



Project: Weld County, CO
Site: Sec 7-T10N-R57W
Well: Horsetail #07H-1816
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: 53088.1nT
Dip Angle: 67.44°
Date: 1/6/2015
Model: IGRF2010

WELL DETAILS: Horsetail #07H-1816

+N/-S	+E/-W	Northing	Ground Level:	4912.00	Longitude	Slot
0.00	0.00	1558371.24	Easting	3473863.77	40° 51' 12.750 N	103° 47' 13.240 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	625.63	6.51	39.52	624.93	14.26	11.76	2.00	39.52	-13.60	
4	4802.73	6.51	39.52	4775.07	379.74	313.24	0.00	0.00	-362.18	
5	5128.36	0.00	0.00	5100.00	394.00	325.00	2.00	180.00	-375.78	
6	5328.36	0.00	0.00	5300.00	394.00	325.00	0.00	0.00	-375.78	
7	6146.74	90.00	179.28	5821.00	-126.96	331.53	11.00	179.28	144.77	
8	13910.43	90.00	179.28	5821.00	-7890.04	428.91	0.00	0.00	7901.69	PBHL 1816B

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1550.00	1556.71	Upper Pierre
3500.00	3519.37	Hygiene
3650.00	3670.35	Lower Pierre
5619.00	5671.67	P200 Marker
5646.00	5706.76	P300 Marker
5665.00	5732.76	P350 Marker
5674.00	5745.53	Sharon Springs
5683.00	5758.62	Niobrara
5706.00	5793.87	Top A Chalk
5745.00	5861.79	Top A Marl
5765.00	5902.96	A Marl
5776.00	5928.61	Top Upper B
5799.00	5994.80	Base Upper B
5821.00	6146.74	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'
624.93	625.63	6.51	39.52	14.26	11.76	-13.60	18.49	Hold 6.51° Inc
4775.07	4802.73	6.51	39.52	379.74	313.24	-362.18	492.26	Drop 2°/100'
5100.00	5128.36	0.00	0.00	394.00	325.00	-375.78	510.75	Hold Vertical
5300.00	5328.36	0.00	0.00	394.00	325.00	-375.78	510.75	KOP, Build 11°/100'
5821.00	6146.74	90.00	179.28	-126.96	331.53	144.77	1031.75	LP @ 90° Inc, Hold
5821.00	13910.43	90.00	179.28	-7890.04	428.91	7901.69	8795.44	TD at 13910.43

DESIGN TARGET DETAILS

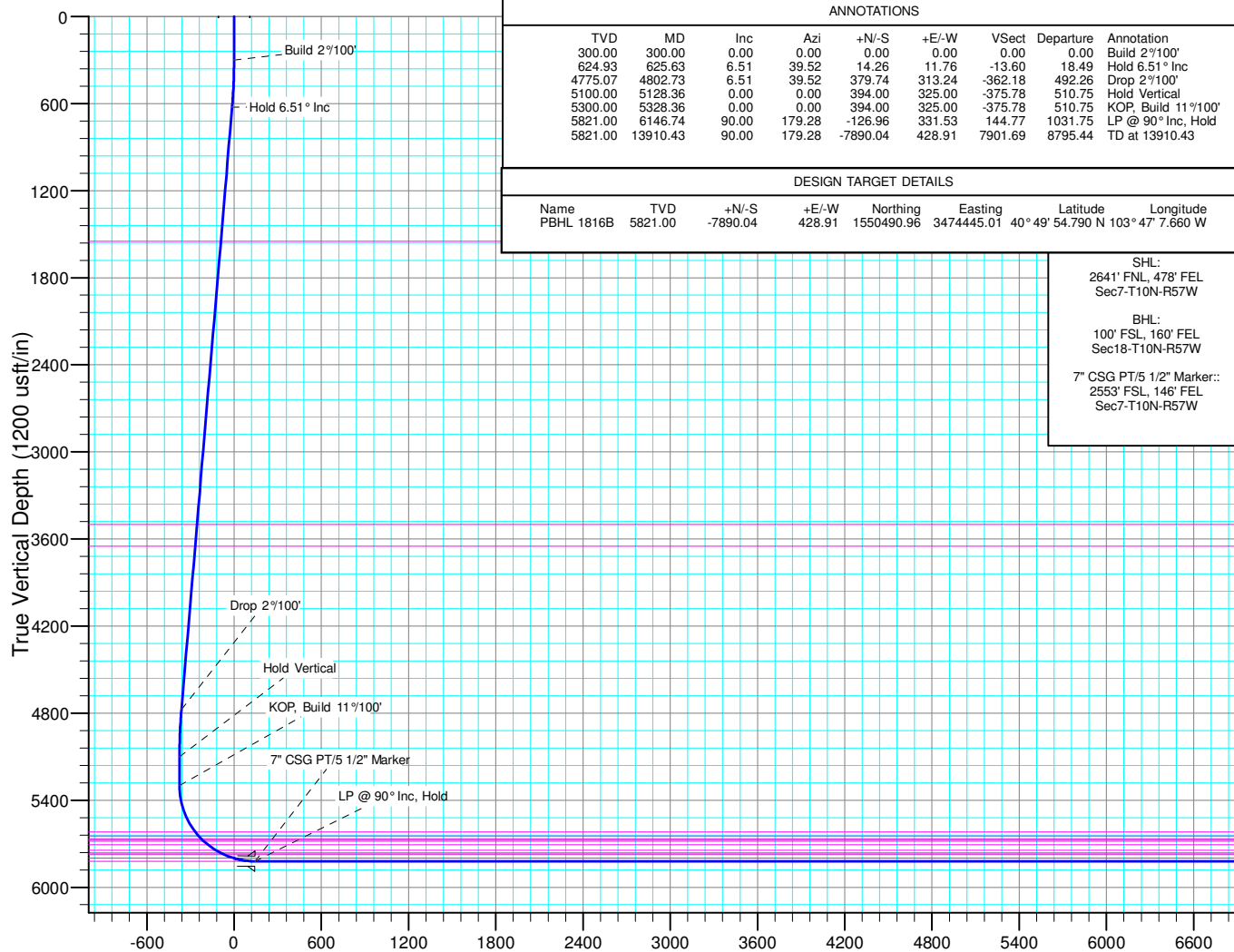
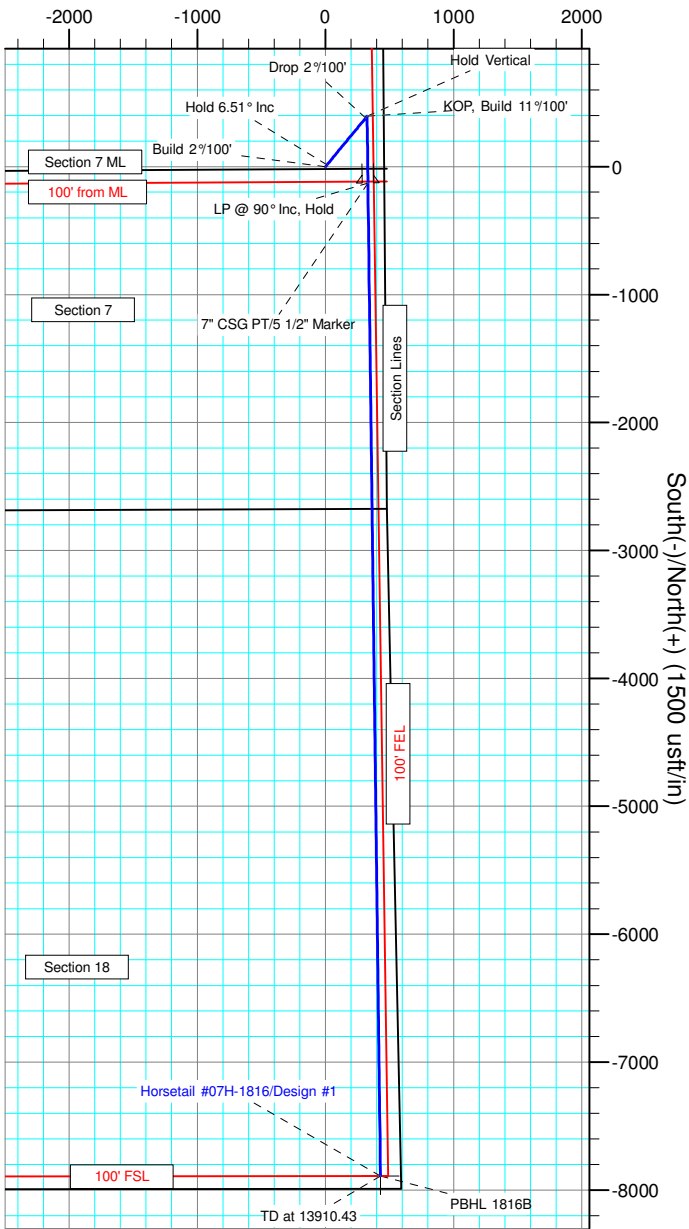
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1816B	5821.00	-7890.04	428.91	1550490.96	3474445.01	40° 49' 54.790 N	103° 47' 7.660 W

SHL:
2641' FNL, 478' FEL
Sec7-T10N-R57W

BHL:
100' FSL, 160' FEL
Sec18-T10N-R57W

7" CSG PT/5 1/2" Marker::
2553' FSL, 146' FEL
Sec7-T10N-R57W

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



Vertical Section at 176.89° (1200 usft/in)



Whiting Petroleum Corp.

Weld County, CO

Sec 7-T10N-R57W

Horsetail #07H-1816

Hz

Plan: Design #1

Standard Planning Report

01 December, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	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 #07H-1816					
Well Position	+N/-S	-156.51 usft	Northing:	1,558,371.24 usft	Latitude:	40° 51' 12.750 N
	+E/-W	4,051.37 usft	Easting:	3,473,863.77 usft	Longitude:	103° 47' 13.240 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,912.00 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	176.89

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	
625.63	6.51	39.52	624.93	14.26	11.76	2.00	2.00	0.00	39.52	
4,802.73	6.51	39.52	4,775.07	379.74	313.24	0.00	0.00	0.00	0.00	
5,128.36	0.00	0.00	5,100.00	394.00	325.00	2.00	-2.00	0.00	180.00	
5,328.36	0.00	0.00	5,300.00	394.00	325.00	0.00	0.00	0.00	0.00	
6,146.74	90.00	179.28	5,821.00	-126.96	331.53	11.00	11.00	0.00	179.28	
13,910.43	90.00	179.28	5,821.00	-7,890.04	428.91	0.00	0.00	0.00	0.00	PBHL 1816B



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	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	39.52	399.98	1.35	1.11	-1.28	2.00	2.00	0.00
500.00	4.00	39.52	499.84	5.38	4.44	-5.13	2.00	2.00	0.00
600.00	6.00	39.52	599.45	12.11	9.99	-11.55	2.00	2.00	0.00
625.63	6.51	39.52	624.93	14.26	11.76	-13.60	2.00	2.00	0.00
Hold 6.51° Inc									
700.00	6.51	39.52	698.82	20.77	17.13	-19.81	0.00	0.00	0.00
800.00	6.51	39.52	798.17	29.52	24.35	-28.15	0.00	0.00	0.00
900.00	6.51	39.52	897.53	38.27	31.57	-36.50	0.00	0.00	0.00
1,000.00	6.51	39.52	996.88	47.02	38.78	-44.84	0.00	0.00	0.00
1,100.00	6.51	39.52	1,096.24	55.77	46.00	-53.19	0.00	0.00	0.00
1,200.00	6.51	39.52	1,195.59	64.52	53.22	-61.53	0.00	0.00	0.00
1,300.00	6.51	39.52	1,294.95	73.27	60.43	-69.88	0.00	0.00	0.00
1,400.00	6.51	39.52	1,394.30	82.02	67.65	-78.22	0.00	0.00	0.00
1,500.00	6.51	39.52	1,493.66	90.76	74.87	-86.57	0.00	0.00	0.00
1,556.71	6.51	39.52	1,550.00	95.73	78.96	-91.30	0.00	0.00	0.00
Upper Pierre									
1,600.00	6.51	39.52	1,593.01	99.51	82.09	-94.91	0.00	0.00	0.00
1,700.00	6.51	39.52	1,692.37	108.26	89.30	-103.26	0.00	0.00	0.00
1,800.00	6.51	39.52	1,791.72	117.01	96.52	-111.60	0.00	0.00	0.00
1,900.00	6.51	39.52	1,891.08	125.76	103.74	-119.95	0.00	0.00	0.00
2,000.00	6.51	39.52	1,990.43	134.51	110.96	-128.29	0.00	0.00	0.00
2,100.00	6.51	39.52	2,089.79	143.26	118.17	-136.64	0.00	0.00	0.00
2,200.00	6.51	39.52	2,189.14	152.01	125.39	-144.98	0.00	0.00	0.00
2,300.00	6.51	39.52	2,288.49	160.76	132.61	-153.33	0.00	0.00	0.00
2,400.00	6.51	39.52	2,387.85	169.51	139.82	-161.67	0.00	0.00	0.00
2,500.00	6.51	39.52	2,487.20	178.26	147.04	-170.02	0.00	0.00	0.00
2,600.00	6.51	39.52	2,586.56	187.01	154.26	-178.36	0.00	0.00	0.00
2,700.00	6.51	39.52	2,685.91	195.76	161.48	-186.71	0.00	0.00	0.00
2,800.00	6.51	39.52	2,785.27	204.51	168.69	-195.05	0.00	0.00	0.00
2,900.00	6.51	39.52	2,884.62	213.26	175.91	-203.40	0.00	0.00	0.00
3,000.00	6.51	39.52	2,983.98	222.01	183.13	-211.74	0.00	0.00	0.00
3,100.00	6.51	39.52	3,083.33	230.76	190.35	-220.09	0.00	0.00	0.00
3,200.00	6.51	39.52	3,182.69	239.51	197.56	-228.43	0.00	0.00	0.00
3,300.00	6.51	39.52	3,282.04	248.26	204.78	-236.78	0.00	0.00	0.00
3,400.00	6.51	39.52	3,381.40	257.01	212.00	-245.12	0.00	0.00	0.00
3,500.00	6.51	39.52	3,480.75	265.76	219.21	-253.47	0.00	0.00	0.00
3,519.37	6.51	39.52	3,500.00	267.45	220.61	-255.08	0.00	0.00	0.00
Hygiene									
3,600.00	6.51	39.52	3,580.11	274.51	226.43	-261.81	0.00	0.00	0.00
3,670.35	6.51	39.52	3,650.00	280.66	231.51	-267.68	0.00	0.00	0.00
Lower Pierre									
3,700.00	6.51	39.52	3,679.46	283.26	233.65	-270.15	0.00	0.00	0.00
3,800.00	6.51	39.52	3,778.82	292.00	240.87	-278.50	0.00	0.00	0.00
3,900.00	6.51	39.52	3,878.17	300.75	248.08	-286.84	0.00	0.00	0.00
4,000.00	6.51	39.52	3,977.52	309.50	255.30	-295.19	0.00	0.00	0.00
4,100.00	6.51	39.52	4,076.88	318.25	262.52	-303.53	0.00	0.00	0.00
4,200.00	6.51	39.52	4,176.23	327.00	269.74	-311.88	0.00	0.00	0.00
4,300.00	6.51	39.52	4,275.59	335.75	276.95	-320.22	0.00	0.00	0.00
4,400.00	6.51	39.52	4,374.94	344.50	284.17	-328.57	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	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	6.51	39.52	4,474.30	353.25	291.39	-336.91	0.00	0.00	0.00
4,600.00	6.51	39.52	4,573.65	362.00	298.61	-345.26	0.00	0.00	0.00
4,700.00	6.51	39.52	4,673.01	370.75	305.82	-353.60	0.00	0.00	0.00
4,802.73	6.51	39.52	4,775.07	379.74	313.24	-362.18	0.00	0.00	0.00
Drop 2°/100'									
4,900.00	4.57	39.52	4,871.89	386.98	319.21	-369.09	2.00	-2.00	0.00
5,000.00	2.57	39.52	4,971.69	391.78	323.17	-373.66	2.00	-2.00	0.00
5,100.00	0.57	39.52	5,071.64	393.89	324.91	-375.67	2.00	-2.00	0.00
5,128.36	0.00	0.00	5,100.00	394.00	325.00	-375.78	2.00	-2.00	0.00
Hold Vertical									
5,200.00	0.00	0.00	5,171.64	394.00	325.00	-375.78	0.00	0.00	0.00
5,300.00	0.00	0.00	5,271.64	394.00	325.00	-375.78	0.00	0.00	0.00
5,328.36	0.00	0.00	5,300.00	394.00	325.00	-375.78	0.00	0.00	0.00
KOP, Build 11°/100'									
5,350.00	2.38	179.28	5,321.64	393.55	325.01	-375.33	11.00	11.00	0.00
5,400.00	7.88	179.28	5,371.42	389.08	325.06	-370.86	11.00	11.00	0.00
5,450.00	13.38	179.28	5,420.54	379.86	325.18	-361.65	11.00	11.00	0.00
5,500.00	18.88	179.28	5,468.56	365.98	325.35	-347.78	11.00	11.00	0.00
5,550.00	24.37	179.28	5,515.02	347.56	325.58	-329.38	11.00	11.00	0.00
5,600.00	29.87	179.28	5,559.50	324.78	325.87	-306.61	11.00	11.00	0.00
5,650.00	35.37	179.28	5,601.60	297.84	326.21	-279.69	11.00	11.00	0.00
5,671.67	37.75	179.28	5,619.00	284.93	326.37	-266.80	11.00	11.00	0.00
P200 Marker									
5,700.00	40.87	179.28	5,640.92	266.98	326.59	-248.86	11.00	11.00	0.00
5,706.76	41.61	179.28	5,646.00	262.53	326.65	-244.41	11.00	11.00	0.00
P300 Marker									
5,732.76	44.47	179.28	5,665.00	244.79	326.87	-226.68	11.00	11.00	0.00
P350 Marker									
5,745.53	45.88	179.28	5,674.00	235.73	326.99	-217.63	11.00	11.00	0.00
Sharon Springs									
5,750.00	46.37	179.28	5,677.10	232.51	327.03	-214.41	11.00	11.00	0.00
5,758.62	47.32	179.28	5,683.00	226.22	327.10	-208.13	11.00	11.00	0.00
Niobrara									
5,793.87	51.19	179.28	5,706.00	199.52	327.44	-181.45	11.00	11.00	0.00
Top A Chalk									
5,800.00	51.87	179.28	5,709.81	194.72	327.50	-176.66	11.00	11.00	0.00
5,850.00	57.37	179.28	5,738.75	153.97	328.01	-135.94	11.00	11.00	0.00
5,861.79	58.66	179.28	5,745.00	143.97	328.14	-125.95	11.00	11.00	0.00
Top A Marl									
5,900.00	62.87	179.28	5,763.66	110.64	328.55	-92.65	11.00	11.00	0.00
5,902.96	63.19	179.28	5,765.00	108.00	328.59	-90.01	11.00	11.00	0.00
A Marl									
5,928.61	66.01	179.28	5,776.00	84.84	328.88	-66.86	11.00	11.00	0.00
Top Upper B									
5,950.00	68.36	179.28	5,784.29	65.12	329.13	-47.16	11.00	11.00	0.00
5,994.80	73.29	179.28	5,799.00	22.83	329.66	-4.90	11.00	11.00	0.00
Base Upper B									
6,000.00	73.86	179.28	5,800.47	17.84	329.72	0.09	11.00	11.00	0.00
6,050.00	79.36	179.28	5,812.04	-30.78	330.33	48.67	11.00	11.00	0.00
6,100.00	84.86	179.28	5,818.90	-80.28	330.95	98.13	11.00	11.00	0.00
6,146.74	90.00	179.28	5,821.00	-126.96	331.53	144.77	11.00	11.00	0.00
LP @ 90° Inc, Hold - Top Lower B - 7" CSG PT/5 1/2" Marker									



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	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)
6,200.00	90.00	179.28	5,821.00	-180.21	332.20	197.98	0.00	0.00	0.00
6,300.00	90.00	179.28	5,821.00	-280.21	333.46	297.89	0.00	0.00	0.00
6,400.00	90.00	179.28	5,821.00	-380.20	334.71	397.81	0.00	0.00	0.00
6,500.00	90.00	179.28	5,821.00	-480.19	335.97	497.72	0.00	0.00	0.00
6,600.00	90.00	179.28	5,821.00	-580.18	337.22	597.63	0.00	0.00	0.00
6,700.00	90.00	179.28	5,821.00	-680.17	338.47	697.54	0.00	0.00	0.00
6,800.00	90.00	179.28	5,821.00	-780.17	339.73	797.46	0.00	0.00	0.00
6,900.00	90.00	179.28	5,821.00	-880.16	340.98	897.37	0.00	0.00	0.00
7,000.00	90.00	179.28	5,821.00	-980.15	342.24	997.28	0.00	0.00	0.00
7,100.00	90.00	179.28	5,821.00	-1,080.14	343.49	1,097.20	0.00	0.00	0.00
7,200.00	90.00	179.28	5,821.00	-1,180.13	344.75	1,197.11	0.00	0.00	0.00
7,300.00	90.00	179.28	5,821.00	-1,280.13	346.00	1,297.02	0.00	0.00	0.00
7,400.00	90.00	179.28	5,821.00	-1,380.12	347.25	1,396.93	0.00	0.00	0.00
7,500.00	90.00	179.28	5,821.00	-1,480.11	348.51	1,496.85	0.00	0.00	0.00
7,600.00	90.00	179.28	5,821.00	-1,580.10	349.76	1,596.76	0.00	0.00	0.00
7,700.00	90.00	179.28	5,821.00	-1,680.10	351.02	1,696.67	0.00	0.00	0.00
7,800.00	90.00	179.28	5,821.00	-1,780.09	352.27	1,796.58	0.00	0.00	0.00
7,900.00	90.00	179.28	5,821.00	-1,880.08	353.53	1,896.50	0.00	0.00	0.00
8,000.00	90.00	179.28	5,821.00	-1,980.07	354.78	1,996.41	0.00	0.00	0.00
8,100.00	90.00	179.28	5,821.00	-2,080.06	356.03	2,096.32	0.00	0.00	0.00
8,200.00	90.00	179.28	5,821.00	-2,180.06	357.29	2,196.24	0.00	0.00	0.00
8,300.00	90.00	179.28	5,821.00	-2,280.05	358.54	2,296.15	0.00	0.00	0.00
8,400.00	90.00	179.28	5,821.00	-2,380.04	359.80	2,396.06	0.00	0.00	0.00
8,500.00	90.00	179.28	5,821.00	-2,480.03	361.05	2,495.97	0.00	0.00	0.00
8,600.00	90.00	179.28	5,821.00	-2,580.02	362.31	2,595.89	0.00	0.00	0.00
8,700.00	90.00	179.28	5,821.00	-2,680.02	363.56	2,695.80	0.00	0.00	0.00
8,800.00	90.00	179.28	5,821.00	-2,780.01	364.81	2,795.71	0.00	0.00	0.00
8,900.00	90.00	179.28	5,821.00	-2,880.00	366.07	2,895.63	0.00	0.00	0.00
9,000.00	90.00	179.28	5,821.00	-2,979.99	367.32	2,995.54	0.00	0.00	0.00
9,100.00	90.00	179.28	5,821.00	-3,079.99	368.58	3,095.45	0.00	0.00	0.00
9,200.00	90.00	179.28	5,821.00	-3,179.98	369.83	3,195.36	0.00	0.00	0.00
9,300.00	90.00	179.28	5,821.00	-3,279.97	371.08	3,295.28	0.00	0.00	0.00
9,400.00	90.00	179.28	5,821.00	-3,379.96	372.34	3,395.19	0.00	0.00	0.00
9,500.00	90.00	179.28	5,821.00	-3,479.95	373.59	3,495.10	0.00	0.00	0.00
9,600.00	90.00	179.28	5,821.00	-3,579.95	374.85	3,595.02	0.00	0.00	0.00
9,700.00	90.00	179.28	5,821.00	-3,679.94	376.10	3,694.93	0.00	0.00	0.00
9,800.00	90.00	179.28	5,821.00	-3,779.93	377.36	3,794.84	0.00	0.00	0.00
9,900.00	90.00	179.28	5,821.00	-3,879.92	378.61	3,894.75	0.00	0.00	0.00
10,000.00	90.00	179.28	5,821.00	-3,979.91	379.86	3,994.67	0.00	0.00	0.00
10,100.00	90.00	179.28	5,821.00	-4,079.91	381.12	4,094.58	0.00	0.00	0.00
10,200.00	90.00	179.28	5,821.00	-4,179.90	382.37	4,194.49	0.00	0.00	0.00
10,300.00	90.00	179.28	5,821.00	-4,279.89	383.63	4,294.40	0.00	0.00	0.00
10,400.00	90.00	179.28	5,821.00	-4,379.88	384.88	4,394.32	0.00	0.00	0.00
10,500.00	90.00	179.28	5,821.00	-4,479.88	386.14	4,494.23	0.00	0.00	0.00
10,600.00	90.00	179.28	5,821.00	-4,579.87	387.39	4,594.14	0.00	0.00	0.00
10,700.00	90.00	179.28	5,821.00	-4,679.86	388.64	4,694.06	0.00	0.00	0.00
10,800.00	90.00	179.28	5,821.00	-4,779.85	389.90	4,793.97	0.00	0.00	0.00
10,900.00	90.00	179.28	5,821.00	-4,879.84	391.15	4,893.88	0.00	0.00	0.00
11,000.00	90.00	179.28	5,821.00	-4,979.84	392.41	4,993.79	0.00	0.00	0.00
11,100.00	90.00	179.28	5,821.00	-5,079.83	393.66	5,093.71	0.00	0.00	0.00
11,200.00	90.00	179.28	5,821.00	-5,179.82	394.92	5,193.62	0.00	0.00	0.00
11,300.00	90.00	179.28	5,821.00	-5,279.81	396.17	5,293.53	0.00	0.00	0.00
11,400.00	90.00	179.28	5,821.00	-5,379.80	397.42	5,393.45	0.00	0.00	0.00
11,500.00	90.00	179.28	5,821.00	-5,479.80	398.68	5,493.36	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	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)
11,600.00	90.00	179.28	5,821.00	-5,579.79	399.93	5,593.27	0.00	0.00	0.00
11,700.00	90.00	179.28	5,821.00	-5,679.78	401.19	5,693.18	0.00	0.00	0.00
11,800.00	90.00	179.28	5,821.00	-5,779.77	402.44	5,793.10	0.00	0.00	0.00
11,900.00	90.00	179.28	5,821.00	-5,879.77	403.70	5,893.01	0.00	0.00	0.00
12,000.00	90.00	179.28	5,821.00	-5,979.76	404.95	5,992.92	0.00	0.00	0.00
12,100.00	90.00	179.28	5,821.00	-6,079.75	406.20	6,092.84	0.00	0.00	0.00
12,200.00	90.00	179.28	5,821.00	-6,179.74	407.46	6,192.75	0.00	0.00	0.00
12,300.00	90.00	179.28	5,821.00	-6,279.73	408.71	6,292.66	0.00	0.00	0.00
12,400.00	90.00	179.28	5,821.00	-6,379.73	409.97	6,392.57	0.00	0.00	0.00
12,500.00	90.00	179.28	5,821.00	-6,479.72	411.22	6,492.49	0.00	0.00	0.00
12,600.00	90.00	179.28	5,821.00	-6,579.71	412.48	6,592.40	0.00	0.00	0.00
12,700.00	90.00	179.28	5,821.00	-6,679.70	413.73	6,692.31	0.00	0.00	0.00
12,800.00	90.00	179.28	5,821.00	-6,779.69	414.98	6,792.22	0.00	0.00	0.00
12,900.00	90.00	179.28	5,821.00	-6,879.69	416.24	6,892.14	0.00	0.00	0.00
13,000.00	90.00	179.28	5,821.00	-6,979.68	417.49	6,992.05	0.00	0.00	0.00
13,100.00	90.00	179.28	5,821.00	-7,079.67	418.75	7,091.96	0.00	0.00	0.00
13,200.00	90.00	179.28	5,821.00	-7,179.66	420.00	7,191.88	0.00	0.00	0.00
13,300.00	90.00	179.28	5,821.00	-7,279.66	421.26	7,291.79	0.00	0.00	0.00
13,400.00	90.00	179.28	5,821.00	-7,379.65	422.51	7,391.70	0.00	0.00	0.00
13,500.00	90.00	179.28	5,821.00	-7,479.64	423.76	7,491.61	0.00	0.00	0.00
13,600.00	90.00	179.28	5,821.00	-7,579.63	425.02	7,591.53	0.00	0.00	0.00
13,700.00	90.00	179.28	5,821.00	-7,679.62	426.27	7,691.44	0.00	0.00	0.00
13,800.00	90.00	179.28	5,821.00	-7,779.62	427.53	7,791.35	0.00	0.00	0.00
13,900.00	90.00	179.28	5,821.00	-7,879.61	428.78	7,891.27	0.00	0.00	0.00
13,910.43	90.00	179.28	5,821.00	-7,890.04	428.91	7,901.69	0.00	0.00	0.00
TD at 13910.43									

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 1816B	0.00	0.00	5,821.00	-7,890.04	428.91	1,550,490.96	3,474,445.01	40° 49' 54.790 N	103° 47' 7.660 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,146.74	5,821.00	7" CSG PT/5 1/2" Marker	7.000	8.750	



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-1816
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4933.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4933.00usft
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-1816	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Design #1		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,556.71	1,550.00	Upper Pierre				
3,519.37	3,500.00	Hygiene				
3,670.35	3,650.00	Lower Pierre				
5,671.67	5,619.00	P200 Marker				
5,706.76	5,646.00	P300 Marker				
5,732.76	5,665.00	P350 Marker				
5,745.53	5,674.00	Sharon Springs				
5,758.62	5,683.00	Niobrara				
5,793.87	5,706.00	Top A Chalk				
5,861.79	5,745.00	Top A Marl				
5,902.96	5,765.00	A Marl				
5,928.61	5,776.00	Top Upper B				
5,994.80	5,799.00	Base Upper B				
6,146.74	5,821.00	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'	
625.63	624.93	14.26	11.76	Hold 6.51° Inc	
4,802.73	4,775.07	379.74	313.24	Drop 2°/100'	
5,128.36	5,100.00	394.00	325.00	Hold Vertical	
5,328.36	5,300.00	394.00	325.00	KOP, Build 11°/100'	
6,146.74	5,821.00	-126.96	331.53	LP @ 90° Inc, Hold	
13,910.43	5,821.00	-7,890.04	428.91	TD at 13910.43	