



# **Whiting Petroleum Corp.**

**Weld County, CO**

**Sec 7-T10N-R57W**

**Horsetail #07G-1809**

**Hz**

**Plan: Design #1**

## **Standard Planning Report**

**26 March, 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>	WELL @ 4913.00usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4913.00usft (Original Well Elev)
<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:	4,896.00 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>										
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	
725.00	8.50	303.00	723.44	17.14	-26.39	2.00	2.00	0.00	303.00	
4,550.00	8.50	303.00	4,506.43	325.06	-500.55	0.00	0.00	0.00	0.00	
4,975.00	0.00	0.00	4,929.87	342.20	-526.94	2.00	-2.00	0.00	180.00	
5,274.26	0.00	0.00	5,229.13	342.20	-526.94	0.00	0.00	0.00	0.00	
6,092.44	90.00	180.00	5,750.00	-178.67	-526.97	11.00	11.00	0.00	180.00	PBHL 1809A
13,842.28	90.00	180.00	5,750.00	-7,928.51	-527.34	0.00	0.00	0.00	0.00	PBHL 1809A



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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4913.00usft (Original Well Elev)
<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)
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	303.00	399.98	0.95	-1.46	-0.85	2.00	2.00	0.00
500.00	4.00	303.00	499.84	3.80	-5.85	-3.40	2.00	2.00	0.00
600.00	6.00	303.00	599.45	8.55	-13.16	-7.66	2.00	2.00	0.00
700.00	8.00	303.00	698.70	15.18	-23.38	-13.60	2.00	2.00	0.00
725.00	8.50	303.00	723.44	17.14	-26.39	-15.35	2.00	2.00	0.00
<b>Hold 8.50° Inc</b>									
800.00	8.50	303.00	797.62	23.18	-35.69	-20.76	0.00	0.00	0.00
900.00	8.50	303.00	896.52	31.23	-48.08	-27.97	0.00	0.00	0.00
1,000.00	8.50	303.00	995.42	39.28	-60.48	-35.18	0.00	0.00	0.00
1,100.00	8.50	303.00	1,094.32	47.33	-72.88	-42.39	0.00	0.00	0.00
1,200.00	8.50	303.00	1,193.23	55.38	-85.27	-49.60	0.00	0.00	0.00
1,300.00	8.50	303.00	1,292.13	63.43	-97.67	-56.81	0.00	0.00	0.00
1,400.00	8.50	303.00	1,391.03	71.48	-110.07	-64.02	0.00	0.00	0.00
1,500.00	8.50	303.00	1,489.93	79.53	-122.46	-71.23	0.00	0.00	0.00
1,560.74	8.50	303.00	1,550.00	84.42	-129.99	-75.60	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,600.00	8.50	303.00	1,588.83	87.58	-134.86	-78.44	0.00	0.00	0.00
1,700.00	8.50	303.00	1,687.73	95.63	-147.26	-85.65	0.00	0.00	0.00
1,800.00	8.50	303.00	1,786.63	103.68	-159.65	-92.86	0.00	0.00	0.00
1,900.00	8.50	303.00	1,885.54	111.73	-172.05	-100.06	0.00	0.00	0.00
2,000.00	8.50	303.00	1,984.44	119.78	-184.44	-107.27	0.00	0.00	0.00
2,100.00	8.50	303.00	2,083.34	127.83	-196.84	-114.48	0.00	0.00	0.00
2,200.00	8.50	303.00	2,182.24	135.88	-209.24	-121.69	0.00	0.00	0.00
2,300.00	8.50	303.00	2,281.14	143.93	-221.63	-128.90	0.00	0.00	0.00
2,400.00	8.50	303.00	2,380.04	151.98	-234.03	-136.11	0.00	0.00	0.00
2,500.00	8.50	303.00	2,478.95	160.03	-246.43	-143.32	0.00	0.00	0.00
2,600.00	8.50	303.00	2,577.85	168.08	-258.82	-150.53	0.00	0.00	0.00
2,700.00	8.50	303.00	2,676.75	176.13	-271.22	-157.74	0.00	0.00	0.00
2,800.00	8.50	303.00	2,775.65	184.18	-283.61	-164.95	0.00	0.00	0.00
2,900.00	8.50	303.00	2,874.55	192.23	-296.01	-172.16	0.00	0.00	0.00
3,000.00	8.50	303.00	2,973.45	200.28	-308.41	-179.37	0.00	0.00	0.00
3,100.00	8.50	303.00	3,072.36	208.33	-320.80	-186.58	0.00	0.00	0.00
3,200.00	8.50	303.00	3,171.26	216.38	-333.20	-193.79	0.00	0.00	0.00
3,300.00	8.50	303.00	3,270.16	224.43	-345.60	-201.00	0.00	0.00	0.00
3,400.00	8.50	303.00	3,369.06	232.48	-357.99	-208.21	0.00	0.00	0.00
3,500.00	8.50	303.00	3,467.96	240.53	-370.39	-215.42	0.00	0.00	0.00
3,532.39	8.50	303.00	3,500.00	243.14	-374.40	-217.76	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	8.50	303.00	3,566.86	248.58	-382.79	-222.63	0.00	0.00	0.00
3,684.06	8.50	303.00	3,650.00	255.35	-393.21	-228.69	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,700.00	8.50	303.00	3,665.77	256.63	-395.18	-229.84	0.00	0.00	0.00
3,800.00	8.50	303.00	3,764.67	264.68	-407.58	-237.05	0.00	0.00	0.00
3,900.00	8.50	303.00	3,863.57	272.73	-419.97	-244.26	0.00	0.00	0.00
4,000.00	8.50	303.00	3,962.47	280.78	-432.37	-251.47	0.00	0.00	0.00
4,100.00	8.50	303.00	4,061.37	288.84	-444.77	-258.68	0.00	0.00	0.00
4,200.00	8.50	303.00	4,160.27	296.89	-457.16	-265.89	0.00	0.00	0.00
4,300.00	8.50	303.00	4,259.17	304.94	-469.56	-273.10	0.00	0.00	0.00
4,400.00	8.50	303.00	4,358.08	312.99	-481.96	-280.31	0.00	0.00	0.00



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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4913.00usft (Original Well Elev)
<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	8.50	303.00	4,456.98	321.04	-494.35	-287.52	0.00	0.00	0.00
4,550.00	8.50	303.00	4,506.43	325.06	-500.55	-291.13	0.00	0.00	0.00
<b>Drop 2°/100'</b>									
4,600.00	7.50	303.00	4,555.94	328.85	-506.39	-294.52	2.00	-2.00	0.00
4,700.00	5.50	303.00	4,655.29	335.02	-515.88	-300.04	2.00	-2.00	0.00
4,800.00	3.50	303.00	4,754.98	339.29	-522.46	-303.87	2.00	-2.00	0.00
4,900.00	1.50	303.00	4,854.88	341.66	-526.12	-306.00	2.00	-2.00	0.00
4,975.00	0.00	0.00	4,929.87	342.20	-526.94	-306.47	2.00	-2.00	0.00
<b>Hold Vertical</b>									
5,000.00	0.00	0.00	4,954.87	342.20	-526.94	-306.47	0.00	0.00	0.00
5,100.00	0.00	0.00	5,054.87	342.20	-526.94	-306.47	0.00	0.00	0.00
5,200.00	0.00	0.00	5,154.87	342.20	-526.94	-306.47	0.00	0.00	0.00
5,274.26	0.00	0.00	5,229.13	342.20	-526.94	-306.47	0.00	0.00	0.00
<b>KOP, Build 11°/100'</b>									
5,300.00	2.83	180.00	5,254.86	341.56	-526.94	-305.84	11.00	11.00	0.00
5,350.00	8.33	180.00	5,304.60	336.70	-526.94	-300.99	11.00	11.00	0.00
5,400.00	13.83	180.00	5,353.65	327.10	-526.94	-291.40	11.00	11.00	0.00
5,450.00	19.33	180.00	5,401.56	312.83	-526.94	-277.17	11.00	11.00	0.00
5,500.00	24.83	180.00	5,447.87	294.04	-526.94	-258.42	11.00	11.00	0.00
5,550.00	30.33	180.00	5,492.17	270.90	-526.94	-235.33	11.00	11.00	0.00
5,576.87	33.29	180.00	5,515.00	256.74	-526.95	-221.20	11.00	11.00	0.00
<b>P200 Marker</b>									
5,595.02	35.28	180.00	5,530.00	246.51	-526.95	-211.00	11.00	11.00	0.00
<b>P300 Marker</b>									
5,600.00	35.83	180.00	5,534.05	243.62	-526.95	-208.11	11.00	11.00	0.00
5,619.95	38.03	180.00	5,550.00	231.63	-526.95	-196.15	11.00	11.00	0.00
<b>P350 Marker</b>									
5,650.00	41.33	180.00	5,573.12	212.45	-526.95	-177.01	11.00	11.00	0.00
5,700.00	46.83	180.00	5,609.02	177.68	-526.95	-142.32	11.00	11.00	0.00
5,750.00	52.33	180.00	5,641.43	139.63	-526.95	-104.35	11.00	11.00	0.00
5,800.00	57.83	180.00	5,670.04	98.65	-526.95	-63.46	11.00	11.00	0.00
5,850.00	63.33	180.00	5,694.59	55.11	-526.95	-20.02	11.00	11.00	0.00
5,867.07	65.21	180.00	5,702.00	39.73	-526.96	-4.67	11.00	11.00	0.00
<b>Sharon Springs</b>									
5,879.31	66.56	180.00	5,707.00	28.56	-526.96	6.47	11.00	11.00	0.00
<b>Niobrara</b>									
5,900.00	68.83	180.00	5,714.85	9.42	-526.96	25.57	11.00	11.00	0.00
5,937.08	72.91	180.00	5,727.00	-25.60	-526.96	60.52	11.00	11.00	0.00
<b>Top A Chalk</b>									
5,950.00	74.33	180.00	5,730.64	-38.00	-526.96	72.89	11.00	11.00	0.00
6,000.00	79.83	180.00	5,741.82	-86.72	-526.96	121.50	11.00	11.00	0.00
6,050.00	85.33	180.00	5,748.27	-136.28	-526.96	170.95	11.00	11.00	0.00
6,092.44	90.00	180.00	5,750.00	-178.67	-526.97	213.25	11.00	11.00	0.00
<b>LP @ 90° Inc, Hold - 7"</b>									
6,100.00	90.00	180.00	5,750.00	-186.23	-526.97	220.79	0.00	0.00	0.00
6,200.00	90.00	180.00	5,750.00	-286.23	-526.97	320.57	0.00	0.00	0.00
6,300.00	90.00	180.00	5,750.00	-386.23	-526.98	420.35	0.00	0.00	0.00
6,400.00	90.00	180.00	5,750.00	-486.23	-526.98	520.13	0.00	0.00	0.00
6,500.00	90.00	180.00	5,750.00	-586.23	-526.99	619.91	0.00	0.00	0.00
6,600.00	90.00	180.00	5,750.00	-686.23	-526.99	719.69	0.00	0.00	0.00
6,700.00	90.00	180.00	5,750.00	-786.23	-527.00	819.47	0.00	0.00	0.00
6,800.00	90.00	180.00	5,750.00	-886.23	-527.00	919.25	0.00	0.00	0.00



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<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	180.00	5,750.00	-986.23	-527.00	1,019.03	0.00	0.00	0.00	
7,000.00	90.00	180.00	5,750.00	-1,086.23	-527.01	1,118.81	0.00	0.00	0.00	
7,100.00	90.00	180.00	5,750.00	-1,186.23	-527.01	1,218.59	0.00	0.00	0.00	
7,200.00	90.00	180.00	5,750.00	-1,286.23	-527.02	1,318.37	0.00	0.00	0.00	
7,300.00	90.00	180.00	5,750.00	-1,386.23	-527.02	1,418.15	0.00	0.00	0.00	
7,400.00	90.00	180.00	5,750.00	-1,486.23	-527.03	1,517.93	0.00	0.00	0.00	
7,500.00	90.00	180.00	5,750.00	-1,586.23	-527.03	1,617.71	0.00	0.00	0.00	
7,600.00	90.00	180.00	5,750.00	-1,686.23	-527.04	1,717.49	0.00	0.00	0.00	
7,700.00	90.00	180.00	5,750.00	-1,786.23	-527.04	1,817.27	0.00	0.00	0.00	
7,800.00	90.00	180.00	5,750.00	-1,886.23	-527.05	1,917.05	0.00	0.00	0.00	
7,900.00	90.00	180.00	5,750.00	-1,986.23	-527.05	2,016.83	0.00	0.00	0.00	
8,000.00	90.00	180.00	5,750.00	-2,086.23	-527.06	2,116.61	0.00	0.00	0.00	
8,100.00	90.00	180.00	5,750.00	-2,186.23	-527.06	2,216.39	0.00	0.00	0.00	
8,200.00	90.00	180.00	5,750.00	-2,286.23	-527.07	2,316.17	0.00	0.00	0.00	
8,300.00	90.00	180.00	5,750.00	-2,386.23	-527.07	2,415.95	0.00	0.00	0.00	
8,400.00	90.00	180.00	5,750.00	-2,486.23	-527.08	2,515.73	0.00	0.00	0.00	
8,500.00	90.00	180.00	5,750.00	-2,586.23	-527.08	2,615.51	0.00	0.00	0.00	
8,600.00	90.00	180.00	5,750.00	-2,686.23	-527.09	2,715.29	0.00	0.00	0.00	
8,700.00	90.00	180.00	5,750.00	-2,786.23	-527.09	2,815.07	0.00	0.00	0.00	
8,800.00	90.00	180.00	5,750.00	-2,886.23	-527.10	2,914.85	0.00	0.00	0.00	
8,900.00	90.00	180.00	5,750.00	-2,986.23	-527.10	3,014.63	0.00	0.00	0.00	
9,000.00	90.00	180.00	5,750.00	-3,086.23	-527.10	3,114.41	0.00	0.00	0.00	
9,100.00	90.00	180.00	5,750.00	-3,186.23	-527.11	3,214.19	0.00	0.00	0.00	
9,200.00	90.00	180.00	5,750.00	-3,286.23	-527.11	3,313.97	0.00	0.00	0.00	
9,300.00	90.00	180.00	5,750.00	-3,386.23	-527.12	3,413.75	0.00	0.00	0.00	
9,400.00	90.00	180.00	5,750.00	-3,486.23	-527.12	3,513.53	0.00	0.00	0.00	
9,500.00	90.00	180.00	5,750.00	-3,586.23	-527.13	3,613.31	0.00	0.00	0.00	
9,600.00	90.00	180.00	5,750.00	-3,686.23	-527.13	3,713.09	0.00	0.00	0.00	
9,700.00	90.00	180.00	5,750.00	-3,786.23	-527.14	3,812.87	0.00	0.00	0.00	
9,800.00	90.00	180.00	5,750.00	-3,886.23	-527.14	3,912.65	0.00	0.00	0.00	
9,900.00	90.00	180.00	5,750.00	-3,986.23	-527.15	4,012.43	0.00	0.00	0.00	
10,000.00	90.00	180.00	5,750.00	-4,086.23	-527.15	4,112.21	0.00	0.00	0.00	
10,100.00	90.00	180.00	5,750.00	-4,186.23	-527.16	4,211.99	0.00	0.00	0.00	
10,200.00	90.00	180.00	5,750.00	-4,286.23	-527.16	4,311.77	0.00	0.00	0.00	
10,300.00	90.00	180.00	5,750.00	-4,386.23	-527.17	4,411.55	0.00	0.00	0.00	
10,400.00	90.00	180.00	5,750.00	-4,486.23	-527.17	4,511.33	0.00	0.00	0.00	
10,500.00	90.00	180.00	5,750.00	-4,586.23	-527.18	4,611.11	0.00	0.00	0.00	
10,600.00	90.00	180.00	5,750.00	-4,686.23	-527.18	4,710.89	0.00	0.00	0.00	
10,700.00	90.00	180.00	5,750.00	-4,786.23	-527.19	4,810.67	0.00	0.00	0.00	
10,800.00	90.00	180.00	5,750.00	-4,886.23	-527.19	4,910.45	0.00	0.00	0.00	
10,900.00	90.00	180.00	5,750.00	-4,986.23	-527.20	5,010.23	0.00	0.00	0.00	
11,000.00	90.00	180.00	5,750.00	-5,086.23	-527.20	5,110.01	0.00	0.00	0.00	
11,100.00	90.00	180.00	5,750.00	-5,186.23	-527.20	5,209.79	0.00	0.00	0.00	
11,200.00	90.00	180.00	5,750.00	-5,286.23	-527.21	5,309.57	0.00	0.00	0.00	
11,300.00	90.00	180.00	5,750.00	-5,386.23	-527.21	5,409.35	0.00	0.00	0.00	
11,400.00	90.00	180.00	5,750.00	-5,486.23	-527.22	5,509.13	0.00	0.00	0.00	
11,500.00	90.00	180.00	5,750.00	-5,586.23	-527.22	5,608.91	0.00	0.00	0.00	
11,600.00	90.00	180.00	5,750.00	-5,686.23	-527.23	5,708.69	0.00	0.00	0.00	
11,700.00	90.00	180.00	5,750.00	-5,786.23	-527.23	5,808.47	0.00	0.00	0.00	
11,800.00	90.00	180.00	5,750.00	-5,886.23	-527.24	5,908.25	0.00	0.00	0.00	
11,900.00	90.00	180.00	5,750.00	-5,986.23	-527.24	6,008.03	0.00	0.00	0.00	
12,000.00	90.00	180.00	5,750.00	-6,086.23	-527.25	6,107.80	0.00	0.00	0.00	
12,100.00	90.00	180.00	5,750.00	-6,186.23	-527.25	6,207.58	0.00	0.00	0.00	
12,200.00	90.00	180.00	5,750.00	-6,286.23	-527.26	6,307.36	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>	WELL @ 4913.00usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4913.00usft (Original Well Elev)
<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	180.00	5,750.00	-6,386.23	-527.26	6,407.14	0.00	0.00	0.00	
12,400.00	90.00	180.00	5,750.00	-6,486.23	-527.27	6,506.92	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,750.00	-6,586.23	-527.27	6,606.70	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,750.00	-6,686.23	-527.28	6,706.48	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,750.00	-6,786.23	-527.28	6,806.26	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,750.00	-6,886.23	-527.29	6,906.04	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,750.00	-6,986.23	-527.29	7,005.82	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,750.00	-7,086.23	-527.30	7,105.60	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,750.00	-7,186.23	-527.30	7,205.38	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,750.00	-7,286.23	-527.31	7,305.16	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,750.00	-7,386.23	-527.31	7,404.94	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,750.00	-7,486.23	-527.31	7,504.72	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,750.00	-7,586.23	-527.32	7,604.50	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,750.00	-7,686.23	-527.32	7,704.28	0.00	0.00	0.00	
13,700.00	90.00	180.00	5,750.00	-7,786.23	-527.33	7,804.06	0.00	0.00	0.00	
13,800.00	90.00	180.00	5,750.00	-7,886.23	-527.33	7,903.84	0.00	0.00	0.00	
13,842.28	90.00	180.00	5,750.00	-7,928.51	-527.34	7,946.03	0.00	0.00	0.00	
TD at 13842.28' MD										

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	5,750.00	-7,928.51	-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)				
6,092.44	5,750.00	7"		7.000	8.750				

Formations									
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)				
1,560.74	1,550.00	Upper Pierre							
3,532.39	3,500.00	Hygiene							
3,684.06	3,650.00	Lower Pierre							
5,576.87	5,515.00	P200 Marker							
5,595.02	5,530.00	P300 Marker							
5,619.95	5,550.00	P350 Marker							
5,867.07	5,702.00	Sharon Springs							
5,879.31	5,707.00	Niobrara							
5,937.08	5,727.00	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>	WELL @ 4913.00usft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	WELL @ 4913.00usft (Original Well Elev)
<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'
725.00	723.44	17.14	-26.39	Hold 8.50° Inc
4,550.00	4,506.43	325.06	-500.55	Drop 2°/100'
4,975.00	4,929.87	342.20	-526.94	Hold Vertical
5,274.26	5,229.13	342.20	-526.94	KOP, Build 11°/100'
6,092.44	5,750.00	-178.67	-526.97	LP @ 90° Inc, Hold
13,842.28	5,750.00	-7,928.51	-527.34	TD at 13842.28' MD