



Project: Weld County, CO
Site: Sec 7-T10N-R57W
Well: Horsetail #07G-1812
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-1812

+N/-S	+E/-W	Northing	Ground Level:	4895.00	Longitude	Slot
0.00	0.00	1558380.07	Easting	3472695.29	40° 51' 13.060 N	103° 47' 28.440 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	581.07	5.62	35.84	580.61	11.17	8.07	2.00	35.84	-10.86	
4	4833.28	5.62	35.84	4812.39	348.83	251.93	0.00	0.00	-339.13	
5	5114.35	0.00	0.00	5093.00	360.00	260.00	2.00	180.00	-349.99	
6	5314.35	0.00	0.00	5293.00	360.00	260.00	0.00	0.00	-349.99	
7	6132.74	90.00	179.74	5814.00	-160.99	262.36	11.00	179.74	170.73	
8	13894.24	90.00	179.74	5814.00	-7922.42	297.49	0.00	0.00	7928.01	PBHL 1812

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1550.00	1555.13	Upper Pierre
3500.00	3514.56	Hygiene
3650.00	3665.28	Lower Pierre
5612.00	5657.66	P200 Marker
5639.00	5692.75	P300 Marker
5658.00	5718.75	P350 Marker
5667.00	5731.52	Sharon Springs
5676.00	5744.62	Niobrara
5699.00	5779.86	Top A Chalk
5738.00	5847.79	Top A Marl
5758.00	5888.96	A Marl
5769.00	5914.60	Top Upper B
5792.00	5980.79	Base Upper B
5814.00	6132.73	Top Lower B

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'
580.61	581.07	5.62	35.84	11.17	8.07	-10.86	13.78	Hold 5.62° Inc
4812.39	4833.28	5.62	35.84	348.83	251.93	-339.13	430.30	Drop 2°/100'
5093.00	5114.35	0.00	0.00	360.00	260.00	-349.99	444.07	Hold Vertical
5293.00	5314.35	0.00	0.00	360.00	260.00	-349.99	444.07	KOP, Build 11°/100'
5814.00	6132.74	90.00	179.74	-160.99	262.36	170.73	965.07	LP @ 90° Inc, Hold
5814.00	13894.24	90.00	179.74	-7922.42	297.49	7928.01	8726.58	TD at 13894.24

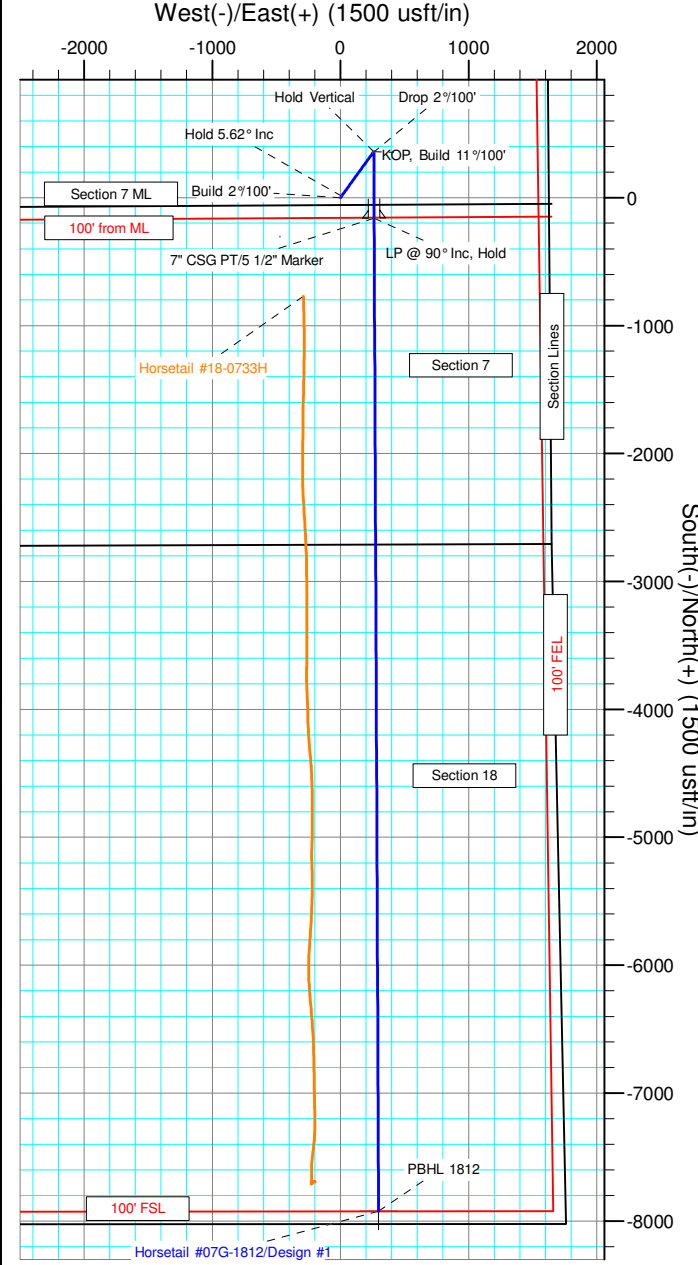
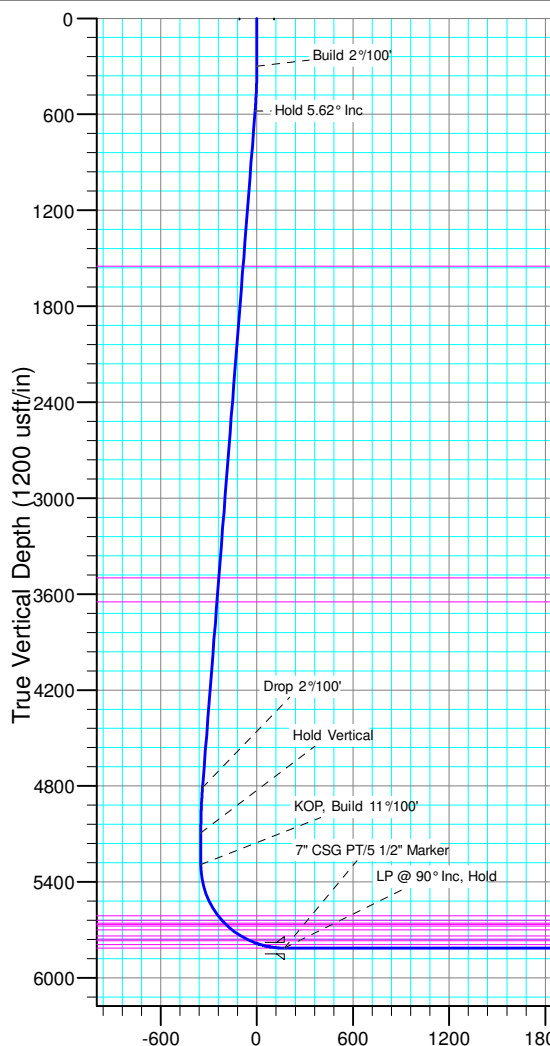
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1812	5814.00	-7922.42	297.49	1550464.85	3473145.39	40° 49' 54.780 N	103° 47' 24.570 W

SHL:
2599' FNL, 1646' FEL
Sec7-T10N-R57W

BHL:
100' FSL, 1460' FEL
Sec18-T10N-R57W

7" CSG PT/5 1/2" Marker:
2536' FSL, 1384' FEL
Sec7-T10N-R57W



Vertical Section at 177.85° (1200 usft/in)



Whiting Petroleum Corp.

Weld County, CO

Sec 7-T10N-R57W

Horsetail #07G-1812

Hz

Plan: Design #1

Standard Planning Report

18 November, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Design #1		

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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-1812				
Well Position	+N/-S	-125.31 usft	Northing:	1,558,380.07 usft	Latitude:	40° 51' 13.060 N
	+E/-W	2,883.27 usft	Easting:	3,472,695.29 usft	Longitude:	103° 47' 28.440 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,895.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2015	7.88	67.44	53,088

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	177.85

Plan Sections										
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	
581.07	5.62	35.84	580.61	11.17	8.07	2.00	2.00	0.00	35.84	
4,833.28	5.62	35.84	4,812.39	348.83	251.93	0.00	0.00	0.00	0.00	
5,114.35	0.00	0.00	5,093.00	360.00	260.00	2.00	-2.00	0.00	180.00	
5,314.35	0.00	0.00	5,293.00	360.00	260.00	0.00	0.00	0.00	0.00	
6,132.74	90.00	179.74	5,814.00	-160.99	262.36	11.00	11.00	0.00	179.74	
13,894.25	90.00	179.74	5,814.00	-7,922.43	297.49	0.00	0.00	0.00	0.00	PBHL 1812B



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	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
Build 2°/100'									
400.00	2.00	35.84	399.98	1.41	1.02	-1.38	2.00	2.00	0.00
500.00	4.00	35.84	499.84	5.66	4.09	-5.50	2.00	2.00	0.00
581.07	5.62	35.84	580.61	11.17	8.07	-10.86	2.00	2.00	0.00
Hold 5.62° Inc									
600.00	5.62	35.84	599.46	12.67	9.15	-12.32	0.00	0.00	0.00
700.00	5.62	35.84	698.98	20.61	14.89	-20.04	0.00	0.00	0.00
800.00	5.62	35.84	798.50	28.55	20.62	-27.76	0.00	0.00	0.00
900.00	5.62	35.84	898.02	36.49	26.36	-35.48	0.00	0.00	0.00
1,000.00	5.62	35.84	997.53	44.44	32.09	-43.20	0.00	0.00	0.00
1,100.00	5.62	35.84	1,097.05	52.38	37.83	-50.92	0.00	0.00	0.00
1,200.00	5.62	35.84	1,196.57	60.32	43.56	-58.64	0.00	0.00	0.00
1,300.00	5.62	35.84	1,296.09	68.26	49.30	-66.36	0.00	0.00	0.00
1,400.00	5.62	35.84	1,395.61	76.20	55.03	-74.08	0.00	0.00	0.00
1,500.00	5.62	35.84	1,495.13	84.14	60.77	-81.80	0.00	0.00	0.00
1,555.14	5.62	35.84	1,550.00	88.52	63.93	-86.06	0.00	0.00	0.00
Upper Pierre									
1,600.00	5.62	35.84	1,594.65	92.08	66.50	-89.52	0.00	0.00	0.00
1,700.00	5.62	35.84	1,694.17	100.02	72.24	-97.24	0.00	0.00	0.00
1,800.00	5.62	35.84	1,793.69	107.96	77.97	-104.96	0.00	0.00	0.00
1,900.00	5.62	35.84	1,893.21	115.90	83.71	-112.68	0.00	0.00	0.00
2,000.00	5.62	35.84	1,992.73	123.84	89.44	-120.40	0.00	0.00	0.00
2,100.00	5.62	35.84	2,092.24	131.79	95.18	-128.12	0.00	0.00	0.00
2,200.00	5.62	35.84	2,191.76	139.73	100.91	-135.84	0.00	0.00	0.00
2,300.00	5.62	35.84	2,291.28	147.67	106.65	-143.56	0.00	0.00	0.00
2,400.00	5.62	35.84	2,390.80	155.61	112.38	-151.28	0.00	0.00	0.00
2,500.00	5.62	35.84	2,490.32	163.55	118.12	-159.00	0.00	0.00	0.00
2,600.00	5.62	35.84	2,589.84	171.49	123.85	-166.72	0.00	0.00	0.00
2,700.00	5.62	35.84	2,689.36	179.43	129.59	-174.44	0.00	0.00	0.00
2,800.00	5.62	35.84	2,788.88	187.37	135.32	-182.16	0.00	0.00	0.00
2,900.00	5.62	35.84	2,888.40	195.31	141.06	-189.88	0.00	0.00	0.00
3,000.00	5.62	35.84	2,987.92	203.25	146.79	-197.60	0.00	0.00	0.00
3,100.00	5.62	35.84	3,087.44	211.19	152.53	-205.32	0.00	0.00	0.00
3,200.00	5.62	35.84	3,186.95	219.13	158.26	-213.04	0.00	0.00	0.00
3,300.00	5.62	35.84	3,286.47	227.08	164.00	-220.76	0.00	0.00	0.00
3,400.00	5.62	35.84	3,385.99	235.02	169.73	-228.48	0.00	0.00	0.00
3,500.00	5.62	35.84	3,485.51	242.96	175.47	-236.20	0.00	0.00	0.00
3,514.56	5.62	35.84	3,500.00	244.11	176.30	-237.33	0.00	0.00	0.00
Hygiene									
3,600.00	5.62	35.84	3,585.03	250.90	181.20	-243.92	0.00	0.00	0.00
3,665.28	5.62	35.84	3,650.00	256.08	184.95	-248.96	0.00	0.00	0.00
Lower Pierre									
3,700.00	5.62	35.84	3,684.55	258.84	186.94	-251.64	0.00	0.00	0.00
3,800.00	5.62	35.84	3,784.07	266.78	192.67	-259.36	0.00	0.00	0.00
3,900.00	5.62	35.84	3,883.59	274.72	198.41	-267.08	0.00	0.00	0.00
4,000.00	5.62	35.84	3,983.11	282.66	204.14	-274.80	0.00	0.00	0.00
4,100.00	5.62	35.84	4,082.63	290.60	209.88	-282.52	0.00	0.00	0.00
4,200.00	5.62	35.84	4,182.15	298.54	215.61	-290.24	0.00	0.00	0.00
4,300.00	5.62	35.84	4,281.67	306.48	221.35	-297.96	0.00	0.00	0.00
4,400.00	5.62	35.84	4,381.18	314.42	227.08	-305.68	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	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	5.62	35.84	4,480.70	322.37	232.82	-313.40	0.00	0.00	0.00
4,600.00	5.62	35.84	4,580.22	330.31	238.55	-321.12	0.00	0.00	0.00
4,700.00	5.62	35.84	4,679.74	338.25	244.29	-328.84	0.00	0.00	0.00
4,800.00	5.62	35.84	4,779.26	346.19	250.02	-336.56	0.00	0.00	0.00
4,833.28	5.62	35.84	4,812.39	348.83	251.93	-339.13	0.00	0.00	0.00
Drop 2°/100'									
4,900.00	4.29	35.84	4,878.85	353.50	255.31	-343.67	2.00	-2.00	0.00
5,000.00	2.29	35.84	4,978.68	358.15	258.66	-348.19	2.00	-2.00	0.00
5,100.00	0.29	35.84	5,078.65	359.97	259.98	-349.96	2.00	-2.00	0.00
5,114.35	0.00	0.00	5,093.00	360.00	260.00	-349.99	2.00	-2.00	-249.74
Hold Vertical									
5,200.00	0.00	0.00	5,178.65	360.00	260.00	-349.99	0.00	0.00	0.00
5,300.00	0.00	0.00	5,278.65	360.00	260.00	-349.99	0.00	0.00	0.00
5,314.35	0.00	0.00	5,293.00	360.00	260.00	-349.99	0.00	0.00	0.00
KOP, Build 11°/100'									
5,350.00	3.92	179.74	5,328.62	358.78	260.01	-348.77	11.00	11.00	0.00
5,400.00	9.42	179.74	5,378.26	352.98	260.03	-342.97	11.00	11.00	0.00
5,450.00	14.92	179.74	5,427.12	342.44	260.08	-332.44	11.00	11.00	0.00
5,500.00	20.42	179.74	5,474.75	327.27	260.15	-317.28	11.00	11.00	0.00
5,550.00	25.92	179.74	5,520.70	307.61	260.24	-297.63	11.00	11.00	0.00
5,600.00	31.41	179.74	5,564.55	283.64	260.35	-273.67	11.00	11.00	0.00
5,650.00	36.91	179.74	5,605.91	255.57	260.47	-245.62	11.00	11.00	0.00
5,657.66	37.75	179.74	5,612.00	250.92	260.49	-240.97	11.00	11.00	0.00
P200 Marker									
5,692.75	41.61	179.74	5,639.00	228.52	260.60	-218.58	11.00	11.00	0.00
P300 Marker									
5,700.00	42.41	179.74	5,644.39	223.67	260.62	-213.73	11.00	11.00	0.00
5,718.75	44.47	179.74	5,658.00	210.78	260.68	-200.85	11.00	11.00	0.00
P350 Marker									
5,731.52	45.88	179.74	5,667.00	201.72	260.72	-191.80	11.00	11.00	0.00
Sharon Springs									
5,744.62	47.32	179.74	5,676.00	192.20	260.76	-182.28	11.00	11.00	0.00
Niobrara									
5,750.00	47.91	179.74	5,679.63	188.23	260.78	-178.31	11.00	11.00	0.00
5,779.86	51.19	179.74	5,699.00	165.51	260.88	-155.60	11.00	11.00	0.00
Top A Chalk									
5,800.00	53.41	179.74	5,711.31	149.58	260.95	-139.68	11.00	11.00	0.00
5,847.79	58.66	179.74	5,738.00	109.96	261.13	-100.08	11.00	11.00	0.00
Top A Marl									
5,850.00	58.91	179.74	5,739.15	108.06	261.14	-98.19	11.00	11.00	0.00
5,888.96	63.19	179.74	5,758.00	73.98	261.29	-64.13	11.00	11.00	0.00
A Marl									
5,900.00	64.41	179.74	5,762.88	64.07	261.34	-54.22	11.00	11.00	0.00
5,914.60	66.01	179.74	5,769.00	50.82	261.40	-40.97	11.00	11.00	0.00
Top Upper B									
5,950.00	69.90	179.74	5,782.28	18.01	261.55	-8.19	11.00	11.00	0.00
5,980.79	73.29	179.74	5,792.00	-11.20	261.68	21.01	11.00	11.00	0.00
Base Upper B									
6,000.00	75.40	179.74	5,797.18	-29.69	261.76	39.49	11.00	11.00	0.00
6,050.00	80.90	179.74	5,807.44	-78.61	261.99	88.38	11.00	11.00	0.00
6,100.00	86.40	179.74	5,812.97	-128.28	262.21	138.03	11.00	11.00	0.00
6,132.74	90.00	179.74	5,814.00	-161.00	262.36	170.73	11.00	11.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	H2		
Design:	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)
LP @ 90° Inc, Hold - Top Lower B - 7" CSG PT/5 1/2" Marker									
6,200.00	90.00	179.74	5,814.00	-228.26	262.66	237.95	0.00	0.00	0.00
6,300.00	90.00	179.74	5,814.00	-328.26	263.12	337.90	0.00	0.00	0.00
6,400.00	90.00	179.74	5,814.00	-428.26	263.57	437.85	0.00	0.00	0.00
6,500.00	90.00	179.74	5,814.00	-528.26	264.02	537.79	0.00	0.00	0.00
6,600.00	90.00	179.74	5,814.00	-628.25	264.47	637.74	0.00	0.00	0.00
6,700.00	90.00	179.74	5,814.00	-728.25	264.93	737.68	0.00	0.00	0.00
6,800.00	90.00	179.74	5,814.00	-828.25	265.38	837.63	0.00	0.00	0.00
6,900.00	90.00	179.74	5,814.00	-928.25	265.83	937.57	0.00	0.00	0.00
7,000.00	90.00	179.74	5,814.00	-1,028.25	266.28	1,037.52	0.00	0.00	0.00
7,100.00	90.00	179.74	5,814.00	-1,128.25	266.74	1,137.46	0.00	0.00	0.00
7,200.00	90.00	179.74	5,814.00	-1,228.25	267.19	1,237.41	0.00	0.00	0.00
7,300.00	90.00	179.74	5,814.00	-1,328.25	267.64	1,337.36	0.00	0.00	0.00
7,400.00	90.00	179.74	5,814.00	-1,428.25	268.09	1,437.30	0.00	0.00	0.00
7,500.00	90.00	179.74	5,814.00	-1,528.25	268.55	1,537.25	0.00	0.00	0.00
7,600.00	90.00	179.74	5,814.00	-1,628.24	269.00	1,637.19	0.00	0.00	0.00
7,700.00	90.00	179.74	5,814.00	-1,728.24	269.45	1,737.14	0.00	0.00	0.00
7,800.00	90.00	179.74	5,814.00	-1,828.24	269.91	1,837.08	0.00	0.00	0.00
7,900.00	90.00	179.74	5,814.00	-1,928.24	270.36	1,937.03	0.00	0.00	0.00
8,000.00	90.00	179.74	5,814.00	-2,028.24	270.81	2,036.97	0.00	0.00	0.00
8,100.00	90.00	179.74	5,814.00	-2,128.24	271.26	2,136.92	0.00	0.00	0.00
8,200.00	90.00	179.74	5,814.00	-2,228.24	271.72	2,236.87	0.00	0.00	0.00
8,300.00	90.00	179.74	5,814.00	-2,328.24	272.17	2,336.81	0.00	0.00	0.00
8,400.00	90.00	179.74	5,814.00	-2,428.24	272.62	2,436.76	0.00	0.00	0.00
8,500.00	90.00	179.74	5,814.00	-2,528.24	273.07	2,536.70	0.00	0.00	0.00
8,600.00	90.00	179.74	5,814.00	-2,628.23	273.53	2,636.65	0.00	0.00	0.00
8,700.00	90.00	179.74	5,814.00	-2,728.23	273.98	2,736.59	0.00	0.00	0.00
8,800.00	90.00	179.74	5,814.00	-2,828.23	274.43	2,836.54	0.00	0.00	0.00
8,900.00	90.00	179.74	5,814.00	-2,928.23	274.88	2,936.48	0.00	0.00	0.00
9,000.00	90.00	179.74	5,814.00	-3,028.23	275.34	3,036.43	0.00	0.00	0.00
9,100.00	90.00	179.74	5,814.00	-3,128.23	275.79	3,136.37	0.00	0.00	0.00
9,200.00	90.00	179.74	5,814.00	-3,228.23	276.24	3,236.32	0.00	0.00	0.00
9,300.00	90.00	179.74	5,814.00	-3,328.23	276.70	3,336.27	0.00	0.00	0.00
9,400.00	90.00	179.74	5,814.00	-3,428.23	277.15	3,436.21	0.00	0.00	0.00
9,500.00	90.00	179.74	5,814.00	-3,528.23	277.60	3,536.16	0.00	0.00	0.00
9,600.00	90.00	179.74	5,814.00	-3,628.22	278.05	3,636.10	0.00	0.00	0.00
9,700.00	90.00	179.74	5,814.00	-3,728.22	278.51	3,736.05	0.00	0.00	0.00
9,800.00	90.00	179.74	5,814.00	-3,828.22	278.96	3,835.99	0.00	0.00	0.00
9,900.00	90.00	179.74	5,814.00	-3,928.22	279.41	3,935.94	0.00	0.00	0.00
10,000.00	90.00	179.74	5,814.00	-4,028.22	279.86	4,035.88	0.00	0.00	0.00
10,100.00	90.00	179.74	5,814.00	-4,128.22	280.32	4,135.83	0.00	0.00	0.00
10,200.00	90.00	179.74	5,814.00	-4,228.22	280.77	4,235.78	0.00	0.00	0.00
10,300.00	90.00	179.74	5,814.00	-4,328.22	281.22	4,335.72	0.00	0.00	0.00
10,400.00	90.00	179.74	5,814.00	-4,428.22	281.67	4,435.67	0.00	0.00	0.00
10,500.00	90.00	179.74	5,814.00	-4,528.21	282.13	4,535.61	0.00	0.00	0.00
10,600.00	90.00	179.74	5,814.00	-4,628.21	282.58	4,635.56	0.00	0.00	0.00
10,700.00	90.00	179.74	5,814.00	-4,728.21	283.03	4,735.50	0.00	0.00	0.00
10,800.00	90.00	179.74	5,814.00	-4,828.21	283.48	4,835.45	0.00	0.00	0.00
10,900.00	90.00	179.74	5,814.00	-4,928.21	283.94	4,935.39	0.00	0.00	0.00
11,000.00	90.00	179.74	5,814.00	-5,028.21	284.39	5,035.34	0.00	0.00	0.00
11,100.00	90.00	179.74	5,814.00	-5,128.21	284.84	5,135.29	0.00	0.00	0.00
11,200.00	90.00	179.74	5,814.00	-5,228.21	285.30	5,235.23	0.00	0.00	0.00
11,300.00	90.00	179.74	5,814.00	-5,328.21	285.75	5,335.18	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	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)	
11,400.00	90.00	179.74	5,814.00	-5,428.21	286.20	5,435.12	0.00	0.00	0.00	
11,500.00	90.00	179.74	5,814.00	-5,528.20	286.65	5,535.07	0.00	0.00	0.00	
11,600.00	90.00	179.74	5,814.00	-5,628.20	287.11	5,635.01	0.00	0.00	0.00	
11,700.00	90.00	179.74	5,814.00	-5,728.20	287.56	5,734.96	0.00	0.00	0.00	
11,800.00	90.00	179.74	5,814.00	-5,828.20	288.01	5,834.90	0.00	0.00	0.00	
11,900.00	90.00	179.74	5,814.00	-5,928.20	288.46	5,934.85	0.00	0.00	0.00	
12,000.00	90.00	179.74	5,814.00	-6,028.20	288.92	6,034.80	0.00	0.00	0.00	
12,100.00	90.00	179.74	5,814.00	-6,128.20	289.37	6,134.74	0.00	0.00	0.00	
12,200.00	90.00	179.74	5,814.00	-6,228.20	289.82	6,234.69	0.00	0.00	0.00	
12,300.00	90.00	179.74	5,814.00	-6,328.20	290.27	6,334.63	0.00	0.00	0.00	
12,400.00	90.00	179.74	5,814.00	-6,428.20	290.73	6,434.58	0.00	0.00	0.00	
12,500.00	90.00	179.74	5,814.00	-6,528.19	291.18	6,534.52	0.00	0.00	0.00	
12,600.00	90.00	179.74	5,814.00	-6,628.19	291.63	6,634.47	0.00	0.00	0.00	
12,700.00	90.00	179.74	5,814.00	-6,728.19	292.09	6,734.41	0.00	0.00	0.00	
12,800.00	90.00	179.74	5,814.00	-6,828.19	292.54	6,834.36	0.00	0.00	0.00	
12,900.00	90.00	179.74	5,814.00	-6,928.19	292.99	6,934.31	0.00	0.00	0.00	
13,000.00	90.00	179.74	5,814.00	-7,028.19	293.44	7,034.25	0.00	0.00	0.00	
13,100.00	90.00	179.74	5,814.00	-7,128.19	293.90	7,134.20	0.00	0.00	0.00	
13,200.00	90.00	179.74	5,814.00	-7,228.19	294.35	7,234.14	0.00	0.00	0.00	
13,300.00	90.00	179.74	5,814.00	-7,328.19	294.80	7,334.09	0.00	0.00	0.00	
13,400.00	90.00	179.74	5,814.00	-7,428.19	295.25	7,434.03	0.00	0.00	0.00	
13,500.00	90.00	179.74	5,814.00	-7,528.18	295.71	7,533.98	0.00	0.00	0.00	
13,600.00	90.00	179.74	5,814.00	-7,628.18	296.16	7,633.92	0.00	0.00	0.00	
13,700.00	90.00	179.74	5,814.00	-7,728.18	296.61	7,733.87	0.00	0.00	0.00	
13,800.00	90.00	179.74	5,814.00	-7,828.18	297.06	7,833.82	0.00	0.00	0.00	
13,894.25	90.00	179.74	5,814.00	-7,922.43	297.49	7,928.01	0.00	0.00	0.00	
TD at 13894.24										

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 1812B - plan hits target center - Point	0.00	0.00	5,814.00	-7,922.43	297.49	1,550,464.85	3,473,145.38	40° 49' 54.780 N	103° 47' 24.570 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,132.74	5,814.00	7" CSG PT/5 1/2" Marker	7.000	8.750	



WOG
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07G-1812
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4916.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4916.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07G-1812	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Design #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,555.14	1,550.00	Upper Pierre				
3,514.56	3,500.00	Hygiene				
3,665.28	3,650.00	Lower Pierre				
5,657.66	5,612.00	P200 Marker				
5,692.75	5,639.00	P300 Marker				
5,718.75	5,658.00	P350 Marker				
5,731.52	5,667.00	Sharon Springs				
5,744.62	5,676.00	Niobrara				
5,779.86	5,699.00	Top A Chalk				
5,847.79	5,738.00	Top A Marl				
5,888.96	5,758.00	A Marl				
5,914.60	5,769.00	Top Upper B				
5,980.79	5,792.00	Base Upper B				
6,132.73	5,814.00	Top Lower B				

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'	
581.07	580.61	11.17	8.07	Hold 5.62° Inc	
4,833.28	4,812.39	348.83	251.93	Drop 2°/100'	
5,114.35	5,093.00	360.00	260.00	Hold Vertical	
5,314.35	5,293.00	360.00	260.00	KOP, Build 11°/100'	
6,132.74	5,814.00	-160.99	262.36	LP @ 90° Inc, Hold	
13,894.25	5,814.00	-7,922.43	297.49	TD at 13894.24	