



Project: Weld County, CO  
Site: Sec 7-T10N-R57W  
Well: Horsetail #07F-1838  
Wellbore: Hz  
Design: Design #1

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

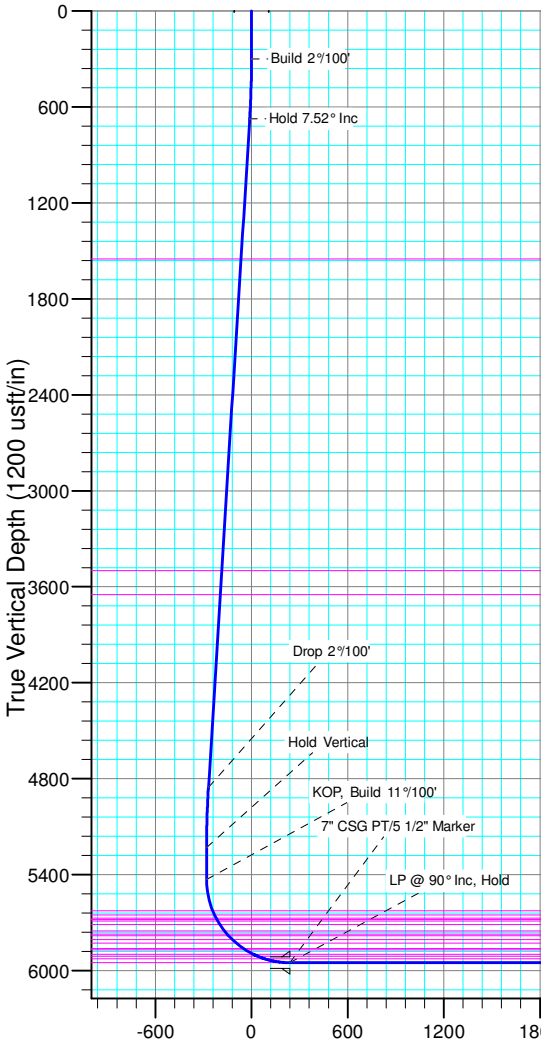
TVDPath	MDPath	Formation
1550.00	1558.67	Upper Pierre
3500.00	3525.59	Hygiene
3650.00	3676.89	Lower Pierre
5626.00	5669.37	P200 Marker
5653.00	5698.86	P300 Marker
5672.00	5720.10	P350 Marker
5681.00	5730.31	Sharon Springs
5690.00	5740.64	Niobrara
5713.00	5767.60	Top A Chalk
5752.00	5815.54	Top A Marl
5772.00	5841.50	A Marl
5783.00	5856.26	Top Upper B
5806.00	5888.47	Base Upper B
5828.00	5921.36	Top Lower B
5862.00	5977.77	Base Lower B
5870.00	5992.39	Top B Marl
5899.00	6052.05	Top C Chalk
5911.00	6081.32	Middle C Chalk
5927.00	6128.06	Middle C Marl
5951.00	6286.81	Lower C Chalk

WELL DETAILS: Horsetail #07F-1838

+N/-S	+E/-W	Northing	Ground Level: 4899.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1558396.34		3471331.45	40° 51' 13.480 N	103° 47' 46.180 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	676.01	7.52	301.05	674.93	12.71	-21.11	2.00	301.05	-11.49	
4	4892.42	7.52	301.05	4855.07	297.29	-493.89	0.00	0.00	-268.84	
5	5268.42	0.00	0.00	5230.00	310.00	-515.00	2.00	180.00	-280.33	
6	5468.42	0.00	0.00	5430.00	310.00	-515.00	0.00	0.00	-280.33	
7	6286.81	90.00	179.56	5951.00	-210.98	-511.03	11.00	179.56	239.59	
8	14042.00	90.00	179.56	5951.00	-7965.95	-451.98	0.00	0.00	7978.77	PBHL 1838D

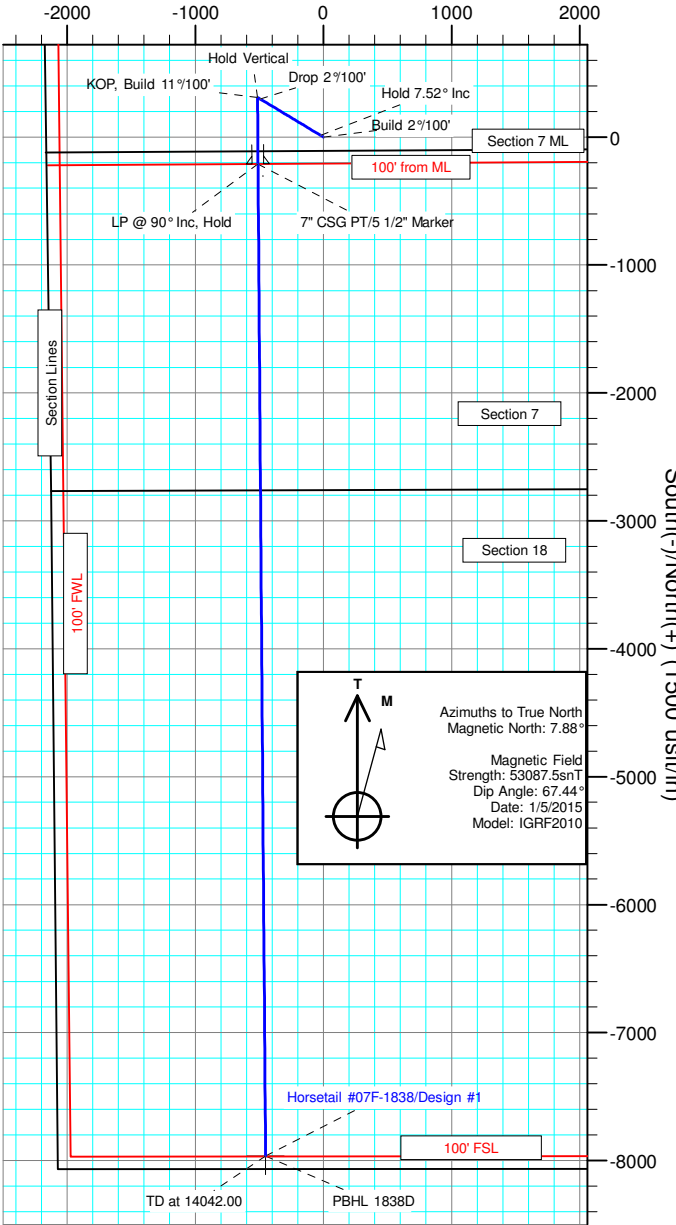


ANNOTATIONS								
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
674.93	676.01	7.52	301.05	12.71	-21.11	-11.49	24.64	Hold 7.52° Inc
4855.07	4892.42	7.52	301.05	297.29	-493.89	-268.84	576.46	Drop 2°/100'
5230.00	5268.42	0.00	0.00	310.00	-515.00	-280.33	601.10	Hold Vertical
5430.00	5468.42	0.00	0.00	310.00	-515.00	-280.33	601.10	KOP, Build 11°/100'
5951.00	6286.81	90.00	179.56	-210.98	-511.03	239.59	1122.10	LP @ 90° Inc, Hold
5951.00	14042.00	90.00	179.56	-7965.95	-451.98	7978.77	8877.30	TD at 14042.00

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1838D	5951.00	-7965.95	-451.98	1550423.18	3471032.61	40° 49' 54.770 N	103° 47' 52.060 W

SHL:  
2545' FNL, 2179' FWL  
Sec7-T10N-R57W  
  
BHL:  
100' FSL, 1623' FWL  
Sec18-T10N-R57W  
  
7" CSG PT/5 1/2" Marker:  
2540' FSL, 1688' FWL  
Sec7-T10N-R57W

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



Azimuths to True North  
Magnetic North: 7.88°  
  
Magnetic Field  
Strength: 53087.5snT  
Dip Angle: 67.44°  
Date: 1/5/2015  
Model: IGRF2010

TD at 14042.00 PBHL 1838D



# **Whiting Petroleum Corp.**

**Weld County, CO  
Sec 7-T10N-R57W  
Horsetail #07F-1838**

**Hz**

**Plan: Design #1**

## **Standard Planning Report**

**12 November, 2015**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07F-1838
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

<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 7-T10N-R57W			
Site Position:		Northing:	1,558,450.14 usft	Latitude:	40° 51' 14.300 N
From:	Lat/Long	Easting:	3,469,810.15 usft	Longitude:	103° 48' 5.960 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	1.10 °

Well	Horsetail #07F-1838					
Well Position	+N/-S	-82.92 usft	Northing:	1,558,396.35 usft	Latitude:	40° 51' 13.480 N
	+E/-W	1,519.99 usft	Easting:	3,471,331.45 usft	Longitude:	103° 47' 46.180 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,899.00 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	1/5/2015	7.88	67.44	53,087

<b>Design</b>	Design #1			
<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	183.25

<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	
676.01	7.52	301.05	674.93	12.71	-21.11	2.00	2.00	0.00	301.05	
4,892.42	7.52	301.05	4,855.07	297.29	-493.89	0.00	0.00	0.00	0.00	
5,268.42	0.00	0.00	5,230.00	310.00	-515.00	2.00	-2.00	0.00	180.00	
5,468.42	0.00	0.00	5,430.00	310.00	-515.00	0.00	0.00	0.00	0.00	
6,286.81	90.00	179.56	5,951.00	-210.98	-511.03	11.00	11.00	0.00	179.56	
14,042.00	90.00	179.56	5,951.00	-7,965.95	-451.98	0.00	0.00	0.00	0.00	PBHL 1838D



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07F-1838
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

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	301.05	399.98	0.90	-1.50	-0.81	2.00	2.00	0.00
500.00	4.00	301.05	499.84	3.60	-5.98	-3.25	2.00	2.00	0.00
600.00	6.00	301.05	599.45	8.09	-13.45	-7.32	2.00	2.00	0.00
676.01	7.52	301.05	674.93	12.71	-21.11	-11.49	2.00	2.00	0.00
<b>Hold 7.52° Inc</b>									
700.00	7.52	301.05	698.72	14.33	-23.80	-12.96	0.00	0.00	0.00
800.00	7.52	301.05	797.85	21.08	-35.01	-19.06	0.00	0.00	0.00
900.00	7.52	301.05	896.99	27.83	-46.23	-25.16	0.00	0.00	0.00
1,000.00	7.52	301.05	996.13	34.58	-57.44	-31.27	0.00	0.00	0.00
1,100.00	7.52	301.05	1,095.27	41.32	-68.65	-37.37	0.00	0.00	0.00
1,200.00	7.52	301.05	1,194.41	48.07	-79.87	-43.47	0.00	0.00	0.00
1,300.00	7.52	301.05	1,293.55	54.82	-91.08	-49.58	0.00	0.00	0.00
1,400.00	7.52	301.05	1,392.69	61.57	-102.29	-55.68	0.00	0.00	0.00
1,500.00	7.52	301.05	1,491.83	68.32	-113.50	-61.78	0.00	0.00	0.00
1,558.67	7.52	301.05	1,550.00	72.28	-120.08	-65.36	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	7.52	301.05	1,590.97	75.07	-124.72	-67.89	0.00	0.00	0.00
1,700.00	7.52	301.05	1,690.11	81.82	-135.93	-73.99	0.00	0.00	0.00
1,800.00	7.52	301.05	1,789.25	88.57	-147.14	-80.09	0.00	0.00	0.00
1,900.00	7.52	301.05	1,888.39	95.32	-158.35	-86.20	0.00	0.00	0.00
2,000.00	7.52	301.05	1,987.53	102.07	-169.57	-92.30	0.00	0.00	0.00
2,100.00	7.52	301.05	2,086.67	108.82	-180.78	-98.40	0.00	0.00	0.00
2,200.00	7.52	301.05	2,185.81	115.57	-191.99	-104.51	0.00	0.00	0.00
2,300.00	7.52	301.05	2,284.95	122.32	-203.21	-110.61	0.00	0.00	0.00
2,400.00	7.52	301.05	2,384.09	129.07	-214.42	-116.71	0.00	0.00	0.00
2,500.00	7.52	301.05	2,483.23	135.82	-225.63	-122.82	0.00	0.00	0.00
2,600.00	7.52	301.05	2,582.37	142.57	-236.84	-128.92	0.00	0.00	0.00
2,700.00	7.52	301.05	2,681.51	149.32	-248.06	-135.02	0.00	0.00	0.00
2,800.00	7.52	301.05	2,780.65	156.07	-259.27	-141.13	0.00	0.00	0.00
2,900.00	7.52	301.05	2,879.79	162.82	-270.48	-147.23	0.00	0.00	0.00
3,000.00	7.52	301.05	2,978.93	169.56	-281.70	-153.33	0.00	0.00	0.00
3,100.00	7.52	301.05	3,078.07	176.31	-292.91	-159.44	0.00	0.00	0.00
3,200.00	7.52	301.05	3,177.21	183.06	-304.12	-165.54	0.00	0.00	0.00
3,300.00	7.52	301.05	3,276.35	189.81	-315.33	-171.65	0.00	0.00	0.00
3,400.00	7.52	301.05	3,375.49	196.56	-326.55	-177.75	0.00	0.00	0.00
3,500.00	7.52	301.05	3,474.63	203.31	-337.76	-183.85	0.00	0.00	0.00
3,525.59	7.52	301.05	3,500.00	205.04	-340.63	-185.41	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	7.52	301.05	3,573.77	210.06	-348.97	-189.96	0.00	0.00	0.00
3,676.89	7.52	301.05	3,650.00	215.25	-357.59	-194.65	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	7.52	301.05	3,672.91	216.81	-360.19	-196.06	0.00	0.00	0.00
3,800.00	7.52	301.05	3,772.05	223.56	-371.40	-202.16	0.00	0.00	0.00
3,900.00	7.52	301.05	3,871.19	230.31	-382.61	-208.27	0.00	0.00	0.00
4,000.00	7.52	301.05	3,970.33	237.06	-393.82	-214.37	0.00	0.00	0.00
4,100.00	7.52	301.05	4,069.47	243.81	-405.04	-220.47	0.00	0.00	0.00
4,200.00	7.52	301.05	4,168.61	250.56	-416.25	-226.58	0.00	0.00	0.00
4,300.00	7.52	301.05	4,267.75	257.31	-427.46	-232.68	0.00	0.00	0.00
4,400.00	7.52	301.05	4,366.89	264.06	-438.68	-238.78	0.00	0.00	0.00



# WOG Planning Report

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<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

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	7.52	301.05	4,466.03	270.81	-449.89	-244.89	0.00	0.00	0.00	
4,600.00	7.52	301.05	4,565.17	277.56	-461.10	-250.99	0.00	0.00	0.00	
4,700.00	7.52	301.05	4,664.31	284.31	-472.31	-257.09	0.00	0.00	0.00	
4,800.00	7.52	301.05	4,763.45	291.05	-483.53	-263.20	0.00	0.00	0.00	
4,892.42	7.52	301.05	4,855.07	297.29	-493.89	-268.84	0.00	0.00	0.00	
<b>Drop 2°/100'</b>										
4,900.00	7.37	301.05	4,862.59	297.80	-494.73	-269.30	2.00	-2.00	0.00	
5,000.00	5.37	301.05	4,961.97	303.52	-504.23	-274.47	2.00	-2.00	0.00	
5,100.00	3.37	301.05	5,061.67	307.45	-510.76	-278.02	2.00	-2.00	0.00	
5,200.00	1.37	301.05	5,161.58	309.58	-514.30	-279.95	2.00	-2.00	0.00	
5,268.42	0.00	0.00	5,230.00	310.00	-515.00	-280.33	2.00	-2.00	86.16	
<b>Hold Vertical</b>										
5,300.00	0.00	0.00	5,261.58	310.00	-515.00	-280.33	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,361.58	310.00	-515.00	-280.33	0.00	0.00	0.00	
5,468.42	0.00	0.00	5,430.00	310.00	-515.00	-280.33	0.00	0.00	0.00	
<b>KOP, Build 11°/100'</b>										
5,500.00	3.47	179.56	5,461.56	309.04	-514.99	-279.37	11.00	11.00	0.00	
5,550.00	8.97	179.56	5,511.24	303.63	-514.95	-273.97	11.00	11.00	0.00	
5,600.00	14.47	179.56	5,560.18	293.47	-514.87	-263.84	11.00	11.00	0.00	
5,650.00	19.97	179.56	5,607.92	278.68	-514.76	-249.07	11.00	11.00	0.00	
5,669.37	22.10	179.56	5,626.00	271.73	-514.71	-242.13	11.00	11.00	0.00	
<b>P200 Marker</b>										
5,698.86	25.34	179.56	5,653.00	259.86	-514.62	-230.30	11.00	11.00	0.00	
<b>P300 Marker</b>										
5,700.00	25.47	179.56	5,654.03	259.38	-514.61	-229.81	11.00	11.00	0.00	
5,720.10	27.68	179.56	5,672.00	250.39	-514.55	-220.84	11.00	11.00	0.00	
<b>P350 Marker</b>										
5,730.31	28.80	179.56	5,681.00	245.55	-514.51	-216.01	11.00	11.00	0.00	
<b>Sharon Springs</b>										
5,740.64	29.94	179.56	5,690.00	240.49	-514.47	-210.96	11.00	11.00	0.00	
<b>Niobrara</b>										
5,750.00	30.97	179.56	5,698.07	235.75	-514.43	-206.23	11.00	11.00	0.00	
5,767.60	32.90	179.56	5,713.00	226.44	-514.36	-196.94	11.00	11.00	0.00	
<b>Top A Chalk</b>										
5,800.00	36.46	179.56	5,739.64	208.00	-514.22	-178.54	11.00	11.00	0.00	
5,815.54	38.17	179.56	5,752.00	198.58	-514.15	-169.14	11.00	11.00	0.00	
<b>Top A Marl</b>										
5,841.50	41.03	179.56	5,772.00	182.04	-514.03	-152.63	11.00	11.00	0.00	
<b>A Marl</b>										
5,850.00	41.96	179.56	5,778.37	176.41	-513.98	-147.01	11.00	11.00	0.00	
5,856.26	42.65	179.56	5,783.00	172.19	-513.95	-142.80	11.00	11.00	0.00	
<b>Top Upper B</b>										
5,888.47	46.19	179.56	5,806.00	149.65	-513.78	-120.31	11.00	11.00	0.00	
<b>Base Upper B</b>										
5,900.00	47.46	179.56	5,813.89	141.24	-513.71	-111.92	11.00	11.00	0.00	
5,921.36	49.81	179.56	5,828.00	125.22	-513.59	-95.92	11.00	11.00	0.00	
<b>Top Lower B</b>										
5,950.00	52.96	179.56	5,845.87	102.84	-513.42	-73.59	11.00	11.00	0.00	
5,977.77	56.01	179.56	5,862.00	80.24	-513.25	-51.04	11.00	11.00	0.00	
<b>Base Lower B</b>										
5,992.39	57.62	179.56	5,870.00	68.01	-513.16	-38.83	11.00	11.00	0.00	
<b>Top B Marl</b>										



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07F-1838
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,000.00	58.46	179.56	5,874.03	61.55	-513.11	-32.38	11.00	11.00	0.00	
6,050.00	63.96	179.56	5,898.10	17.75	-512.77	11.33	11.00	11.00	0.00	
6,052.05	64.18	179.56	5,899.00	15.90	-512.76	13.17	11.00	11.00	0.00	
Top C Chalk										
6,081.32	67.40	179.56	5,911.00	-10.79	-512.56	39.81	11.00	11.00	0.00	
Middle C Chalk										
6,100.00	69.46	179.56	5,917.87	-28.16	-512.42	57.14	11.00	11.00	0.00	
6,128.06	72.54	179.56	5,927.00	-54.68	-512.22	83.61	11.00	11.00	0.00	
Middle C Marl										
6,150.00	74.95	179.56	5,933.14	-75.75	-512.06	104.63	11.00	11.00	0.00	
6,200.00	80.45	179.56	5,943.78	-124.58	-511.69	153.37	11.00	11.00	0.00	
6,250.00	85.95	179.56	5,949.70	-174.21	-511.31	202.89	11.00	11.00	0.00	
6,286.81	90.00	179.56	5,951.00	-210.99	-511.03	239.60	11.00	11.00	0.00	
LP @ 90° Inc, Hold - Lower C Chalk - 7" CSG PT/5 1/2" Marker										
6,300.00	90.00	179.56	5,951.00	-224.18	-510.93	252.76	0.00	0.00	0.00	
6,400.00	90.00	179.56	5,951.00	-324.17	-510.17	352.55	0.00	0.00	0.00	
6,500.00	90.00	179.56	5,951.00	-424.17	-509.41	452.35	0.00	0.00	0.00	
6,600.00	90.00	179.56	5,951.00	-524.17	-508.65	552.14	0.00	0.00	0.00	
6,700.00	90.00	179.56	5,951.00	-624.16	-507.89	651.93	0.00	0.00	0.00	
6,800.00	90.00	179.56	5,951.00	-724.16	-507.12	751.73	0.00	0.00	0.00	
6,900.00	90.00	179.56	5,951.00	-824.16	-506.36	851.52	0.00	0.00	0.00	
7,000.00	90.00	179.56	5,951.00	-924.16	-505.60	951.31	0.00	0.00	0.00	
7,100.00	90.00	179.56	5,951.00	-1,024.15	-504.84	1,051.11	0.00	0.00	0.00	
7,200.00	90.00	179.56	5,951.00	-1,124.15	-504.08	1,150.90	0.00	0.00	0.00	
7,300.00	90.00	179.56	5,951.00	-1,224.15	-503.32	1,250.69	0.00	0.00	0.00	
7,400.00	90.00	179.56	5,951.00	-1,324.14	-502.56	1,350.49	0.00	0.00	0.00	
7,500.00	90.00	179.56	5,951.00	-1,424.14	-501.79	1,450.28	0.00	0.00	0.00	
7,600.00	90.00	179.56	5,951.00	-1,524.14	-501.03	1,550.07	0.00	0.00	0.00	
7,700.00	90.00	179.56	5,951.00	-1,624.14	-500.27	1,649.87	0.00	0.00	0.00	
7,800.00	90.00	179.56	5,951.00	-1,724.13	-499.51	1,749.66	0.00	0.00	0.00	
7,900.00	90.00	179.56	5,951.00	-1,824.13	-498.75	1,849.45	0.00	0.00	0.00	
8,000.00	90.00	179.56	5,951.00	-1,924.13	-497.99	1,949.25	0.00	0.00	0.00	
8,100.00	90.00	179.56	5,951.00	-2,024.12	-497.22	2,049.04	0.00	0.00	0.00	
8,200.00	90.00	179.56	5,951.00	-2,124.12	-496.46	2,148.83	0.00	0.00	0.00	
8,300.00	90.00	179.56	5,951.00	-2,224.12	-495.70	2,248.63	0.00	0.00	0.00	
8,400.00	90.00	179.56	5,951.00	-2,324.12	-494.94	2,348.42	0.00	0.00	0.00	
8,500.00	90.00	179.56	5,951.00	-2,424.11	-494.18	2,448.21	0.00	0.00	0.00	
8,600.00	90.00	179.56	5,951.00	-2,524.11	-493.42	2,548.01	0.00	0.00	0.00	
8,700.00	90.00	179.56	5,951.00	-2,624.11	-492.66	2,647.80	0.00	0.00	0.00	
8,800.00	90.00	179.56	5,951.00	-2,724.10	-491.89	2,747.59	0.00	0.00	0.00	
8,900.00	90.00	179.56	5,951.00	-2,824.10	-491.13	2,847.39	0.00	0.00	0.00	
9,000.00	90.00	179.56	5,951.00	-2,924.10	-490.37	2,947.18	0.00	0.00	0.00	
9,100.00	90.00	179.56	5,951.00	-3,024.10	-489.61	3,046.97	0.00	0.00	0.00	
9,200.00	90.00	179.56	5,951.00	-3,124.09	-488.85	3,146.77	0.00	0.00	0.00	
9,300.00	90.00	179.56	5,951.00	-3,224.09	-488.09	3,246.56	0.00	0.00	0.00	
9,400.00	90.00	179.56	5,951.00	-3,324.09	-487.32	3,346.35	0.00	0.00	0.00	
9,500.00	90.00	179.56	5,951.00	-3,424.08	-486.56	3,446.15	0.00	0.00	0.00	
9,600.00	90.00	179.56	5,951.00	-3,524.08	-485.80	3,545.94	0.00	0.00	0.00	
9,700.00	90.00	179.56	5,951.00	-3,624.08	-485.04	3,645.73	0.00	0.00	0.00	
9,800.00	90.00	179.56	5,951.00	-3,724.08	-484.28	3,745.53	0.00	0.00	0.00	
9,900.00	90.00	179.56	5,951.00	-3,824.07	-483.52	3,845.32	0.00	0.00	0.00	
10,000.00	90.00	179.56	5,951.00	-3,924.07	-482.76	3,945.12	0.00	0.00	0.00	
10,100.00	90.00	179.56	5,951.00	-4,024.07	-481.99	4,044.91	0.00	0.00	0.00	
10,200.00	90.00	179.56	5,951.00	-4,124.06	-481.23	4,144.70	0.00	0.00	0.00	



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07F-1838
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	H2		
<b>Design:</b>	Design #1		

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)
10,300.00	90.00	179.56	5,951.00	-4,224.06	-480.47	4,244.50	0.00	0.00	0.00
10,400.00	90.00	179.56	5,951.00	-4,324.06	-479.71	4,344.29	0.00	0.00	0.00
10,500.00	90.00	179.56	5,951.00	-4,424.05	-478.95	4,444.08	0.00	0.00	0.00
10,600.00	90.00	179.56	5,951.00	-4,524.05	-478.19	4,543.88	0.00	0.00	0.00
10,700.00	90.00	179.56	5,951.00	-4,624.05	-477.43	4,643.67	0.00	0.00	0.00
10,800.00	90.00	179.56	5,951.00	-4,724.05	-476.66	4,743.46	0.00	0.00	0.00
10,900.00	90.00	179.56	5,951.00	-4,824.04	-475.90	4,843.26	0.00	0.00	0.00
11,000.00	90.00	179.56	5,951.00	-4,924.04	-475.14	4,943.05	0.00	0.00	0.00
11,100.00	90.00	179.56	5,951.00	-5,024.04	-474.38	5,042.84	0.00	0.00	0.00
11,200.00	90.00	179.56	5,951.00	-5,124.03	-473.62	5,142.64	0.00	0.00	0.00
11,300.00	90.00	179.56	5,951.00	-5,224.03	-472.86	5,242.43	0.00	0.00	0.00
11,400.00	90.00	179.56	5,951.00	-5,324.03	-472.09	5,342.22	0.00	0.00	0.00
11,500.00	90.00	179.56	5,951.00	-5,424.03	-471.33	5,442.02	0.00	0.00	0.00
11,600.00	90.00	179.56	5,951.00	-5,524.02	-470.57	5,541.81	0.00	0.00	0.00
11,700.00	90.00	179.56	5,951.00	-5,624.02	-469.81	5,641.60	0.00	0.00	0.00
11,800.00	90.00	179.56	5,951.00	-5,724.02	-469.05	5,741.40	0.00	0.00	0.00
11,900.00	90.00	179.56	5,951.00	-5,824.01	-468.29	5,841.19	0.00	0.00	0.00
12,000.00	90.00	179.56	5,951.00	-5,924.01	-467.53	5,940.98	0.00	0.00	0.00
12,100.00	90.00	179.56	5,951.00	-6,024.01	-466.76	6,040.78	0.00	0.00	0.00
12,200.00	90.00	179.56	5,951.00	-6,124.01	-466.00	6,140.57	0.00	0.00	0.00
12,300.00	90.00	179.56	5,951.00	-6,224.00	-465.24	6,240.36	0.00	0.00	0.00
12,400.00	90.00	179.56	5,951.00	-6,324.00	-464.48	6,340.16	0.00	0.00	0.00
12,500.00	90.00	179.56	5,951.00	-6,424.00	-463.72	6,439.95	0.00	0.00	0.00
12,600.00	90.00	179.56	5,951.00	-6,523.99	-462.96	6,539.74	0.00	0.00	0.00
12,700.00	90.00	179.56	5,951.00	-6,623.99	-462.19	6,639.54	0.00	0.00	0.00
12,800.00	90.00	179.56	5,951.00	-6,723.99	-461.43	6,739.33	0.00	0.00	0.00
12,900.00	90.00	179.56	5,951.00	-6,823.99	-460.67	6,839.12	0.00	0.00	0.00
13,000.00	90.00	179.56	5,951.00	-6,923.98	-459.91	6,938.92	0.00	0.00	0.00
13,100.00	90.00	179.56	5,951.00	-7,023.98	-459.15	7,038.71	0.00	0.00	0.00
13,200.00	90.00	179.56	5,951.00	-7,123.98	-458.39	7,138.50	0.00	0.00	0.00
13,300.00	90.00	179.56	5,951.00	-7,223.97	-457.63	7,238.30	0.00	0.00	0.00
13,400.00	90.00	179.56	5,951.00	-7,323.97	-456.86	7,338.09	0.00	0.00	0.00
13,500.00	90.00	179.56	5,951.00	-7,423.97	-456.10	7,437.88	0.00	0.00	0.00
13,600.00	90.00	179.56	5,951.00	-7,523.96	-455.34	7,537.68	0.00	0.00	0.00
13,700.00	90.00	179.56	5,951.00	-7,623.96	-454.58	7,637.47	0.00	0.00	0.00
13,800.00	90.00	179.56	5,951.00	-7,723.96	-453.82	7,737.26	0.00	0.00	0.00
13,900.00	90.00	179.56	5,951.00	-7,823.96	-453.06	7,837.06	0.00	0.00	0.00
14,000.00	90.00	179.56	5,951.00	-7,923.95	-452.30	7,936.85	0.00	0.00	0.00
14,042.00	90.00	179.56	5,951.00	-7,965.95	-451.98	7,978.77	0.00	0.00	0.00
TD at 14042.00									

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 1838D	0.00	0.00	5,951.00	-7,965.95	-451.98	1,550,423.18	3,471,032.61	40° 49' 54.770 N	103° 47' 52.060 W
- plan hits target center									
- Point									



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07F-1838
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4920.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4920.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07F-1838	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,286.81	5,951.00	7" CSG PT/5 1/2" Marker	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,558.67	1,550.00	Upper Pierre				
3,525.59	3,500.00	Hygiene				
3,676.89	3,650.00	Lower Pierre				
5,669.37	5,626.00	P200 Marker				
5,698.86	5,653.00	P300 Marker				
5,720.10	5,672.00	P350 Marker				
5,730.31	5,681.00	Sharon Springs				
5,740.64	5,690.00	Niobrara				
5,767.60	5,713.00	Top A Chalk				
5,815.54	5,752.00	Top A Marl				
5,841.50	5,772.00	A Marl				
5,856.26	5,783.00	Top Upper B				
5,888.47	5,806.00	Base Upper B				
5,921.36	5,828.00	Top Lower B				
5,977.77	5,862.00	Base Lower B				
5,992.39	5,870.00	Top B Marl				
6,052.05	5,899.00	Top C Chalk				
6,081.32	5,911.00	Middle C Chalk				
6,128.06	5,927.00	Middle C Marl				
6,286.81	5,951.00	Lower C Chalk				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.00	300.00	0.00	0.00	Build 2°/100'	
676.01	674.93	12.71	-21.11	Hold 7.52° Inc	
4,892.42	4,855.07	297.29	-493.89	Drop 2°/100'	
5,268.42	5,230.00	310.00	-515.00	Hold Vertical	
5,468.42	5,430.00	310.00	-515.00	KOP, Build 11°/100'	
6,286.81	5,951.00	-210.98	-511.03	LP @ 90° Inc, Hold	
14,042.00	5,951.00	-7,965.95	-451.98	TD at 14042.00	