



Project: Weld County, CO  
Site: Sec 7-T10N-R57W  
Well: Horsetail #07G-1809  
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



Azimuths to True North  
Magnetic North: 7.88°  
Magnetic Field  
Strength: 53087.8nT  
Dip Angle: 67.44°  
Date: 1/6/2015  
Model: IGRF2010

WELL DETAILS: Horsetail #07G-1809

+N/-S	+E/-W	Northing	Ground Level:	4895.00	Longitude	Slot
0.00	0.00	1558382.24	Easting	3472545.37	40° 51' 13.110 N	103° 47' 30.390 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	766.60	9.33	300.61	764.54	19.31	-32.63	2.00	300.61	-17.10	
4	4598.23	9.33	300.61	4545.46	335.69	-567.37	0.00	0.00	-297.30	
5	5064.83	0.00	0.00	5010.00	355.00	-600.00	2.00	180.00	-314.40	
6	5264.83	0.00	0.00	5210.00	355.00	-600.00	0.00	0.00	-314.40	
7	6083.22	90.00	179.50	5731.00	-165.98	-595.43	11.00	179.50	205.13	
8	13846.04	90.00	179.50	5731.00	-7928.50	-527.34	0.00	0.00	7946.02	PBHL 1809

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1550.00	1562.60	Upper Pierre
3500.00	3538.75	Hygiene
3650.00	3690.76	Lower Pierre
5612.00	5724.01	P200 Marker
5639.00	5768.85	P300 Marker
5658.00	5804.09	P350 Marker
5667.00	5822.26	Sharon Springs
5676.00	5841.66	Niobrara
5699.00	5899.67	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'
764.54	766.60	9.33	300.61	19.31	-32.63	-17.10	37.92	Hold 9.33° Inc
4545.46	4598.23	9.33	300.61	335.69	-567.37	-297.30	659.24	Drop 2°/100'
5010.00	5064.83	0.00	0.00	355.00	-600.00	-314.40	697.15	Hold Vertical
5210.00	5264.83	0.00	0.00	355.00	-600.00	-314.40	697.15	KOP, Build 11°/100'
5731.00	6083.22	90.00	179.50	-165.98	-595.43	205.13	1218.15	LP @ 90° Inc, Hold
5731.00	13846.04	90.00	179.50	-7928.50	-527.34	7946.02	8980.98	TD at 13846.04

DESIGN TARGET DETAILS

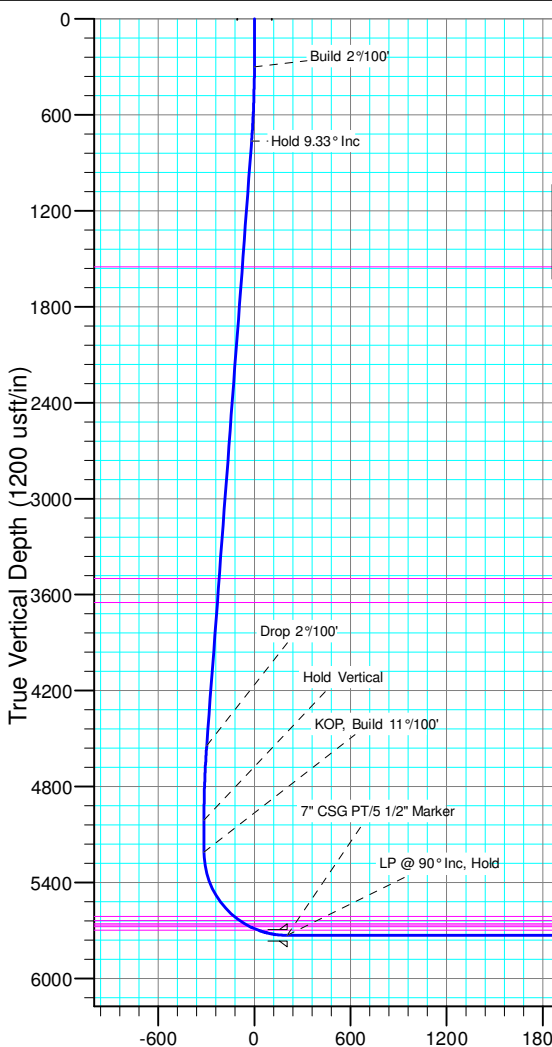
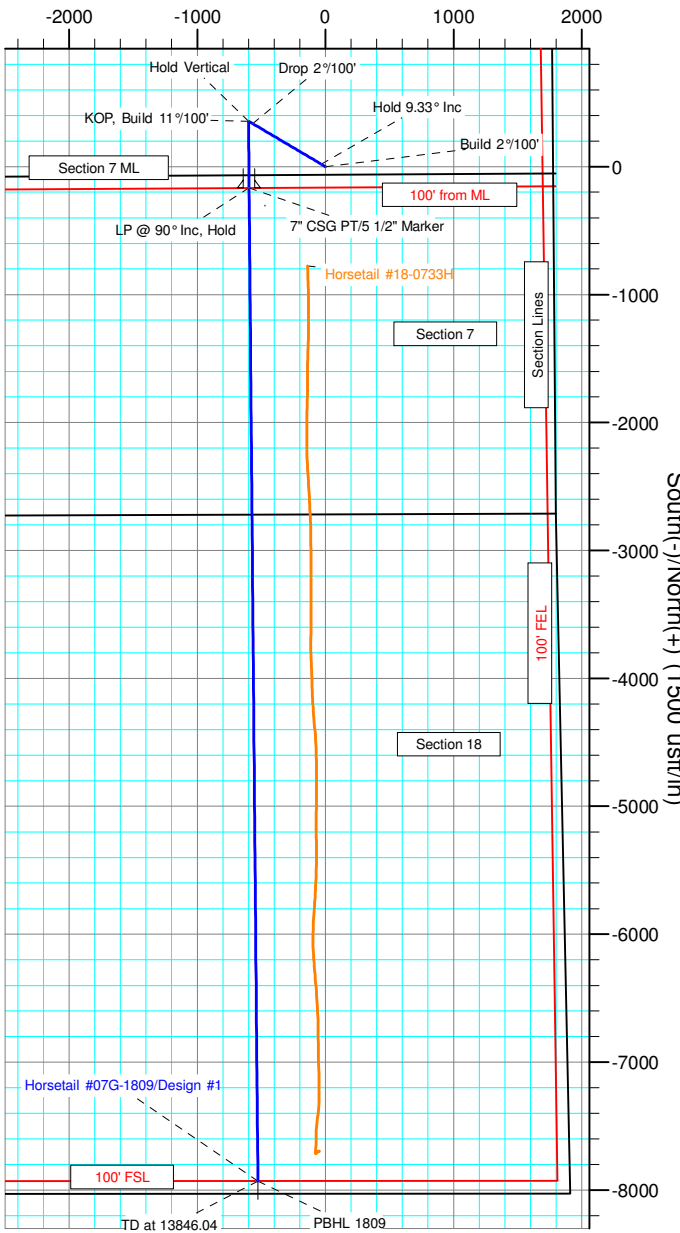
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1809	5731.00	-7928.50	-527.34	1550445.05	3472170.86	40° 49' 54.770 N	103° 47' 37.250 W

SHL:  
2593' FNL, 1795' FEL  
Sec7-T10N-R57W

BHL:  
100' FSL, 2435' FEL  
Sec18-T10N-R57W

7" CSG PT/5 1/2" Marker:  
2537' FSL, 2390' FEL  
Sec7-T10N-R57W

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



Vertical Section at 183.81° (1200 usft/in)



# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 7-T10N-R57W**

**Horsetail #07G-1809**

**Hz**

**Plan: Design #1**

## **Standard Planning Report**

**18 November, 2015**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07G-1809
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4916.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<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 #07G-1809					
Well Position	+N/-S	-120.26 usft	Northing:	1,558,382.25 usft	Latitude:	40° 51' 13.110 N
	+E/-W	2,733.42 usft	Easting:	3,472,545.37 usft	Longitude:	103° 47' 30.390 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,895.00 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	1/6/2015	7.88	67.44	53,088

<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	183.81

<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	
766.60	9.33	300.61	764.54	19.31	-32.63	2.00	2.00	0.00	300.61	
4,598.23	9.33	300.61	4,545.46	335.69	-567.37	0.00	0.00	0.00	0.00	
5,064.83	0.00	0.00	5,010.00	355.00	-600.00	2.00	-2.00	0.00	180.00	
5,264.83	0.00	0.00	5,210.00	355.00	-600.00	0.00	0.00	0.00	0.00	
6,083.22	90.00	179.50	5,731.00	-165.98	-595.43	11.00	11.00	0.00	179.50	
13,846.04	90.00	179.50	5,731.00	-7,928.50	-527.34	0.00	0.00	0.00	0.00	PBHL 1809A



# WOG

## Planning Report

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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<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	300.61	399.98	0.89	-1.50	-0.79	2.00	2.00	0.00
500.00	4.00	300.61	499.84	3.55	-6.01	-3.15	2.00	2.00	0.00
600.00	6.00	300.61	599.45	7.99	-13.51	-7.08	2.00	2.00	0.00
700.00	8.00	300.61	698.70	14.20	-23.99	-12.57	2.00	2.00	0.00
766.60	9.33	300.61	764.54	19.31	-32.63	-17.10	2.00	2.00	0.00
<b>Hold 9.33° Inc</b>									
800.00	9.33	300.61	797.50	22.06	-37.29	-19.54	0.00	0.00	0.00
900.00	9.33	300.61	896.17	30.32	-51.25	-26.85	0.00	0.00	0.00
1,000.00	9.33	300.61	994.85	38.58	-65.20	-34.17	0.00	0.00	0.00
1,100.00	9.33	300.61	1,093.53	46.84	-79.16	-41.48	0.00	0.00	0.00
1,200.00	9.33	300.61	1,192.20	55.09	-93.12	-48.79	0.00	0.00	0.00
1,300.00	9.33	300.61	1,290.88	63.35	-107.07	-56.11	0.00	0.00	0.00
1,400.00	9.33	300.61	1,389.56	71.61	-121.03	-63.42	0.00	0.00	0.00
1,500.00	9.33	300.61	1,488.23	79.87	-134.98	-70.73	0.00	0.00	0.00
1,562.60	9.33	300.61	1,550.00	85.03	-143.72	-75.31	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	9.33	300.61	1,586.91	88.12	-148.94	-78.04	0.00	0.00	0.00
1,700.00	9.33	300.61	1,685.59	96.38	-162.90	-85.36	0.00	0.00	0.00
1,800.00	9.33	300.61	1,784.26	104.64	-176.85	-92.67	0.00	0.00	0.00
1,900.00	9.33	300.61	1,882.94	112.89	-190.81	-99.98	0.00	0.00	0.00
2,000.00	9.33	300.61	1,981.62	121.15	-204.76	-107.30	0.00	0.00	0.00
2,100.00	9.33	300.61	2,080.29	129.41	-218.72	-114.61	0.00	0.00	0.00
2,200.00	9.33	300.61	2,178.97	137.67	-232.67	-121.92	0.00	0.00	0.00
2,300.00	9.33	300.61	2,277.65	145.92	-246.63	-129.23	0.00	0.00	0.00
2,400.00	9.33	300.61	2,376.32	154.18	-260.59	-136.55	0.00	0.00	0.00
2,500.00	9.33	300.61	2,475.00	162.44	-274.54	-143.86	0.00	0.00	0.00
2,600.00	9.33	300.61	2,573.67	170.69	-288.50	-151.17	0.00	0.00	0.00
2,700.00	9.33	300.61	2,672.35	178.95	-302.45	-158.49	0.00	0.00	0.00
2,800.00	9.33	300.61	2,771.03	187.21	-316.41	-165.80	0.00	0.00	0.00
2,900.00	9.33	300.61	2,869.70	195.47	-330.37	-173.11	0.00	0.00	0.00
3,000.00	9.33	300.61	2,968.38	203.72	-344.32	-180.42	0.00	0.00	0.00
3,100.00	9.33	300.61	3,067.06	211.98	-358.28	-187.74	0.00	0.00	0.00
3,200.00	9.33	300.61	3,165.73	220.24	-372.23	-195.05	0.00	0.00	0.00
3,300.00	9.33	300.61	3,264.41	228.50	-386.19	-202.36	0.00	0.00	0.00
3,400.00	9.33	300.61	3,363.09	236.75	-400.15	-209.68	0.00	0.00	0.00
3,500.00	9.33	300.61	3,461.76	245.01	-414.10	-216.99	0.00	0.00	0.00
3,538.75	9.33	300.61	3,500.00	248.21	-419.51	-219.82	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	9.33	300.61	3,560.44	253.27	-428.06	-224.30	0.00	0.00	0.00
3,690.76	9.33	300.61	3,650.00	260.76	-440.72	-230.94	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	9.33	300.61	3,659.12	261.52	-442.01	-231.61	0.00	0.00	0.00
3,800.00	9.33	300.61	3,757.79	269.78	-455.97	-238.93	0.00	0.00	0.00
3,900.00	9.33	300.61	3,856.47	278.04	-469.92	-246.24	0.00	0.00	0.00
4,000.00	9.33	300.61	3,955.15	286.30	-483.88	-253.55	0.00	0.00	0.00
4,100.00	9.33	300.61	4,053.82	294.55	-497.84	-260.87	0.00	0.00	0.00
4,200.00	9.33	300.61	4,152.50	302.81	-511.79	-268.18	0.00	0.00	0.00
4,300.00	9.33	300.61	4,251.18	311.07	-525.75	-275.49	0.00	0.00	0.00
4,400.00	9.33	300.61	4,349.85	319.32	-539.70	-282.80	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07G-1809
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4916.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<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	9.33	300.61	4,448.53	327.58	-553.66	-290.12	0.00	0.00	0.00
4,598.23	9.33	300.61	4,545.46	335.69	-567.37	-297.30	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,600.00	9.30	300.61	4,547.20	335.84	-567.62	-297.43	2.00	-2.00	0.00
4,700.00	7.30	300.61	4,646.15	343.19	-580.03	-303.94	2.00	-2.00	0.00
4,800.00	5.30	300.61	4,745.54	348.77	-589.47	-308.88	2.00	-2.00	0.00
4,900.00	3.30	300.61	4,845.26	352.59	-595.92	-312.26	2.00	-2.00	0.00
5,000.00	1.30	300.61	4,945.17	354.63	-599.37	-314.07	2.00	-2.00	0.00
5,064.83	0.00	0.00	5,010.00	355.00	-600.00	-314.40	2.00	-2.00	91.60
<b>Hold Vertical</b>									
5,100.00	0.00	0.00	5,045.17	355.00	-600.00	-314.40	0.00	0.00	0.00
5,200.00	0.00	0.00	5,145.17	355.00	-600.00	-314.40	0.00	0.00	0.00
5,264.83	0.00	0.00	5,210.00	355.00	-600.00	-314.40	0.00	0.00	0.00
<b>KOP, Build 11°/100'</b>									
5,300.00	3.87	179.50	5,245.14	353.81	-599.99	-313.22	11.00	11.00	0.00
5,350.00	9.37	179.50	5,294.79	348.05	-599.94	-307.47	11.00	11.00	0.00
5,400.00	14.86	179.50	5,343.66	337.56	-599.85	-297.01	11.00	11.00	0.00
5,450.00	20.36	179.50	5,391.29	322.44	-599.71	-281.93	11.00	11.00	0.00
5,500.00	25.86	179.50	5,437.26	302.82	-599.54	-262.37	11.00	11.00	0.00
5,550.00	31.36	179.50	5,481.14	278.89	-599.33	-238.50	11.00	11.00	0.00
5,600.00	36.86	179.50	5,522.52	250.86	-599.09	-210.55	11.00	11.00	0.00
5,650.00	42.36	179.50	5,561.03	219.00	-598.81	-178.78	11.00	11.00	0.00
5,700.00	47.86	179.50	5,596.30	183.59	-598.50	-143.47	11.00	11.00	0.00
5,724.01	50.50	179.50	5,612.00	165.42	-598.34	-125.35	11.00	11.00	0.00
<b>P200 Marker</b>									
5,750.00	53.36	179.50	5,628.03	144.97	-598.16	-104.95	11.00	11.00	0.00
5,768.85	55.43	179.50	5,639.00	129.64	-598.02	-89.67	11.00	11.00	0.00
<b>P300 Marker</b>									
5,800.00	58.85	179.50	5,655.90	103.48	-597.79	-63.58	11.00	11.00	0.00
5,804.09	59.30	179.50	5,658.00	99.97	-597.76	-60.08	11.00	11.00	0.00
<b>P350 Marker</b>									
5,822.26	61.30	179.50	5,667.00	84.19	-597.62	-44.35	11.00	11.00	0.00
<b>Sharon Springs</b>									
5,841.66	63.44	179.50	5,676.00	67.00	-597.47	-27.20	11.00	11.00	0.00
<b>Niobrara</b>									
5,850.00	64.35	179.50	5,679.67	59.52	-597.41	-19.74	11.00	11.00	0.00
5,899.67	69.81	179.50	5,699.00	13.79	-597.01	25.86	11.00	11.00	0.00
<b>Top A Chalk</b>									
5,900.00	69.85	179.50	5,699.12	13.48	-597.00	26.17	11.00	11.00	0.00
5,950.00	75.35	179.50	5,714.06	-34.21	-596.59	73.73	11.00	11.00	0.00
6,000.00	80.85	179.50	5,724.37	-83.12	-596.16	122.50	11.00	11.00	0.00
6,050.00	86.35	179.50	5,729.94	-132.79	-595.72	172.03	11.00	11.00	0.00
6,083.22	90.00	179.50	5,731.00	-165.98	-595.43	205.13	11.00	11.00	0.00
<b>LP @ 90° Inc, Hold - 7" CSG PT/5 1/2" Marker</b>									
6,100.00	90.00	179.50	5,731.00	-182.76	-595.28	221.87	0.00	0.00	0.00
6,200.00	90.00	179.50	5,731.00	-282.76	-594.41	321.58	0.00	0.00	0.00
6,300.00	90.00	179.50	5,731.00	-382.75	-593.53	421.30	0.00	0.00	0.00
6,400.00	90.00	179.50	5,731.00	-482.75	-592.65	521.02	0.00	0.00	0.00
6,500.00	90.00	179.50	5,731.00	-582.75	-591.77	620.74	0.00	0.00	0.00
6,600.00	90.00	179.50	5,731.00	-682.74	-590.90	720.45	0.00	0.00	0.00
6,700.00	90.00	179.50	5,731.00	-782.74	-590.02	820.17	0.00	0.00	0.00
6,800.00	90.00	179.50	5,731.00	-882.74	-589.14	919.89	0.00	0.00	0.00



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07G-1809
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4916.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<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)	
6,900.00	90.00	179.50	5,731.00	-982.73	-588.27	1,019.61	0.00	0.00	0.00	
7,000.00	90.00	179.50	5,731.00	-1,082.73	-587.39	1,119.32	0.00	0.00	0.00	
7,100.00	90.00	179.50	5,731.00	-1,182.72	-586.51	1,219.04	0.00	0.00	0.00	
7,200.00	90.00	179.50	5,731.00	-1,282.72	-585.63	1,318.76	0.00	0.00	0.00	
7,300.00	90.00	179.50	5,731.00	-1,382.72	-584.76	1,418.47	0.00	0.00	0.00	
7,400.00	90.00	179.50	5,731.00	-1,482.71	-583.88	1,518.19	0.00	0.00	0.00	
7,500.00	90.00	179.50	5,731.00	-1,582.71	-583.00	1,617.91	0.00	0.00	0.00	
7,600.00	90.00	179.50	5,731.00	-1,682.70	-582.12	1,717.63	0.00	0.00	0.00	
7,700.00	90.00	179.50	5,731.00	-1,782.70	-581.25	1,817.34	0.00	0.00	0.00	
7,800.00	90.00	179.50	5,731.00	-1,882.70	-580.37	1,917.06	0.00	0.00	0.00	
7,900.00	90.00	179.50	5,731.00	-1,982.69	-579.49	2,016.78	0.00	0.00	0.00	
8,000.00	90.00	179.50	5,731.00	-2,082.69	-578.62	2,116.50	0.00	0.00	0.00	
8,100.00	90.00	179.50	5,731.00	-2,182.69	-577.74	2,216.21	0.00	0.00	0.00	
8,200.00	90.00	179.50	5,731.00	-2,282.68	-576.86	2,315.93	0.00	0.00	0.00	
8,300.00	90.00	179.50	5,731.00	-2,382.68	-575.98	2,415.65	0.00	0.00	0.00	
8,400.00	90.00	179.50	5,731.00	-2,482.67	-575.11	2,515.37	0.00	0.00	0.00	
8,500.00	90.00	179.50	5,731.00	-2,582.67	-574.23	2,615.08	0.00	0.00	0.00	
8,600.00	90.00	179.50	5,731.00	-2,682.67	-573.35	2,714.80	0.00	0.00	0.00	
8,700.00	90.00	179.50	5,731.00	-2,782.66	-572.48	2,814.52	0.00	0.00	0.00	
8,800.00	90.00	179.50	5,731.00	-2,882.66	-571.60	2,914.24	0.00	0.00	0.00	
8,900.00	90.00	179.50	5,731.00	-2,982.65	-570.72	3,013.95	0.00	0.00	0.00	
9,000.00	90.00	179.50	5,731.00	-3,082.65	-569.84	3,113.67	0.00	0.00	0.00	
9,100.00	90.00	179.50	5,731.00	-3,182.65	-568.97	3,213.39	0.00	0.00	0.00	
9,200.00	90.00	179.50	5,731.00	-3,282.64	-568.09	3,313.11	0.00	0.00	0.00	
9,300.00	90.00	179.50	5,731.00	-3,382.64	-567.21	3,412.82	0.00	0.00	0.00	
9,400.00	90.00	179.50	5,731.00	-3,482.64	-566.34	3,512.54	0.00	0.00	0.00	
9,500.00	90.00	179.50	5,731.00	-3,582.63	-565.46	3,612.26	0.00	0.00	0.00	
9,600.00	90.00	179.50	5,731.00	-3,682.63	-564.58	3,711.98	0.00	0.00	0.00	
9,700.00	90.00	179.50	5,731.00	-3,782.62	-563.70	3,811.69	0.00	0.00	0.00	
9,800.00	90.00	179.50	5,731.00	-3,882.62	-562.83	3,911.41	0.00	0.00	0.00	
9,900.00	90.00	179.50	5,731.00	-3,982.62	-561.95	4,011.13	0.00	0.00	0.00	
10,000.00	90.00	179.50	5,731.00	-4,082.61	-561.07	4,110.85	0.00	0.00	0.00	
10,100.00	90.00	179.50	5,731.00	-4,182.61	-560.20	4,210.56	0.00	0.00	0.00	
10,200.00	90.00	179.50	5,731.00	-4,282.60	-559.32	4,310.28	0.00	0.00	0.00	
10,300.00	90.00	179.50	5,731.00	-4,382.60	-558.44	4,410.00	0.00	0.00	0.00	
10,400.00	90.00	179.50	5,731.00	-4,482.60	-557.56	4,509.72	0.00	0.00	0.00	
10,500.00	90.00	179.50	5,731.00	-4,582.59	-556.69	4,609.43	0.00	0.00	0.00	
10,600.00	90.00	179.50	5,731.00	-4,682.59	-555.81	4,709.15	0.00	0.00	0.00	
10,700.00	90.00	179.50	5,731.00	-4,782.59	-554.93	4,808.87	0.00	0.00	0.00	
10,800.00	90.00	179.50	5,731.00	-4,882.58	-554.06	4,908.59	0.00	0.00	0.00	
10,900.00	90.00	179.50	5,731.00	-4,982.58	-553.18	5,008.30	0.00	0.00	0.00	
11,000.00	90.00	179.50	5,731.00	-5,082.57	-552.30	5,108.02	0.00	0.00	0.00	
11,100.00	90.00	179.50	5,731.00	-5,182.57	-551.42	5,207.74	0.00	0.00	0.00	
11,200.00	90.00	179.50	5,731.00	-5,282.57	-550.55	5,307.46	0.00	0.00	0.00	
11,300.00	90.00	179.50	5,731.00	-5,382.56	-549.67	5,407.17	0.00	0.00	0.00	
11,400.00	90.00	179.50	5,731.00	-5,482.56	-548.79	5,506.89	0.00	0.00	0.00	
11,500.00	90.00	179.50	5,731.00	-5,582.55	-547.91	5,606.61	0.00	0.00	0.00	
11,600.00	90.00	179.50	5,731.00	-5,682.55	-547.04	5,706.33	0.00	0.00	0.00	
11,700.00	90.00	179.50	5,731.00	-5,782.55	-546.16	5,806.04	0.00	0.00	0.00	
11,800.00	90.00	179.50	5,731.00	-5,882.54	-545.28	5,905.76	0.00	0.00	0.00	
11,900.00	90.00	179.50	5,731.00	-5,982.54	-544.41	6,005.48	0.00	0.00	0.00	
12,000.00	90.00	179.50	5,731.00	-6,082.54	-543.53	6,105.20	0.00	0.00	0.00	
12,100.00	90.00	179.50	5,731.00	-6,182.53	-542.65	6,204.91	0.00	0.00	0.00	
12,200.00	90.00	179.50	5,731.00	-6,282.53	-541.77	6,304.63	0.00	0.00	0.00	



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07G-1809
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4916.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<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)	
12,300.00	90.00	179.50	5,731.00	-6,382.52	-540.90	6,404.35	0.00	0.00	0.00	
12,400.00	90.00	179.50	5,731.00	-6,482.52	-540.02	6,504.07	0.00	0.00	0.00	
12,500.00	90.00	179.50	5,731.00	-6,582.52	-539.14	6,603.78	0.00	0.00	0.00	
12,600.00	90.00	179.50	5,731.00	-6,682.51	-538.27	6,703.50	0.00	0.00	0.00	
12,700.00	90.00	179.50	5,731.00	-6,782.51	-537.39	6,803.22	0.00	0.00	0.00	
12,800.00	90.00	179.50	5,731.00	-6,882.50	-536.51	6,902.94	0.00	0.00	0.00	
12,900.00	90.00	179.50	5,731.00	-6,982.50	-535.63	7,002.65	0.00	0.00	0.00	
13,000.00	90.00	179.50	5,731.00	-7,082.50	-534.76	7,102.37	0.00	0.00	0.00	
13,100.00	90.00	179.50	5,731.00	-7,182.49	-533.88	7,202.09	0.00	0.00	0.00	
13,200.00	90.00	179.50	5,731.00	-7,282.49	-533.00	7,301.81	0.00	0.00	0.00	
13,300.00	90.00	179.50	5,731.00	-7,382.49	-532.13	7,401.52	0.00	0.00	0.00	
13,400.00	90.00	179.50	5,731.00	-7,482.48	-531.25	7,501.24	0.00	0.00	0.00	
13,500.00	90.00	179.50	5,731.00	-7,582.48	-530.37	7,600.96	0.00	0.00	0.00	
13,600.00	90.00	179.50	5,731.00	-7,682.47	-529.49	7,700.68	0.00	0.00	0.00	
13,700.00	90.00	179.50	5,731.00	-7,782.47	-528.62	7,800.39	0.00	0.00	0.00	
13,800.00	90.00	179.50	5,731.00	-7,882.47	-527.74	7,900.11	0.00	0.00	0.00	
13,846.04	90.00	179.50	5,731.00	-7,928.50	-527.34	7,946.02	0.00	0.00	0.00	
TD at 13846.04										

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 1809A	0.00	0.00	5,731.00	-7,928.50	-527.34	1,550,445.05	3,472,170.86	40° 49' 54.770 N	103° 47' 37.250 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,083.22	5,731.00	7" CSG PT/5 1/2" Marker	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,562.60	1,550.00	Upper Pierre				
3,538.75	3,500.00	Hygiene				
3,690.76	3,650.00	Lower Pierre				
5,724.01	5,612.00	P200 Marker				
5,768.85	5,639.00	P300 Marker				
5,804.09	5,658.00	P350 Marker				
5,822.26	5,667.00	Sharon Springs				
5,841.66	5,676.00	Niobrara				
5,899.67	5,699.00	Top A Chalk				



**WOG**  
Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07G-1809
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4916.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4916.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07G-1809	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

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'
766.60	764.54	19.31	-32.63	Hold 9.33° Inc
4,598.23	4,545.46	335.69	-567.37	Drop 2°/100'
5,064.83	5,010.00	355.00	-600.00	Hold Vertical
5,264.83	5,210.00	355.00	-600.00	KOP, Build 11°/100'
6,083.22	5,731.00	-165.98	-595.43	LP @ 90° Inc, Hold
13,846.04	5,731.00	-7,928.50	-527.34	TD at 13846.04