



Project: Weld County, CO  
Site: Sec 8-T10N-R57W  
Well: Horsetail #08C-1739  
Wellbore: Hz  
Design: APD

PROJECT DETAILS: Weld County, CO

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
System Datum: Mean Sea Level

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1525.00	1527.74	Upper Pierre
3565.00	3572.86	Hygiene
3665.00	3673.11	Lower Pierre
5604.00	5616.22	P200 Marker
5619.00	5631.41	P300 Marker
5639.00	5651.80	P350 Marker
5654.00	5667.21	Sharon Springs
5666.00	5679.61	Niobrara
5681.00	5695.23	Top A Chalk
5723.00	5739.81	Top A Marl
5742.00	5760.47	A Marl
5748.00	5767.07	Top Upper B
5779.00	5801.84	Base Upper B
5783.00	5806.41	Top Lower B
5816.00	5845.10	Base Lower B
5831.00	5863.31	Top B Marl
5871.00	5914.35	Top C Chalk
5883.00	5930.51	Middle C Chalk
5897.00	5949.98	Middle C Marl
5918.00	5980.65	Lower C Chalk

WELL DETAILS: Horsetail #08C-1739

+N/-S	+E/-W	Northing	Ground Level:	4913.30	Longitude	Slot
0.00	0.00	1560749.45	Easting	3476549.94	40° 51' 35.730 N	103° 46' 37.690 W

SECTION DETAILS

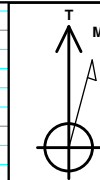
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	502.80	4.06	331.26	502.63	6.29	-3.45	2.00	331.26	-6.23	
4	5137.15	4.06	331.26	5125.37	293.71	-161.05	0.00	0.00	-291.07	
5	5339.95	0.00	0.00	5328.00	300.00	-164.50	2.00	180.00	-297.31	
6	5539.95	0.00	0.00	5528.00	300.00	-164.50	0.00	0.00	-297.31	
7	6358.33	90.00	180.00	6049.00	-221.00	-164.50	11.00	180.00	223.62	
8	16339.94	90.00	180.00	6049.00	-10202.61	-164.50	0.00	0.00	10203.94	PBHL 1739

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'
502.63	502.80	4.06	331.26	6.29	-3.45	-6.23	7.18	Hold 4.06° Inc
5125.37	5137.15	4.06	331.26	293.71	-161.05	-291.07	334.97	Drop 2°/100'
5328.00	5339.95	0.00	0.00	300.00	-164.50	-297.31	342.14	Hold Vertical
5528.00	5539.95	0.00	0.00	300.00	-164.50	-297.31	342.14	KOP, Build 11°/100'
6049.00	6358.33	90.00	180.00	-221.00	-164.50	223.62	863.14	LP @ 90° Inc, Hold
6049.00	16339.94	90.00	180.00	-10202.61	-164.50	10203.94	10844.76	TD at 16339.94

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1739	6049.00	-10202.61	-164.50	1550545.57	3476583.68	40° 49' 54.920 N	103° 46' 39.830 W



Azimuths to True North  
Magnetic North: 7.86°

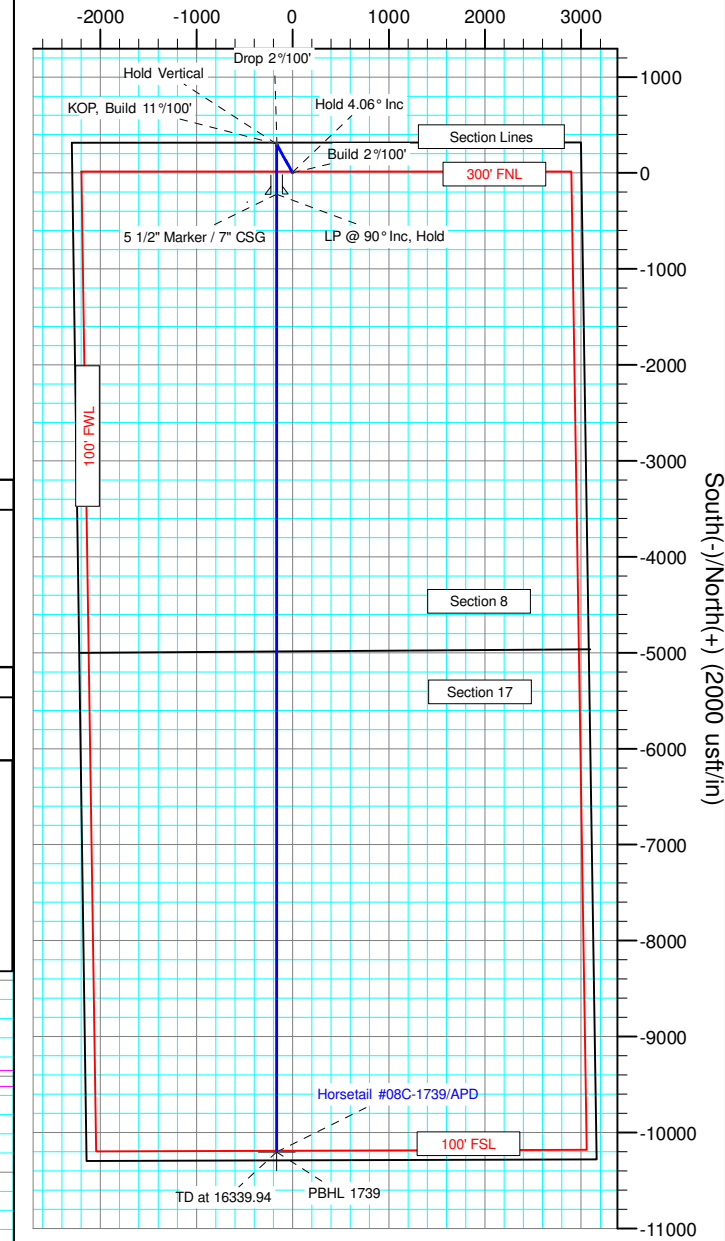
Magnetic Field  
Strength: 53082.0snT  
Dip Angle: 67.45°  
Date: 2/10/2015  
Model: IGRF2010

SHL:  
330' FNL, 2291' FWL  
Sec8-T10N-R57W

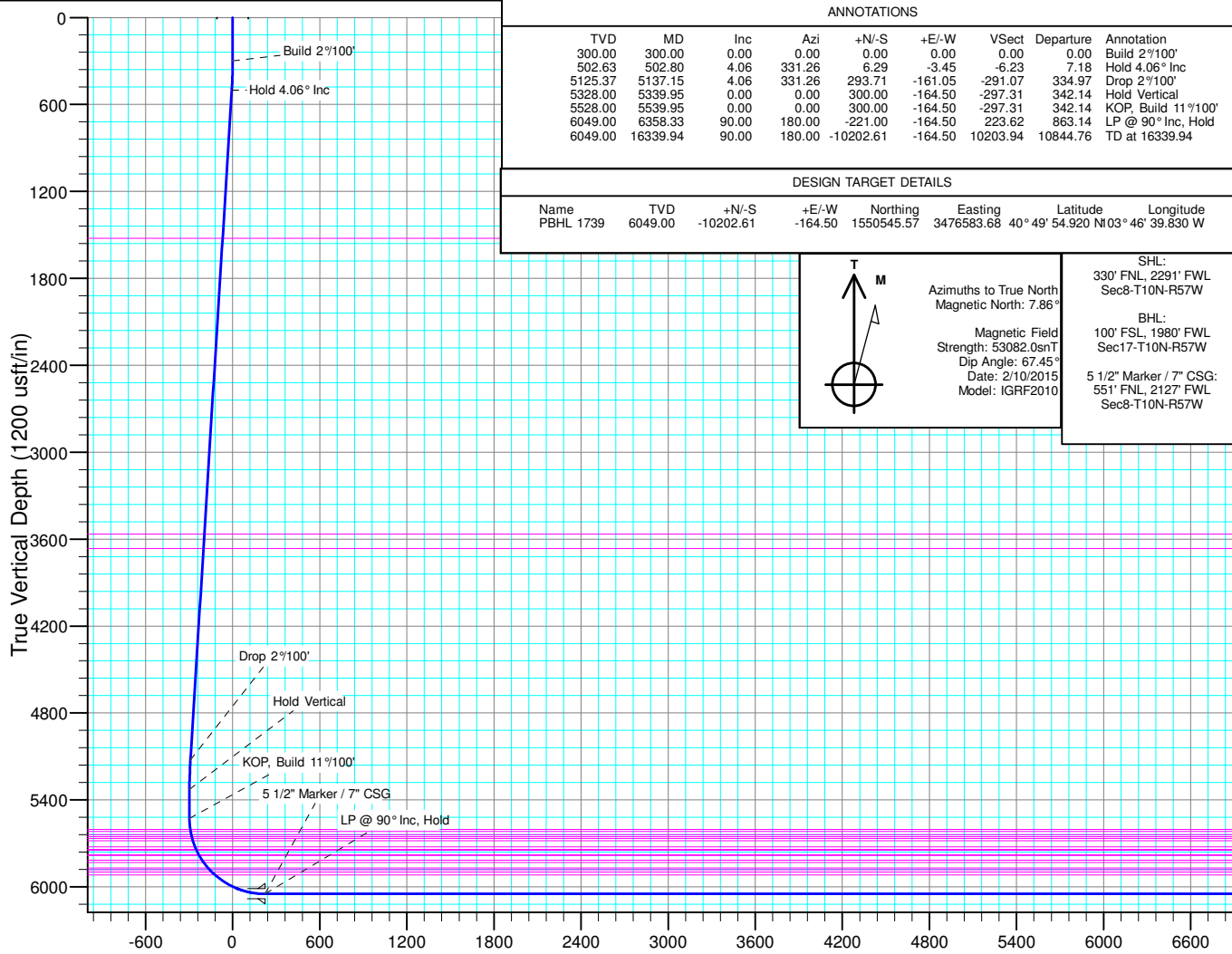
BHL:  
100' FSL, 1980' FWL  
Sec17-T10N-R57W

5 1/2" Marker / 7" CSG:  
551' FNL, 2127' FWL  
Sec8-T10N-R57W

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



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



Vertical Section at 180.92° (1200 usft/in)



# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 8-T10N-R57W**

**Horsetail #08C-1739**

**Hz**

**Plan: APD**

## **Standard Planning Report**

**21 March, 2016**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08C-1739
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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 #08C-1739					
Well Position	+N/-S	-317.62 usft	Northing:	1,560,749.45 usft	Latitude:	40° 51' 35.730 N
	+E/-W	2,295.09 usft	Easting:	3,476,549.94 usft	Longitude:	103° 46' 37.690 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,913.30 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	2/10/2015	7.86	67.45	53,082

<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	180.92

<b>Plan Sections</b>										
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	
502.80	4.06	331.26	502.63	6.29	-3.45	2.00	2.00	0.00	331.26	
5,137.15	4.06	331.26	5,125.37	293.71	-161.05	0.00	0.00	0.00	0.00	
5,339.95	0.00	0.00	5,328.00	300.00	-164.50	2.00	-2.00	0.00	180.00	
5,539.95	0.00	0.00	5,528.00	300.00	-164.50	0.00	0.00	0.00	0.00	
6,358.33	90.00	180.00	6,049.00	-221.00	-164.50	11.00	11.00	0.00	180.00	
16,339.95	90.00	180.00	6,049.00	-10,202.61	-164.50	0.00	0.00	0.00	0.00	PBHL 1739



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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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	331.26	399.98	1.53	-0.84	-1.52	2.00	2.00	0.00
500.00	4.00	331.26	499.84	6.12	-3.36	-6.06	2.00	2.00	0.00
502.80	4.06	331.26	502.63	6.29	-3.45	-6.23	2.00	2.00	0.00
<b>Hold 4.06° Inc</b>									
600.00	4.06	331.26	599.59	12.32	-6.76	-12.21	0.00	0.00	0.00
700.00	4.06	331.26	699.34	18.52	-10.16	-18.36	0.00	0.00	0.00
800.00	4.06	331.26	799.09	24.72	-13.56	-24.50	0.00	0.00	0.00
900.00	4.06	331.26	898.84	30.93	-16.96	-30.65	0.00	0.00	0.00
1,000.00	4.06	331.26	998.59	37.13	-20.36	-36.79	0.00	0.00	0.00
1,100.00	4.06	331.26	1,098.33	43.33	-23.76	-42.94	0.00	0.00	0.00
1,200.00	4.06	331.26	1,198.08	49.53	-27.16	-49.09	0.00	0.00	0.00
1,300.00	4.06	331.26	1,297.83	55.73	-30.56	-55.23	0.00	0.00	0.00
1,400.00	4.06	331.26	1,397.58	61.93	-33.96	-61.38	0.00	0.00	0.00
1,500.00	4.06	331.26	1,497.33	68.14	-37.36	-67.53	0.00	0.00	0.00
1,527.74	4.06	331.26	1,525.00	69.86	-38.31	-69.23	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	4.06	331.26	1,597.08	74.34	-40.76	-73.67	0.00	0.00	0.00
1,700.00	4.06	331.26	1,696.83	80.54	-44.16	-79.82	0.00	0.00	0.00
1,800.00	4.06	331.26	1,796.58	86.74	-47.56	-85.96	0.00	0.00	0.00
1,900.00	4.06	331.26	1,896.33	92.94	-50.97	-92.11	0.00	0.00	0.00
2,000.00	4.06	331.26	1,996.08	99.15	-54.37	-98.26	0.00	0.00	0.00
2,100.00	4.06	331.26	2,095.83	105.35	-57.77	-104.40	0.00	0.00	0.00
2,200.00	4.06	331.26	2,195.58	111.55	-61.17	-110.55	0.00	0.00	0.00
2,300.00	4.06	331.26	2,295.33	117.75	-64.57	-116.70	0.00	0.00	0.00
2,400.00	4.06	331.26	2,395.08	123.95	-67.97	-122.84	0.00	0.00	0.00
2,500.00	4.06	331.26	2,494.83	130.16	-71.37	-128.99	0.00	0.00	0.00
2,600.00	4.06	331.26	2,594.58	136.36	-74.77	-135.13	0.00	0.00	0.00
2,700.00	4.06	331.26	2,694.33	142.56	-78.17	-141.28	0.00	0.00	0.00
2,800.00	4.06	331.26	2,794.08	148.76	-81.57	-147.43	0.00	0.00	0.00
2,900.00	4.06	331.26	2,893.83	154.96	-84.97	-153.57	0.00	0.00	0.00
3,000.00	4.06	331.26	2,993.58	161.17	-88.37	-159.72	0.00	0.00	0.00
3,100.00	4.06	331.26	3,093.33	167.37	-91.78	-165.87	0.00	0.00	0.00
3,200.00	4.06	331.26	3,193.08	173.57	-95.18	-172.01	0.00	0.00	0.00
3,300.00	4.06	331.26	3,292.82	179.77	-98.58	-178.16	0.00	0.00	0.00
3,400.00	4.06	331.26	3,392.57	185.97	-101.98	-184.30	0.00	0.00	0.00
3,500.00	4.06	331.26	3,492.32	192.17	-105.38	-190.45	0.00	0.00	0.00
3,572.86	4.06	331.26	3,565.00	196.69	-107.86	-194.93	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	4.06	331.26	3,592.07	198.38	-108.78	-196.60	0.00	0.00	0.00
3,673.11	4.06	331.26	3,665.00	202.91	-111.27	-201.09	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	4.06	331.26	3,691.82	204.58	-112.18	-202.74	0.00	0.00	0.00
3,800.00	4.06	331.26	3,791.57	210.78	-115.58	-208.89	0.00	0.00	0.00
3,900.00	4.06	331.26	3,891.32	216.98	-118.98	-215.04	0.00	0.00	0.00
4,000.00	4.06	331.26	3,991.07	223.18	-122.38	-221.18	0.00	0.00	0.00
4,100.00	4.06	331.26	4,090.82	229.39	-125.78	-227.33	0.00	0.00	0.00
4,200.00	4.06	331.26	4,190.57	235.59	-129.18	-233.47	0.00	0.00	0.00
4,300.00	4.06	331.26	4,290.32	241.79	-132.58	-239.62	0.00	0.00	0.00
4,400.00	4.06	331.26	4,390.07	247.99	-135.99	-245.77	0.00	0.00	0.00



# WOG

## Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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	4.06	331.26	4,489.82	254.19	-139.39	-251.91	0.00	0.00	0.00	
4,600.00	4.06	331.26	4,589.57	260.40	-142.79	-258.06	0.00	0.00	0.00	
4,700.00	4.06	331.26	4,689.32	266.60	-146.19	-264.21	0.00	0.00	0.00	
4,800.00	4.06	331.26	4,789.07	272.80	-149.59	-270.35	0.00	0.00	0.00	
4,900.00	4.06	331.26	4,888.82	279.00	-152.99	-276.50	0.00	0.00	0.00	
5,000.00	4.06	331.26	4,988.57	285.20	-156.39	-282.64	0.00	0.00	0.00	
5,100.00	4.06	331.26	5,088.32	291.40	-159.79	-288.79	0.00	0.00	0.00	
5,137.15	4.06	331.26	5,125.37	293.71	-161.05	-291.07	0.00	0.00	0.00	
<b>Drop 2°/100'</b>										
5,200.00	2.80	331.26	5,188.11	297.00	-162.86	-294.34	2.00	-2.00	0.00	
5,300.00	0.80	331.26	5,288.06	299.76	-164.37	-297.07	2.00	-2.00	0.00	
5,339.95	0.00	0.00	5,328.00	300.00	-164.50	-297.31	2.00	-2.00	0.00	
<b>Hold Vertical</b>										
5,400.00	0.00	0.00	5,388.05	300.00	-164.50	-297.31	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,488.05	300.00	-164.50	-297.31	0.00	0.00	0.00	
5,539.95	0.00	0.00	5,528.00	300.00	-164.50	-297.31	0.00	0.00	0.00	
<b>KOP, Build 11°/100'</b>										
5,600.00	6.60	180.00	5,587.92	296.54	-164.50	-293.85	11.00	11.00	0.00	
5,616.22	8.39	180.00	5,604.00	294.43	-164.50	-291.74	11.00	11.00	0.00	
<b>P200 Marker</b>										
5,631.42	10.06	180.00	5,619.00	291.99	-164.50	-289.30	11.00	11.00	0.00	
<b>P300 Marker</b>										
5,651.80	12.30	180.00	5,639.00	288.04	-164.50	-285.35	11.00	11.00	0.00	
<b>P350 Marker</b>										
5,667.21	14.00	180.00	5,654.00	284.53	-164.50	-281.85	11.00	11.00	0.00	
<b>Sharon Springs</b>										
5,679.61	15.36	180.00	5,666.00	281.39	-164.50	-278.70	11.00	11.00	0.00	
<b>Niobrara</b>										
5,695.24	17.08	180.00	5,681.00	277.03	-164.50	-274.34	11.00	11.00	0.00	
<b>Top A Chalk</b>										
5,700.00	17.60	180.00	5,685.55	275.61	-164.50	-272.92	11.00	11.00	0.00	
5,739.81	21.98	180.00	5,723.00	262.13	-164.50	-259.45	11.00	11.00	0.00	
<b>Top A Marl</b>										
5,760.47	24.25	180.00	5,742.00	254.02	-164.50	-251.34	11.00	11.00	0.00	
<b>A Marl</b>										
5,767.07	24.98	180.00	5,748.00	251.27	-164.50	-248.59	11.00	11.00	0.00	
<b>Top Upper B</b>										
5,800.00	28.60	180.00	5,777.39	236.43	-164.50	-233.75	11.00	11.00	0.00	
5,801.84	28.80	180.00	5,779.00	235.55	-164.50	-232.87	11.00	11.00	0.00	
<b>Base Upper B</b>										
5,806.41	29.30	180.00	5,783.00	233.33	-164.50	-230.65	11.00	11.00	0.00	
<b>Top Lower B</b>										
5,845.10	33.56	180.00	5,816.00	213.16	-164.50	-210.48	11.00	11.00	0.00	
<b>Base Lower B</b>										
5,863.31	35.56	180.00	5,831.00	202.83	-164.50	-200.15	11.00	11.00	0.00	
<b>Top B Marl</b>										
5,900.00	39.60	180.00	5,860.07	180.46	-164.50	-177.78	11.00	11.00	0.00	
5,914.35	41.17	180.00	5,871.00	171.16	-164.50	-168.49	11.00	11.00	0.00	
<b>Top C Chalk</b>										
5,930.51	42.95	180.00	5,883.00	160.33	-164.50	-157.66	11.00	11.00	0.00	
<b>Middle C Chalk</b>										
5,949.98	45.09	180.00	5,897.00	146.80	-164.50	-144.13	11.00	11.00	0.00	



# WOG

## Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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)
<b>Middle C Marl</b>									
5,980.65	48.47	180.00	5,918.00	124.46	-164.50	-121.79	11.00	11.00	0.00
<b>Lower C Chalk</b>									
6,000.00	50.59	180.00	5,930.56	109.74	-164.50	-107.07	11.00	11.00	0.00
6,100.00	61.59	180.00	5,986.26	26.87	-164.50	-24.22	11.00	11.00	0.00
6,200.00	72.59	180.00	6,025.13	-65.10	-164.50	67.74	11.00	11.00	0.00
6,300.00	83.59	180.00	6,045.74	-162.79	-164.50	165.42	11.00	11.00	0.00
6,358.33	90.00	180.00	6,049.00	-221.00	-164.50	223.62	11.00	11.00	0.00
<b>LP @ 90° Inc, Hold - 5 1/2" Marker / 7" CSG</b>									
6,400.00	90.00	180.00	6,049.00	-262.67	-164.50	265.29	0.00	0.00	0.00
6,500.00	90.00	180.00	6,049.00	-362.67	-164.50	365.27	0.00	0.00	0.00
6,600.00	90.00	180.00	6,049.00	-462.67	-164.50	465.26	0.00	0.00	0.00
6,700.00	90.00	180.00	6,049.00	-562.67	-164.50	565.25	0.00	0.00	0.00
6,800.00	90.00	180.00	6,049.00	-662.67	-164.50	665.24	0.00	0.00	0.00
6,900.00	90.00	180.00	6,049.00	-762.67	-164.50	765.22	0.00	0.00	0.00
7,000.00	90.00	180.00	6,049.00	-862.67	-164.50	865.21	0.00	0.00	0.00
7,100.00	90.00	180.00	6,049.00	-962.67	-164.50	965.20	0.00	0.00	0.00
7,200.00	90.00	180.00	6,049.00	-1,062.67	-164.50	1,065.18	0.00	0.00	0.00
7,300.00	90.00	180.00	6,049.00	-1,162.67	-164.50	1,165.17	0.00	0.00	0.00
7,400.00	90.00	180.00	6,049.00	-1,262.67	-164.50	1,265.16	0.00	0.00	0.00
7,500.00	90.00	180.00	6,049.00	-1,362.67	-164.50	1,365.14	0.00	0.00	0.00
7,600.00	90.00	180.00	6,049.00	-1,462.67	-164.50	1,465.13	0.00	0.00	0.00
7,700.00	90.00	180.00	6,049.00	-1,562.67	-164.50	1,565.12	0.00	0.00	0.00
7,800.00	90.00	180.00	6,049.00	-1,662.67	-164.50	1,665.11	0.00	0.00	0.00
7,900.00	90.00	180.00	6,049.00	-1,762.67	-164.50	1,765.09	0.00	0.00	0.00
8,000.00	90.00	180.00	6,049.00	-1,862.67	-164.50	1,865.08	0.00	0.00	0.00
8,100.00	90.00	180.00	6,049.00	-1,962.67	-164.50	1,965.07	0.00	0.00	0.00
8,200.00	90.00	180.00	6,049.00	-2,062.67	-164.50	2,065.05	0.00	0.00	0.00
8,300.00	90.00	180.00	6,049.00	-2,162.67	-164.50	2,165.04	0.00	0.00	0.00
8,400.00	90.00	180.00	6,049.00	-2,262.67	-164.50	2,265.03	0.00	0.00	0.00
8,500.00	90.00	180.00	6,049.00	-2,362.67	-164.50	2,365.01	0.00	0.00	0.00
8,600.00	90.00	180.00	6,049.00	-2,462.67	-164.50	2,465.00	0.00	0.00	0.00
8,700.00	90.00	180.00	6,049.00	-2,562.67	-164.50	2,564.99	0.00	0.00	0.00
8,800.00	90.00	180.00	6,049.00	-2,662.67	-164.50	2,664.98	0.00	0.00	0.00
8,900.00	90.00	180.00	6,049.00	-2,762.67	-164.50	2,764.96	0.00	0.00	0.00
9,000.00	90.00	180.00	6,049.00	-2,862.67	-164.50	2,864.95	0.00	0.00	0.00
9,100.00	90.00	180.00	6,049.00	-2,962.67	-164.50	2,964.94	0.00	0.00	0.00
9,200.00	90.00	180.00	6,049.00	-3,062.67	-164.50	3,064.92	0.00	0.00	0.00
9,300.00	90.00	180.00	6,049.00	-3,162.67	-164.50	3,164.91	0.00	0.00	0.00
9,400.00	90.00	180.00	6,049.00	-3,262.67	-164.50	3,264.90	0.00	0.00	0.00
9,500.00	90.00	180.00	6,049.00	-3,362.67	-164.50	3,364.88	0.00	0.00	0.00
9,600.00	90.00	180.00	6,049.00	-3,462.67	-164.50	3,464.87	0.00	0.00	0.00
9,700.00	90.00	180.00	6,049.00	-3,562.67	-164.50	3,564.86	0.00	0.00	0.00
9,800.00	90.00	180.00	6,049.00	-3,662.67	-164.50	3,664.85	0.00	0.00	0.00
9,900.00	90.00	180.00	6,049.00	-3,762.67	-164.50	3,764.83	0.00	0.00	0.00
10,000.00	90.00	180.00	6,049.00	-3,862.67	-164.50	3,864.82	0.00	0.00	0.00
10,100.00	90.00	180.00	6,049.00	-3,962.67	-164.50	3,964.81	0.00	0.00	0.00
10,200.00	90.00	180.00	6,049.00	-4,062.67	-164.50	4,064.79	0.00	0.00	0.00
10,300.00	90.00	180.00	6,049.00	-4,162.67	-164.50	4,164.78	0.00	0.00	0.00
10,400.00	90.00	180.00	6,049.00	-4,262.67	-164.50	4,264.77	0.00	0.00	0.00
10,500.00	90.00	180.00	6,049.00	-4,362.67	-164.50	4,364.75	0.00	0.00	0.00
10,600.00	90.00	180.00	6,049.00	-4,462.67	-164.50	4,464.74	0.00	0.00	0.00
10,700.00	90.00	180.00	6,049.00	-4,562.67	-164.50	4,564.73	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08C-1739
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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)
10,800.00	90.00	180.00	6,049.00	-4,662.67	-164.50	4,664.72	0.00	0.00	0.00
10,900.00	90.00	180.00	6,049.00	-4,762.67	-164.50	4,764.70	0.00	0.00	0.00
11,000.00	90.00	180.00	6,049.00	-4,862.67	-164.50	4,864.69	0.00	0.00	0.00
11,100.00	90.00	180.00	6,049.00	-4,962.67	-164.50	4,964.68	0.00	0.00	0.00
11,200.00	90.00	180.00	6,049.00	-5,062.67	-164.50	5,064.66	0.00	0.00	0.00
11,300.00	90.00	180.00	6,049.00	-5,162.67	-164.50	5,164.65	0.00	0.00	0.00
11,400.00	90.00	180.00	6,049.00	-5,262.67	-164.50	5,264.64	0.00	0.00	0.00
11,500.00	90.00	180.00	6,049.00	-5,362.67	-164.50	5,364.62	0.00	0.00	0.00
11,600.00	90.00	180.00	6,049.00	-5,462.67	-164.50	5,464.61	0.00	0.00	0.00
11,700.00	90.00	180.00	6,049.00	-5,562.67	-164.50	5,564.60	0.00	0.00	0.00
11,800.00	90.00	180.00	6,049.00	-5,662.67	-164.50	5,664.59	0.00	0.00	0.00
11,900.00	90.00	180.00	6,049.00	-5,762.67	-164.50	5,764.57	0.00	0.00	0.00
12,000.00	90.00	180.00	6,049.00	-5,862.67	-164.50	5,864.56	0.00	0.00	0.00
12,100.00	90.00	180.00	6,049.00	-5,962.67	-164.50	5,964.55	0.00	0.00	0.00
12,200.00	90.00	180.00	6,049.00	-6,062.67	-164.50	6,064.53	0.00	0.00	0.00
12,300.00	90.00	180.00	6,049.00	-6,162.67	-164.50	6,164.52	0.00	0.00	0.00
12,400.00	90.00	180.00	6,049.00	-6,262.67	-164.50	6,264.51	0.00	0.00	0.00
12,500.00	90.00	180.00	6,049.00	-6,362.67	-164.50	6,364.49	0.00	0.00	0.00
12,600.00	90.00	180.00	6,049.00	-6,462.67	-164.50	6,464.48	0.00	0.00	0.00
12,700.00	90.00	180.00	6,049.00	-6,562.67	-164.50	6,564.47	0.00	0.00	0.00
12,800.00	90.00	180.00	6,049.00	-6,662.67	-164.50	6,664.46	0.00	0.00	0.00
12,900.00	90.00	180.00	6,049.00	-6,762.67	-164.50	6,764.44	0.00	0.00	0.00
13,000.00	90.00	180.00	6,049.00	-6,862.67	-164.50	6,864.43	0.00	0.00	0.00
13,100.00	90.00	180.00	6,049.00	-6,962.67	-164.50	6,964.42	0.00	0.00	0.00
13,200.00	90.00	180.00	6,049.00	-7,062.67	-164.50	7,064.40	0.00	0.00	0.00
13,300.00	90.00	180.00	6,049.00	-7,162.67	-164.50	7,164.39	0.00	0.00	0.00
13,400.00	90.00	180.00	6,049.00	-7,262.67	-164.50	7,264.38	0.00	0.00	0.00
13,500.00	90.00	180.00	6,049.00	-7,362.67	-164.50	7,364.36	0.00	0.00	0.00
13,600.00	90.00	180.00	6,049.00	-7,462.67	-164.50	7,464.35	0.00	0.00	0.00
13,700.00	90.00	180.00	6,049.00	-7,562.67	-164.50	7,564.34	0.00	0.00	0.00
13,800.00	90.00	180.00	6,049.00	-7,662.67	-164.50	7,664.33	0.00	0.00	0.00
13,900.00	90.00	180.00	6,049.00	-7,762.67	-164.50	7,764.31	0.00	0.00	0.00
14,000.00	90.00	180.00	6,049.00	-7,862.67	-164.50	7,864.30	0.00	0.00	0.00
14,100.00	90.00	180.00	6,049.00	-7,962.67	-164.50	7,964.29	0.00	0.00	0.00
14,200.00	90.00	180.00	6,049.00	-8,062.67	-164.50	8,064.27	0.00	0.00	0.00
14,300.00	90.00	180.00	6,049.00	-8,162.67	-164.50	8,164.26	0.00	0.00	0.00
14,400.00	90.00	180.00	6,049.00	-8,262.67	-164.50	8,264.25	0.00	0.00	0.00
14,500.00	90.00	180.00	6,049.00	-8,362.67	-164.50	8,364.23	0.00	0.00	0.00
14,600.00	90.00	180.00	6,049.00	-8,462.67	-164.50	8,464.22	0.00	0.00	0.00
14,700.00	90.00	180.00	6,049.00	-8,562.67	-164.50	8,564.21	0.00	0.00	0.00
14,800.00	90.00	180.00	6,049.00	-8,662.67	-164.50	8,664.20	0.00	0.00	0.00
14,900.00	90.00	180.00	6,049.00	-8,762.67	-164.50	8,764.18	0.00	0.00	0.00
15,000.00	90.00	180.00	6,049.00	-8,862.67	-164.50	8,864.17	0.00	0.00	0.00
15,100.00	90.00	180.00	6,049.00	-8,962.67	-164.50	8,964.16	0.00	0.00	0.00
15,200.00	90.00	180.00	6,049.00	-9,062.67	-164.50	9,064.14	0.00	0.00	0.00
15,300.00	90.00	180.00	6,049.00	-9,162.67	-164.50	9,164.13	0.00	0.00	0.00
15,400.00	90.00	180.00	6,049.00	-9,262.67	-164.50	9,264.12	0.00	0.00	0.00
15,500.00	90.00	180.00	6,049.00	-9,362.67	-164.50	9,364.10	0.00	0.00	0.00
15,600.00	90.00	180.00	6,049.00	-9,462.67	-164.50	9,464.09	0.00	0.00	0.00
15,700.00	90.00	180.00	6,049.00	-9,562.67	-164.50	9,564.08	0.00	0.00	0.00
15,800.00	90.00	180.00	6,049.00	-9,662.67	-164.50	9,664.07	0.00	0.00	0.00
15,900.00	90.00	180.00	6,049.00	-9,762.67	-164.50	9,764.05	0.00	0.00	0.00
16,000.00	90.00	180.00	6,049.00	-9,862.67	-164.50	9,864.04	0.00	0.00	0.00
16,100.00	90.00	180.00	6,049.00	-9,962.67	-164.50	9,964.03	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08C-1739
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<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)
16,200.00	90.00	180.00	6,049.00	-10,062.67	-164.50	10,064.01	0.00	0.00	0.00
16,300.00	90.00	180.00	6,049.00	-10,162.67	-164.50	10,164.00	0.00	0.00	0.00
16,339.95	90.00	180.00	6,049.00	-10,202.61	-164.50	10,203.94	0.00	0.00	0.00
TD at 16339.94									

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 1739	0.00	0.00	6,049.00	-10,202.61	-164.50	1,550,545.57	3,476,583.68	40° 49' 54.920 N	103° 46' 39.830 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,358.33	6,049.00	5 1/2" Marker / 7" CSG	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,527.74	1,525.90	Upper Pierre				
3,572.86	3,565.90	Hygiene				
3,673.11	3,665.90	Lower Pierre				
5,616.22	5,604.90	P200 Marker				
5,631.42	5,619.90	P300 Marker				
5,651.80	5,639.90	P350 Marker				
5,667.21	5,654.90	Sharon Springs				
5,679.61	5,666.90	Niobrara				
5,695.24	5,681.90	Top A Chalk				
5,739.81	5,723.90	Top A Marl				
5,760.47	5,742.90	A Marl				
5,767.07	5,748.90	Top Upper B				
5,801.84	5,779.90	Base Upper B				
5,806.41	5,783.90	Top Lower B				
5,845.10	5,816.90	Base Lower B				
5,863.31	5,831.90	Top B Marl				
5,914.35	5,871.90	Top C Chalk				
5,930.51	5,883.90	Middle C Chalk				
5,949.98	5,897.90	Middle C Marl				
5,980.65	5,918.90	Lower C Chalk				





# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08C-1739
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4931.80usft (Original Well Elev)
<b>Site:</b>	Sec 8-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #08C-1739	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	APD		

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'
502.80	502.63	6.29	-3.45	Hold 4.06° Inc
5,137.15	5,125.37	293.71	-161.05	Drop 2°/100'
5,339.95	5,328.00	300.00	-164.50	Hold Vertical
5,539.95	5,528.00	300.00	-164.50	KOP, Build 11°/100'
6,358.33	6,049.00	-221.00	-164.50	LP @ 90° Inc, Hold
16,339.95	6,049.00	-10,202.61	-164.50	TD at 16339.94