



Project: Weld County, CO  
Site: Sec 7-T10N-R57W  
Well: Horsetail #07H-0647  
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

MDPath	Formation
1550.00	Upper Pierre
3500.00	Hygiene
3650.00	Lower Pierre
5619.00	P200 Marker
5646.00	P300 Marker
5665.00	P350 Marker
5674.00	Sharon Springs
5683.00	Niobrara
5706.00	Top A Chalk
5745.00	Top A Marl
5765.00	A Marl
5776.00	Top Upper B
5799.00	Base Upper B
5821.00	Top Lower B
5855.00	Base Lower B
5863.00	Top B Marl
5892.00	Top C Chalk
5904.00	5981.86 Middle C Chalk
5920.00	6008.45 Middle C Marl
5944.00	6052.40 Lower C Chalk
5960.00	6085.54 Lower C Marl
5974.00	6118.37 Lower C Marker
5986.00	6150.89 Top Ft. Hays
6000.00	6198.07 Ft. Hays Marker

WELL DETAILS: Horsetail #07H-0647

+N/-S	+E/-W	Northing	Ground Level: 4912.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1558321.90	3473773.23	40° 51' 12.280 N	103° 47' 14.430 W		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	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	545.09	4.90	194.19	544.79	-10.16	-2.57	2.00	194.19	-10.12	
4	5068.05	4.90	194.19	5051.21	-384.84	-97.30	0.00	0.00	-383.50	
5	5313.14	0.00	0.00	5296.00	-395.00	-99.87	2.00	180.00	-393.62	
6	5513.14	0.00	0.00	5496.00	-395.00	-99.87	0.00	0.00	-393.62	
7	6331.52	90.00	360.00	6017.00	126.00	-99.87	11.00	360.00	127.33	
8	13624.03	90.00	360.00	6017.00	7418.51	-99.87	0.00	0.00	7419.18	PBHL 0647C

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'
544.79	545.09	4.90	194.19	-10.16	-2.57	-10.12	10.48	Hold 4.90° Inc
5051.21	5068.05	4.90	194.19	-384.84	-97.30	-383.50	396.95	Drop 2°/100'
5296.00	5313.14	0.00	0.00	-395.00	-99.87	-393.62	407.43	Hold Vertical
5496.00	5513.14	0.00	0.00	-395.00	-99.87	-393.62	407.43	KOP, Build 11°/100'
6017.00	6331.52	90.00	360.00	126.00	-99.87	127.33	928.43	LP @ 90° Inc, Hold
6017.00	13624.03	90.00	360.00	7418.51	-99.87	7419.18	8220.94	TD at 13624.03

DESIGN TARGET DETAILS

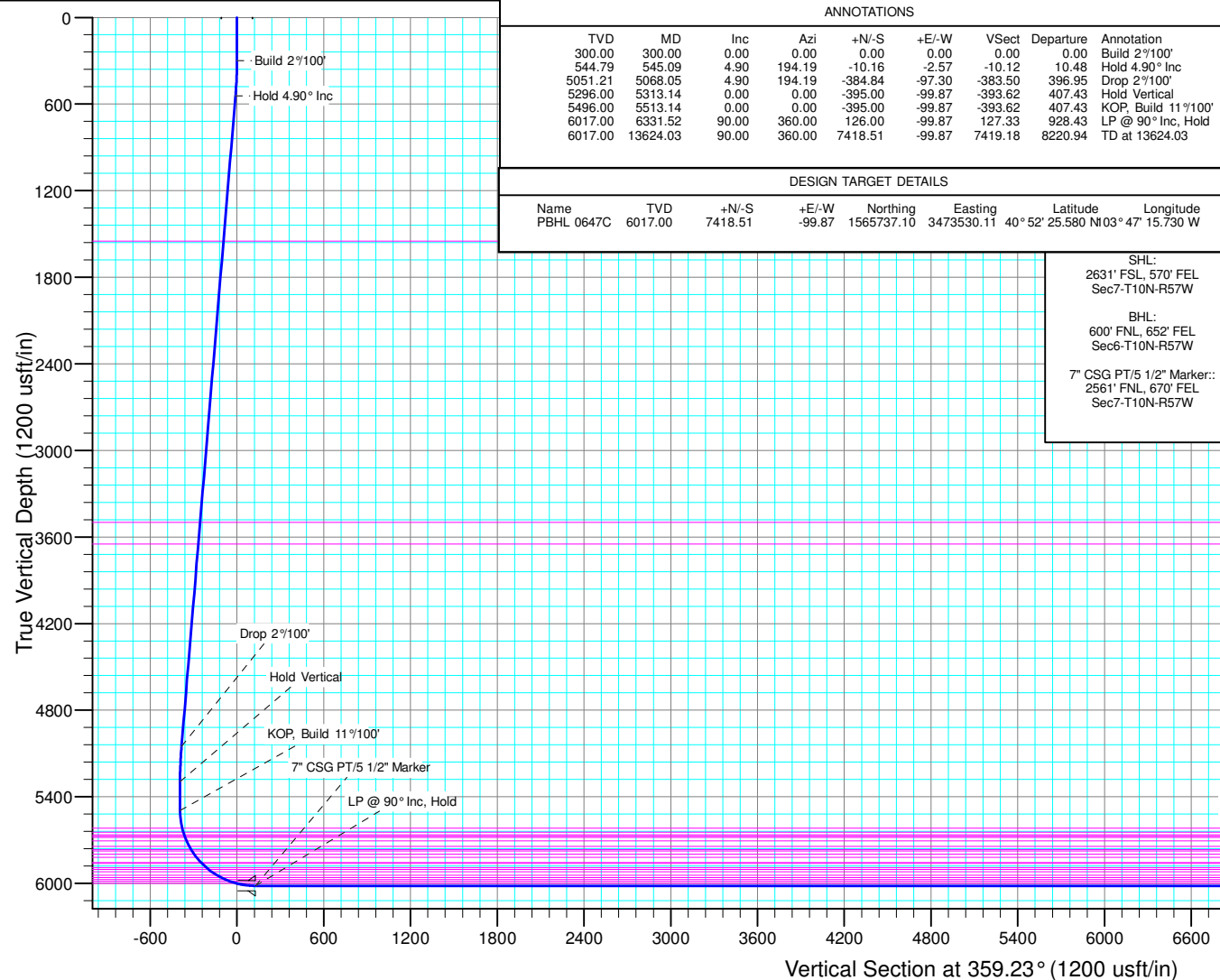
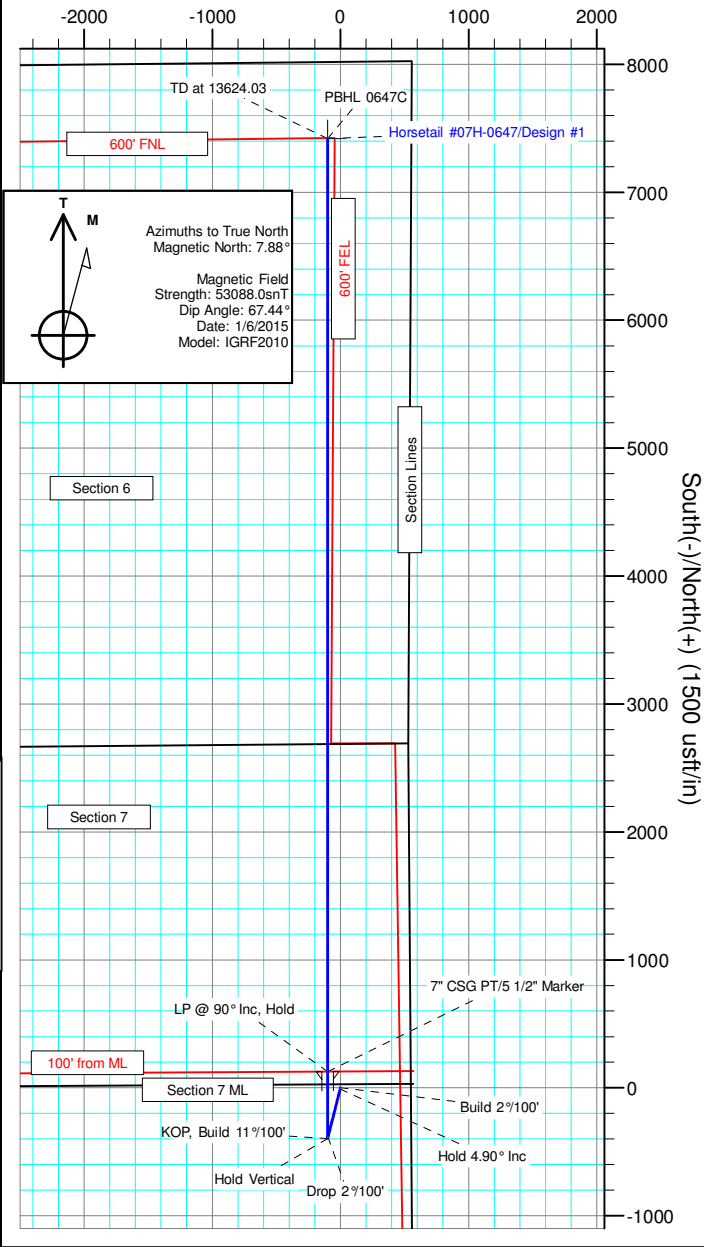
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 0647C	6017.00	7418.51	-99.87	1565737.10	3473530.11	40° 52' 25.580 N	103° 47' 15.730 W

SHL:  
2631' FSL, 570' FEL  
Sec7-T10N-R57W

BHL:  
600' FNL, 652' FEL  
Sec6-T10N-R57W

7" CSG PT/5 1/2" Marker:  
2561' FNL, 670' FEL  
Sec7-T10N-R57W

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





# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 7-T10N-R57W**

**Horsetail #07H-0647**

**Hz**

**Plan: Design #1**

## **Standard Planning Report**

**01 December, 2015**



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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 #07H-0647					
Well Position	+N/-S	-204.11 usft	Northing:	1,558,321.91 usft	Latitude:	40° 51' 12.280 N
	+E/-W	3,959.90 usft	Easting:	3,473,773.23 usft	Longitude:	103° 47' 14.430 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,912.00 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	359.23

<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	
545.09	4.90	194.19	544.79	-10.16	-2.57	2.00	2.00	0.00	194.19	
5,068.05	4.90	194.19	5,051.21	-384.84	-97.30	0.00	0.00	0.00	0.00	
5,313.14	0.00	0.00	5,296.00	-395.00	-99.87	2.00	-2.00	0.00	180.00	
5,513.14	0.00	0.00	5,496.00	-395.00	-99.87	0.00	0.00	0.00	0.00	
6,331.52	90.00	360.00	6,017.00	126.00	-99.87	11.00	11.00	0.00	360.00	
13,624.03	90.00	360.00	6,017.00	7,418.51	-99.87	0.00	0.00	0.00	0.00	PBHL 0647C



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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	194.19	399.98	-1.69	-0.43	-1.69	2.00	2.00	0.00
500.00	4.00	194.19	499.84	-6.77	-1.71	-6.74	2.00	2.00	0.00
545.09	4.90	194.19	544.79	-10.16	-2.57	-10.12	2.00	2.00	0.00
<b>Hold 4.90° Inc</b>									
600.00	4.90	194.19	599.50	-14.71	-3.72	-14.66	0.00	0.00	0.00
700.00	4.90	194.19	699.13	-22.99	-5.81	-22.91	0.00	0.00	0.00
800.00	4.90	194.19	798.77	-31.27	-7.91	-31.17	0.00	0.00	0.00
900.00	4.90	194.19	898.40	-39.56	-10.00	-39.42	0.00	0.00	0.00
1,000.00	4.90	194.19	998.04	-47.84	-12.10	-47.68	0.00	0.00	0.00
1,100.00	4.90	194.19	1,097.67	-56.13	-14.19	-55.93	0.00	0.00	0.00
1,200.00	4.90	194.19	1,197.31	-64.41	-16.29	-64.19	0.00	0.00	0.00
1,300.00	4.90	194.19	1,296.94	-72.70	-18.38	-72.44	0.00	0.00	0.00
1,400.00	4.90	194.19	1,396.57	-80.98	-20.47	-80.70	0.00	0.00	0.00
1,500.00	4.90	194.19	1,496.21	-89.26	-22.57	-88.95	0.00	0.00	0.00
1,553.99	4.90	194.19	1,550.00	-93.74	-23.70	-93.41	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	4.90	194.19	1,595.84	-97.55	-24.66	-97.21	0.00	0.00	0.00
1,700.00	4.90	194.19	1,695.48	-105.83	-26.76	-105.46	0.00	0.00	0.00
1,800.00	4.90	194.19	1,795.11	-114.12	-28.85	-113.72	0.00	0.00	0.00
1,900.00	4.90	194.19	1,894.75	-122.40	-30.95	-121.97	0.00	0.00	0.00
2,000.00	4.90	194.19	1,994.38	-130.68	-33.04	-130.23	0.00	0.00	0.00
2,100.00	4.90	194.19	2,094.01	-138.97	-35.14	-138.48	0.00	0.00	0.00
2,200.00	4.90	194.19	2,193.65	-147.25	-37.23	-146.74	0.00	0.00	0.00
2,300.00	4.90	194.19	2,293.28	-155.54	-39.32	-154.99	0.00	0.00	0.00
2,400.00	4.90	194.19	2,392.92	-163.82	-41.42	-163.25	0.00	0.00	0.00
2,500.00	4.90	194.19	2,492.55	-172.10	-43.51	-171.50	0.00	0.00	0.00
2,600.00	4.90	194.19	2,592.19	-180.39	-45.61	-179.76	0.00	0.00	0.00
2,700.00	4.90	194.19	2,691.82	-188.67	-47.70	-188.01	0.00	0.00	0.00
2,800.00	4.90	194.19	2,791.45	-196.96	-49.80	-196.27	0.00	0.00	0.00
2,900.00	4.90	194.19	2,891.09	-205.24	-51.89	-204.52	0.00	0.00	0.00
3,000.00	4.90	194.19	2,990.72	-213.52	-53.99	-212.78	0.00	0.00	0.00
3,100.00	4.90	194.19	3,090.36	-221.81	-56.08	-221.03	0.00	0.00	0.00
3,200.00	4.90	194.19	3,189.99	-230.09	-58.18	-229.29	0.00	0.00	0.00
3,300.00	4.90	194.19	3,289.63	-238.38	-60.27	-237.54	0.00	0.00	0.00
3,400.00	4.90	194.19	3,389.26	-246.66	-62.36	-245.80	0.00	0.00	0.00
3,500.00	4.90	194.19	3,488.89	-254.94	-64.46	-254.05	0.00	0.00	0.00
3,511.15	4.90	194.19	3,500.00	-255.87	-64.69	-254.97	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	4.90	194.19	3,588.53	-263.23	-66.55	-262.31	0.00	0.00	0.00
3,661.70	4.90	194.19	3,650.00	-268.34	-67.85	-267.40	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	4.90	194.19	3,688.16	-271.51	-68.65	-270.56	0.00	0.00	0.00
3,800.00	4.90	194.19	3,787.80	-279.80	-70.74	-278.82	0.00	0.00	0.00
3,900.00	4.90	194.19	3,887.43	-288.08	-72.84	-287.07	0.00	0.00	0.00
4,000.00	4.90	194.19	3,987.07	-296.36	-74.93	-295.33	0.00	0.00	0.00
4,100.00	4.90	194.19	4,086.70	-304.65	-77.03	-303.58	0.00	0.00	0.00
4,200.00	4.90	194.19	4,186.33	-312.93	-79.12	-311.84	0.00	0.00	0.00
4,300.00	4.90	194.19	4,285.97	-321.22	-81.21	-320.09	0.00	0.00	0.00
4,400.00	4.90	194.19	4,385.60	-329.50	-83.31	-328.35	0.00	0.00	0.00



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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	4.90	194.19	4,485.24	-337.78	-85.40	-336.60	0.00	0.00	0.00
4,600.00	4.90	194.19	4,584.87	-346.07	-87.50	-344.86	0.00	0.00	0.00
4,700.00	4.90	194.19	4,684.51	-354.35	-89.59	-353.11	0.00	0.00	0.00
4,800.00	4.90	194.19	4,784.14	-362.64	-91.69	-361.37	0.00	0.00	0.00
4,900.00	4.90	194.19	4,883.77	-370.92	-93.78	-369.62	0.00	0.00	0.00
5,000.00	4.90	194.19	4,983.41	-379.20	-95.88	-377.88	0.00	0.00	0.00
5,068.05	4.90	194.19	5,051.21	-384.84	-97.30	-383.50	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
5,100.00	4.26	194.19	5,083.06	-387.32	-97.93	-385.96	2.00	-2.00	0.00
5,200.00	2.26	194.19	5,182.89	-392.83	-99.32	-391.46	2.00	-2.00	0.00
5,300.00	0.26	194.19	5,282.86	-394.97	-99.86	-393.59	2.00	-2.00	0.00
5,313.14	0.00	0.00	5,296.00	-395.00	-99.87	-393.62	2.00	-2.00	0.00
<b>Hold Vertical</b>									
5,400.00	0.00	0.00	5,382.86	-395.00	-99.87	-393.62	0.00	0.00	0.00
5,500.00	0.00	0.00	5,482.86	-395.00	-99.87	-393.62	0.00	0.00	0.00
5,513.14	0.00	0.00	5,496.00	-395.00	-99.87	-393.62	0.00	0.00	0.00
<b>KOP, Build 11°/100'</b>									
5,550.00	4.05	360.00	5,532.83	-393.70	-99.87	-392.32	11.00	11.00	0.00
5,600.00	9.55	360.00	5,582.46	-387.78	-99.87	-386.40	11.00	11.00	0.00
5,637.31	13.66	360.00	5,619.00	-380.27	-99.87	-378.89	11.00	11.00	0.00
<b>P200 Marker</b>									
5,650.00	15.05	360.00	5,631.29	-377.13	-99.87	-375.75	11.00	11.00	0.00
5,665.29	16.73	360.00	5,646.00	-372.94	-99.87	-371.56	11.00	11.00	0.00
<b>P300 Marker</b>									
5,685.25	18.93	360.00	5,665.00	-366.83	-99.87	-365.45	11.00	11.00	0.00
<b>P350 Marker</b>									
5,694.80	19.98	360.00	5,674.00	-363.65	-99.87	-362.27	11.00	11.00	0.00
<b>Sharon Springs</b>									
5,700.00	20.55	360.00	5,678.88	-361.85	-99.87	-360.47	11.00	11.00	0.00
5,704.41	21.03	360.00	5,683.00	-360.28	-99.87	-358.91	11.00	11.00	0.00
<b>Niobrara</b>									
5,729.29	23.77	360.00	5,706.00	-350.80	-99.87	-349.43	11.00	11.00	0.00
<b>Top A Chalk</b>									
5,750.00	26.05	360.00	5,724.79	-342.08	-99.87	-340.70	11.00	11.00	0.00
5,772.75	28.55	360.00	5,745.00	-331.65	-99.87	-330.27	11.00	11.00	0.00
<b>Top A Marl</b>									
5,795.80	31.09	360.00	5,765.00	-320.18	-99.87	-318.81	11.00	11.00	0.00
<b>A Marl</b>									
5,800.00	31.55	360.00	5,768.58	-318.00	-99.87	-316.63	11.00	11.00	0.00
5,808.75	32.51	360.00	5,776.00	-313.36	-99.87	-311.99	11.00	11.00	0.00
<b>Top Upper B</b>									
5,836.50	35.56	360.00	5,799.00	-297.83	-99.87	-296.46	11.00	11.00	0.00
<b>Base Upper B</b>									
5,850.00	37.05	360.00	5,809.88	-289.84	-99.87	-288.47	11.00	11.00	0.00
5,864.08	38.59	360.00	5,821.00	-281.21	-99.87	-279.84	11.00	11.00	0.00
<b>Top Lower B</b>									
5,900.00	42.54	360.00	5,848.28	-257.85	-99.87	-256.48	11.00	11.00	0.00
5,909.20	43.56	360.00	5,855.00	-251.57	-99.87	-250.20	11.00	11.00	0.00
<b>Base Lower B</b>									
5,920.35	44.78	360.00	5,863.00	-243.80	-99.87	-242.43	11.00	11.00	0.00
<b>Top B Marl</b>									
5,950.00	48.04	360.00	5,883.44	-222.33	-99.87	-220.96	11.00	11.00	0.00



# WOG Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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)
5,962.99	49.47	360.00	5,892.00	-212.56	-99.87	-211.20	11.00	11.00	0.00
Top C Chalk									
5,981.86	51.55	360.00	5,904.00	-198.00	-99.87	-196.64	11.00	11.00	0.00
Middle C Chalk									
6,000.00	53.54	360.00	5,915.03	-183.60	-99.87	-182.24	11.00	11.00	0.00
6,008.45	54.47	360.00	5,920.00	-176.76	-99.87	-175.40	11.00	11.00	0.00
Middle C Marl									
6,050.00	59.04	360.00	5,942.77	-142.02	-99.87	-140.67	11.00	11.00	0.00
6,052.40	59.30	360.00	5,944.00	-139.96	-99.87	-138.61	11.00	11.00	0.00
Lower C Chalk									
6,085.54	62.95	360.00	5,960.00	-110.95	-99.87	-109.59	11.00	11.00	0.00
Lower C Marl									
6,100.00	64.54	360.00	5,966.40	-97.98	-99.87	-96.63	11.00	11.00	0.00
6,118.37	66.56	360.00	5,974.00	-81.26	-99.87	-79.91	11.00	11.00	0.00
Lower C Marker									
6,150.00	70.04	360.00	5,985.70	-51.87	-99.87	-50.52	11.00	11.00	0.00
6,150.89	70.14	360.00	5,986.00	-51.03	-99.87	-49.68	11.00	11.00	0.00
Top Ft. Hays									
6,198.07	75.32	360.00	6,000.00	-6.00	-99.87	-4.66	11.00	11.00	0.00
Ft. Hays Marker									
6,200.00	75.54	360.00	6,000.49	-4.13	-99.87	-2.79	11.00	11.00	0.00
6,250.00	81.03	360.00	6,010.63	44.81	-99.87	46.15	11.00	11.00	0.00
6,300.00	86.53	360.00	6,016.05	94.49	-99.87	95.83	11.00	11.00	0.00
6,331.52	90.00	360.00	6,017.00	126.00	-99.87	127.33	11.00	11.00	0.00
LP @ 90° Inc, Hold - 7" CSG PT/5 1/2" Marker									
6,400.00	90.00	360.00	6,017.00	194.48	-99.87	195.80	0.00	0.00	0.00
6,500.00	90.00	360.00	6,017.00	294.48	-99.87	295.79	0.00	0.00	0.00
6,600.00	90.00	360.00	6,017.00	394.48	-99.87	395.78	0.00	0.00	0.00
6,700.00	90.00	360.00	6,017.00	494.48	-99.87	495.78	0.00	0.00	0.00
6,800.00	90.00	360.00	6,017.00	594.48	-99.87	595.77	0.00	0.00	0.00
6,900.00	90.00	360.00	6,017.00	694.48	-99.87	695.76	0.00	0.00	0.00
7,000.00	90.00	360.00	6,017.00	794.48	-99.87	795.75	0.00	0.00	0.00
7,100.00	90.00	360.00	6,017.00	894.48	-99.87	895.74	0.00	0.00	0.00
7,200.00	90.00	360.00	6,017.00	994.48	-99.87	995.73	0.00	0.00	0.00
7,300.00	90.00	360.00	6,017.00	1,094.48	-99.87	1,095.72	0.00	0.00	0.00
7,400.00	90.00	360.00	6,017.00	1,194.48	-99.87	1,195.71	0.00	0.00	0.00
7,500.00	90.00	360.00	6,017.00	1,294.48	-99.87	1,295.70	0.00	0.00	0.00
7,600.00	90.00	360.00	6,017.00	1,394.48	-99.87	1,395.69	0.00	0.00	0.00
7,700.00	90.00	360.00	6,017.00	1,494.48	-99.87	1,495.68	0.00	0.00	0.00
7,800.00	90.00	360.00	6,017.00	1,594.48	-99.87	1,595.68	0.00	0.00	0.00
7,900.00	90.00	360.00	6,017.00	1,694.48	-99.87	1,695.67	0.00	0.00	0.00
8,000.00	90.00	360.00	6,017.00	1,794.48	-99.87	1,795.66	0.00	0.00	0.00
8,100.00	90.00	360.00	6,017.00	1,894.48	-99.87	1,895.65	0.00	0.00	0.00
8,200.00	90.00	360.00	6,017.00	1,994.48	-99.87	1,995.64	0.00	0.00	0.00
8,300.00	90.00	360.00	6,017.00	2,094.48	-99.87	2,095.63	0.00	0.00	0.00
8,400.00	90.00	360.00	6,017.00	2,194.48	-99.87	2,195.62	0.00	0.00	0.00
8,500.00	90.00	360.00	6,017.00	2,294.48	-99.87	2,295.61	0.00	0.00	0.00
8,600.00	90.00	360.00	6,017.00	2,394.48	-99.87	2,395.60	0.00	0.00	0.00
8,700.00	90.00	360.00	6,017.00	2,494.48	-99.87	2,495.59	0.00	0.00	0.00
8,800.00	90.00	360.00	6,017.00	2,594.48	-99.87	2,595.58	0.00	0.00	0.00
8,900.00	90.00	360.00	6,017.00	2,694.48	-99.87	2,695.58	0.00	0.00	0.00
9,000.00	90.00	360.00	6,017.00	2,794.48	-99.87	2,795.57	0.00	0.00	0.00
9,100.00	90.00	360.00	6,017.00	2,894.48	-99.87	2,895.56	0.00	0.00	0.00



**WOG**  
Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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)
9,200.00	90.00	360.00	6,017.00	2,994.48	-99.87	2,995.55	0.00	0.00	0.00
9,300.00	90.00	360.00	6,017.00	3,094.48	-99.87	3,095.54	0.00	0.00	0.00
9,400.00	90.00	360.00	6,017.00	3,194.48	-99.87	3,195.53	0.00	0.00	0.00
9,500.00	90.00	360.00	6,017.00	3,294.48	-99.87	3,295.52	0.00	0.00	0.00
9,600.00	90.00	360.00	6,017.00	3,394.48	-99.87	3,395.51	0.00	0.00	0.00
9,700.00	90.00	360.00	6,017.00	3,494.48	-99.87	3,495.50	0.00	0.00	0.00
9,800.00	90.00	360.00	6,017.00	3,594.48	-99.87	3,595.49	0.00	0.00	0.00
9,900.00	90.00	360.00	6,017.00	3,694.48	-99.87	3,695.49	0.00	0.00	0.00
10,000.00	90.00	360.00	6,017.00	3,794.48	-99.87	3,795.48	0.00	0.00	0.00
10,100.00	90.00	360.00	6,017.00	3,894.48	-99.87	3,895.47	0.00	0.00	0.00
10,200.00	90.00	360.00	6,017.00	3,994.48	-99.87	3,995.46	0.00	0.00	0.00
10,300.00	90.00	360.00	6,017.00	4,094.48	-99.87	4,095.45	0.00	0.00	0.00
10,400.00	90.00	360.00	6,017.00	4,194.48	-99.87	4,195.44	0.00	0.00	0.00
10,500.00	90.00	360.00	6,017.00	4,294.48	-99.87	4,295.43	0.00	0.00	0.00
10,600.00	90.00	360.00	6,017.00	4,394.48	-99.87	4,395.42	0.00	0.00	0.00
10,700.00	90.00	360.00	6,017.00	4,494.48	-99.87	4,495.41	0.00	0.00	0.00
10,800.00	90.00	360.00	6,017.00	4,594.48	-99.87	4,595.40	0.00	0.00	0.00
10,900.00	90.00	360.00	6,017.00	4,694.48	-99.87	4,695.39	0.00	0.00	0.00
11,000.00	90.00	360.00	6,017.00	4,794.48	-99.87	4,795.39	0.00	0.00	0.00
11,100.00	90.00	360.00	6,017.00	4,894.48	-99.87	4,895.38	0.00	0.00	0.00
11,200.00	90.00	360.00	6,017.00	4,994.48	-99.87	4,995.37	0.00	0.00	0.00
11,300.00	90.00	360.00	6,017.00	5,094.48	-99.87	5,095.36	0.00	0.00	0.00
11,400.00	90.00	360.00	6,017.00	5,194.48	-99.87	5,195.35	0.00	0.00	0.00
11,500.00	90.00	360.00	6,017.00	5,294.48	-99.87	5,295.34	0.00	0.00	0.00
11,600.00	90.00	360.00	6,017.00	5,394.48	-99.87	5,395.33	0.00	0.00	0.00
11,700.00	90.00	360.00	6,017.00	5,494.48	-99.87	5,495.32	0.00	0.00	0.00
11,800.00	90.00	360.00	6,017.00	5,594.48	-99.87	5,595.31	0.00	0.00	0.00
11,900.00	90.00	360.00	6,017.00	5,694.48	-99.87	5,695.30	0.00	0.00	0.00
12,000.00	90.00	360.00	6,017.00	5,794.48	-99.87	5,795.30	0.00	0.00	0.00
12,100.00	90.00	360.00	6,017.00	5,894.48	-99.87	5,895.29	0.00	0.00	0.00
12,200.00	90.00	360.00	6,017.00	5,994.48	-99.87	5,995.28	0.00	0.00	0.00
12,300.00	90.00	360.00	6,017.00	6,094.48	-99.87	6,095.27	0.00	0.00	0.00
12,400.00	90.00	360.00	6,017.00	6,194.48	-99.87	6,195.26	0.00	0.00	0.00
12,500.00	90.00	360.00	6,017.00	6,294.48	-99.87	6,295.25	0.00	0.00	0.00
12,600.00	90.00	360.00	6,017.00	6,394.48	-99.87	6,395.24	0.00	0.00	0.00
12,700.00	90.00	360.00	6,017.00	6,494.48	-99.87	6,495.23	0.00	0.00	0.00
12,800.00	90.00	360.00	6,017.00	6,594.48	-99.87	6,595.22	0.00	0.00	0.00
12,900.00	90.00	360.00	6,017.00	6,694.48	-99.87	6,695.21	0.00	0.00	0.00
13,000.00	90.00	360.00	6,017.00	6,794.48	-99.87	6,795.20	0.00	0.00	0.00
13,100.00	90.00	360.00	6,017.00	6,894.48	-99.87	6,895.20	0.00	0.00	0.00
13,200.00	90.00	360.00	6,017.00	6,994.48	-99.87	6,995.19	0.00	0.00	0.00
13,300.00	90.00	360.00	6,017.00	7,094.48	-99.87	7,095.18	0.00	0.00	0.00
13,400.00	90.00	360.00	6,017.00	7,194.48	-99.87	7,195.17	0.00	0.00	0.00
13,500.00	90.00	360.00	6,017.00	7,294.48	-99.87	7,295.16	0.00	0.00	0.00
13,600.00	90.00	360.00	6,017.00	7,394.48	-99.87	7,395.15	0.00	0.00	0.00
13,624.03	90.00	360.00	6,017.00	7,418.51	-99.87	7,419.18	0.00	0.00	0.00
TD at 13624.03									



# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Design #1		

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 0647C	0.00	0.00	6,017.00	7,418.51	-99.87	1,565,737.10	3,473,530.11	40° 52' 25.580 N	103° 47' 15.730 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,331.52	6,017.00	7" CSG PT/5 1/2" Marker	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,553.99	1,550.00	Upper Pierre				
3,511.15	3,500.00	Hygiene				
3,661.70	3,650.00	Lower Pierre				
5,637.31	5,619.00	P200 Marker				
5,665.29	5,646.00	P300 Marker				
5,685.25	5,665.00	P350 Marker				
5,694.80	5,674.00	Sharon Springs				
5,704.41	5,683.00	Niobrara				
5,729.29	5,706.00	Top A Chalk				
5,772.75	5,745.00	Top A Marl				
5,795.80	5,765.00	A Marl				
5,808.75	5,776.00	Top Upper B				
5,836.50	5,799.00	Base Upper B				
5,864.08	5,821.00	Top Lower B				
5,909.20	5,855.00	Base Lower B				
5,920.35	5,863.00	Top B Marl				
5,962.99	5,892.00	Top C Chalk				
5,981.86	5,904.00	Middle C Chalk				
6,008.45	5,920.00	Middle C Marl				
6,052.40	5,944.00	Lower C Chalk				
6,085.54	5,960.00	Lower C Marl				
6,118.37	5,974.00	Lower C Marker				
6,150.89	5,986.00	Top Ft. Hays				
6,198.07	6,000.00	Ft. Hays Marker				





# WOG

## Planning Report

<b>Database:</b>	LandmarkEDM	<b>Local Co-ordinate Reference:</b>	Well Horsetail #07H-0647
<b>Company:</b>	Whiting Petroleum Corp.	<b>TVD Reference:</b>	KBE @ 4933.00usft
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 4933.00usft
<b>Site:</b>	Sec 7-T10N-R57W	<b>North Reference:</b>	True
<b>Well:</b>	Horsetail #07H-0647	<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'
545.09	544.79	-10.16	-2.57	Hold 4.90° Inc
5,068.05	5,051.21	-384.84	-97.30	Drop 2°/100'
5,313.14	5,296.00	-395.00	-99.87	Hold Vertical
5,513.14	5,496.00	-395.00	-99.87	KOP, Build 11°/100'
6,331.52	6,017.00	126.00	-99.87	LP @ 90° Inc, Hold
13,624.03	6,017.00	7,418.51	-99.87	TD at 13624.03