



Project: Weld County, CO
Site: Sec 7-T10N-R57W
Well: Horsetail #07F-1840
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

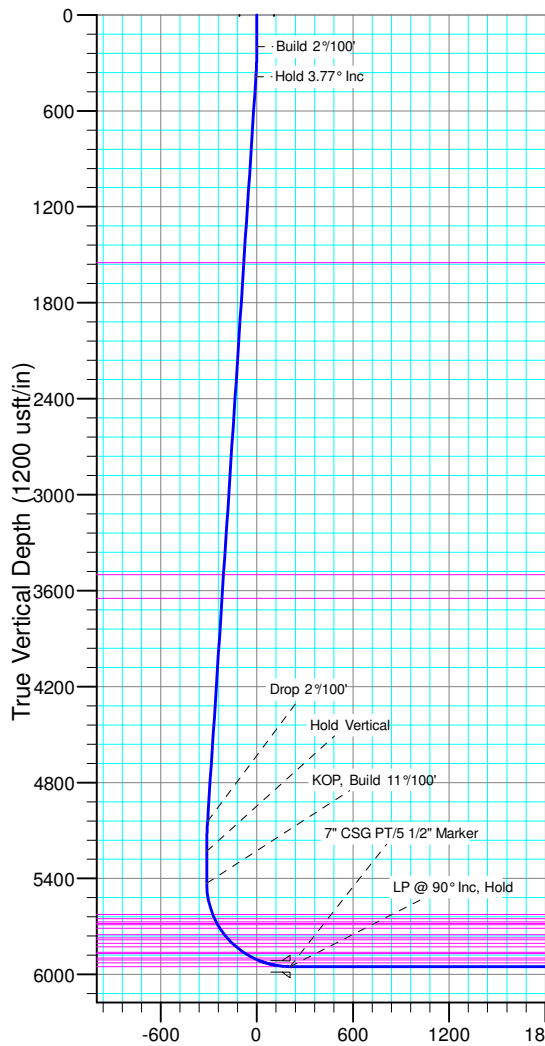
TVDPath	MDPath	Formation
1550.00	1552.65	Upper Pierre
3500.00	3506.88	Hygiene
3650.00	3657.21	Lower Pierre
5626.00	5641.30	P200 Marker
5653.00	5670.80	P300 Marker
5672.00	5692.03	P350 Marker
5681.00	5702.25	Sharon Springs
5690.00	5712.58	Niobrara
5713.00	5739.53	Top A Chalk
5752.00	5787.48	Top A Marl
5772.00	5813.43	A Marl
5783.00	5828.20	Top Upper B
5806.00	5860.41	Base Upper B
5828.00	5893.30	Top Lower B
5862.00	5949.70	Base Lower B
5870.00	5964.32	Top B Marl
5899.00	6023.99	Top C Chalk
5911.00	6053.26	Middle C Chalk
5927.00	6099.99	Middle C Marl
5951.00	6258.74	Lower C Chalk

WELL DETAILS: Horsetail #07F-1840

+N/-S	+E/-W	Northing	Ground Level: 4899.00	Easting	Latitude	Longitude	Slot
0.00	0.00	1558395.60		3471451.39	40° 51' 13.450 N	103° 47' 44.620 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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	388.46	3.77	10.11	388.32	6.10	1.09	2.00	10.11	-6.09	
4	5051.90	3.77	10.11	5041.68	307.90	54.91	0.00	0.00	-307.34	
5	5240.36	0.00	0.00	5230.00	314.00	56.00	2.00	180.00	-313.43	
6	5440.36	0.00	0.00	5430.00	314.00	56.00	0.00	0.00	-313.43	
7	6258.74	90.00	179.84	5951.00	-207.00	57.41	11.00	179.84	207.55	
8	14014.68	90.00	179.84	5951.00	-7962.91	78.41	0.00	0.00	7963.29	PBHL 1840D



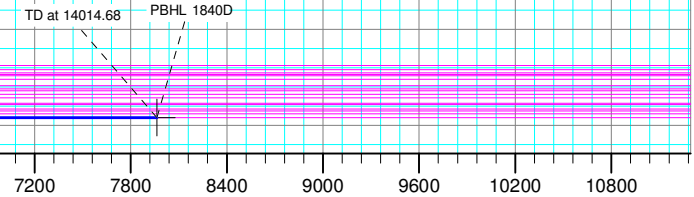
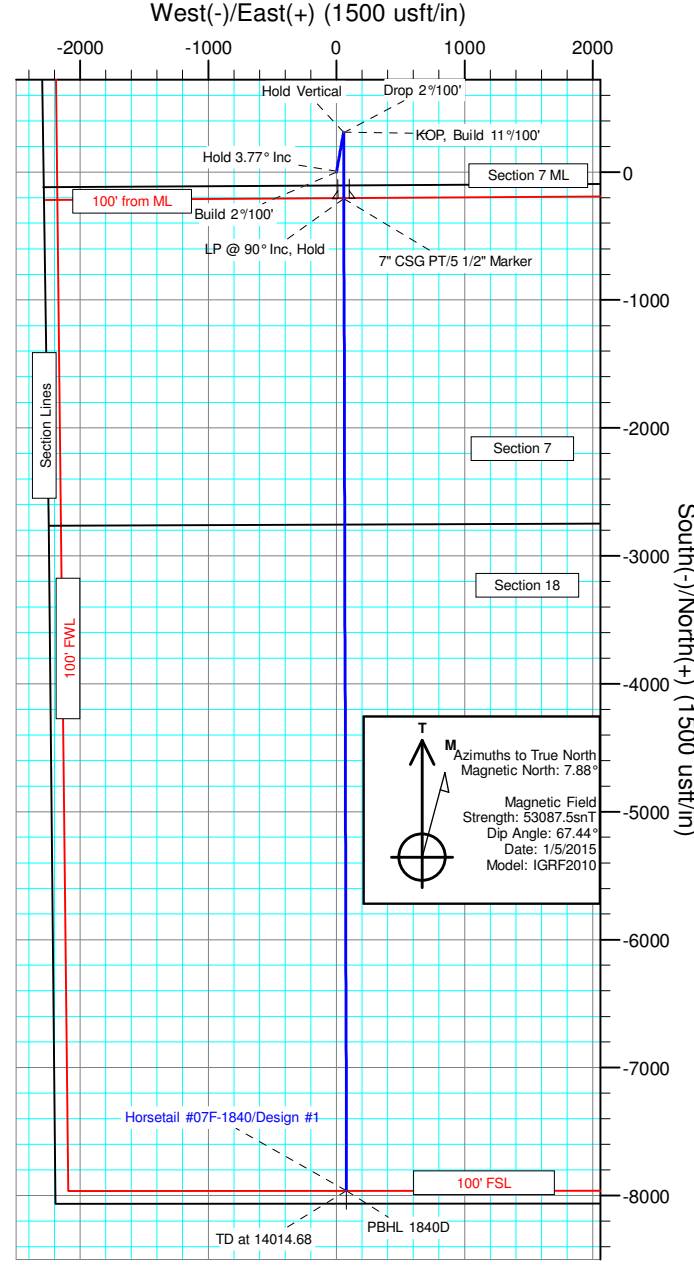
ANNOTATIONS										
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation		
200.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	Build 2°/100'		
388.32	388.46	3.77	10.11	6.10	1.09	-6.09	6.20	Hold 3.77° Inc		
5041.68	5051.90	3.77	10.11	307.90	54.91	-307.34	312.76	Drop 2°/100'		
5230.00	5240.36	0.00	0.00	314.00	56.00	-313.43	318.95	Hold Vertical		
5430.00	5440.36	0.00	0.00	314.00	56.00	-313.43	318.95	KOP, Build 11°/100'		
5951.00	6258.74	90.00	179.84	-207.00	57.41	207.55	839.95	LP @ 90° Inc, Hold		
5951.00	14014.68	90.00	179.84	-7962.91	78.41	7963.29	8595.89	TD at 14014.68		

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 1840D	5951.00	-7962.91	78.41	1550435.67	3471682.82	40° 49' 54.770 N	103° 47' 43.600 W

SHL:
2549' FNL, 2299' FWL
Sec7-T10N-R57W

BHL:
100' FSL, 2273' FWL
Sec18-T10N-R57W

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Whiting Petroleum Corp.

**Weld County, CO
Sec 7-T10N-R57W
Horsetail #07F-1840**

Hz

Plan: Design #1

Standard Planning Report

12 November, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	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-1840					
Well Position	+N/-S	-85.96 usft	Northing:	1,558,395.60 usft	Latitude:	40° 51' 13.450 N
	+E/-W	1,639.90 usft	Easting:	3,471,451.39 usft	Longitude:	103° 47' 44.620 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	53,088

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	179.44

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
388.46	3.77	10.11	388.32	6.10	1.09	2.00	2.00	0.00	10.11	
5,051.90	3.77	10.11	5,041.68	307.90	54.91	0.00	0.00	0.00	0.00	
5,240.36	0.00	0.00	5,230.00	314.00	56.00	2.00	-2.00	0.00	180.00	
5,440.36	0.00	0.00	5,430.00	314.00	56.00	0.00	0.00	0.00	0.00	
6,258.74	90.00	179.84	5,951.00	-207.00	57.41	11.00	11.00	0.00	179.84	
14,014.68	90.00	179.84	5,951.00	-7,962.91	78.41	0.00	0.00	0.00	0.00	PBHL 1840D



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	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
Build 2°/100'									
300.00	2.00	10.11	299.98	1.72	0.31	-1.71	2.00	2.00	0.00
388.46	3.77	10.11	388.32	6.10	1.09	-6.09	2.00	2.00	0.00
Hold 3.77° Inc									
400.00	3.77	10.11	399.84	6.85	1.22	-6.83	0.00	0.00	0.00
500.00	3.77	10.11	499.62	13.32	2.38	-13.29	0.00	0.00	0.00
600.00	3.77	10.11	599.41	19.79	3.53	-19.75	0.00	0.00	0.00
700.00	3.77	10.11	699.19	26.26	4.68	-26.21	0.00	0.00	0.00
800.00	3.77	10.11	798.97	32.73	5.84	-32.67	0.00	0.00	0.00
900.00	3.77	10.11	898.76	39.21	6.99	-39.13	0.00	0.00	0.00
1,000.00	3.77	10.11	998.54	45.68	8.15	-45.59	0.00	0.00	0.00
1,100.00	3.77	10.11	1,098.33	52.15	9.30	-52.05	0.00	0.00	0.00
1,200.00	3.77	10.11	1,198.11	58.62	10.45	-58.51	0.00	0.00	0.00
1,300.00	3.77	10.11	1,297.89	65.09	11.61	-64.97	0.00	0.00	0.00
1,400.00	3.77	10.11	1,397.68	71.56	12.76	-71.43	0.00	0.00	0.00
1,500.00	3.77	10.11	1,497.46	78.03	13.92	-77.89	0.00	0.00	0.00
1,552.65	3.77	10.11	1,550.00	81.44	14.52	-81.30	0.00	0.00	0.00
Upper Pierre									
1,600.00	3.77	10.11	1,597.24	84.51	15.07	-84.35	0.00	0.00	0.00
1,700.00	3.77	10.11	1,697.03	90.98	16.23	-90.81	0.00	0.00	0.00
1,800.00	3.77	10.11	1,796.81	97.45	17.38	-97.27	0.00	0.00	0.00
1,900.00	3.77	10.11	1,896.59	103.92	18.53	-103.73	0.00	0.00	0.00
2,000.00	3.77	10.11	1,996.38	110.39	19.69	-110.19	0.00	0.00	0.00
2,100.00	3.77	10.11	2,096.16	116.86	20.84	-116.65	0.00	0.00	0.00
2,200.00	3.77	10.11	2,195.95	123.34	22.00	-123.11	0.00	0.00	0.00
2,300.00	3.77	10.11	2,295.73	129.81	23.15	-129.57	0.00	0.00	0.00
2,400.00	3.77	10.11	2,395.51	136.28	24.30	-136.03	0.00	0.00	0.00
2,500.00	3.77	10.11	2,495.30	142.75	25.46	-142.49	0.00	0.00	0.00
2,600.00	3.77	10.11	2,595.08	149.22	26.61	-148.95	0.00	0.00	0.00
2,700.00	3.77	10.11	2,694.86	155.69	27.77	-155.41	0.00	0.00	0.00
2,800.00	3.77	10.11	2,794.65	162.17	28.92	-161.87	0.00	0.00	0.00
2,900.00	3.77	10.11	2,894.43	168.64	30.08	-168.33	0.00	0.00	0.00
3,000.00	3.77	10.11	2,994.22	175.11	31.23	-174.79	0.00	0.00	0.00
3,100.00	3.77	10.11	3,094.00	181.58	32.38	-181.25	0.00	0.00	0.00
3,200.00	3.77	10.11	3,193.78	188.05	33.54	-187.71	0.00	0.00	0.00
3,300.00	3.77	10.11	3,293.57	194.52	34.69	-194.17	0.00	0.00	0.00
3,400.00	3.77	10.11	3,393.35	201.00	35.85	-200.63	0.00	0.00	0.00
3,500.00	3.77	10.11	3,493.13	207.47	37.00	-207.09	0.00	0.00	0.00
3,506.88	3.77	10.11	3,500.00	207.91	37.08	-207.54	0.00	0.00	0.00
Hygiene									
3,600.00	3.77	10.11	3,592.92	213.94	38.15	-213.55	0.00	0.00	0.00
3,657.21	3.77	10.11	3,650.00	217.64	38.81	-217.25	0.00	0.00	0.00
Lower Pierre									
3,700.00	3.77	10.11	3,692.70	220.41	39.31	-220.01	0.00	0.00	0.00
3,800.00	3.77	10.11	3,792.48	226.88	40.46	-226.47	0.00	0.00	0.00
3,900.00	3.77	10.11	3,892.27	233.35	41.62	-232.93	0.00	0.00	0.00
4,000.00	3.77	10.11	3,992.05	239.82	42.77	-239.39	0.00	0.00	0.00
4,100.00	3.77	10.11	4,091.84	246.30	43.93	-245.85	0.00	0.00	0.00
4,200.00	3.77	10.11	4,191.62	252.77	45.08	-252.31	0.00	0.00	0.00
4,300.00	3.77	10.11	4,291.40	259.24	46.23	-258.77	0.00	0.00	0.00
4,400.00	3.77	10.11	4,391.19	265.71	47.39	-265.23	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	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	3.77	10.11	4,490.97	272.18	48.54	-271.69	0.00	0.00	0.00
4,600.00	3.77	10.11	4,590.75	278.65	49.70	-278.15	0.00	0.00	0.00
4,700.00	3.77	10.11	4,690.54	285.13	50.85	-284.61	0.00	0.00	0.00
4,800.00	3.77	10.11	4,790.32	291.60	52.00	-291.07	0.00	0.00	0.00
4,900.00	3.77	10.11	4,890.11	298.07	53.16	-297.53	0.00	0.00	0.00
5,000.00	3.77	10.11	4,989.89	304.54	54.31	-303.99	0.00	0.00	0.00
5,051.90	3.77	10.11	5,041.68	307.90	54.91	-307.34	0.00	0.00	0.00
Drop 2°/100'									
5,100.00	2.81	10.11	5,089.70	310.62	55.40	-310.06	2.00	-2.00	0.00
5,200.00	0.81	10.11	5,189.64	313.72	55.95	-313.15	2.00	-2.00	0.00
5,240.36	0.00	0.00	5,230.00	314.00	56.00	-313.43	2.00	-2.00	0.00
Hold Vertical									
5,300.00	0.00	0.00	5,289.64	314.00	56.00	-313.43	0.00	0.00	0.00
5,400.00	0.00	0.00	5,389.64	314.00	56.00	-313.43	0.00	0.00	0.00
5,440.36	0.00	0.00	5,430.00	314.00	56.00	-313.43	0.00	0.00	0.00
KOP, Build 11°/100'									
5,450.00	1.06	179.84	5,439.64	313.91	56.00	-313.34	11.00	11.00	0.00
5,500.00	6.56	179.84	5,489.51	310.59	56.01	-310.02	11.00	11.00	0.00
5,550.00	12.06	179.84	5,538.83	302.51	56.03	-301.94	11.00	11.00	0.00
5,600.00	17.56	179.84	5,587.15	289.73	56.07	-289.17	11.00	11.00	0.00
5,641.30	22.10	179.84	5,626.00	275.73	56.10	-275.16	11.00	11.00	0.00
P200 Marker									
5,650.00	23.05	179.84	5,634.03	272.39	56.11	-271.82	11.00	11.00	0.00
5,670.80	25.34	179.84	5,653.00	263.86	56.14	-263.30	11.00	11.00	0.00
P300 Marker									
5,692.03	27.68	179.84	5,672.00	254.39	56.16	-253.82	11.00	11.00	0.00
P350 Marker									
5,700.00	28.55	179.84	5,679.03	250.63	56.17	-250.07	11.00	11.00	0.00
5,702.25	28.80	179.84	5,681.00	249.55	56.17	-248.99	11.00	11.00	0.00
Sharon Springs									
5,712.58	29.94	179.84	5,690.00	244.49	56.19	-243.92	11.00	11.00	0.00
Niobrara									
5,739.53	32.90	179.84	5,713.00	230.44	56.23	-229.87	11.00	11.00	0.00
Top A Chalk									
5,750.00	34.05	179.84	5,721.73	224.66	56.24	-224.10	11.00	11.00	0.00
5,787.48	38.17	179.84	5,752.00	202.58	56.30	-202.02	11.00	11.00	0.00
Top A Marl									
5,800.00	39.55	179.84	5,761.75	194.72	56.32	-194.16	11.00	11.00	0.00
5,813.43	41.03	179.84	5,772.00	186.04	56.35	-185.47	11.00	11.00	0.00
A Marl									
5,828.20	42.65	179.84	5,783.00	176.19	56.37	-175.62	11.00	11.00	0.00
Top Upper B									
5,850.00	45.05	179.84	5,798.72	161.09	56.41	-160.52	11.00	11.00	0.00
5,860.41	46.19	179.84	5,806.00	153.65	56.43	-153.08	11.00	11.00	0.00
Base Upper B									
5,893.30	49.81	179.84	5,828.00	129.21	56.50	-128.65	11.00	11.00	0.00
Top Lower B									
5,900.00	50.55	179.84	5,832.29	124.06	56.51	-123.50	11.00	11.00	0.00
5,949.70	56.01	179.84	5,862.00	84.23	56.62	-83.67	11.00	11.00	0.00
Base Lower B									
5,950.00	56.05	179.84	5,862.17	83.99	56.62	-83.43	11.00	11.00	0.00
5,964.32	57.62	179.84	5,870.00	72.00	56.66	-71.44	11.00	11.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	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)
Top B Marl									
6,000.00	61.55	179.84	5,888.06	41.24	56.74	-40.68	11.00	11.00	0.00
6,023.99	64.18	179.84	5,899.00	19.89	56.80	-19.33	11.00	11.00	0.00
Top C Chalk									
6,050.00	67.04	179.84	5,909.74	-3.80	56.86	4.35	11.00	11.00	0.00
6,053.26	67.40	179.84	5,911.00	-6.80	56.87	7.36	11.00	11.00	0.00
Middle C Chalk									
6,099.99	72.54	179.84	5,927.00	-50.69	56.99	51.25	11.00	11.00	0.00
Middle C Marl									
6,100.00	72.54	179.84	5,927.00	-50.70	56.99	51.26	11.00	11.00	0.00
6,150.00	78.04	179.84	5,939.69	-99.04	57.12	99.60	11.00	11.00	0.00
6,200.00	83.54	179.84	5,947.69	-148.38	57.25	148.94	11.00	11.00	0.00
6,250.00	89.04	179.84	5,950.93	-198.25	57.39	198.81	11.00	11.00	0.00
6,258.74	90.00	179.84	5,951.00	-206.99	57.41	207.55	11.00	11.00	0.00
LP @ 90° Inc, Hold - Lower C Chalk - 7" CSG PT/5 1/2" Marker									
6,300.00	90.00	179.84	5,951.00	-248.25	57.52	248.81	0.00	0.00	0.00
6,400.00	90.00	179.84	5,951.00	-348.25	57.79	348.81	0.00	0.00	0.00
6,500.00	90.00	179.84	5,951.00	-448.25	58.06	448.80	0.00	0.00	0.00
6,600.00	90.00	179.84	5,951.00	-548.25	58.33	548.80	0.00	0.00	0.00
6,700.00	90.00	179.84	5,951.00	-648.25	58.61	648.80	0.00	0.00	0.00
6,800.00	90.00	179.84	5,951.00	-748.25	58.88	748.80	0.00	0.00	0.00
6,900.00	90.00	179.84	5,951.00	-848.25	59.15	848.79	0.00	0.00	0.00
7,000.00	90.00	179.84	5,951.00	-948.25	59.42	948.79	0.00	0.00	0.00
7,100.00	90.00	179.84	5,951.00	-1,048.25	59.69	1,048.79	0.00	0.00	0.00
7,200.00	90.00	179.84	5,951.00	-1,148.25	59.96	1,148.79	0.00	0.00	0.00
7,300.00	90.00	179.84	5,951.00	-1,248.25	60.23	1,248.78	0.00	0.00	0.00
7,400.00	90.00	179.84	5,951.00	-1,348.25	60.50	1,348.78	0.00	0.00	0.00
7,500.00	90.00	179.84	5,951.00	-1,448.25	60.77	1,448.78	0.00	0.00	0.00
7,600.00	90.00	179.84	5,951.00	-1,548.25	61.04	1,548.78	0.00	0.00	0.00
7,700.00	90.00	179.84	5,951.00	-1,648.25	61.31	1,648.77	0.00	0.00	0.00
7,800.00	90.00	179.84	5,951.00	-1,748.25	61.58	1,748.77	0.00	0.00	0.00
7,900.00	90.00	179.84	5,951.00	-1,848.25	61.85	1,848.77	0.00	0.00	0.00
8,000.00	90.00	179.84	5,951.00	-1,948.25	62.12	1,948.77	0.00	0.00	0.00
8,100.00	90.00	179.84	5,951.00	-2,048.25	62.40	2,048.76	0.00	0.00	0.00
8,200.00	90.00	179.84	5,951.00	-2,148.25	62.67	2,148.76	0.00	0.00	0.00
8,300.00	90.00	179.84	5,951.00	-2,248.25	62.94	2,248.76	0.00	0.00	0.00
8,400.00	90.00	179.84	5,951.00	-2,348.25	63.21	2,348.75	0.00	0.00	0.00
8,500.00	90.00	179.84	5,951.00	-2,448.25	63.48	2,448.75	0.00	0.00	0.00
8,600.00	90.00	179.84	5,951.00	-2,548.25	63.75	2,548.75	0.00	0.00	0.00
8,700.00	90.00	179.84	5,951.00	-2,648.25	64.02	2,648.75	0.00	0.00	0.00
8,800.00	90.00	179.84	5,951.00	-2,748.25	64.29	2,748.74	0.00	0.00	0.00
8,900.00	90.00	179.84	5,951.00	-2,848.24	64.56	2,848.74	0.00	0.00	0.00
9,000.00	90.00	179.84	5,951.00	-2,948.24	64.83	2,948.74	0.00	0.00	0.00
9,100.00	90.00	179.84	5,951.00	-3,048.24	65.10	3,048.74	0.00	0.00	0.00
9,200.00	90.00	179.84	5,951.00	-3,148.24	65.37	3,148.73	0.00	0.00	0.00
9,300.00	90.00	179.84	5,951.00	-3,248.24	65.64	3,248.73	0.00	0.00	0.00
9,400.00	90.00	179.84	5,951.00	-3,348.24	65.91	3,348.73	0.00	0.00	0.00
9,500.00	90.00	179.84	5,951.00	-3,448.24	66.19	3,448.73	0.00	0.00	0.00
9,600.00	90.00	179.84	5,951.00	-3,548.24	66.46	3,548.72	0.00	0.00	0.00
9,700.00	90.00	179.84	5,951.00	-3,648.24	66.73	3,648.72	0.00	0.00	0.00
9,800.00	90.00	179.84	5,951.00	-3,748.24	67.00	3,748.72	0.00	0.00	0.00
9,900.00	90.00	179.84	5,951.00	-3,848.24	67.27	3,848.72	0.00	0.00	0.00
10,000.00	90.00	179.84	5,951.00	-3,948.24	67.54	3,948.71	0.00	0.00	0.00
10,100.00	90.00	179.84	5,951.00	-4,048.24	67.81	4,048.71	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	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)
10,200.00	90.00	179.84	5,951.00	-4,148.24	68.08	4,148.71	0.00	0.00	0.00
10,300.00	90.00	179.84	5,951.00	-4,248.24	68.35	4,248.71	0.00	0.00	0.00
10,400.00	90.00	179.84	5,951.00	-4,348.24	68.62	4,348.70	0.00	0.00	0.00
10,500.00	90.00	179.84	5,951.00	-4,448.24	68.89	4,448.70	0.00	0.00	0.00
10,600.00	90.00	179.84	5,951.00	-4,548.24	69.16	4,548.70	0.00	0.00	0.00
10,700.00	90.00	179.84	5,951.00	-4,648.24	69.43	4,648.70	0.00	0.00	0.00
10,800.00	90.00	179.84	5,951.00	-4,748.24	69.71	4,748.69	0.00	0.00	0.00
10,900.00	90.00	179.84	5,951.00	-4,848.24	69.98	4,848.69	0.00	0.00	0.00
11,000.00	90.00	179.84	5,951.00	-4,948.24	70.25	4,948.69	0.00	0.00	0.00
11,100.00	90.00	179.84	5,951.00	-5,048.24	70.52	5,048.69	0.00	0.00	0.00
11,200.00	90.00	179.84	5,951.00	-5,148.24	70.79	5,148.68	0.00	0.00	0.00
11,300.00	90.00	179.84	5,951.00	-5,248.24	71.06	5,248.68	0.00	0.00	0.00
11,400.00	90.00	179.84	5,951.00	-5,348.24	71.33	5,348.68	0.00	0.00	0.00
11,500.00	90.00	179.84	5,951.00	-5,448.24	71.60	5,448.68	0.00	0.00	0.00
11,600.00	90.00	179.84	5,951.00	-5,548.23	71.87	5,548.67	0.00	0.00	0.00
11,700.00	90.00	179.84	5,951.00	-5,648.23	72.14	5,648.67	0.00	0.00	0.00
11,800.00	90.00	179.84	5,951.00	-5,748.23	72.41	5,748.67	0.00	0.00	0.00
11,900.00	90.00	179.84	5,951.00	-5,848.23	72.68	5,848.67	0.00	0.00	0.00
12,000.00	90.00	179.84	5,951.00	-5,948.23	72.95	5,948.66	0.00	0.00	0.00
12,100.00	90.00	179.84	5,951.00	-6,048.23	73.22	6,048.66	0.00	0.00	0.00
12,200.00	90.00	179.84	5,951.00	-6,148.23	73.50	6,148.66	0.00	0.00	0.00
12,300.00	90.00	179.84	5,951.00	-6,248.23	73.77	6,248.66	0.00	0.00	0.00
12,400.00	90.00	179.84	5,951.00	-6,348.23	74.04	6,348.65	0.00	0.00	0.00
12,500.00	90.00	179.84	5,951.00	-6,448.23	74.31	6,448.65	0.00	0.00	0.00
12,600.00	90.00	179.84	5,951.00	-6,548.23	74.58	6,548.65	0.00	0.00	0.00
12,700.00	90.00	179.84	5,951.00	-6,648.23	74.85	6,648.65	0.00	0.00	0.00
12,800.00	90.00	179.84	5,951.00	-6,748.23	75.12	6,748.64	0.00	0.00	0.00
12,900.00	90.00	179.84	5,951.00	-6,848.23	75.39	6,848.64	0.00	0.00	0.00
13,000.00	90.00	179.84	5,951.00	-6,948.23	75.66	6,948.64	0.00	0.00	0.00
13,100.00	90.00	179.84	5,951.00	-7,048.23	75.93	7,048.64	0.00	0.00	0.00
13,200.00	90.00	179.84	5,951.00	-7,148.23	76.20	7,148.63	0.00	0.00	0.00
13,300.00	90.00	179.84	5,951.00	-7,248.23	76.47	7,248.63	0.00	0.00	0.00
13,400.00	90.00	179.84	5,951.00	-7,348.23	76.74	7,348.63	0.00	0.00	0.00
13,500.00	90.00	179.84	5,951.00	-7,448.23	77.02	7,448.63	0.00	0.00	0.00
13,600.00	90.00	179.84	5,951.00	-7,548.23	77.29	7,548.62	0.00	0.00	0.00
13,700.00	90.00	179.84	5,951.00	-7,648.23	77.56	7,648.62	0.00	0.00	0.00
13,800.00	90.00	179.84	5,951.00	-7,748.23	77.83	7,748.62	0.00	0.00	0.00
13,900.00	90.00	179.84	5,951.00	-7,848.23	78.10	7,848.61	0.00	0.00	0.00
14,000.00	90.00	179.84	5,951.00	-7,948.23	78.37	7,948.61	0.00	0.00	0.00
14,014.68	90.00	179.84	5,951.00	-7,962.91	78.41	7,963.29	0.00	0.00	0.00
TD at 14014.68									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL 1840D	0.00	0.00	5,951.00	-7,962.91	78.41	1,550,435.67	3,471,682.82	40° 49' 54.770 N	103° 47' 43.600 W
- hit/miss target									
- Shape									
- plan hits target center									
- Point									



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07F-1840
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-1840	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Design #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,258.74	5,951.00	7" CSG PT/5 1/2" Marker	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,552.65	1,550.00	Upper Pierre				
3,506.88	3,500.00	Hygiene				
3,657.21	3,650.00	Lower Pierre				
5,641.30	5,626.00	P200 Marker				
5,670.80	5,653.00	P300 Marker				
5,692.03	5,672.00	P350 Marker				
5,702.25	5,681.00	Sharon Springs				
5,712.58	5,690.00	Niobrara				
5,739.53	5,713.00	Top A Chalk				
5,787.48	5,752.00	Top A Marl				
5,813.43	5,772.00	A Marl				
5,828.20	5,783.00	Top Upper B				
5,860.41	5,806.00	Base Upper B				
5,893.30	5,828.00	Top Lower B				
5,949.70	5,862.00	Base Lower B				
5,964.32	5,870.00	Top B Marl				
6,023.99	5,899.00	Top C Chalk				
6,053.26	5,911.00	Middle C Chalk				
6,099.99	5,927.00	Middle C Marl				
6,258.74	5,951.00	Lower C Chalk				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
200.00	200.00	0.00	0.00	Build 2°/100'	
388.46	388.32	6.10	1.09	Hold 3.77° Inc	
5,051.90	5,041.68	307.90	54.91	Drop 2°/100'	
5,240.36	5,230.00	314.00	56.00	Hold Vertical	
5,440.36	5,430.00	314.00	56.00	KOP, Build 11°/100'	
6,258.74	5,951.00	-207.00	57.41	LP @ 90° Inc, Hold	
14,014.68	5,951.00	-7,962.91	78.41	TD at 14014.68	