



Project: Weld County, CO
Site: Sec 7-T10N-R57W
Well: Horsetail #07F-1839
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	1553.65	Upper Pierre
3500.00	3510.16	Hygiene
3650.00	3660.66	Lower Pierre
5626.00	5642.83	P200 Marker
5653.00	5670.81	P300 Marker
5672.00	5690.77	P350 Marker
5681.00	5700.32	Sharon Springs
5690.00	5709.93	Niobrara
5713.00	5734.81	Top A Chalk
5752.00	5778.27	Top A Marl
5772.00	5801.32	A Marl
5783.00	5814.27	Top Upper B
5806.00	5842.03	Base Upper B
5828.00	5869.60	Top Lower B
5862.00	5914.72	Base Lower B
5870.00	5925.87	Top B Marl
5899.00	5968.51	Top C Chalk
5911.00	5987.38	Middle C Chalk
5927.00	6013.97	Middle C Marl
5951.00	6057.92	Lower C Chalk
5967.00	6091.06	Lower C Marl
5981.00	6123.89	Lower C Marker
5993.00	6156.41	Top Ft. Hays
6007.00	6203.59	Ft. Hays Marker

WELL DETAILS: Horsetail #07F-1839

+N/-S	+E/-W	Northing	Ground Level: 4899.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1558396.47		3471391.42	40° 51' 13.470 N	103° 47' 45.400 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	533.75	4.68	323.13	533.49	7.62	-5.72	2.00	323.13	-7.49	
4	5084.91	4.68	323.13	5069.51	304.38	-228.28	0.00	0.00	-298.94	
5	5318.66	0.00	0.00	5303.00	312.00	-234.00	2.00	180.00	-306.43	
6	5518.66	0.00	0.00	5503.00	312.00	-234.00	0.00	0.00	-306.43	
7	6337.05	90.00	179.67	6024.00	-208.99	-231.03	11.00	179.67	214.35	
8	14093.10	90.00	179.67	6024.00	-7964.92	-186.80	0.00	0.00	7967.11	PBHL 1839c

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'
533.49	533.75	4.68	323.13	7.62	-5.72	-7.49	9.53	Hold 4.68° Inc
5069.51	5084.91	4.68	323.13	304.38	-228.28	-298.94	380.47	Drop 2°/100'
5303.00	5318.66	0.00	0.00	312.00	-234.00	-306.43	390.00	Hold Vertical
5503.00	5518.66	0.00	0.00	312.00	-234.00	-306.43	390.00	KOP, Build 11°/100'
6024.00	6337.05	90.00	179.67	-208.99	-231.03	214.35	911.00	LP @ 90° Inc, Hold
6024.00	14093.10	90.00	179.67	-7964.92	-186.80	7967.11	8667.06	TD at 14093.11

DESIGN TARGET DETAILS

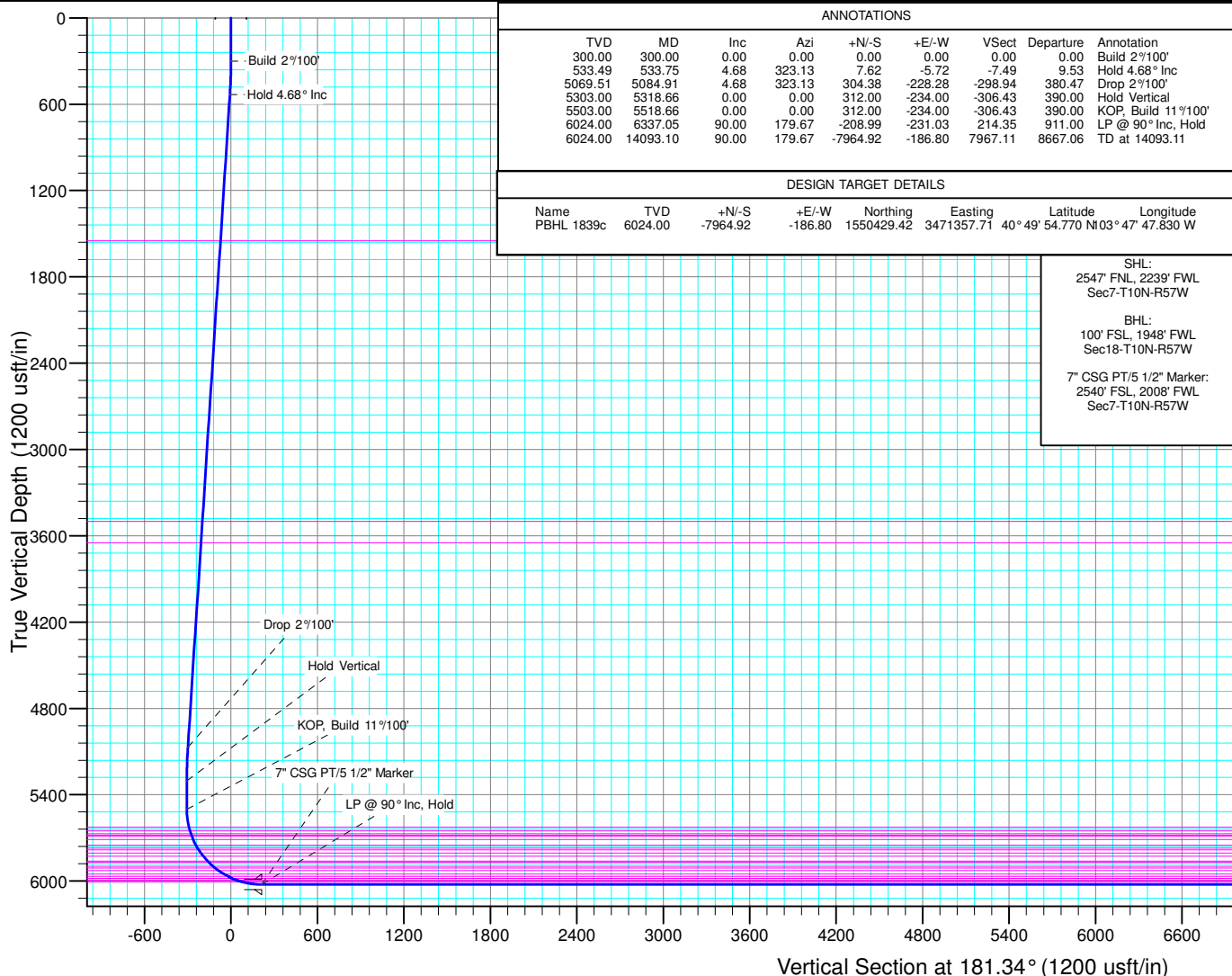
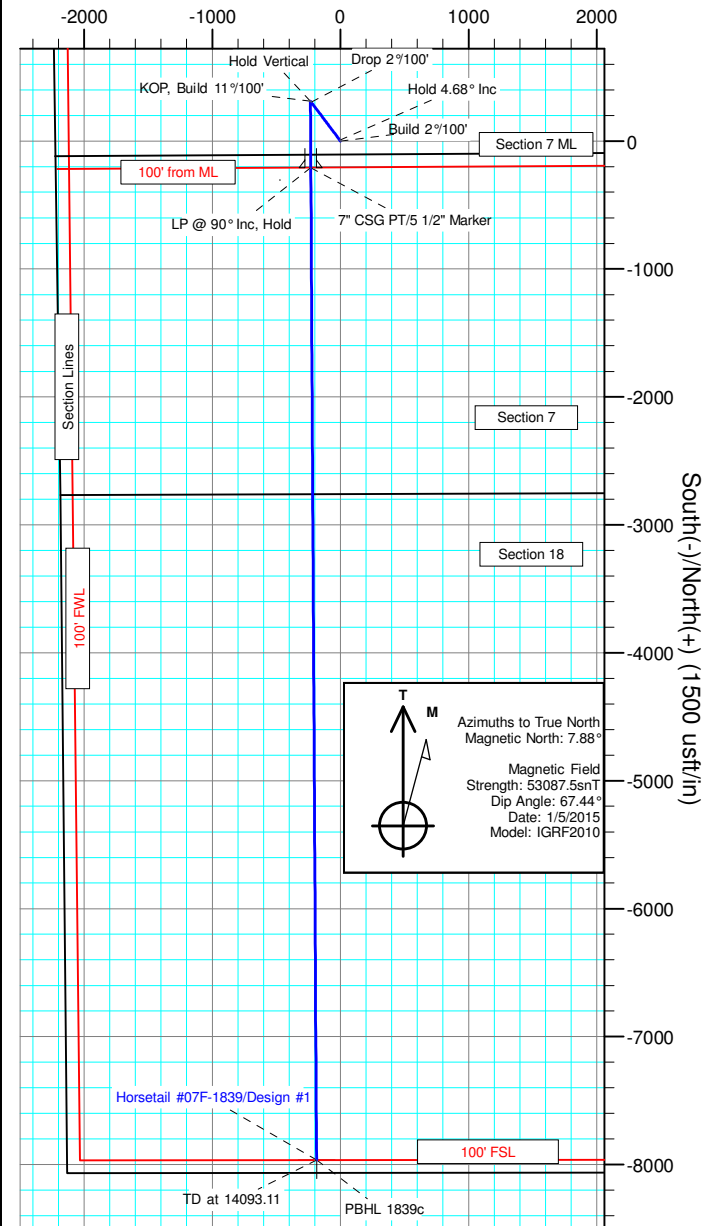
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1839c	6024.00	-7964.92	-186.80	1550429.42	3471357.71	40° 49' 54.770 N	103° 47' 47.830 W

SHL:
2547' FNL, 2239' FWL
Sec7-T10N-R57W

BHL:
100' FSL, 1948' FWL
Sec18-T10N-R57W

7" CSG PT/5 1/2" Marker:
2540' FSL, 2008' FWL
Sec7-T10N-R57W

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





Whiting Petroleum Corp.

**Weld County, CO
Sec 7-T10N-R57W
Horsetail #07F-1839**

Hz

Plan: Design #1

Standard Planning Report

12 November, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1839
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	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 #07F-1839					
Well Position	+N/-S	-83.94 usft	Northing:	1,558,396.47 usft	Latitude:	40° 51' 13.470 N
	+E/-W	1,579.96 usft	Easting:	3,471,391.42 usft	Longitude:	103° 47' 45.400 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,899.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/5/2015	7.88	67.44	53,087

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	181.34

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	
533.75	4.68	323.13	533.49	7.62	-5.72	2.00	2.00	0.00	323.13	
5,084.91	4.68	323.13	5,069.51	304.38	-228.28	0.00	0.00	0.00	0.00	
5,318.66	0.00	0.00	5,303.00	312.00	-234.00	2.00	-2.00	0.00	180.00	
5,518.66	0.00	0.00	5,503.00	312.00	-234.00	0.00	0.00	0.00	0.00	
6,337.05	90.00	179.67	6,024.00	-208.99	-231.03	11.00	11.00	0.00	179.67	
14,093.10	90.00	179.67	6,024.00	-7,964.92	-186.80	0.00	0.00	0.00	0.00	PBHL 1839c



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1839
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	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	323.13	399.98	1.40	-1.05	-1.37	2.00	2.00	0.00
500.00	4.00	323.13	499.84	5.58	-4.19	-5.48	2.00	2.00	0.00
533.75	4.68	323.13	533.49	7.62	-5.72	-7.49	2.00	2.00	0.00
Hold 4.68° Inc									
600.00	4.68	323.13	599.52	11.94	-8.96	-11.73	0.00	0.00	0.00
700.00	4.68	323.13	699.19	18.46	-13.85	-18.14	0.00	0.00	0.00
800.00	4.68	323.13	798.85	24.99	-18.74	-24.54	0.00	0.00	0.00
900.00	4.68	323.13	898.52	31.51	-23.63	-30.94	0.00	0.00	0.00
1,000.00	4.68	323.13	998.19	38.03	-28.52	-37.35	0.00	0.00	0.00
1,100.00	4.68	323.13	1,097.86	44.55	-33.41	-43.75	0.00	0.00	0.00
1,200.00	4.68	323.13	1,197.52	51.07	-38.30	-50.15	0.00	0.00	0.00
1,300.00	4.68	323.13	1,297.19	57.59	-43.19	-56.56	0.00	0.00	0.00
1,400.00	4.68	323.13	1,396.86	64.11	-48.08	-62.96	0.00	0.00	0.00
1,500.00	4.68	323.13	1,496.53	70.63	-52.97	-69.37	0.00	0.00	0.00
1,553.65	4.68	323.13	1,550.00	74.13	-55.59	-72.80	0.00	0.00	0.00
Upper Pierre									
1,600.00	4.68	323.13	1,596.19	77.15	-57.86	-75.77	0.00	0.00	0.00
1,700.00	4.68	323.13	1,695.86	83.67	-62.75	-82.17	0.00	0.00	0.00
1,800.00	4.68	323.13	1,795.53	90.19	-67.64	-88.58	0.00	0.00	0.00
1,900.00	4.68	323.13	1,895.20	96.71	-72.53	-94.98	0.00	0.00	0.00
2,000.00	4.68	323.13	1,994.86	103.23	-77.42	-101.39	0.00	0.00	0.00
2,100.00	4.68	323.13	2,094.53	109.75	-82.31	-107.79	0.00	0.00	0.00
2,200.00	4.68	323.13	2,194.20	116.27	-87.20	-114.19	0.00	0.00	0.00
2,300.00	4.68	323.13	2,293.86	122.79	-92.09	-120.60	0.00	0.00	0.00
2,400.00	4.68	323.13	2,393.53	129.31	-96.98	-127.00	0.00	0.00	0.00
2,500.00	4.68	323.13	2,493.20	135.83	-101.87	-133.40	0.00	0.00	0.00
2,600.00	4.68	323.13	2,592.87	142.35	-106.76	-139.81	0.00	0.00	0.00
2,700.00	4.68	323.13	2,692.53	148.87	-111.65	-146.21	0.00	0.00	0.00
2,800.00	4.68	323.13	2,792.20	155.39	-116.54	-152.62	0.00	0.00	0.00
2,900.00	4.68	323.13	2,891.87	161.91	-121.43	-159.02	0.00	0.00	0.00
3,000.00	4.68	323.13	2,991.54	168.43	-126.32	-165.42	0.00	0.00	0.00
3,100.00	4.68	323.13	3,091.20	174.95	-131.21	-171.83	0.00	0.00	0.00
3,200.00	4.68	323.13	3,190.87	181.47	-136.10	-178.23	0.00	0.00	0.00
3,300.00	4.68	323.13	3,290.54	187.99	-140.99	-184.64	0.00	0.00	0.00
3,400.00	4.68	323.13	3,390.20	194.51	-145.89	-191.04	0.00	0.00	0.00
3,500.00	4.68	323.13	3,489.87	201.03	-150.78	-197.44	0.00	0.00	0.00
3,510.16	4.68	323.13	3,500.00	201.70	-151.27	-198.09	0.00	0.00	0.00
Hygiene									
3,600.00	4.68	323.13	3,589.54	207.55	-155.67	-203.85	0.00	0.00	0.00
3,660.66	4.68	323.13	3,650.00	211.51	-158.63	-207.73	0.00	0.00	0.00
Lower Pierre									
3,700.00	4.68	323.13	3,689.21	214.07	-160.56	-210.25	0.00	0.00	0.00
3,800.00	4.68	323.13	3,788.87	220.59	-165.45	-216.66	0.00	0.00	0.00
3,900.00	4.68	323.13	3,888.54	227.12	-170.34	-223.06	0.00	0.00	0.00
4,000.00	4.68	323.13	3,988.21	233.64	-175.23	-229.46	0.00	0.00	0.00
4,100.00	4.68	323.13	4,087.88	240.16	-180.12	-235.87	0.00	0.00	0.00
4,200.00	4.68	323.13	4,187.54	246.68	-185.01	-242.27	0.00	0.00	0.00
4,300.00	4.68	323.13	4,287.21	253.20	-189.90	-248.67	0.00	0.00	0.00
4,400.00	4.68	323.13	4,386.88	259.72	-194.79	-255.08	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1839
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	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	4.68	323.13	4,486.55	266.24	-199.68	-261.48	0.00	0.00	0.00	
4,600.00	4.68	323.13	4,586.21	272.76	-204.57	-267.89	0.00	0.00	0.00	
4,700.00	4.68	323.13	4,685.88	279.28	-209.46	-274.29	0.00	0.00	0.00	
4,800.00	4.68	323.13	4,785.55	285.80	-214.35	-280.69	0.00	0.00	0.00	
4,900.00	4.68	323.13	4,885.21	292.32	-219.24	-287.10	0.00	0.00	0.00	
5,000.00	4.68	323.13	4,984.88	298.84	-224.13	-293.50	0.00	0.00	0.00	
5,084.91	4.68	323.13	5,069.51	304.38	-228.28	-298.94	0.00	0.00	0.00	
Drop 2°/100'										
5,100.00	4.37	323.13	5,084.55	305.33	-229.00	-299.87	2.00	-2.00	0.00	
5,200.00	2.37	323.13	5,184.37	310.03	-232.53	-304.50	2.00	-2.00	0.00	
5,300.00	0.37	323.13	5,284.34	311.95	-233.96	-306.38	2.00	-2.00	0.00	
5,318.66	0.00	0.00	5,303.00	312.00	-234.00	-306.43	2.00	-2.00	0.00	
Hold Vertical										
5,400.00	0.00	0.00	5,384.34	312.00	-234.00	-306.43	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,484.34	312.00	-234.00	-306.43	0.00	0.00	0.00	
5,518.66	0.00	0.00	5,503.00	312.00	-234.00	-306.43	0.00	0.00	0.00	
KOP, Build 11°/100'										
5,550.00	3.45	179.67	5,534.32	311.06	-233.99	-305.49	11.00	11.00	0.00	
5,600.00	8.95	179.67	5,584.01	305.66	-233.96	-300.09	11.00	11.00	0.00	
5,642.83	13.66	179.67	5,626.00	297.27	-233.92	-291.71	11.00	11.00	0.00	
P200 Marker										
5,650.00	14.44	179.67	5,632.95	295.53	-233.91	-289.97	11.00	11.00	0.00	
5,670.81	16.73	179.67	5,653.00	289.94	-233.87	-284.38	11.00	11.00	0.00	
P300 Marker										
5,690.77	18.93	179.67	5,672.00	283.83	-233.84	-278.27	11.00	11.00	0.00	
P350 Marker										
5,700.00	19.94	179.67	5,680.70	280.76	-233.82	-275.20	11.00	11.00	0.00	
5,700.32	19.98	179.67	5,681.00	280.65	-233.82	-275.09	11.00	11.00	0.00	
Sharon Springs										
5,709.93	21.03	179.67	5,690.00	277.28	-233.80	-271.73	11.00	11.00	0.00	
Niobrara										
5,734.81	23.77	179.67	5,713.00	267.80	-233.75	-262.25	11.00	11.00	0.00	
Top A Chalk										
5,750.00	25.44	179.67	5,726.81	261.48	-233.71	-255.93	11.00	11.00	0.00	
5,778.27	28.55	179.67	5,752.00	248.65	-233.64	-243.10	11.00	11.00	0.00	
Top A Marl										
5,800.00	30.94	179.67	5,770.86	237.87	-233.58	-232.33	11.00	11.00	0.00	
5,801.32	31.09	179.67	5,772.00	237.19	-233.57	-231.64	11.00	11.00	0.00	
A Marl										
5,814.27	32.51	179.67	5,783.00	230.37	-233.53	-224.83	11.00	11.00	0.00	
Top Upper B										
5,842.03	35.56	179.67	5,806.00	214.83	-233.45	-209.30	11.00	11.00	0.00	
Base Upper B										
5,850.00	36.44	179.67	5,812.45	210.14	-233.42	-204.61	11.00	11.00	0.00	
5,869.60	38.59	179.67	5,828.00	198.21	-233.35	-192.68	11.00	11.00	0.00	
Top Lower B										
5,900.00	41.94	179.67	5,851.19	178.56	-233.24	-173.05	11.00	11.00	0.00	
5,914.72	43.56	179.67	5,862.00	168.57	-233.18	-163.06	11.00	11.00	0.00	
Base Lower B										
5,925.87	44.78	179.67	5,870.00	160.80	-233.14	-155.29	11.00	11.00	0.00	
Top B Marl										
5,950.00	47.44	179.67	5,886.73	143.42	-233.04	-137.91	11.00	11.00	0.00	



WOG

Planning Report

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Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	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)
5,968.51	49.47	179.67	5,899.00	129.57	-232.96	-124.07	11.00	11.00	0.00
Top C Chalk									
5,987.38	51.55	179.67	5,911.00	115.00	-232.88	-109.51	11.00	11.00	0.00
Middle C Chalk									
6,000.00	52.93	179.67	5,918.73	105.03	-232.82	-99.54	11.00	11.00	0.00
6,013.97	54.47	179.67	5,927.00	93.77	-232.76	-88.28	11.00	11.00	0.00
Middle C Marl									
6,050.00	58.43	179.67	5,946.91	63.75	-232.58	-58.28	11.00	11.00	0.00
6,057.92	59.30	179.67	5,951.00	56.97	-232.55	-51.50	11.00	11.00	0.00
Lower C Chalk									
6,091.06	62.95	179.67	5,967.00	27.95	-232.38	-22.50	11.00	11.00	0.00
Lower C Marl									
6,100.00	63.93	179.67	5,971.00	19.96	-232.33	-14.50	11.00	11.00	0.00
6,123.89	66.56	179.67	5,981.00	-1.73	-232.21	7.18	11.00	11.00	0.00
Lower C Marker									
6,150.00	69.43	179.67	5,990.78	-25.94	-232.07	31.38	11.00	11.00	0.00
6,156.41	70.14	179.67	5,993.00	-31.96	-232.04	37.39	11.00	11.00	0.00
Top Ft. Hays									
6,200.00	74.93	179.67	6,006.08	-73.52	-231.80	78.94	11.00	11.00	0.00
6,203.59	75.32	179.67	6,007.00	-76.99	-231.78	82.40	11.00	11.00	0.00
Ft. Hays Marker									
6,250.00	80.43	179.67	6,016.75	-122.35	-231.52	127.75	11.00	11.00	0.00
6,300.00	85.93	179.67	6,022.68	-171.98	-231.24	177.35	11.00	11.00	0.00
6,337.05	90.00	179.67	6,024.00	-209.00	-231.03	214.36	11.00	11.00	0.00
LP @ 90° Inc, Hold - 7" CSG PT/5 1/2" Marker									
6,400.00	90.00	179.67	6,024.00	-271.95	-230.67	277.28	0.00	0.00	0.00
6,500.00	90.00	179.67	6,024.00	-371.94	-230.10	377.24	0.00	0.00	0.00
6,600.00	90.00	179.67	6,024.00	-471.94	-229.53	477.19	0.00	0.00	0.00
6,700.00	90.00	179.67	6,024.00	-571.94	-228.96	577.15	0.00	0.00	0.00
6,800.00	90.00	179.67	6,024.00	-671.94	-228.39	677.11	0.00	0.00	0.00
6,900.00	90.00	179.67	6,024.00	-771.94	-227.82	777.07	0.00	0.00	0.00
7,000.00	90.00	179.67	6,024.00	-871.94	-227.25	877.02	0.00	0.00	0.00
7,100.00	90.00	179.67	6,024.00	-971.93	-226.68	976.98	0.00	0.00	0.00
7,200.00	90.00	179.67	6,024.00	-1,071.93	-226.11	1,076.94	0.00	0.00	0.00
7,300.00	90.00	179.67	6,024.00	-1,171.93	-225.54	1,176.90	0.00	0.00	0.00
7,400.00	90.00	179.67	6,024.00	-1,271.93	-224.97	1,276.85	0.00	0.00	0.00
7,500.00	90.00	179.67	6,024.00	-1,371.93	-224.40	1,376.81	0.00	0.00	0.00
7,600.00	90.00	179.67	6,024.00	-1,471.93	-223.83	1,476.77	0.00	0.00	0.00
7,700.00	90.00	179.67	6,024.00	-1,571.92	-223.26	1,576.73	0.00	0.00	0.00
7,800.00	90.00	179.67	6,024.00	-1,671.92	-222.69	1,676.68	0.00	0.00	0.00
7,900.00	90.00	179.67	6,024.00	-1,771.92	-222.12	1,776.64	0.00	0.00	0.00
8,000.00	90.00	179.67	6,024.00	-1,871.92	-221.55	1,876.60	0.00	0.00	0.00
8,100.00	90.00	179.67	6,024.00	-1,971.92	-220.97	1,976.56	0.00	0.00	0.00
8,200.00	90.00	179.67	6,024.00	-2,071.92	-220.40	2,076.51	0.00	0.00	0.00
8,300.00	90.00	179.67	6,024.00	-2,171.91	-219.83	2,176.47	0.00	0.00	0.00
8,400.00	90.00	179.67	6,024.00	-2,271.91	-219.26	2,276.43	0.00	0.00	0.00
8,500.00	90.00	179.67	6,024.00	-2,371.91	-218.69	2,376.39	0.00	0.00	0.00
8,600.00	90.00	179.67	6,024.00	-2,471.91	-218.12	2,476.34	0.00	0.00	0.00
8,700.00	90.00	179.67	6,024.00	-2,571.91	-217.55	2,576.30	0.00	0.00	0.00
8,800.00	90.00	179.67	6,024.00	-2,671.91	-216.98	2,676.26	0.00	0.00	0.00
8,900.00	90.00	179.67	6,024.00	-2,771.90	-216.41	2,776.22	0.00	0.00	0.00
9,000.00	90.00	179.67	6,024.00	-2,871.90	-215.84	2,876.17	0.00	0.00	0.00
9,100.00	90.00	179.67	6,024.00	-2,971.90	-215.27	2,976.13	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1839
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	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)
9,200.00	90.00	179.67	6,024.00	-3,071.90	-214.70	3,076.09	0.00	0.00	0.00
9,300.00	90.00	179.67	6,024.00	-3,171.90	-214.13	3,176.05	0.00	0.00	0.00
9,400.00	90.00	179.67	6,024.00	-3,271.90	-213.56	3,276.00	0.00	0.00	0.00
9,500.00	90.00	179.67	6,024.00	-3,371.90	-212.99	3,375.96	0.00	0.00	0.00
9,600.00	90.00	179.67	6,024.00	-3,471.89	-212.42	3,475.92	0.00	0.00	0.00
9,700.00	90.00	179.67	6,024.00	-3,571.89	-211.85	3,575.88	0.00	0.00	0.00
9,800.00	90.00	179.67	6,024.00	-3,671.89	-211.28	3,675.83	0.00	0.00	0.00
9,900.00	90.00	179.67	6,024.00	-3,771.89	-210.71	3,775.79	0.00	0.00	0.00
10,000.00	90.00	179.67	6,024.00	-3,871.89	-210.14	3,875.75	0.00	0.00	0.00
10,100.00	90.00	179.67	6,024.00	-3,971.89	-209.57	3,975.71	0.00	0.00	0.00
10,200.00	90.00	179.67	6,024.00	-4,071.88	-209.00	4,075.66	0.00	0.00	0.00
10,300.00	90.00	179.67	6,024.00	-4,171.88	-208.43	4,175.62	0.00	0.00	0.00
10,400.00	90.00	179.67	6,024.00	-4,271.88	-207.86	4,275.58	0.00	0.00	0.00
10,500.00	90.00	179.67	6,024.00	-4,371.88	-207.29	4,375.54	0.00	0.00	0.00
10,600.00	90.00	179.67	6,024.00	-4,471.88	-206.72	4,475.49	0.00	0.00	0.00
10,700.00	90.00	179.67	6,024.00	-4,571.88	-206.15	4,575.45	0.00	0.00	0.00
10,800.00	90.00	179.67	6,024.00	-4,671.87	-205.58	4,675.41	0.00	0.00	0.00
10,900.00	90.00	179.67	6,024.00	-4,771.87	-205.01	4,775.37	0.00	0.00	0.00
11,000.00	90.00	179.67	6,024.00	-4,871.87	-204.44	4,875.32	0.00	0.00	0.00
11,100.00	90.00	179.67	6,024.00	-4,971.87	-203.87	4,975.28	0.00	0.00	0.00
11,200.00	90.00	179.67	6,024.00	-5,071.87	-203.30	5,075.24	0.00	0.00	0.00
11,300.00	90.00	179.67	6,024.00	-5,171.87	-202.73	5,175.20	0.00	0.00	0.00
11,400.00	90.00	179.67	6,024.00	-5,271.86	-202.16	5,275.15	0.00	0.00	0.00
11,500.00	90.00	179.67	6,024.00	-5,371.86	-201.58	5,375.11	0.00	0.00	0.00
11,600.00	90.00	179.67	6,024.00	-5,471.86	-201.01	5,475.07	0.00	0.00	0.00
11,700.00	90.00	179.67	6,024.00	-5,571.86	-200.44	5,575.03	0.00	0.00	0.00
11,800.00	90.00	179.67	6,024.00	-5,671.86	-199.87	5,674.98	0.00	0.00	0.00
11,900.00	90.00	179.67	6,024.00	-5,771.86	-199.30	5,774.94	0.00	0.00	0.00
12,000.00	90.00	179.67	6,024.00	-5,871.85	-198.73	5,874.90	0.00	0.00	0.00
12,100.00	90.00	179.67	6,024.00	-5,971.85	-198.16	5,974.86	0.00	0.00	0.00
12,200.00	90.00	179.67	6,024.00	-6,071.85	-197.59	6,074.81	0.00	0.00	0.00
12,300.00	90.00	179.67	6,024.00	-6,171.85	-197.02	6,174.77	0.00	0.00	0.00
12,400.00	90.00	179.67	6,024.00	-6,271.85	-196.45	6,274.73	0.00	0.00	0.00
12,500.00	90.00	179.67	6,024.00	-6,371.85	-195.88	6,374.69	0.00	0.00	0.00
12,600.00	90.00	179.67	6,024.00	-6,471.84	-195.31	6,474.64	0.00	0.00	0.00
12,700.00	90.00	179.67	6,024.00	-6,571.84	-194.74	6,574.60	0.00	0.00	0.00
12,800.00	90.00	179.67	6,024.00	-6,671.84	-194.17	6,674.56	0.00	0.00	0.00
12,900.00	90.00	179.67	6,024.00	-6,771.84	-193.60	6,774.52	0.00	0.00	0.00
13,000.00	90.00	179.67	6,024.00	-6,871.84	-193.03	6,874.47	0.00	0.00	0.00
13,100.00	90.00	179.67	6,024.00	-6,971.84	-192.46	6,974.43	0.00	0.00	0.00
13,200.00	90.00	179.67	6,024.00	-7,071.83	-191.89	7,074.39	0.00	0.00	0.00
13,300.00	90.00	179.67	6,024.00	-7,171.83	-191.32	7,174.35	0.00	0.00	0.00
13,400.00	90.00	179.67	6,024.00	-7,271.83	-190.75	7,274.31	0.00	0.00	0.00
13,500.00	90.00	179.67	6,024.00	-7,371.83	-190.18	7,374.26	0.00	0.00	0.00
13,600.00	90.00	179.67	6,024.00	-7,471.83	-189.61	7,474.22	0.00	0.00	0.00
13,700.00	90.00	179.67	6,024.00	-7,571.83	-189.04	7,574.18	0.00	0.00	0.00
13,800.00	90.00	179.67	6,024.00	-7,671.83	-188.47	7,674.14	0.00	0.00	0.00
13,900.00	90.00	179.67	6,024.00	-7,771.82	-187.90	7,774.09	0.00	0.00	0.00
14,000.00	90.00	179.67	6,024.00	-7,871.82	-187.33	7,874.05	0.00	0.00	0.00
14,093.10	90.00	179.67	6,024.00	-7,964.92	-186.80	7,967.11	0.00	0.00	0.00
TD at 14093.11									



WOG

Planning Report

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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
PBHL 1839c	0.00	0.00	6,024.00	-7,964.92	-186.80	1,550,429.43	3,471,357.71	40° 49' 54.770 N	103° 47' 47.830 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(in)	(in)
6,337.05	6,024.00	7" CSG PT/5 1/2" Marker		7.000	8.750

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,553.65	1,550.00	Upper Pierre				
3,510.16	3,500.00	Hygiene				
3,660.66	3,650.00	Lower Pierre				
5,642.83	5,626.00	P200 Marker				
5,670.81	5,653.00	P300 Marker				
5,690.77	5,672.00	P350 Marker				
5,700.32	5,681.00	Sharon Springs				
5,709.93	5,690.00	Niobrara				
5,734.81	5,713.00	Top A Chalk				
5,778.27	5,752.00	Top A Marl				
5,801.32	5,772.00	A Marl				
5,814.27	5,783.00	Top Upper B				
5,842.03	5,806.00	Base Upper B				
5,869.60	5,828.00	Top Lower B				
5,914.72	5,862.00	Base Lower B				
5,925.87	5,870.00	Top B Marl				
5,968.51	5,899.00	Top C Chalk				
5,987.38	5,911.00	Middle C Chalk				
6,013.97	5,927.00	Middle C Marl				
6,057.92	5,951.00	Lower C Chalk				
6,091.06	5,967.00	Lower C Marl				
6,123.89	5,981.00	Lower C Marker				
6,156.41	5,993.00	Top Ft. Hays				
6,203.59	6,007.00	Ft. Hays Marker				



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1839
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4920.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4920.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07F-1839	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	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'
533.75	533.49	7.62	-5.72	Hold 4.68° Inc
5,084.91	5,069.51	304.38	-228.28	Drop 2°/100'
5,318.66	5,303.00	312.00	-234.00	Hold Vertical
5,518.66	5,503.00	312.00	-234.00	KOP, Build 11°/100'
6,337.05	6,024.00	-208.99	-231.03	LP @ 90° Inc, Hold
14,093.10	6,024.00	-7,964.92	-186.80	TD at 14093.11