



Project: Weld County, CO  
Site: Sec 8-T10N-R57W  
Well: Horsetail #08B-1711  
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: 7.85°  
Magnetic Field  
Strength: 53076.7nT  
Dip Angle: 67.44°  
Date: 3/2/2015  
Model: IGRF2010

WELL DETAILS: Horsetail #08B-1711

+N/-S	+E/-W	Northing	Ground Level: Easting	4890.00 Latitude	Longitude	Slot
0.00	0.00	1560719.00	3477638.01	40° 51' 35.220 N	103° 46' 23.540 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	578.55	5.57	36.26	578.11	10.91	8.00	2.00	36.26	-10.70	
4	4771.13	5.57	36.26	4750.89	339.09	248.75	0.00	0.00	-332.68	
5	5049.68	0.00	0.00	5029.00	350.00	256.75	2.00	180.00	-343.39	
6	5249.68	0.00	0.00	5229.00	350.00	256.75	0.00	0.00	-343.39	
7	6068.07	90.00	180.00	5750.00	-171.00	256.75	11.00	180.00	177.44	
8	16036.94	90.00	180.00	5750.00	-10139.87	256.75	0.00	0.00	10143.12	PBHL 1711

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1550.00	1555.05	Upper Pierre
3500.00	3514.31	Hygiene
3650.00	3665.02	Lower Pierre
5515.00	5552.43	P200 Marker
5530.00	5570.59	P300 Marker
5550.00	5595.53	P350 Marker
5702.00	5842.67	Sharon Springs
5707.00	5854.91	Niobrara
5727.00	5912.68	Top A Chalk

#### ANNOTATIONS

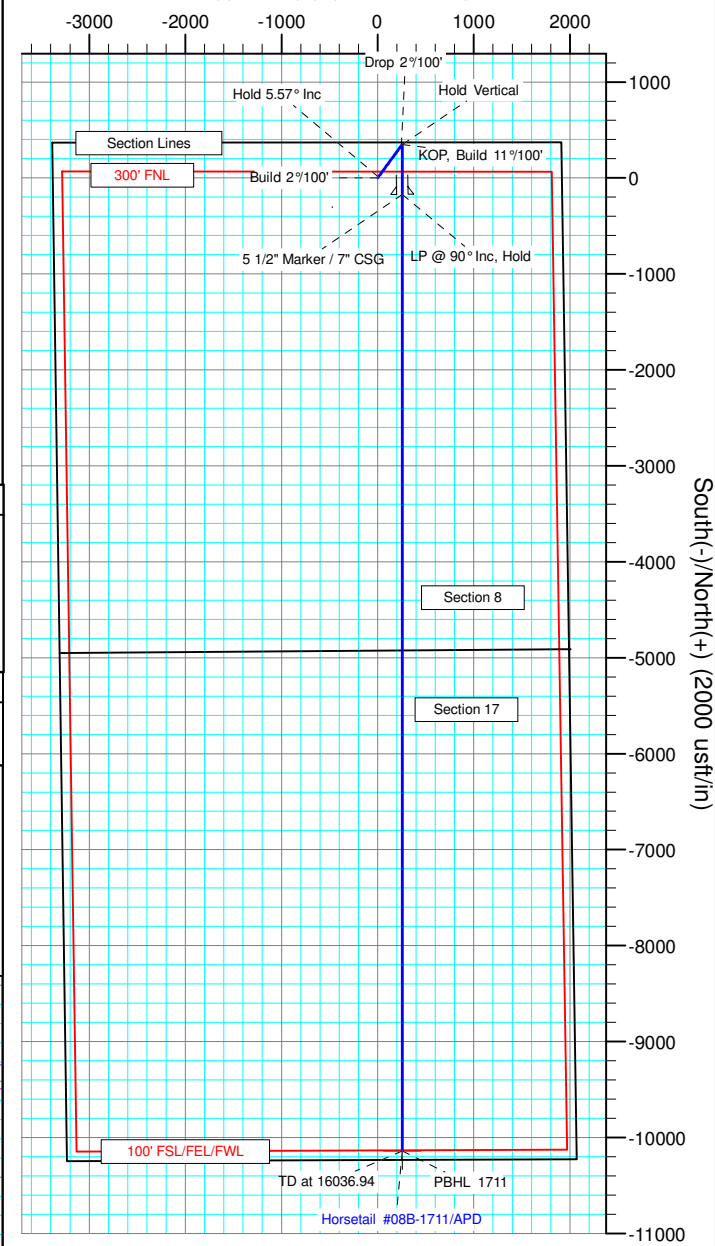
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
578.11	578.55	5.57	36.26	10.91	8.00	-10.70	13.53	Hold 5.57° Inc
4750.89	4771.13	5.57	36.26	339.09	248.75	-332.68	420.54	Drop 2°/100'
5029.00	5049.68	0.00	0.00	350.00	256.75	-343.39	434.07	Hold Vertical
5229.00	5249.68	0.00	0.00	350.00	256.75	-343.39	434.07	KOP, Build 11°/100'
5750.00	6068.07	90.00	180.00	-171.00	256.75	177.44	955.07	LP @ 90° Inc, Hold
5750.00	16036.94	90.00	180.00	-10139.87	256.75	10143.12	10923.95	TD at 16036.94

#### DESIGN TARGET DETAILS

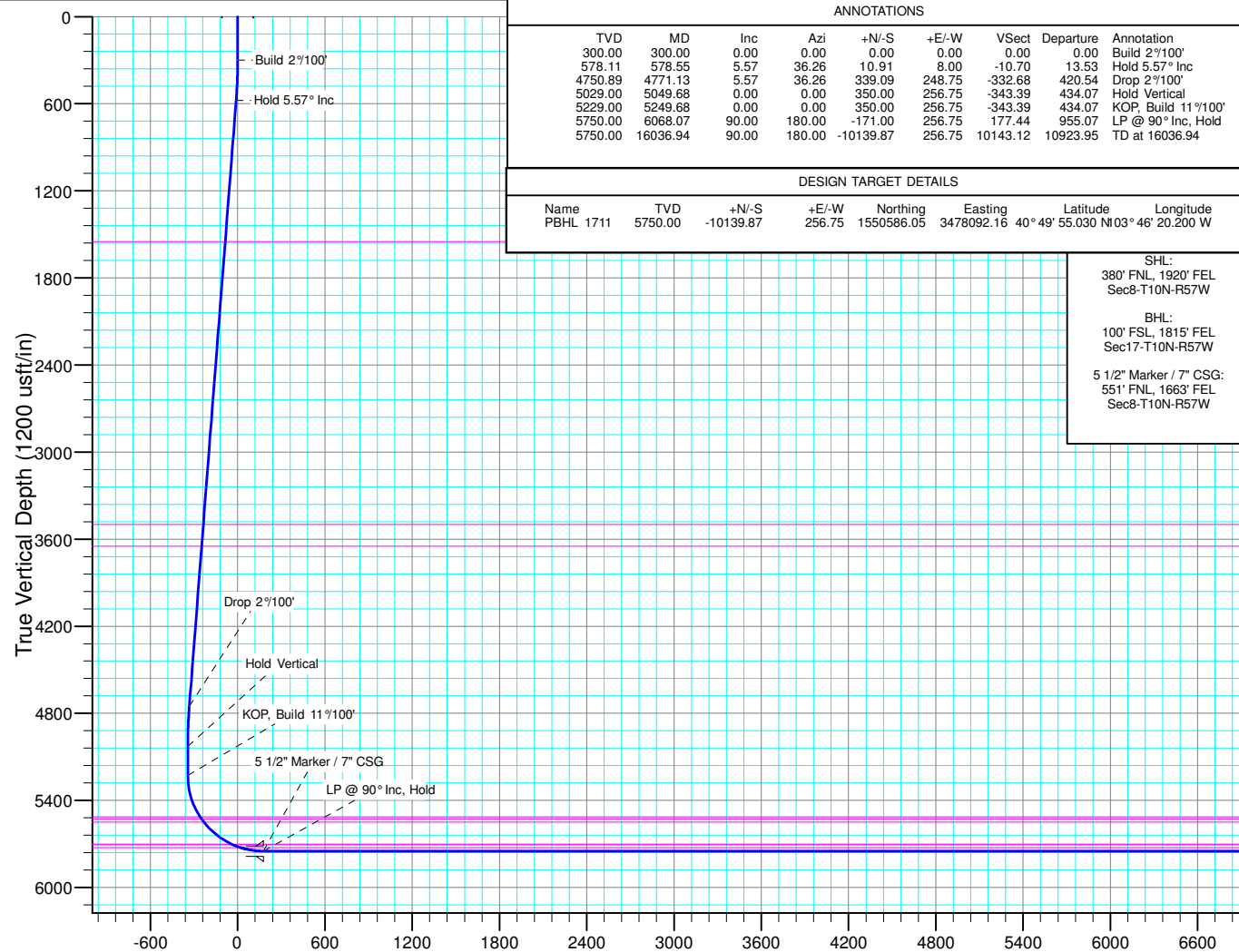
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1711	5750.00	-10139.87	256.75	1550586.05	3478092.16	40° 49' 55.030 N	103° 46' 20.200 W

SHL:  
380' FNL, 1920' FEL  
Sec8-T10N-R57W  
  
BHL:  
100' FSL, 1815' FEL  
Sec17-T10N-R57W  
  
5 1/2" Marker / 7" CSG:  
551' FNL, 1663' FEL  
Sec8-T10N-R57W

West(-)/East(+) (2000 usft/in)



South(-)/North(+) (2000 usft/in)



Vertical Section at 178.55° (1200 usft/in)



# **Whiting Petroleum Corp.**

**Weld County, CO  
Sec 8-T10N-R57W  
Horsetail #08B-1711**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**22 March, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1711
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Sec 8-T10N-R57W			
Site Position:		Northing:	1,561,022.64 usft	Latitude:	40° 51' 38.869 N
From:	Lat/Long	Easting:	3,474,249.13 usft	Longitude:	103° 47' 7.559 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.11 °

Well	Horsetail #08B-1711					
Well Position	+N/-S	-369.10 usft	Northing:	1,560,719.00 usft	Latitude:	40° 51' 35.220 N
	+E/-W	3,382.37 usft	Easting:	3,477,638.01 usft	Longitude:	103° 46' 23.540 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,890.00 usft

<b>Wellbore</b>	Hz				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/2/2015	7.85	67.44	53,077

<b>Design</b>	APD			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	178.55

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
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	
578.55	5.57	36.26	578.11	10.91	8.00	2.00	2.00	0.00	36.26	
4,771.13	5.57	36.26	4,750.89	339.09	248.75	0.00	0.00	0.00	0.00	
5,049.68	0.00	0.00	5,029.00	350.00	256.75	2.00	-2.00	0.00	180.00	
5,249.68	0.00	0.00	5,229.00	350.00	256.75	0.00	0.00	0.00	0.00	
6,068.07	90.00	180.00	5,750.00	-171.00	256.75	11.00	11.00	0.00	180.00	
16,036.94	90.00	180.00	5,750.00	-10,139.87	256.75	0.00	0.00	0.00	0.00	PBHL 1711



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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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
<b>Build 2°/100'</b>									
400.00	2.00	36.26	399.98	1.41	1.03	-1.38	2.00	2.00	0.00
500.00	4.00	36.26	499.84	5.63	4.13	-5.52	2.00	2.00	0.00
578.55	5.57	36.26	578.11	10.91	8.00	-10.70	2.00	2.00	0.00
<b>Hold 5.57° Inc</b>									
600.00	5.57	36.26	599.46	12.59	9.24	-12.35	0.00	0.00	0.00
700.00	5.57	36.26	698.99	20.42	14.98	-20.03	0.00	0.00	0.00
800.00	5.57	36.26	798.52	28.24	20.72	-27.71	0.00	0.00	0.00
900.00	5.57	36.26	898.04	36.07	26.46	-35.39	0.00	0.00	0.00
1,000.00	5.57	36.26	997.57	43.90	32.20	-43.07	0.00	0.00	0.00
1,100.00	5.57	36.26	1,097.10	51.73	37.95	-50.75	0.00	0.00	0.00
1,200.00	5.57	36.26	1,196.63	59.56	43.69	-58.43	0.00	0.00	0.00
1,300.00	5.57	36.26	1,296.15	67.38	49.43	-66.11	0.00	0.00	0.00
1,400.00	5.57	36.26	1,395.68	75.21	55.17	-73.79	0.00	0.00	0.00
1,500.00	5.57	36.26	1,495.21	83.04	60.91	-81.47	0.00	0.00	0.00
1,555.05	5.57	36.26	1,550.00	87.35	64.08	-85.70	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	5.57	36.26	1,594.74	90.87	66.66	-89.15	0.00	0.00	0.00
1,700.00	5.57	36.26	1,694.26	98.69	72.40	-96.83	0.00	0.00	0.00
1,800.00	5.57	36.26	1,793.79	106.52	78.14	-104.51	0.00	0.00	0.00
1,900.00	5.57	36.26	1,893.32	114.35	83.88	-112.19	0.00	0.00	0.00
2,000.00	5.57	36.26	1,992.85	122.18	89.62	-119.87	0.00	0.00	0.00
2,100.00	5.57	36.26	2,092.38	130.00	95.37	-127.55	0.00	0.00	0.00
2,200.00	5.57	36.26	2,191.90	137.83	101.11	-135.23	0.00	0.00	0.00
2,300.00	5.57	36.26	2,291.43	145.66	106.85	-142.91	0.00	0.00	0.00
2,400.00	5.57	36.26	2,390.96	153.49	112.59	-150.59	0.00	0.00	0.00
2,500.00	5.57	36.26	2,490.49	161.31	118.34	-158.27	0.00	0.00	0.00
2,600.00	5.57	36.26	2,590.01	169.14	124.08	-165.95	0.00	0.00	0.00
2,700.00	5.57	36.26	2,689.54	176.97	129.82	-173.63	0.00	0.00	0.00
2,800.00	5.57	36.26	2,789.07	184.80	135.56	-181.31	0.00	0.00	0.00
2,900.00	5.57	36.26	2,888.60	192.62	141.30	-188.99	0.00	0.00	0.00
3,000.00	5.57	36.26	2,988.12	200.45	147.05	-196.67	0.00	0.00	0.00
3,100.00	5.57	36.26	3,087.65	208.28	152.79	-204.35	0.00	0.00	0.00
3,200.00	5.57	36.26	3,187.18	216.11	158.53	-212.03	0.00	0.00	0.00
3,300.00	5.57	36.26	3,286.71	223.94	164.27	-219.71	0.00	0.00	0.00
3,400.00	5.57	36.26	3,386.23	231.76	170.01	-227.38	0.00	0.00	0.00
3,500.00	5.57	36.26	3,485.76	239.59	175.76	-235.06	0.00	0.00	0.00
3,514.31	5.57	36.26	3,500.00	240.71	176.58	-236.16	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	5.57	36.26	3,585.29	247.42	181.50	-242.74	0.00	0.00	0.00
3,665.02	5.57	36.26	3,650.00	252.51	185.23	-247.74	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	5.57	36.26	3,684.82	255.25	187.24	-250.42	0.00	0.00	0.00
3,800.00	5.57	36.26	3,784.35	263.07	192.98	-258.10	0.00	0.00	0.00
3,900.00	5.57	36.26	3,883.87	270.90	198.72	-265.78	0.00	0.00	0.00
4,000.00	5.57	36.26	3,983.40	278.73	204.47	-273.46	0.00	0.00	0.00
4,100.00	5.57	36.26	4,082.93	286.56	210.21	-281.14	0.00	0.00	0.00
4,200.00	5.57	36.26	4,182.46	294.38	215.95	-288.82	0.00	0.00	0.00
4,300.00	5.57	36.26	4,281.98	302.21	221.69	-296.50	0.00	0.00	0.00
4,400.00	5.57	36.26	4,381.51	310.04	227.43	-304.18	0.00	0.00	0.00



# WOG

## Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	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	5.57	36.26	4,481.04	317.87	233.18	-311.86	0.00	0.00	0.00	
4,600.00	5.57	36.26	4,580.57	325.69	238.92	-319.54	0.00	0.00	0.00	
4,700.00	5.57	36.26	4,680.09	333.52	244.66	-327.22	0.00	0.00	0.00	
4,771.13	5.57	36.26	4,750.89	339.09	248.75	-332.68	0.00	0.00	0.00	
<b>Drop 2°/100'</b>										
4,800.00	4.99	36.26	4,779.64	341.23	250.32	-334.79	2.00	-2.00	0.00	
4,900.00	2.99	36.26	4,879.39	346.85	254.44	-340.30	2.00	-2.00	0.00	
5,000.00	0.99	36.26	4,979.32	349.65	256.49	-343.05	2.00	-2.00	0.00	
5,049.68	0.00	0.00	5,029.00	350.00	256.75	-343.39	2.00	-2.00	-72.99	
<b>Hold Vertical</b>										
5,100.00	0.00	0.00	5,079.32	350.00	256.75	-343.39	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,179.32	350.00	256.75	-343.39	0.00	0.00	0.00	
5,249.68	0.00	0.00	5,229.00	350.00	256.75	-343.39	0.00	0.00	0.00	
<b>KOP, Build 11°/100'</b>										
5,300.00	5.53	180.00	5,279.24	347.57	256.75	-340.96	11.00	11.00	0.00	
5,400.00	16.53	180.00	5,377.24	328.46	256.75	-321.86	11.00	11.00	0.00	
5,500.00	27.53	180.00	5,469.80	291.01	256.75	-284.42	11.00	11.00	0.00	
5,552.43	33.29	180.00	5,515.00	264.48	256.75	-257.90	11.00	11.00	0.00	
<b>P200 Marker</b>										
5,570.59	35.29	180.00	5,530.00	254.25	256.75	-247.67	11.00	11.00	0.00	
<b>P300 Marker</b>										
5,595.53	38.03	180.00	5,550.00	239.37	256.75	-232.79	11.00	11.00	0.00	
<b>P350 Marker</b>										
5,600.00	38.53	180.00	5,553.51	236.59	256.75	-230.02	11.00	11.00	0.00	
5,700.00	49.52	180.00	5,625.31	167.20	256.75	-160.65	11.00	11.00	0.00	
5,800.00	60.52	180.00	5,682.55	85.39	256.75	-78.87	11.00	11.00	0.00	
5,842.67	65.21	180.00	5,702.00	47.43	256.75	-40.92	11.00	11.00	0.00	
<b>Sharon Springs</b>										
5,854.91	66.56	180.00	5,707.00	36.26	256.75	-29.75	11.00	11.00	0.00	
<b>Niobrara</b>										
5,900.00	71.52	180.00	5,723.13	-5.83	256.75	12.33	11.00	11.00	0.00	
5,912.68	72.91	180.00	5,727.00	-17.91	256.75	24.40	11.00	11.00	0.00	
<b>Top A Chalk</b>										
6,000.00	82.51	180.00	5,745.56	-103.13	256.75	109.59	11.00	11.00	0.00	
6,068.07	90.00	180.00	5,750.00	-171.00	256.75	177.45	11.00	11.00	0.00	
<b>LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG</b>										
6,100.00	90.00	180.00	5,750.00	-202.93	256.75	209.37	0.00	0.00	0.00	
6,200.00	90.00	180.00	5,750.00	-302.93	256.75	309.34	0.00	0.00	0.00	
6,300.00	90.00	180.00	5,750.00	-402.93	256.75	409.30	0.00	0.00	0.00	
6,400.00	90.00	180.00	5,750.00	-502.93	256.75	509.27	0.00	0.00	0.00	
6,500.00	90.00	180.00	5,750.00	-602.93	256.75	609.24	0.00	0.00	0.00	
6,600.00	90.00	180.00	5,750.00	-702.93	256.75	709.21	0.00	0.00	0.00	
6,700.00	90.00	180.00	5,750.00	-802.93	256.75	809.18	0.00	0.00	0.00	
6,800.00	90.00	180.00	5,750.00	-902.93	256.75	909.14	0.00	0.00	0.00	
6,900.00	90.00	180.00	5,750.00	-1,002.93	256.75	1,009.11	0.00	0.00	0.00	
7,000.00	90.00	180.00	5,750.00	-1,102.93	256.75	1,109.08	0.00	0.00	0.00	
7,100.00	90.00	180.00	5,750.00	-1,202.93	256.75	1,209.05	0.00	0.00	0.00	
7,200.00	90.00	180.00	5,750.00	-1,302.93	256.75	1,309.02	0.00	0.00	0.00	
7,300.00	90.00	180.00	5,750.00	-1,402.93	256.75	1,408.98	0.00	0.00	0.00	
7,400.00	90.00	180.00	5,750.00	-1,502.93	256.75	1,508.95	0.00	0.00	0.00	
7,500.00	90.00	180.00	5,750.00	-1,602.93	256.75	1,608.92	0.00	0.00	0.00	
7,600.00	90.00	180.00	5,750.00	-1,702.93	256.75	1,708.89	0.00	0.00	0.00	



# WOG

## Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	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)
7,700.00	90.00	180.00	5,750.00	-1,802.93	256.75	1,808.86	0.00	0.00	0.00
7,800.00	90.00	180.00	5,750.00	-1,902.93	256.75	1,908.82	0.00	0.00	0.00
7,900.00	90.00	180.00	5,750.00	-2,002.93	256.75	2,008.79	0.00	0.00	0.00
8,000.00	90.00	180.00	5,750.00	-2,102.93	256.75	2,108.76	0.00	0.00	0.00
8,100.00	90.00	180.00	5,750.00	-2,202.93	256.75	2,208.73	0.00	0.00	0.00
8,200.00	90.00	180.00	5,750.00	-2,302.93	256.75	2,308.70	0.00	0.00	0.00
8,300.00	90.00	180.00	5,750.00	-2,402.93	256.75	2,408.66	0.00	0.00	0.00
8,400.00	90.00	180.00	5,750.00	-2,502.93	256.75	2,508.63	0.00	0.00	0.00
8,500.00	90.00	180.00	5,750.00	-2,602.93	256.75	2,608.60	0.00	0.00	0.00
8,600.00	90.00	180.00	5,750.00	-2,702.93	256.75	2,708.57	0.00	0.00	0.00
8,700.00	90.00	180.00	5,750.00	-2,802.93	256.75	2,808.54	0.00	0.00	0.00
8,800.00	90.00	180.00	5,750.00	-2,902.93	256.75	2,908.50	0.00	0.00	0.00
8,900.00	90.00	180.00	5,750.00	-3,002.93	256.75	3,008.47	0.00	0.00	0.00
9,000.00	90.00	180.00	5,750.00	-3,102.93	256.75	3,108.44	0.00	0.00	0.00
9,100.00	90.00	180.00	5,750.00	-3,202.93	256.75	3,208.41	0.00	0.00	0.00
9,200.00	90.00	180.00	5,750.00	-3,302.93	256.75	3,308.38	0.00	0.00	0.00
9,300.00	90.00	180.00	5,750.00	-3,402.93	256.75	3,408.34	0.00	0.00	0.00
9,400.00	90.00	180.00	5,750.00	-3,502.93	256.75	3,508.31	0.00	0.00	0.00
9,500.00	90.00	180.00	5,750.00	-3,602.93	256.75	3,608.28	0.00	0.00	0.00
9,600.00	90.00	180.00	5,750.00	-3,702.93	256.75	3,708.25	0.00	0.00	0.00
9,700.00	90.00	180.00	5,750.00	-3,802.93	256.75	3,808.22	0.00	0.00	0.00
9,800.00	90.00	180.00	5,750.00	-3,902.93	256.75	3,908.18	0.00	0.00	0.00
9,900.00	90.00	180.00	5,750.00	-4,002.93	256.75	4,008.15	0.00	0.00	0.00
10,000.00	90.00	180.00	5,750.00	-4,102.93	256.75	4,108.12	0.00	0.00	0.00
10,100.00	90.00	180.00	5,750.00	-4,202.93	256.75	4,208.09	0.00	0.00	0.00
10,200.00	90.00	180.00	5,750.00	-4,302.93	256.75	4,308.06	0.00	0.00	0.00
10,300.00	90.00	180.00	5,750.00	-4,402.93	256.75	4,408.02	0.00	0.00	0.00
10,400.00	90.00	180.00	5,750.00	-4,502.93	256.75	4,507.99	0.00	0.00	0.00
10,500.00	90.00	180.00	5,750.00	-4,602.93	256.75	4,607.96	0.00	0.00	0.00
10,600.00	90.00	180.00	5,750.00	-4,702.93	256.75	4,707.93	0.00	0.00	0.00
10,700.00	90.00	180.00	5,750.00	-4,802.93	256.75	4,807.90	0.00	0.00	0.00
10,800.00	90.00	180.00	5,750.00	-4,902.93	256.75	4,907.86	0.00	0.00	0.00
10,900.00	90.00	180.00	5,750.00	-5,002.93	256.75	5,007.83	0.00	0.00	0.00
11,000.00	90.00	180.00	5,750.00	-5,102.93	256.75	5,107.80	0.00	0.00	0.00
11,100.00	90.00	180.00	5,750.00	-5,202.93	256.75	5,207.77	0.00	0.00	0.00
11,200.00	90.00	180.00	5,750.00	-5,302.93	256.75	5,307.73	0.00	0.00	0.00
11,300.00	90.00	180.00	5,750.00	-5,402.93	256.75	5,407.70	0.00	0.00	0.00
11,400.00	90.00	180.00	5,750.00	-5,502.93	256.75	5,507.67	0.00	0.00	0.00
11,500.00	90.00	180.00	5,750.00	-5,602.93	256.75	5,607.64	0.00	0.00	0.00
11,600.00	90.00	180.00	5,750.00	-5,702.93	256.75	5,707.61	0.00	0.00	0.00
11,700.00	90.00	180.00	5,750.00	-5,802.93	256.75	5,807.57	0.00	0.00	0.00
11,800.00	90.00	180.00	5,750.00	-5,902.93	256.75	5,907.54	0.00	0.00	0.00
11,900.00	90.00	180.00	5,750.00	-6,002.93	256.75	6,007.51	0.00	0.00	0.00
12,000.00	90.00	180.00	5,750.00	-6,102.93	256.75	6,107.48	0.00	0.00	0.00
12,100.00	90.00	180.00	5,750.00	-6,202.93	256.75	6,207.45	0.00	0.00	0.00
12,200.00	90.00	180.00	5,750.00	-6,302.93	256.75	6,307.41	0.00	0.00	0.00
12,300.00	90.00	180.00	5,750.00	-6,402.93	256.75	6,407.38	0.00	0.00	0.00
12,400.00	90.00	180.00	5,750.00	-6,502.93	256.75	6,507.35	0.00	0.00	0.00
12,500.00	90.00	180.00	5,750.00	-6,602.93	256.75	6,607.32	0.00	0.00	0.00
12,600.00	90.00	180.00	5,750.00	-6,702.93	256.75	6,707.29	0.00	0.00	0.00
12,700.00	90.00	180.00	5,750.00	-6,802.93	256.75	6,807.25	0.00	0.00	0.00
12,800.00	90.00	180.00	5,750.00	-6,902.93	256.75	6,907.22	0.00	0.00	0.00
12,900.00	90.00	180.00	5,750.00	-7,002.93	256.75	7,007.19	0.00	0.00	0.00
13,000.00	90.00	180.00	5,750.00	-7,102.94	256.75	7,107.16	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1711
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	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)
13,100.00	90.00	180.00	5,750.00	-7,202.94	256.75	7,207.13	0.00	0.00	0.00
13,200.00	90.00	180.00	5,750.00	-7,302.94	256.75	7,307.09	0.00	0.00	0.00
13,300.00	90.00	180.00	5,750.00	-7,402.94	256.75	7,407.06	0.00	0.00	0.00
13,400.00	90.00	180.00	5,750.00	-7,502.94	256.75	7,507.03	0.00	0.00	0.00
13,500.00	90.00	180.00	5,750.00	-7,602.94	256.75	7,607.00	0.00	0.00	0.00
13,600.00	90.00	180.00	5,750.00	-7,702.94	256.75	7,706.97	0.00	0.00	0.00
13,700.00	90.00	180.00	5,750.00	-7,802.94	256.75	7,806.93	0.00	0.00	0.00
13,800.00	90.00	180.00	5,750.00	-7,902.94	256.75	7,906.90	0.00	0.00	0.00
13,900.00	90.00	180.00	5,750.00	-8,002.94	256.75	8,006.87	0.00	0.00	0.00
14,000.00	90.00	180.00	5,750.00	-8,102.94	256.75	8,106.84	0.00	0.00	0.00
14,100.00	90.00	180.00	5,750.00	-8,202.94	256.75	8,206.81	0.00	0.00	0.00
14,200.00	90.00	180.00	5,750.00	-8,302.94	256.75	8,306.77	0.00	0.00	0.00
14,300.00	90.00	180.00	5,750.00	-8,402.94	256.75	8,406.74	0.00	0.00	0.00
14,400.00	90.00	180.00	5,750.00	-8,502.94	256.75	8,506.71	0.00	0.00	0.00
14,500.00	90.00	180.00	5,750.00	-8,602.94	256.75	8,606.68	0.00	0.00	0.00
14,600.00	90.00	180.00	5,750.00	-8,702.94	256.75	8,706.65	0.00	0.00	0.00
14,700.00	90.00	180.00	5,750.00	-8,802.94	256.75	8,806.61	0.00	0.00	0.00
14,800.00	90.00	180.00	5,750.00	-8,902.94	256.75	8,906.58	0.00	0.00	0.00
14,900.00	90.00	180.00	5,750.00	-9,002.94	256.75	9,006.55	0.00	0.00	0.00
15,000.00	90.00	180.00	5,750.00	-9,102.94	256.75	9,106.52	0.00	0.00	0.00
15,100.00	90.00	180.00	5,750.00	-9,202.94	256.75	9,206.49	0.00	0.00	0.00
15,200.00	90.00	180.00	5,750.00	-9,302.94	256.75	9,306.45	0.00	0.00	0.00
15,300.00	90.00	180.00	5,750.00	-9,402.94	256.75	9,406.42	0.00	0.00	0.00
15,400.00	90.00	180.00	5,750.00	-9,502.94	256.75	9,506.39	0.00	0.00	0.00
15,500.00	90.00	180.00	5,750.00	-9,602.94	256.75	9,606.36	0.00	0.00	0.00
15,600.00	90.00	180.00	5,750.00	-9,702.94	256.75	9,706.33	0.00	0.00	0.00
15,700.00	90.00	180.00	5,750.00	-9,802.94	256.75	9,806.29	0.00	0.00	0.00
15,800.00	90.00	180.00	5,750.00	-9,902.94	256.75	9,906.26	0.00	0.00	0.00
15,900.00	90.00	180.00	5,750.00	-10,002.94	256.75	10,006.23	0.00	0.00	0.00
16,000.00	90.00	180.00	5,750.00	-10,102.94	256.75	10,106.20	0.00	0.00	0.00
16,036.94	90.00	180.00	5,750.00	-10,139.87	256.75	10,143.12	0.00	0.00	0.00
TD at 16036.94									

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 1711	0.00	0.00	5,750.00	-10,139.87	256.75	1,550,586.05	3,478,092.15	40° 49' 55.030 N	103° 46' 20.200 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,068.07	5,750.00	5 1/2" Marker / 7" CSG	7.000	8.750	



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1711
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4908.50usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08B-1711	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,555.05	1,550.00	Upper Pierre				
3,514.31	3,500.00	Hygiene				
3,665.02	3,650.00	Lower Pierre				
5,552.43	5,515.00	P200 Marker				
5,570.59	5,530.00	P300 Marker				
5,595.53	5,550.00	P350 Marker				
5,842.67	5,702.00	Sharon Springs				
5,854.91	5,707.00	Niobrara				
5,912.68	5,727.00	Top A Chalk				

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'
578.55	578.11	10.91	8.00	Hold 5.57° Inc
4,771.13	4,750.89	339.09	248.75	Drop 2°/100'
5,049.68	5,029.00	350.00	256.75	Hold Vertical
5,249.68	5,229.00	350.00	256.75	KOP, Build 11°/100'
6,068.07	5,750.00	-171.00	256.75	LP @ 90° Inc, Hold
16,036.94	5,750.00	-10,139.87	256.75	TD at 16036.94