

Vertical Section at 177.77° (1000 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 30-T10N-R57W
Horsetail #30E-3103**

Hz

Plan: APD

Standard Planning Report

22 October, 2015



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-3103
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-3103	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-3103			
Well Position	+N/-S	-2,375.25 usft	Northing:	1,542,641.99 usft
	+E/-W	686.61 usft	Easting:	3,470,289.84 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	177.77

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	
531.51	4.63	66.57	531.26	3.72	8.58	2.00	2.00	0.00	66.57	
4,599.27	4.63	66.57	4,585.74	134.28	309.87	0.00	0.00	0.00	0.00	
4,830.78	0.00	0.00	4,817.00	138.00	318.45	2.00	-2.00	0.00	180.00	
5,030.78	0.00	0.00	5,017.00	138.00	318.45	0.00	0.00	0.00	0.00	
5,849.16	90.00	180.00	5,538.00	-383.00	318.45	11.00	11.00	0.00	180.00	
13,650.59	90.00	180.00	5,538.00	-8,184.43	318.45	0.00	0.00	0.00	0.00	PBHL 3103



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-3103	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	66.57	399.98	0.69	1.60	-0.63	2.00	2.00	0.00
500.00	4.00	66.57	499.84	2.77	6.40	-2.52	2.00	2.00	0.00
531.51	4.63	66.57	531.26	3.72	8.58	-3.38	2.00	2.00	0.00
Hold 4.63° Inc									
600.00	4.63	66.57	599.52	5.92	13.65	-5.38	0.00	0.00	0.00
700.00	4.63	66.57	699.20	9.13	21.06	-8.30	0.00	0.00	0.00
800.00	4.63	66.57	798.87	12.34	28.47	-11.22	0.00	0.00	0.00
900.00	4.63	66.57	898.55	15.55	35.87	-14.14	0.00	0.00	0.00
1,000.00	4.63	66.57	998.22	18.75	43.28	-17.06	0.00	0.00	0.00
1,100.00	4.63	66.57	1,097.89	21.96	50.69	-19.98	0.00	0.00	0.00
1,200.00	4.63	66.57	1,197.57	25.17	58.09	-22.90	0.00	0.00	0.00
1,300.00	4.63	66.57	1,297.24	28.38	65.50	-25.82	0.00	0.00	0.00
1,400.00	4.63	66.57	1,396.91	31.59	72.91	-28.74	0.00	0.00	0.00
1,500.00	4.63	66.57	1,496.59	34.80	80.31	-31.65	0.00	0.00	0.00
1,553.59	4.63	66.57	1,550.00	36.52	84.28	-33.22	0.00	0.00	0.00
Upper Pierre									
1,600.00	4.63	66.57	1,596.26	38.01	87.72	-34.57	0.00	0.00	0.00
1,700.00	4.63	66.57	1,695.93	41.22	95.13	-37.49	0.00	0.00	0.00
1,800.00	4.63	66.57	1,795.61	44.43	102.53	-40.41	0.00	0.00	0.00
1,900.00	4.63	66.57	1,895.28	47.64	109.94	-43.33	0.00	0.00	0.00
2,000.00	4.63	66.57	1,994.96	50.85	117.35	-46.25	0.00	0.00	0.00
2,100.00	4.63	66.57	2,094.63	54.06	124.75	-49.17	0.00	0.00	0.00
2,200.00	4.63	66.57	2,194.30	57.27	132.16	-52.09	0.00	0.00	0.00
2,300.00	4.63	66.57	2,293.98	60.48	139.57	-55.01	0.00	0.00	0.00
2,400.00	4.63	66.57	2,393.65	63.69	146.97	-57.93	0.00	0.00	0.00
2,500.00	4.63	66.57	2,493.32	66.90	154.38	-60.85	0.00	0.00	0.00
2,600.00	4.63	66.57	2,593.00	70.11	161.79	-63.77	0.00	0.00	0.00
2,700.00	4.63	66.57	2,692.67	73.32	169.20	-66.69	0.00	0.00	0.00
2,800.00	4.63	66.57	2,792.34	76.53	176.60	-69.61	0.00	0.00	0.00
2,900.00	4.63	66.57	2,892.02	79.74	184.01	-72.53	0.00	0.00	0.00
3,000.00	4.63	66.57	2,991.69	82.95	191.42	-75.44	0.00	0.00	0.00
3,100.00	4.63	66.57	3,091.37	86.16	198.82	-78.36	0.00	0.00	0.00
3,200.00	4.63	66.57	3,191.04	89.37	206.23	-81.28	0.00	0.00	0.00
3,300.00	4.63	66.57	3,290.71	92.58	213.64	-84.20	0.00	0.00	0.00
3,400.00	4.63	66.57	3,390.39	95.79	221.04	-87.12	0.00	0.00	0.00
3,500.00	4.63	66.57	3,490.06	99.00	228.45	-90.04	0.00	0.00	0.00
3,509.97	4.63	66.57	3,500.00	99.32	229.19	-90.33	0.00	0.00	0.00
Hygiene									
3,600.00	4.63	66.57	3,589.73	102.21	235.86	-92.96	0.00	0.00	0.00
3,660.46	4.63	66.57	3,650.00	104.15	240.34	-94.73	0.00	0.00	0.00
Lower Pierre									
3,700.00	4.63	66.57	3,689.41	105.42	243.26	-95.88	0.00	0.00	0.00
3,800.00	4.63	66.57	3,789.08	108.63	250.67	-98.80	0.00	0.00	0.00
3,900.00	4.63	66.57	3,888.76	111.84	258.08	-101.72	0.00	0.00	0.00
4,000.00	4.63	66.57	3,988.43	115.05	265.48	-104.64	0.00	0.00	0.00
4,100.00	4.63	66.57	4,088.10	118.26	272.89	-107.56	0.00	0.00	0.00
4,200.00	4.63	66.57	4,187.78	121.47	280.30	-110.48	0.00	0.00	0.00
4,300.00	4.63	66.57	4,287.45	124.68	287.71	-113.40	0.00	0.00	0.00
4,400.00	4.63	66.57	4,387.12	127.89	295.11	-116.32	0.00	0.00	0.00



WOG

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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-3103	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	4.63	66.57	4,486.80	131.10	302.52	-119.24	0.00	0.00	0.00
4,599.27	4.63	66.57	4,585.74	134.28	309.87	-122.13	0.00	0.00	0.00
Drop 2°/100'									
4,700.00	2.62	66.57	4,686.27	136.81	315.71	-124.43	2.00	-2.00	0.00
4,800.00	0.62	66.57	4,786.22	137.93	318.30	-125.45	2.00	-2.00	0.00
4,830.78	0.00	0.00	4,817.00	138.00	318.45	-125.51	2.00	-2.00	0.00
Hold Vertical									
4,900.00	0.00	0.00	4,886.22	138.00	318.45	-125.51	0.00	0.00	0.00
5,000.00	0.00	0.00	4,986.22	138.00	318.45	-125.51	0.00	0.00	0.00
5,030.78	0.00	0.00	5,017.00	138.00	318.45	-125.51	0.00	0.00	0.00
KOP, Build 11°/100'									
5,050.00	2.11	180.00	5,036.22	137.65	318.45	-125.16	11.00	11.00	0.00
5,100.00	7.61	180.00	5,086.02	133.41	318.45	-120.93	11.00	11.00	0.00
5,150.00	13.11	180.00	5,135.18	124.42	318.45	-111.94	11.00	11.00	0.00
5,200.00	18.61	180.00	5,183.26	110.76	318.45	-98.29	11.00	11.00	0.00
5,250.00	24.11	180.00	5,229.81	92.56	318.45	-80.10	11.00	11.00	0.00
5,300.00	29.61	180.00	5,274.40	69.98	318.45	-57.54	11.00	11.00	0.00
5,350.00	35.11	180.00	5,316.62	43.23	318.45	-30.81	11.00	11.00	0.00
5,400.00	40.60	180.00	5,356.08	12.56	318.45	-0.16	11.00	11.00	0.00
5,450.00	46.10	180.00	5,392.43	-21.76	318.45	34.12	11.00	11.00	0.00
5,500.00	51.60	180.00	5,425.31	-59.39	318.45	71.73	11.00	11.00	0.00
5,538.34	55.82	180.00	5,448.00	-90.29	318.45	102.60	11.00	11.00	0.00
P200 Marker									
5,550.00	57.10	180.00	5,454.44	-100.01	318.45	112.31	11.00	11.00	0.00
5,590.29	61.53	180.00	5,475.00	-134.65	318.45	146.93	11.00	11.00	0.00
P300 Marker									
5,600.00	62.60	180.00	5,479.55	-143.23	318.45	155.50	11.00	11.00	0.00
5,614.41	64.18	180.00	5,486.00	-156.11	318.45	168.37	11.00	11.00	0.00
P350 Marker									
5,643.68	67.40	180.00	5,498.00	-182.80	318.45	195.04	11.00	11.00	0.00
Sharon Springs									
5,648.95	67.98	180.00	5,500.00	-187.67	318.45	199.91	11.00	11.00	0.00
Niobrara									
5,650.00	68.10	180.00	5,500.39	-188.65	318.45	200.89	11.00	11.00	0.00
5,697.22	73.29	180.00	5,516.00	-233.20	318.45	245.41	11.00	11.00	0.00
Top A Chalk									
5,700.00	73.60	180.00	5,516.79	-235.87	318.45	248.07	11.00	11.00	0.00
5,750.00	79.09	180.00	5,528.59	-284.43	318.45	296.60	11.00	11.00	0.00
5,800.00	84.59	180.00	5,535.68	-333.91	318.45	346.04	11.00	11.00	0.00
5,849.16	90.00	180.00	5,538.00	-383.00	318.45	395.09	11.00	11.00	0.00
LP @ 90° Inc, Hold - 7"									
5,900.00	90.00	180.00	5,538.00	-433.84	318.45	445.89	0.00	0.00	0.00
6,000.00	90.00	180.00	5,538.00	-533.84	318.45	545.81	0.00	0.00	0.00
6,100.00	90.00	180.00	5,538.00	-633.84	318.45	645.74	0.00	0.00	0.00
6,200.00	90.00	180.00	5,538.00	-733.84	318.45	745.66	0.00	0.00	0.00
6,300.00	90.00	180.00	5,538.00	-833.84	318.45	845.59	0.00	0.00	0.00
6,400.00	90.00	180.00	5,538.00	-933.84	318.45	945.51	0.00	0.00	0.00
6,500.00	90.00	180.00	5,538.00	-1,033.84	318.45	1,045.44	0.00	0.00	0.00
6,600.00	90.00	180.00	5,538.00	-1,133.84	318.45	1,145.36	0.00	0.00	0.00
6,700.00	90.00	180.00	5,538.00	-1,233.84	318.45	1,245.28	0.00	0.00	0.00
6,800.00	90.00	180.00	5,538.00	-1,333.84	318.45	1,345.21	0.00	0.00	0.00
6,900.00	90.00	180.00	5,538.00	-1,433.84	318.45	1,445.13	0.00	0.00	0.00



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Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-3103
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-3103	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)	
7,000.00	90.00	180.00	5,538.00	-1,533.84	318.45	1,545.06	0.00	0.00	0.00	
7,100.00	90.00	180.00	5,538.00	-1,633.84	318.45	1,644.98	0.00	0.00	0.00	
7,200.00	90.00	180.00	5,538.00	-1,733.84	318.45	1,744.91	0.00	0.00	0.00	
7,300.00	90.00	180.00	5,538.00	-1,833.84	318.45	1,844.83	0.00	0.00	0.00	
7,400.00	90.00	180.00	5,538.00	-1,933.84	318.45	1,944.76	0.00	0.00	0.00	
7,500.00	90.00	180.00	5,538.00	-2,033.84	318.45	2,044.68	0.00	0.00	0.00	
7,600.00	90.00	180.00	5,538.00	-2,133.84	318.45	2,144.60	0.00	0.00	0.00	
7,700.00	90.00	180.00	5,538.00	-2,233.84	318.45	2,244.53	0.00	0.00	0.00	
7,800.00	90.00	180.00	5,538.00	-2,333.84	318.45	2,344.45	0.00	0.00	0.00	
7,900.00	90.00	180.00	5,538.00	-2,433.84	318.45	2,444.38	0.00	0.00	0.00	
8,000.00	90.00	180.00	5,538.00	-2,533.84	318.45	2,544.30	0.00	0.00	0.00	
8,100.00	90.00	180.00	5,538.00	-2,633.84	318.45	2,644.23	0.00	0.00	0.00	
8,200.00	90.00	180.00	5,538.00	-2,733.84	318.45	2,744.15	0.00	0.00	0.00	
8,300.00	90.00	180.00	5,538.00	-2,833.84	318.45	2,844.07	0.00	0.00	0.00	
8,400.00	90.00	180.00	5,538.00	-2,933.84	318.45	2,944.00	0.00	0.00	0.00	
8,500.00	90.00	180.00	5,538.00	-3,033.84	318.45	3,043.92	0.00	0.00	0.00	
8,600.00	90.00	180.00	5,538.00	-3,133.84	318.45	3,143.85	0.00	0.00	0.00	
8,700.00	90.00	180.00	5,538.00	-3,233.84	318.45	3,243.77	0.00	0.00	0.00	
8,800.00	90.00	180.00	5,538.00	-3,333.84	318.45	3,343.70	0.00	0.00	0.00	
8,900.00	90.00	180.00	5,538.00	-3,433.84	318.45	3,443.62	0.00	0.00	0.00	
9,000.00	90.00	180.00	5,538.00	-3,533.84	318.45	3,543.55	0.00	0.00	0.00	
9,100.00	90.00	180.00	5,538.00	-3,633.84	318.45	3,643.47	0.00	0.00	0.00	
9,200.00	90.00	180.00	5,538.00	-3,733.84	318.45	3,743.39	0.00	0.00	0.00	
9,300.00	90.00	180.00	5,538.00	-3,833.84	318.45	3,843.32	0.00	0.00	0.00	
9,400.00	90.00	180.00	5,538.00	-3,933.84	318.45	3,943.24	0.00	0.00	0.00	
9,500.00	90.00	180.00	5,538.00	-4,033.84	318.45	4,043.17	0.00	0.00	0.00	
9,600.00	90.00	180.00	5,538.00	-4,133.84	318.45	4,143.09	0.00	0.00	0.00	
9,700.00	90.00	180.00	5,538.00	-4,233.84	318.45	4,243.02	0.00	0.00	0.00	
9,800.00	90.00	180.00	5,538.00	-4,333.84	318.45	4,342.94	0.00	0.00	0.00	
9,900.00	90.00	180.00	5,538.00	-4,433.84	318.45	4,442.87	0.00	0.00	0.00	
10,000.00	90.00	180.00	5,538.00	-4,533.84	318.45	4,542.79	0.00	0.00	0.00	
10,100.00	90.00	180.00	5,538.00	-4,633.84	318.45	4,642.71	0.00	0.00	0.00	
10,200.00	90.00	180.00	5,538.00	-4,733.84	318.45	4,742.64	0.00	0.00	0.00	
10,300.00	90.00	180.00	5,538.00	-4,833.84	318.45	4,842.56	0.00	0.00	0.00	
10,400.00	90.00	180.00	5,538.00	-4,933.84	318.45	4,942.49	0.00	0.00	0.00	
10,500.00	90.00	180.00	5,538.00	-5,033.84	318.45	5,042.41	0.00	0.00	0.00	
10,600.00	90.00	180.00	5,538.00	-5,133.84	318.45	5,142.34	0.00	0.00	0.00	
10,700.00	90.00	180.00	5,538.00	-5,233.84	318.45	5,242.26	0.00	0.00	0.00	
10,800.00	90.00	180.00	5,538.00	-5,333.84	318.45	5,342.18	0.00	0.00	0.00	
10,900.00	90.00	180.00	5,538.00	-5,433.84	318.45	5,442.11	0.00	0.00	0.00	
11,000.00	90.00	180.00	5,538.00	-5,533.84	318.45	5,542.03	0.00	0.00	0.00	
11,100.00	90.00	180.00	5,538.00	-5,633.84	318.45	5,641.96	0.00	0.00	0.00	
11,200.00	90.00	180.00	5,538.00	-5,733.84	318.45	5,741.88	0.00	0.00	0.00	
11,300.00	90.00	180.00	5,538.00	-5,833.84	318.45	5,841.81	0.00	0.00	0.00	
11,400.00	90.00	180.00	5,538.00	-5,933.84	318.45	5,941.73	0.00	0.00	0.00	
11,500.00	90.00	180.00	5,538.00	-6,033.84	318.45	6,041.66	0.00	0.00	0.00	
11,600.00	90.00	180.00	5,538.00	-6,133.84	318.45	6,141.58	0.00	0.00	0.00	
11,700.00	90.00	180.00	5,538.00	-6,233.84	318.45	6,241.50	0.00	0.00	0.00	
11,800.00	90.00	180.00	5,538.00	-6,333.84	318.45	6,341.43	0.00	0.00	0.00	
11,900.00	90.00	180.00	5,538.00	-6,433.84	318.45	6,441.35	0.00	0.00	0.00	
12,000.00	90.00	180.00	5,538.00	-6,533.84	318.45	6,541.28	0.00	0.00	0.00	
12,100.00	90.00	180.00	5,538.00	-6,633.84	318.45	6,641.20	0.00	0.00	0.00	
12,200.00	90.00	180.00	5,538.00	-6,733.84	318.45	6,741.13	0.00	0.00	0.00	
12,300.00	90.00	180.00	5,538.00	-6,833.84	318.45	6,841.05	0.00	0.00	0.00	



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-3103
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-3103	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)	
12,400.00	90.00	180.00	5,538.00	-6,933.84	318.45	6,940.97	0.00	0.00	0.00	
12,500.00	90.00	180.00	5,538.00	-7,033.84	318.45	7,040.90	0.00	0.00	0.00	
12,600.00	90.00	180.00	5,538.00	-7,133.84	318.45	7,140.82	0.00	0.00	0.00	
12,700.00	90.00	180.00	5,538.00	-7,233.84	318.45	7,240.75	0.00	0.00	0.00	
12,800.00	90.00	180.00	5,538.00	-7,333.84	318.45	7,340.67	0.00	0.00	0.00	
12,900.00	90.00	180.00	5,538.00	-7,433.84	318.45	7,440.60	0.00	0.00	0.00	
13,000.00	90.00	180.00	5,538.00	-7,533.84	318.45	7,540.52	0.00	0.00	0.00	
13,100.00	90.00	180.00	5,538.00	-7,633.84	318.45	7,640.45	0.00	0.00	0.00	
13,200.00	90.00	180.00	5,538.00	-7,733.84	318.45	7,740.37	0.00	0.00	0.00	
13,300.00	90.00	180.00	5,538.00	-7,833.84	318.45	7,840.29	0.00	0.00	0.00	
13,400.00	90.00	180.00	5,538.00	-7,933.84	318.45	7,940.22	0.00	0.00	0.00	
13,500.00	90.00	180.00	5,538.00	-8,033.84	318.45	8,040.14	0.00	0.00	0.00	
13,600.00	90.00	180.00	5,538.00	-8,133.84	318.45	8,140.07	0.00	0.00	0.00	
13,650.59	90.00	180.00	5,538.00	-8,184.43	318.45	8,190.62	0.00	0.00	0.00	
TD at 13650.59										

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 3103	0.00	0.00	5,538.00	-8,184.43	318.45	1,534,465.17	3,470,765.04	40° 47' 17.170 N	103° 47' 59.520 W	
- plan hits target center										
- Point										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
5,849.16	5,538.00	7"	7.000	8.750	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,553.59	1,550.00	Upper Pierre				
3,509.97	3,500.00	Hygiene				
3,660.46	3,650.00	Lower Pierre				
5,538.34	5,448.00	P200 Marker				
5,590.29	5,475.00	P300 Marker				
5,614.41	5,486.00	P350 Marker				
5,643.68	5,498.00	Sharon Springs				
5,648.95	5,500.00	Niobrara				
5,697.22	5,516.00	Top A Chalk				



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #30E-3103
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-3103	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'
531.51	531.26	3.72	8.58	Hold 4.63° Inc
4,599.27	4,585.74	134.28	309.87	Drop 2°/100'
4,830.78	4,817.00	138.00	318.45	Hold Vertical
5,030.78	5,017.00	138.00	318.45	KOP, Build 11°/100'
5,849.16	5,538.00	-383.00	318.45	LP @ 90° Inc, Hold
13,650.59	5,538.00	-8,184.43	318.45	TD at 13650.59