9,397.54	91.53	9,397.98	0.00	0.00	0.00	
15,300.00	90.00	360.00	5,821.00	9,497.54	91.52	9,497.98	0.00	0.00	0.00	
15,400.00	90.00	360.00	5,821.00	9,597.54	91.52	9,597.97	0.00	0.00	0.00	
15,500.00	90.00	360.00	5,821.00	9,697.54	91.51	9,697.97	0.00	0.00	0.00	
15,600.00	90.00	360.00	5,821.00	9,797.54	91.50	9,797.97	0.00	0.00	0.00	
15,700.00	90.00	360.00	5,821.00	9,897.54	91.50	9,897.96	0.00	0.00	0.00	
15,800.00	90.00	360.00	5,821.00	9,997.54	91.49	9,997.96	0.00	0.00	0.00	
15,900.00	90.00	360.00	5,821.00	10,097.54	91.48	10,097.95	0.00	0.00	0.00	
16,000.00	90.00	360.00	5,821.00	10,197.54	91.48	10,197.95	0.00	0.00	0.00	
16,011.07	90.00	360.00	5,821.00	10,208.61	91.48	10,209.02	0.00	0.00	0.00	
TD at 16011.07' 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 2440	0.00	0.00	5,821.00	10,208.61	91.48	1,550,121.70	3,466,378.34	40° 49' 52.670 N	103° 48' 52.670 W	
- plan hits target center										
- Point										

Casing Points										
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)						
6,125.76	5,821.00	7"	7.000	8.750						



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Razor #25N-2440
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4722.00usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4722.00usft (Original Well Elev)
Site:	Sec 25-T10N-R58W	North Reference:	True
Well:	Razor #25N-2440	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,552.73	1,550.00	Upper Pierre				
3,507.42	3,500.00	Hygiene				
3,657.45	3,650.00	Lower Pierre				
5,441.94	5,433.00	P200 Marker				
5,462.73	5,453.00	P300 Marker				
5,479.56	5,469.00	P350 Marker				
5,494.43	5,483.00	Sharon Springs				
5,498.71	5,487.00	Niobrara				
5,517.05	5,504.00	Top A Chalk				
5,550.12	5,534.00	Top A Marl				
5,563.64	5,546.00	A Marl				
5,572.76	5,554.00	Top Upper B				
5,600.67	5,578.00	Base Upper B				
5,619.82	5,594.00	Top Lower B				
5,655.82	5,623.00	Base Lower B				
5,672.60	5,636.00	Top B Marl				
5,730.37	5,678.00	Top C Chalk				
5,742.14	5,686.00	Middle C Chalk				
5,763.47	5,700.00	Middle C Marl				
5,792.54	5,718.00	Lower C Chalk				
5,822.17	5,735.00	Lower C Marl				
5,875.44	5,762.00	Lower C Marker				
5,895.67	5,771.00	Top Ft. Hays				
5,933.73	5,786.00	Ft. Hays Marker				
6,125.76	5,821.00	Top Codell				

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Build 2°/100'
500.00	499.84	-6.32	2.95	Hold 4° Inc
3,425.00	3,417.71	-191.25	89.18	Drop 2°/100'
3,625.00	3,617.55	-197.57	92.13	Hold Vertical
5,307.58	5,300.13	-197.57	92.13	KOP, Build 11°/100'
6,125.76	5,821.00	323.30	92.10	LP @ 90° Inc, Hold
16,011.07	5,821.00	10,208.61	91.48	TD at 16011.07' MD