





Whiting Petroleum Corp.

**Weld County, CO
Sec 30-T10N-R57W
Horsetail #30E-1935**

Hz

Plan: APD

Standard Planning Report

22 October, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-1935
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

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 30-T10N-R57W			
Site Position:		Northing:	1,545,003.67 usft	Latitude: 40° 49' 1.510 N
From:	Lat/Long	Easting:	3,469,557.91 usft	Longitude: 103° 48' 12.589 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 1.10 °

Well	Horsetail #30E-1935			
Well Position	+N/-S	-2,325.67 usft	Northing:	1,542,691.01 usft
	+E/-W	657.39 usft	Easting:	3,470,259.68 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 4,806.40 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/28/2015	7.81	67.38	53,006

Design	APD			
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	359.37

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	
798.31	9.97	186.25	795.80	-42.97	-4.71	2.00	2.00	0.00	186.25	
4,664.04	9.97	186.25	4,603.20	-708.03	-77.54	0.00	0.00	0.00	0.00	
5,162.35	0.00	0.00	5,099.00	-751.00	-82.25	2.00	-2.00	0.00	180.00	
5,362.35	0.00	0.00	5,299.00	-751.00	-82.25	0.00	0.00	0.00	0.00	
6,180.74	90.00	360.00	5,820.00	-230.00	-82.25	11.00	11.00	0.00	360.00	
13,926.28	90.00	360.00	5,820.00	7,515.55	-82.25	0.00	0.00	0.00	0.00	PBHL 1935



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-1935
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

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	186.25	399.98	-1.73	-0.19	-1.73	2.00	2.00	0.00
500.00	4.00	186.25	499.84	-6.94	-0.76	-6.93	2.00	2.00	0.00
600.00	6.00	186.25	599.45	-15.60	-1.71	-15.58	2.00	2.00	0.00
700.00	8.00	186.25	698.70	-27.71	-3.04	-27.68	2.00	2.00	0.00
798.31	9.97	186.25	795.80	-42.97	-4.71	-42.92	2.00	2.00	0.00
Hold 9.97° Inc									
800.00	9.97	186.25	797.47	-43.26	-4.74	-43.21	0.00	0.00	0.00
900.00	9.97	186.25	895.96	-60.47	-6.62	-60.39	0.00	0.00	0.00
1,000.00	9.97	186.25	994.45	-77.67	-8.51	-77.57	0.00	0.00	0.00
1,100.00	9.97	186.25	1,092.94	-94.88	-10.39	-94.76	0.00	0.00	0.00
1,200.00	9.97	186.25	1,191.43	-112.08	-12.27	-111.94	0.00	0.00	0.00
1,300.00	9.97	186.25	1,289.92	-129.28	-14.16	-129.12	0.00	0.00	0.00
1,400.00	9.97	186.25	1,388.41	-146.49	-16.04	-146.30	0.00	0.00	0.00
1,500.00	9.97	186.25	1,486.90	-163.69	-17.93	-163.48	0.00	0.00	0.00
1,564.06	9.97	186.25	1,550.00	-174.71	-19.13	-174.49	0.00	0.00	0.00
Upper Pierre									
1,600.00	9.97	186.25	1,585.39	-180.89	-19.81	-180.67	0.00	0.00	0.00
1,700.00	9.97	186.25	1,683.88	-198.10	-21.70	-197.85	0.00	0.00	0.00
1,800.00	9.97	186.25	1,782.38	-215.30	-23.58	-215.03	0.00	0.00	0.00
1,900.00	9.97	186.25	1,880.87	-232.51	-25.46	-232.21	0.00	0.00	0.00
2,000.00	9.97	186.25	1,979.36	-249.71	-27.35	-249.40	0.00	0.00	0.00
2,100.00	9.97	186.25	2,077.85	-266.91	-29.23	-266.58	0.00	0.00	0.00
2,200.00	9.97	186.25	2,176.34	-284.12	-31.12	-283.76	0.00	0.00	0.00
2,300.00	9.97	186.25	2,274.83	-301.32	-33.00	-300.94	0.00	0.00	0.00
2,400.00	9.97	186.25	2,373.32	-318.53	-34.89	-318.12	0.00	0.00	0.00
2,500.00	9.97	186.25	2,471.81	-335.73	-36.77	-335.31	0.00	0.00	0.00
2,600.00	9.97	186.25	2,570.30	-352.93	-38.65	-352.49	0.00	0.00	0.00
2,700.00	9.97	186.25	2,668.79	-370.14	-40.54	-369.67	0.00	0.00	0.00
2,800.00	9.97	186.25	2,767.29	-387.34	-42.42	-386.85	0.00	0.00	0.00
2,900.00	9.97	186.25	2,865.78	-404.54	-44.31	-404.04	0.00	0.00	0.00
3,000.00	9.97	186.25	2,964.27	-421.75	-46.19	-421.22	0.00	0.00	0.00
3,100.00	9.97	186.25	3,062.76	-438.95	-48.07	-438.40	0.00	0.00	0.00
3,200.00	9.97	186.25	3,161.25	-456.16	-49.96	-455.58	0.00	0.00	0.00
3,300.00	9.97	186.25	3,259.74	-473.36	-51.84	-472.76	0.00	0.00	0.00
3,400.00	9.97	186.25	3,358.23	-490.56	-53.73	-489.95	0.00	0.00	0.00
3,500.00	9.97	186.25	3,456.72	-507.77	-55.61	-507.13	0.00	0.00	0.00
3,543.94	9.97	186.25	3,500.00	-515.33	-56.44	-514.68	0.00	0.00	0.00
Hygiene									
3,600.00	9.97	186.25	3,555.21	-524.97	-57.50	-524.31	0.00	0.00	0.00
3,696.24	9.97	186.25	3,650.00	-541.53	-59.31	-540.85	0.00	0.00	0.00
Lower Pierre									
3,700.00	9.97	186.25	3,653.70	-542.18	-59.38	-541.49	0.00	0.00	0.00
3,800.00	9.97	186.25	3,752.20	-559.38	-61.26	-558.67	0.00	0.00	0.00
3,900.00	9.97	186.25	3,850.69	-576.58	-63.15	-575.86	0.00	0.00	0.00
4,000.00	9.97	186.25	3,949.18	-593.79	-65.03	-593.04	0.00	0.00	0.00
4,100.00	9.97	186.25	4,047.67	-610.99	-66.92	-610.22	0.00	0.00	0.00
4,200.00	9.97	186.25	4,146.16	-628.19	-68.80	-627.40	0.00	0.00	0.00
4,300.00	9.97	186.25	4,244.65	-645.40	-70.68	-644.59	0.00	0.00	0.00
4,400.00	9.97	186.25	4,343.14	-662.60	-72.57	-661.77	0.00	0.00	0.00



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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	APD		

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	9.97	186.25	4,441.63	-679.81	-74.45	-678.95	0.00	0.00	0.00
4,600.00	9.97	186.25	4,540.12	-697.01	-76.34	-696.13	0.00	0.00	0.00
4,664.04	9.97	186.25	4,603.20	-708.03	-77.54	-707.14	0.00	0.00	0.00
Drop 2°/100'									
4,700.00	9.25	186.25	4,638.65	-713.99	-78.20	-713.09	2.00	-2.00	0.00
4,800.00	7.25	186.25	4,737.61	-728.25	-79.76	-727.33	2.00	-2.00	0.00
4,900.00	5.25	186.25	4,837.01	-739.07	-80.94	-738.14	2.00	-2.00	0.00
5,000.00	3.25	186.25	4,936.74	-746.43	-81.75	-745.49	2.00	-2.00	0.00
5,100.00	1.25	186.25	5,036.65	-750.33	-82.18	-749.38	2.00	-2.00	0.00
5,162.35	0.00	0.00	5,099.00	-751.00	-82.25	-750.05	2.00	-2.00	0.00
Hold Vertical									
5,200.00	0.00	0.00	5,136.65	-751.00	-82.25	-750.05	0.00	0.00	0.00
5,300.00	0.00	0.00	5,236.65	-751.00	-82.25	-750.05	0.00	0.00	0.00
5,362.35	0.00	0.00	5,299.00	-751.00	-82.25	-750.05	0.00	0.00	0.00
KOP, Build 11°/100'									
5,400.00	4.14	360.00	5,336.62	-749.64	-82.25	-748.70	11.00	11.00	0.00
5,450.00	9.64	360.00	5,386.24	-743.64	-82.25	-742.70	11.00	11.00	0.00
5,500.00	15.14	360.00	5,435.05	-732.92	-82.25	-731.98	11.00	11.00	0.00
5,513.46	16.62	360.00	5,448.00	-729.24	-82.25	-728.30	11.00	11.00	0.00
P200 Marker									
5,541.88	19.74	360.00	5,475.00	-720.37	-82.25	-719.43	11.00	11.00	0.00
P300 Marker									
5,550.00	20.64	360.00	5,482.62	-717.57	-82.25	-716.63	11.00	11.00	0.00
5,553.62	21.03	360.00	5,486.00	-716.28	-82.25	-715.34	11.00	11.00	0.00
P350 Marker									
5,566.54	22.46	360.00	5,498.00	-711.50	-82.25	-710.55	11.00	11.00	0.00
Sharon Springs									
5,568.71	22.69	360.00	5,500.00	-710.67	-82.25	-709.72	11.00	11.00	0.00
Niobrara									
5,586.17	24.61	360.00	5,516.00	-703.66	-82.25	-702.72	11.00	11.00	0.00
Top A Chalk									
5,600.00	26.13	360.00	5,528.49	-697.73	-82.25	-696.79	11.00	11.00	0.00
5,621.96	28.55	360.00	5,548.00	-687.65	-82.25	-686.70	11.00	11.00	0.00
Top A Marl									
5,635.72	30.06	360.00	5,560.00	-680.91	-82.25	-679.97	11.00	11.00	0.00
A Marl									
5,642.68	30.83	360.00	5,566.00	-677.38	-82.25	-676.44	11.00	11.00	0.00
Top Upper B									
5,650.00	31.63	360.00	5,572.26	-673.59	-82.25	-672.65	11.00	11.00	0.00
5,671.11	33.95	360.00	5,590.00	-662.16	-82.25	-661.22	11.00	11.00	0.00
Base Upper B									
5,690.65	36.10	360.00	5,606.00	-650.94	-82.25	-650.00	11.00	11.00	0.00
Top Lower B									
5,700.00	37.13	360.00	5,613.50	-645.37	-82.25	-644.43	11.00	11.00	0.00
5,728.84	40.30	360.00	5,636.00	-627.33	-82.25	-626.39	11.00	11.00	0.00
Base Lower B									
5,742.09	41.76	360.00	5,646.00	-618.63	-82.25	-617.69	11.00	11.00	0.00
Top B Marl									
5,750.00	42.63	360.00	5,651.86	-613.32	-82.25	-612.38	11.00	11.00	0.00
5,800.00	48.13	360.00	5,686.96	-577.74	-82.25	-576.81	11.00	11.00	0.00
5,804.57	48.63	360.00	5,690.00	-574.33	-82.25	-573.39	11.00	11.00	0.00
Top C Chalk									



WOG

Planning Report

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Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	APD		

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)	
5,819.96	50.32	360.00	5,700.00	-562.63	-82.25	-561.69	11.00	11.00	0.00	
Middle C Chalk										
5,842.48	52.80	360.00	5,714.00	-544.99	-82.25	-544.05	11.00	11.00	0.00	
Middle C Marl										
5,850.00	53.63	360.00	5,718.50	-538.97	-82.25	-538.03	11.00	11.00	0.00	
5,878.93	56.81	360.00	5,735.00	-515.21	-82.25	-514.28	11.00	11.00	0.00	
Lower C Chalk										
5,900.00	59.13	360.00	5,746.18	-497.35	-82.25	-496.42	11.00	11.00	0.00	
5,913.60	60.62	360.00	5,753.00	-485.59	-82.25	-484.66	11.00	11.00	0.00	
Lower C Marl										
5,928.23	62.23	360.00	5,760.00	-472.73	-82.25	-471.81	11.00	11.00	0.00	
Lower C Marker										
5,950.00	64.63	360.00	5,769.74	-453.27	-82.25	-452.34	11.00	11.00	0.00	
6,000.00	70.12	360.00	5,788.96	-407.13	-82.25	-406.21	11.00	11.00	0.00	
6,000.11	70.12	360.00	5,789.00	-407.03	-82.25	-406.11	0.00	0.00	0.00	
Top Ft. Hays										
6,050.00	75.62	360.00	5,803.68	-359.37	-82.25	-358.45	11.02	11.02	0.00	
6,055.41	76.22	360.00	5,805.00	-354.12	-82.25	-353.20	11.00	11.00	0.00	
Ft. Hays Marker										
6,100.00	81.12	360.00	5,813.76	-310.41	-82.25	-309.50	11.00	11.00	0.00	
6,150.00	86.62	360.00	5,819.09	-260.72	-82.25	-259.80	11.00	11.00	0.00	
6,180.74	90.00	360.00	5,820.00	-230.00	-82.25	-229.08	11.00	11.00	0.00	
LP @ 90° Inc, Hold - 7"										
6,200.00	90.00	360.00	5,820.00	-210.74	-82.25	-209.82	0.00	0.00	0.00	
6,300.00	90.00	360.00	5,820.00	-110.74	-82.25	-109.83	0.00	0.00	0.00	
6,400.00	90.00	360.00	5,820.00	-10.74	-82.25	-9.84	0.00	0.00	0.00	
6,500.00	90.00	360.00	5,820.00	89.26	-82.25	90.16	0.00	0.00	0.00	
6,600.00	90.00	360.00	5,820.00	189.26	-82.25	190.15	0.00	0.00	0.00	
6,700.00	90.00	360.00	5,820.00	289.26	-82.25	290.15	0.00	0.00	0.00	
6,800.00	90.00	360.00	5,820.00	389.26	-82.25	390.14	0.00	0.00	0.00	
6,900.00	90.00	360.00	5,820.00	489.26	-82.25	490.13	0.00	0.00	0.00	
7,000.00	90.00	360.00	5,820.00	589.26	-82.25	590.13	0.00	0.00	0.00	
7,100.00	90.00	360.00	5,820.00	689.26	-82.25	690.12	0.00	0.00	0.00	
7,200.00	90.00	360.00	5,820.00	789.26	-82.25	790.12	0.00	0.00	0.00	
7,300.00	90.00	360.00	5,820.00	889.26	-82.25	890.11	0.00	0.00	0.00	
7,400.00	90.00	360.00	5,820.00	989.26	-82.25	990.10	0.00	0.00	0.00	
7,500.00	90.00	360.00	5,820.00	1,089.26	-82.25	1,090.10	0.00	0.00	0.00	
7,600.00	90.00	360.00	5,820.00	1,189.26	-82.25	1,190.09	0.00	0.00	0.00	
7,700.00	90.00	360.00	5,820.00	1,289.26	-82.25	1,290.09	0.00	0.00	0.00	
7,800.00	90.00	360.00	5,820.00	1,389.26	-82.25	1,390.08	0.00	0.00	0.00	
7,900.00	90.00	360.00	5,820.00	1,489.26	-82.25	1,490.07	0.00	0.00	0.00	
8,000.00	90.00	360.00	5,820.00	1,589.26	-82.25	1,590.07	0.00	0.00	0.00	
8,100.00	90.00	360.00	5,820.00	1,689.26	-82.25	1,690.06	0.00	0.00	0.00	
8,200.00	90.00	360.00	5,820.00	1,789.26	-82.25	1,790.06	0.00	0.00	0.00	
8,300.00	90.00	360.00	5,820.00	1,889.26	-82.25	1,890.05	0.00	0.00	0.00	
8,400.00	90.00	360.00	5,820.00	1,989.26	-82.25	1,990.04	0.00	0.00	0.00	
8,500.00	90.00	360.00	5,820.00	2,089.26	-82.25	2,090.04	0.00	0.00	0.00	
8,600.00	90.00	360.00	5,820.00	2,189.26	-82.25	2,190.03	0.00	0.00	0.00	
8,700.00	90.00	360.00	5,820.00	2,289.26	-82.25	2,290.03	0.00	0.00	0.00	
8,800.00	90.00	360.00	5,820.00	2,389.26	-82.25	2,390.02	0.00	0.00	0.00	
8,900.00	90.00	360.00	5,820.00	2,489.26	-82.25	2,490.01	0.00	0.00	0.00	
9,000.00	90.00	360.00	5,820.00	2,589.26	-82.25	2,590.01	0.00	0.00	0.00	
9,100.00	90.00	360.00	5,820.00	2,689.26	-82.25	2,690.00	0.00	0.00	0.00	



WOG
Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-1935
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4827.40usft (Original Well Elev)
Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	APD		

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	360.00	5,820.00	2,789.26	-82.25	2,790.00	0.00	0.00	0.00
9,300.00	90.00	360.00	5,820.00	2,889.26	-82.25	2,889.99	0.00	0.00	0.00
9,400.00	90.00	360.00	5,820.00	2,989.26	-82.25	2,989.98	0.00	0.00	0.00
9,500.00	90.00	360.00	5,820.00	3,089.26	-82.25	3,089.98	0.00	0.00	0.00
9,600.00	90.00	360.00	5,820.00	3,189.26	-82.25	3,189.97	0.00	0.00	0.00
9,700.00	90.00	360.00	5,820.00	3,289.26	-82.25	3,289.97	0.00	0.00	0.00
9,800.00	90.00	360.00	5,820.00	3,389.26	-82.25	3,389.96	0.00	0.00	0.00
9,900.00	90.00	360.00	5,820.00	3,489.26	-82.25	3,489.95	0.00	0.00	0.00
10,000.00	90.00	360.00	5,820.00	3,589.26	-82.25	3,589.95	0.00	0.00	0.00
10,100.00	90.00	360.00	5,820.00	3,689.26	-82.25	3,689.94	0.00	0.00	0.00
10,200.00	90.00	360.00	5,820.00	3,789.26	-82.25	3,789.94	0.00	0.00	0.00
10,300.00	90.00	360.00	5,820.00	3,889.26	-82.25	3,889.93	0.00	0.00	0.00
10,400.00	90.00	360.00	5,820.00	3,989.26	-82.25	3,989.92	0.00	0.00	0.00
10,500.00	90.00	360.00	5,820.00	4,089.26	-82.25	4,089.92	0.00	0.00	0.00
10,600.00	90.00	360.00	5,820.00	4,189.26	-82.25	4,189.91	0.00	0.00	0.00
10,700.00	90.00	360.00	5,820.00	4,289.26	-82.25	4,289.91	0.00	0.00	0.00
10,800.00	90.00	360.00	5,820.00	4,389.26	-82.25	4,389.90	0.00	0.00	0.00
10,900.00	90.00	360.00	5,820.00	4,489.26	-82.25	4,489.89	0.00	0.00	0.00
11,000.00	90.00	360.00	5,820.00	4,589.26	-82.25	4,589.89	0.00	0.00	0.00
11,100.00	90.00	360.00	5,820.00	4,689.26	-82.25	4,689.88	0.00	0.00	0.00
11,200.00	90.00	360.00	5,820.00	4,789.26	-82.25	4,789.88	0.00	0.00	0.00
11,300.00	90.00	360.00	5,820.00	4,889.26	-82.25	4,889.87	0.00	0.00	0.00
11,400.00	90.00	360.00	5,820.00	4,989.26	-82.25	4,989.86	0.00	0.00	0.00
11,500.00	90.00	360.00	5,820.00	5,089.26	-82.25	5,089.86	0.00	0.00	0.00
11,600.00	90.00	360.00	5,820.00	5,189.26	-82.25	5,189.85	0.00	0.00	0.00
11,700.00	90.00	360.00	5,820.00	5,289.26	-82.25	5,289.85	0.00	0.00	0.00
11,800.00	90.00	360.00	5,820.00	5,389.26	-82.25	5,389.84	0.00	0.00	0.00
11,900.00	90.00	360.00	5,820.00	5,489.26	-82.25	5,489.83	0.00	0.00	0.00
12,000.00	90.00	360.00	5,820.00	5,589.26	-82.25	5,589.83	0.00	0.00	0.00
12,100.00	90.00	360.00	5,820.00	5,689.26	-82.25	5,689.82	0.00	0.00	0.00
12,200.00	90.00	360.00	5,820.00	5,789.26	-82.25	5,789.82	0.00	0.00	0.00
12,300.00	90.00	360.00	5,820.00	5,889.26	-82.25	5,889.81	0.00	0.00	0.00
12,400.00	90.00	360.00	5,820.00	5,989.26	-82.25	5,989.80	0.00	0.00	0.00
12,500.00	90.00	360.00	5,820.00	6,089.26	-82.25	6,089.80	0.00	0.00	0.00
12,600.00	90.00	360.00	5,820.00	6,189.26	-82.25	6,189.79	0.00	0.00	0.00
12,700.00	90.00	360.00	5,820.00	6,289.26	-82.25	6,289.79	0.00	0.00	0.00
12,800.00	90.00	360.00	5,820.00	6,389.26	-82.25	6,389.78	0.00	0.00	0.00
12,900.00	90.00	360.00	5,820.00	6,489.26	-82.25	6,489.77	0.00	0.00	0.00
13,000.00	90.00	360.00	5,820.00	6,589.26	-82.25	6,589.77	0.00	0.00	0.00
13,100.00	90.00	360.00	5,820.00	6,689.26	-82.25	6,689.76	0.00	0.00	0.00
13,200.00	90.00	360.00	5,820.00	6,789.26	-82.25	6,789.76	0.00	0.00	0.00
13,300.00	90.00	360.00	5,820.00	6,889.26	-82.25	6,889.75	0.00	0.00	0.00
13,400.00	90.00	360.00	5,820.00	6,989.26	-82.25	6,989.75	0.00	0.00	0.00
13,500.00	90.00	360.00	5,820.00	7,089.26	-82.25	7,089.74	0.00	0.00	0.00
13,600.00	90.00	360.00	5,820.00	7,189.26	-82.25	7,189.73	0.00	0.00	0.00
13,700.00	90.00	360.00	5,820.00	7,289.26	-82.25	7,289.73	0.00	0.00	0.00
13,800.00	90.00	360.00	5,820.00	7,389.26	-82.25	7,389.72	0.00	0.00	0.00
13,900.00	90.00	360.00	5,820.00	7,489.26	-82.25	7,489.72	0.00	0.00	0.00
13,926.28	90.00	360.00	5,820.00	7,515.55	-82.25	7,516.00	0.00	0.00	0.00
TD at 13926.28									



WOG

Planning Report

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Project:	Weld County, CO	MD Reference:	KBE @ 4827.40usft (Original Well Elev)
Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

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 1935	0.00	0.00	5,820.00	7,515.55	-82.25	1,550,203.60	3,470,033.46	40° 49' 52.790 N	103° 48' 5.110 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(usft)	(usft)			(in)	(in)
6,180.74	5,820.00	7"		7.000	8.750

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
1,564.06	1,550.00	Upper Pierre				
3,543.94	3,500.00	Hygiene				
3,696.24	3,650.00	Lower Pierre				
5,513.46	5,448.00	P200 Marker				
5,541.88	5,475.00	P300 Marker				
5,553.62	5,486.00	P350 Marker				
5,566.54	5,498.00	Sharon Springs				
5,568.71	5,500.00	Niobrara				
5,586.17	5,516.00	Top A Chalk				
5,621.96	5,548.00	Top A Marl				
5,635.72	5,560.00	A Marl				
5,642.68	5,566.00	Top Upper B				
5,671.11	5,590.00	Base Upper B				
5,690.65	5,606.00	Top Lower B				
5,728.84	5,636.00	Base Lower B				
5,742.09	5,646.00	Top B Marl				
5,804.57	5,690.00	Top C Chalk				
5,819.96	5,700.00	Middle C Chalk				
5,842.48	5,714.00	Middle C Marl				
5,878.93	5,735.00	Lower C Chalk				
5,913.60	5,753.00	Lower C Marl				
5,928.23	5,760.00	Lower C Marker				
6,000.11	5,789.00	Top Ft. Hays				
6,055.41	5,805.00	Ft. Hays Marker				



WOG
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Site:	Sec 30-T10N-R57W	North Reference:	True
Well:	Horsetail #30E-1935	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

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'
798.31	795.80	-42.97	-4.71	Hold 9.97° Inc
4,664.04	4,603.20	-708.03	-77.54	Drop 2°/100'
5,162.35	5,099.00	-751.00	-82.25	Hold Vertical
5,362.35	5,299.00	-751.00	-82.25	KOP, Build 11°/100'
6,180.74	5,820.00	-230.00	-82.25	LP @ 90° Inc, Hold
13,926.28	5,820.00	7,515.55	-82.25	TD at 13926.28