



Whiting Petroleum Corp.

Weld County, CO

Sec 7-T10N-R57W

Horsetail #07H-0646

Hz

Plan: Design #1

Standard Planning Report

27 March, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-0646
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4925.90usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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-0646					
Well Position	+N/-S	-202.08 usft	Northing:	1,558,322.79 usft	Latitude:	40° 51' 12.300 N
	+E/-W	3,899.93 usft	Easting:	3,473,713.23 usft	Longitude:	103° 47' 15.210 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	4,908.90 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	357.17

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	
600.00	6.00	221.00	599.45	-11.84	-10.30	2.00	2.00	0.00	221.00	
5,100.00	6.00	221.00	5,074.80	-366.84	-318.89	0.00	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,374.25	-378.69	-329.19	2.00	-2.00	0.00	180.00	
5,553.88	0.00	0.00	5,528.13	-378.69	-329.19	0.00	0.00	0.00	0.00	
6,372.06	90.00	359.73	6,049.00	142.18	-331.68	11.00	11.00	0.00	359.73	PBHL 0646D
13,643.40	90.00	359.73	6,049.00	7,413.44	-366.42	0.00	0.00	0.00	0.00	PBHL 0646D



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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4925.90usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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	221.00	399.98	-1.32	-1.14	-1.26	2.00	2.00	0.00
500.00	4.00	221.00	499.84	-5.27	-4.58	-5.03	2.00	2.00	0.00
600.00	6.00	221.00	599.45	-11.84	-10.30	-11.32	2.00	2.00	0.00
Hold 6° Inc									
700.00	6.00	221.00	698.90	-19.73	-17.15	-18.86	0.00	0.00	0.00
800.00	6.00	221.00	798.36	-27.62	-24.01	-26.40	0.00	0.00	0.00
900.00	6.00	221.00	897.81	-35.51	-30.87	-33.94	0.00	0.00	0.00
1,000.00	6.00	221.00	997.26	-43.40	-37.73	-41.48	0.00	0.00	0.00
1,100.00	6.00	221.00	1,096.71	-51.29	-44.58	-49.02	0.00	0.00	0.00
1,200.00	6.00	221.00	1,196.17	-59.18	-51.44	-56.57	0.00	0.00	0.00
1,300.00	6.00	221.00	1,295.62	-67.07	-58.30	-64.11	0.00	0.00	0.00
1,400.00	6.00	221.00	1,395.07	-74.96	-65.16	-71.65	0.00	0.00	0.00
1,500.00	6.00	221.00	1,494.52	-82.84	-72.02	-79.19	0.00	0.00	0.00
1,555.78	6.00	221.00	1,550.00	-87.24	-75.84	-83.39	0.00	0.00	0.00
Upper Pierre									
1,600.00	6.00	221.00	1,593.97	-90.73	-78.87	-86.73	0.00	0.00	0.00
1,700.00	6.00	221.00	1,693.43	-98.62	-85.73	-94.27	0.00	0.00	0.00
1,800.00	6.00	221.00	1,792.88	-106.51	-92.59	-101.81	0.00	0.00	0.00
1,900.00	6.00	221.00	1,892.33	-114.40	-99.45	-109.35	0.00	0.00	0.00
2,000.00	6.00	221.00	1,991.78	-122.29	-106.30	-116.89	0.00	0.00	0.00
2,100.00	6.00	221.00	2,091.23	-130.18	-113.16	-124.43	0.00	0.00	0.00
2,200.00	6.00	221.00	2,190.69	-138.07	-120.02	-131.97	0.00	0.00	0.00
2,300.00	6.00	221.00	2,290.14	-145.95	-126.88	-139.51	0.00	0.00	0.00
2,400.00	6.00	221.00	2,389.59	-153.84	-133.73	-147.05	0.00	0.00	0.00
2,500.00	6.00	221.00	2,489.04	-161.73	-140.59	-154.59	0.00	0.00	0.00
2,600.00	6.00	221.00	2,588.50	-169.62	-147.45	-162.14	0.00	0.00	0.00
2,700.00	6.00	221.00	2,687.95	-177.51	-154.31	-169.68	0.00	0.00	0.00
2,800.00	6.00	221.00	2,787.40	-185.40	-161.17	-177.22	0.00	0.00	0.00
2,900.00	6.00	221.00	2,886.85	-193.29	-168.02	-184.76	0.00	0.00	0.00
3,000.00	6.00	221.00	2,986.30	-201.18	-174.88	-192.30	0.00	0.00	0.00
3,100.00	6.00	221.00	3,085.76	-209.07	-181.74	-199.84	0.00	0.00	0.00
3,200.00	6.00	221.00	3,185.21	-216.95	-188.60	-207.38	0.00	0.00	0.00
3,300.00	6.00	221.00	3,284.66	-224.84	-195.45	-214.92	0.00	0.00	0.00
3,400.00	6.00	221.00	3,384.11	-232.73	-202.31	-222.46	0.00	0.00	0.00
3,500.00	6.00	221.00	3,483.57	-240.62	-209.17	-230.00	0.00	0.00	0.00
3,516.53	6.00	221.00	3,500.00	-241.92	-210.30	-231.25	0.00	0.00	0.00
Hygiene									
3,600.00	6.00	221.00	3,583.02	-248.51	-216.03	-237.54	0.00	0.00	0.00
3,667.35	6.00	221.00	3,650.00	-253.82	-220.65	-242.62	0.00	0.00	0.00
Lower Pierre									
3,700.00	6.00	221.00	3,682.47	-256.40	-222.88	-245.08	0.00	0.00	0.00
3,800.00	6.00	221.00	3,781.92	-264.29	-229.74	-252.62	0.00	0.00	0.00
3,900.00	6.00	221.00	3,881.37	-272.18	-236.60	-260.16	0.00	0.00	0.00
4,000.00	6.00	221.00	3,980.83	-280.07	-243.46	-267.71	0.00	0.00	0.00
4,100.00	6.00	221.00	4,080.28	-287.95	-250.31	-275.25	0.00	0.00	0.00
4,200.00	6.00	221.00	4,179.73	-295.84	-257.17	-282.79	0.00	0.00	0.00
4,300.00	6.00	221.00	4,279.18	-303.73	-264.03	-290.33	0.00	0.00	0.00
4,400.00	6.00	221.00	4,378.64	-311.62	-270.89	-297.87	0.00	0.00	0.00
4,500.00	6.00	221.00	4,478.09	-319.51	-277.75	-305.41	0.00	0.00	0.00



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Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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)
4,600.00	6.00	221.00	4,577.54	-327.40	-284.60	-312.95	0.00	0.00	0.00
4,700.00	6.00	221.00	4,676.99	-335.29	-291.46	-320.49	0.00	0.00	0.00
4,800.00	6.00	221.00	4,776.44	-343.18	-298.32	-328.03	0.00	0.00	0.00
4,900.00	6.00	221.00	4,875.90	-351.07	-305.18	-335.57	0.00	0.00	0.00
5,000.00	6.00	221.00	4,975.35	-358.95	-312.03	-343.11	0.00	0.00	0.00
5,100.00	6.00	221.00	5,074.80	-366.84	-318.89	-350.65	0.00	0.00	0.00
Drop 2°/100'									
5,200.00	4.00	221.00	5,174.42	-373.42	-324.61	-356.94	2.00	-2.00	0.00
5,300.00	2.00	221.00	5,274.27	-377.37	-328.04	-360.72	2.00	-2.00	0.00
5,400.00	0.00	0.00	5,374.25	-378.69	-329.19	-361.97	2.00	-2.00	0.00
Hold Vertical									
5,500.00	0.00	0.00	5,474.25	-378.69	-329.19	-361.97	0.00	0.00	0.00
5,540.75	0.00	0.00	5,515.00	-378.69	-329.19	-361.97	0.00	0.00	0.00
P200 Marker									
5,553.88	0.00	0.00	5,528.13	-378.69	-329.19	-361.97	0.00	0.00	0.00
KOP, Build 11°/100'									
5,555.75	0.21	359.73	5,530.00	-378.68	-329.19	-361.97	11.00	11.00	0.00
P300 Marker									
5,575.75	2.41	359.73	5,550.00	-378.23	-329.19	-361.52	11.00	11.00	0.00
P350 Marker									
5,600.00	5.07	359.73	5,574.19	-376.65	-329.20	-359.94	11.00	11.00	0.00
5,650.00	10.57	359.73	5,623.71	-369.84	-329.23	-353.14	11.00	11.00	0.00
5,700.00	16.07	359.73	5,672.34	-358.33	-329.28	-341.63	11.00	11.00	0.00
5,731.15	19.50	359.73	5,702.00	-348.81	-329.33	-332.13	11.00	11.00	0.00
Sharon Springs									
5,736.46	20.08	359.73	5,707.00	-347.01	-329.34	-330.33	11.00	11.00	0.00
Niobrara									
5,750.00	21.57	359.73	5,719.65	-342.20	-329.36	-325.52	11.00	11.00	0.00
5,757.93	22.45	359.73	5,727.00	-339.23	-329.38	-322.56	11.00	11.00	0.00
Top A Chalk									
5,798.66	26.93	359.73	5,764.00	-322.22	-329.46	-305.57	11.00	11.00	0.00
Top A Marl									
5,800.00	27.07	359.73	5,765.20	-321.61	-329.46	-304.96	11.00	11.00	0.00
5,820.20	29.30	359.73	5,783.00	-312.07	-329.51	-295.43	11.00	11.00	0.00
A Marl									
5,830.58	30.44	359.73	5,792.00	-306.91	-329.53	-290.26	11.00	11.00	0.00
Top Upper B									
5,850.00	32.57	359.73	5,808.56	-296.76	-329.58	-280.13	11.00	11.00	0.00
5,863.70	34.08	359.73	5,820.00	-289.23	-329.62	-272.61	11.00	11.00	0.00
Base Upper B									
5,884.51	36.37	359.73	5,837.00	-277.23	-329.67	-260.62	11.00	11.00	0.00
Top Lower B									
5,900.00	38.07	359.73	5,849.34	-267.86	-329.72	-251.26	11.00	11.00	0.00
5,909.81	39.15	359.73	5,857.00	-261.74	-329.75	-245.14	11.00	11.00	0.00
Base Lower B									
5,918.90	40.15	359.73	5,864.00	-255.94	-329.77	-239.35	11.00	11.00	0.00
Top B Marl									
5,950.00	43.57	359.73	5,887.16	-235.19	-329.87	-218.61	11.00	11.00	0.00
5,988.43	47.80	359.73	5,914.00	-207.69	-330.00	-191.15	11.00	11.00	0.00
Top C Chalk									
6,000.00	49.07	359.73	5,921.67	-199.04	-330.05	-182.50	11.00	11.00	0.00
6,000.50	49.13	359.73	5,922.00	-198.66	-330.05	-182.13	11.00	11.00	0.00



WOG

Planning Report

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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4925.90usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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)	
Middle C Chalk										
6,022.43	51.54	359.73	5,936.00	-181.78	-330.13	-165.26	11.00	11.00	0.00	
Middle C Marl										
6,050.00	54.57	359.73	5,952.57	-159.75	-330.23	-143.25	11.00	11.00	0.00	
6,054.22	55.04	359.73	5,955.00	-156.30	-330.25	-139.80	11.00	11.00	0.00	
Lower C Chalk										
6,087.14	58.66	359.73	5,973.00	-128.74	-330.38	-112.27	11.00	11.00	0.00	
Lower C Marl										
6,100.00	60.07	359.73	5,979.55	-117.68	-330.43	-101.22	11.00	11.00	0.00	
6,150.00	65.57	359.73	6,002.38	-73.22	-330.65	-56.80	11.00	11.00	0.00	
6,153.95	66.01	359.73	6,004.00	-69.61	-330.66	-53.20	11.00	11.00	0.00	
Lower C Marker										
6,166.59	67.40	359.73	6,009.00	-58.00	-330.72	-41.60	11.00	11.00	0.00	
Top Ft. Hays										
6,200.00	71.07	359.73	6,020.84	-26.77	-330.87	-10.40	11.00	11.00	0.00	
6,227.24	74.07	359.73	6,029.00	-0.78	-330.99	15.56	11.00	11.00	0.00	
Ft. Hays Marker										
6,250.00	76.57	359.73	6,034.77	21.23	-331.10	37.55	11.00	11.00	0.00	
6,300.00	82.07	359.73	6,044.03	70.35	-331.33	86.62	11.00	11.00	0.00	
6,350.00	87.57	359.73	6,048.54	120.12	-331.57	136.35	11.00	11.00	0.00	
6,370.55	89.83	359.73	6,049.00	140.67	-331.67	156.87	11.00	11.00	0.00	
Top Codell										
6,372.06	90.00	359.73	6,049.00	142.18	-331.68	158.38	11.00	11.00	0.00	
LP @ 90° Inc, Hold - 7"										
6,400.00	90.00	359.73	6,049.00	170.12	-331.81	186.29	0.00	0.00	0.00	
6,500.00	90.00	359.73	6,049.00	270.12	-332.29	286.19	0.00	0.00	0.00	
6,600.00	90.00	359.73	6,049.00	370.11	-332.77	386.09	0.00	0.00	0.00	
6,700.00	90.00	359.73	6,049.00	470.11	-333.24	485.99	0.00	0.00	0.00	
6,800.00	90.00	359.73	6,049.00	570.11	-333.72	585.89	0.00	0.00	0.00	
6,900.00	90.00	359.73	6,049.00	670.11	-334.20	685.79	0.00	0.00	0.00	
7,000.00	90.00	359.73	6,049.00	770.11	-334.68	785.69	0.00	0.00	0.00	
7,100.00	90.00	359.73	6,049.00	870.11	-335.15	885.59	0.00	0.00	0.00	
7,200.00	90.00	359.73	6,049.00	970.11	-335.63	985.49	0.00	0.00	0.00	
7,300.00	90.00	359.73	6,049.00	1,070.11	-336.11	1,085.39	0.00	0.00	0.00	
7,400.00	90.00	359.73	6,049.00	1,170.10	-336.59	1,185.29	0.00	0.00	0.00	
7,500.00	90.00	359.73	6,049.00	1,270.10	-337.06	1,285.19	0.00	0.00	0.00	
7,600.00	90.00	359.73	6,049.00	1,370.10	-337.54	1,385.10	0.00	0.00	0.00	
7,700.00	90.00	359.73	6,049.00	1,470.10	-338.02	1,485.00	0.00	0.00	0.00	
7,800.00	90.00	359.73	6,049.00	1,570.10	-338.50	1,584.90	0.00	0.00	0.00	
7,900.00	90.00	359.73	6,049.00	1,670.10	-338.98	1,684.80	0.00	0.00	0.00	
8,000.00	90.00	359.73	6,049.00	1,770.10	-339.45	1,784.70	0.00	0.00	0.00	
8,100.00	90.00	359.73	6,049.00	1,870.10	-339.93	1,884.60	0.00	0.00	0.00	
8,200.00	90.00	359.73	6,049.00	1,970.10	-340.41	1,984.50	0.00	0.00	0.00	
8,300.00	90.00	359.73	6,049.00	2,070.09	-340.89	2,084.40	0.00	0.00	0.00	
8,400.00	90.00	359.73	6,049.00	2,170.09	-341.36	2,184.30	0.00	0.00	0.00	
8,500.00	90.00	359.73	6,049.00	2,270.09	-341.84	2,284.20	0.00	0.00	0.00	
8,600.00	90.00	359.73	6,049.00	2,370.09	-342.32	2,384.10	0.00	0.00	0.00	
8,700.00	90.00	359.73	6,049.00	2,470.09	-342.80	2,484.00	0.00	0.00	0.00	
8,800.00	90.00	359.73	6,049.00	2,570.09	-343.28	2,583.90	0.00	0.00	0.00	
8,900.00	90.00	359.73	6,049.00	2,670.09	-343.75	2,683.80	0.00	0.00	0.00	
9,000.00	90.00	359.73	6,049.00	2,770.09	-344.23	2,783.70	0.00	0.00	0.00	
9,100.00	90.00	359.73	6,049.00	2,870.09	-344.71	2,883.60	0.00	0.00	0.00	
9,200.00	90.00	359.73	6,049.00	2,970.08	-345.19	2,983.50	0.00	0.00	0.00	



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #07H-0646
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4925.90usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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)
9,300.00	90.00	359.73	6,049.00	3,070.08	-345.66	3,083.40	0.00	0.00	0.00
9,400.00	90.00	359.73	6,049.00	3,170.08	-346.14	3,183.30	0.00	0.00	0.00
9,500.00	90.00	359.73	6,049.00	3,270.08	-346.62	3,283.21	0.00	0.00	0.00
9,600.00	90.00	359.73	6,049.00	3,370.08	-347.10	3,383.11	0.00	0.00	0.00
9,700.00	90.00	359.73	6,049.00	3,470.08	-347.58	3,483.01	0.00	0.00	0.00
9,800.00	90.00	359.73	6,049.00	3,570.08	-348.05	3,582.91	0.00	0.00	0.00
9,900.00	90.00	359.73	6,049.00	3,670.08	-348.53	3,682.81	0.00	0.00	0.00
10,000.00	90.00	359.73	6,049.00	3,770.08	-349.01	3,782.71	0.00	0.00	0.00
10,100.00	90.00	359.73	6,049.00	3,870.07	-349.49	3,882.61	0.00	0.00	0.00
10,200.00	90.00	359.73	6,049.00	3,970.07	-349.96	3,982.51	0.00	0.00	0.00
10,300.00	90.00	359.73	6,049.00	4,070.07	-350.44	4,082.41	0.00	0.00	0.00
10,400.00	90.00	359.73	6,049.00	4,170.07	-350.92	4,182.31	0.00	0.00	0.00
10,500.00	90.00	359.73	6,049.00	4,270.07	-351.40	4,282.21	0.00	0.00	0.00
10,600.00	90.00	359.73	6,049.00	4,370.07	-351.88	4,382.11	0.00	0.00	0.00
10,700.00	90.00	359.73	6,049.00	4,470.07	-352.35	4,482.01	0.00	0.00	0.00
10,800.00	90.00	359.73	6,049.00	4,570.07	-352.83	4,581.91	0.00	0.00	0.00
10,900.00	90.00	359.73	6,049.00	4,670.06	-353.31	4,681.81	0.00	0.00	0.00
11,000.00	90.00	359.73	6,049.00	4,770.06	-353.79	4,781.71	0.00	0.00	0.00
11,100.00	90.00	359.73	6,049.00	4,870.06	-354.26	4,881.61	0.00	0.00	0.00
11,200.00	90.00	359.73	6,049.00	4,970.06	-354.74	4,981.51	0.00	0.00	0.00
11,300.00	90.00	359.73	6,049.00	5,070.06	-355.22	5,081.41	0.00	0.00	0.00
11,400.00	90.00	359.73	6,049.00	5,170.06	-355.70	5,181.32	0.00	0.00	0.00
11,500.00	90.00	359.73	6,049.00	5,270.06	-356.18	5,281.22	0.00	0.00	0.00
11,600.00	90.00	359.73	6,049.00	5,370.06	-356.65	5,381.12	0.00	0.00	0.00
11,700.00	90.00	359.73	6,049.00	5,470.06	-357.13	5,481.02	0.00	0.00	0.00
11,800.00	90.00	359.73	6,049.00	5,570.05	-357.61	5,580.92	0.00	0.00	0.00
11,900.00	90.00	359.73	6,049.00	5,670.05	-358.09	5,680.82	0.00	0.00	0.00
12,000.00	90.00	359.73	6,049.00	5,770.05	-358.56	5,780.72	0.00	0.00	0.00
12,100.00	90.00	359.73	6,049.00	5,870.05	-359.04	5,880.62	0.00	0.00	0.00
12,200.00	90.00	359.73	6,049.00	5,970.05	-359.52	5,980.52	0.00	0.00	0.00
12,300.00	90.00	359.73	6,049.00	6,070.05	-360.00	6,080.42	0.00	0.00	0.00
12,400.00	90.00	359.73	6,049.00	6,170.05	-360.48	6,180.32	0.00	0.00	0.00
12,500.00	90.00	359.73	6,049.00	6,270.05	-360.95	6,280.22	0.00	0.00	0.00
12,600.00	90.00	359.73	6,049.00	6,370.05	-361.43	6,380.12	0.00	0.00	0.00
12,700.00	90.00	359.73	6,049.00	6,470.04	-361.91	6,480.02	0.00	0.00	0.00
12,800.00	90.00	359.73	6,049.00	6,570.04	-362.39	6,579.92	0.00	0.00	0.00
12,900.00	90.00	359.73	6,049.00	6,670.04	-362.86	6,679.82	0.00	0.00	0.00
13,000.00	90.00	359.73	6,049.00	6,770.04	-363.34	6,779.72	0.00	0.00	0.00
13,100.00	90.00	359.73	6,049.00	6,870.04	-363.82	6,879.62	0.00	0.00	0.00
13,200.00	90.00	359.73	6,049.00	6,970.04	-364.30	6,979.52	0.00	0.00	0.00
13,300.00	90.00	359.73	6,049.00	7,070.04	-364.78	7,079.42	0.00	0.00	0.00
13,400.00	90.00	359.73	6,049.00	7,170.04	-365.25	7,179.33	0.00	0.00	0.00
13,500.00	90.00	359.73	6,049.00	7,270.04	-365.73	7,279.23	0.00	0.00	0.00
13,600.00	90.00	359.73	6,049.00	7,370.03	-366.21	7,379.13	0.00	0.00	0.00
13,643.40	90.00	359.73	6,049.00	7,413.43	-366.42	7,422.48	0.00	0.00	0.00
TD at 13643.40' MD									



WOG

Planning Report

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Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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 0646D	0.00	0.00	6,049.00	7,413.44	-366.42	1,565,727.76	3,473,203.73	40° 52' 25.550 N	103° 47' 19.980 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(in)	(in)
6,372.06	6,049.00	7"		7.000	8.750

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,555.78	1,550.00	Upper Pierre				
3,516.53	3,500.00	Hygiene				
3,667.35	3,650.00	Lower Pierre				
5,540.75	5,515.00	P200 Marker				
5,555.75	5,530.00	P300 Marker				
5,575.75	5,550.00	P350 Marker				
5,731.15	5,702.00	Sharon Springs				
5,736.46	5,707.00	Niobrara				
5,757.93	5,727.00	Top A Chalk				
5,798.66	5,764.00	Top A Marl				
5,820.20	5,783.00	A Marl				
5,830.58	5,792.00	Top Upper B				
5,863.70	5,820.00	Base Upper B				
5,884.51	5,837.00	Top Lower B				
5,909.81	5,857.00	Base Lower B				
5,918.90	5,864.00	Top B Marl				
5,988.43	5,914.00	Top C Chalk				
6,000.50	5,922.00	Middle C Chalk				
6,022.43	5,936.00	Middle C Marl				
6,054.22	5,955.00	Lower C Chalk				
6,087.14	5,973.00	Lower C Marl				
6,153.95	6,004.00	Lower C Marker				
6,166.59	6,009.00	Top Ft. Hays				
6,227.24	6,029.00	Ft. Hays Marker				
6,370.55	6,049.00	Top Codell				



WOG

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Project:	Weld County, CO	MD Reference:	KBE @ 4925.90usft (Original Well Elev)
Site:	Sec 7-T10N-R57W	North Reference:	True
Well:	Horsetail #07H-0646	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'
600.00	599.45	-11.84	-10.30	Hold 6° Inc
5,100.00	5,074.80	-366.84	-318.89	Drop 2°/100'
5,400.00	5,374.25	-378.69	-329.19	Hold Vertical
5,553.88	5,528.13	-378.69	-329.19	KOP, Build 11°/100'
6,372.06	6,049.00	142.18	-331.68	LP @ 90° Inc, Hold
13,643.40	6,049.00	7,413.43	-366.42	TD at 13643.40' MD