



Project: Weld County, CO
Site: Sec 29-T10N-R57W
Well: Horsetail #29F-2006
Wellbore: Hz
Design: APD

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: 7.85°
Magnetic Field
Strength: 52868.0snT
Dip Angle: 67.37°
Date: 1/15/2016
Model: IGRF2015

WELL DETAILS: Horsetail #29F-2006

+N/-S	+E/-W	Northing	Ground Level:	4698.00	Latitude	Longitude	Slot
0.00	0.00	1542761.13	Easting	3476884.10	40° 48' 37.960 N	103° 46' 37.890 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	845.98	10.92	204.13	842.68	-47.34	-21.21	2.00	204.13	-46.43	
4	4318.49	10.92	204.13	4252.32	-647.66	-290.13	0.00	0.00	-635.22	
5	4864.47	0.00	0.00	4795.00	-695.00	-311.33	2.00	180.00	-681.65	
6	5064.47	0.00	0.00	4995.00	-695.00	-311.33	0.00	0.00	-681.65	
7	5882.86	90.00	360.00	5516.00	-174.00	-311.33	11.00	360.00	-161.09	
8	13645.27	90.00	360.00	5516.00	7588.41	-311.33	0.00	0.00	7594.80	PBHL 29F-2006

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1550.00	1566.34	Upper Pierre
3500.00	3552.30	Hygiene
3650.00	3705.07	Lower Pierre
5355.00	5461.91	P200 Marker
5375.00	5490.34	P300 Marker
5391.00	5514.32	P350 Marker
5405.00	5536.42	Sharon Springs
5409.00	5542.95	Niobrara
5426.00	5572.03	Top A Chalk
5456.00	5630.35	Top A Marl
5468.00	5657.46	A Marl
5476.00	5677.37	Top Upper B
5500.00	5753.40	Base Upper B
5516.00	5882.86	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'
842.68	845.98	10.92	204.13	-47.34	-21.21	-46.43	51.87	Hold 10.92° Inc
4252.32	4318.49	10.92	204.13	-647.66	-290.13	-635.22	709.68	Drop 2°/100'
4795.00	4864.47	0.00	0.00	-695.00	-311.33	-681.65	761.55	Hold Vertical
4995.00	5064.47	0.00	0.00	-695.00	-311.33	-681.65	761.55	KOP, Build 11°/100'
5516.00	5882.86	90.00	360.00	-174.00	-311.33	-161.09	1282.55	LP @ 90° Inc, Hold
5516.00	13645.27	90.00	360.00	7588.41	-311.33	7594.80	9044.96	TD at 13645.27

DESIGN TARGET DETAILS

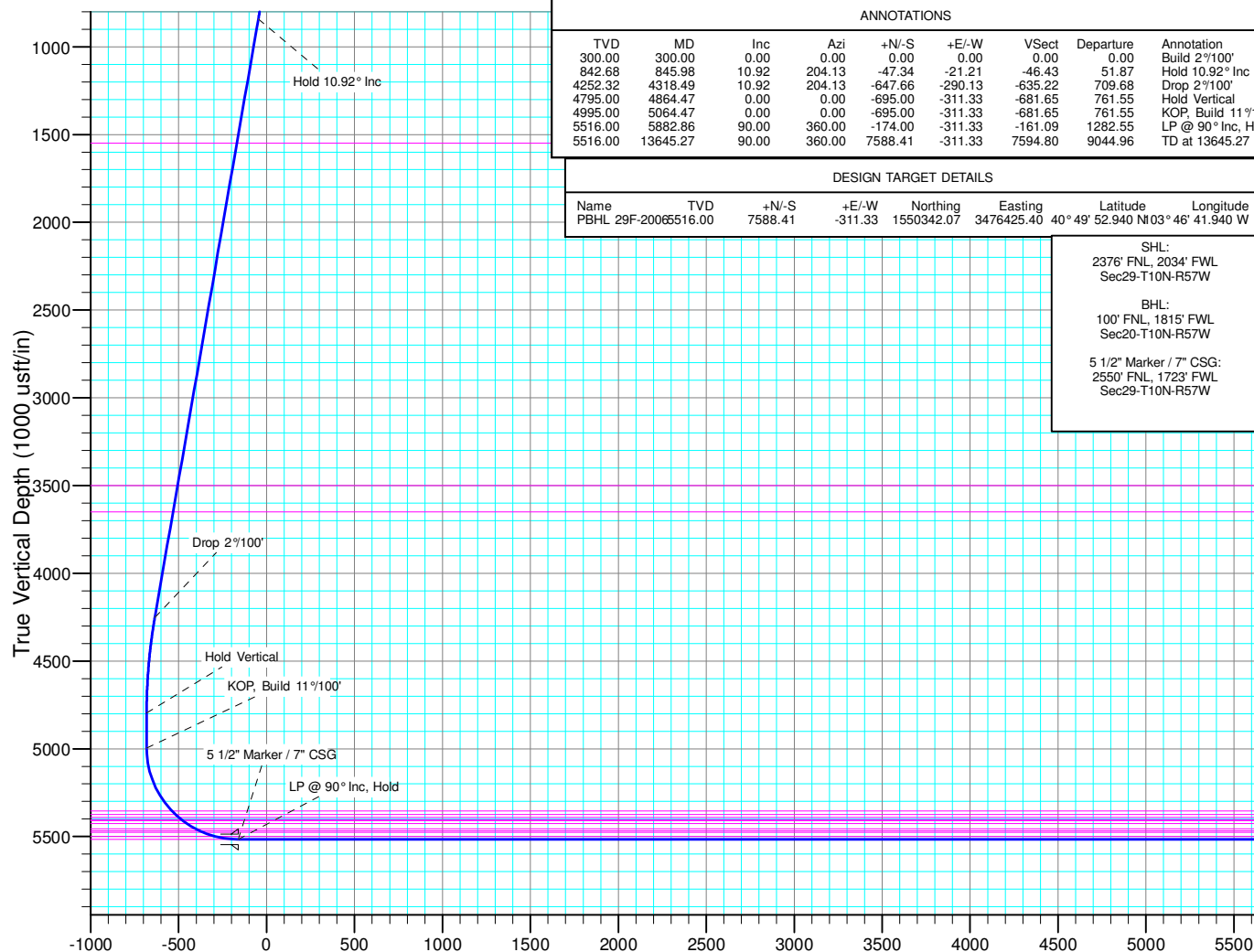
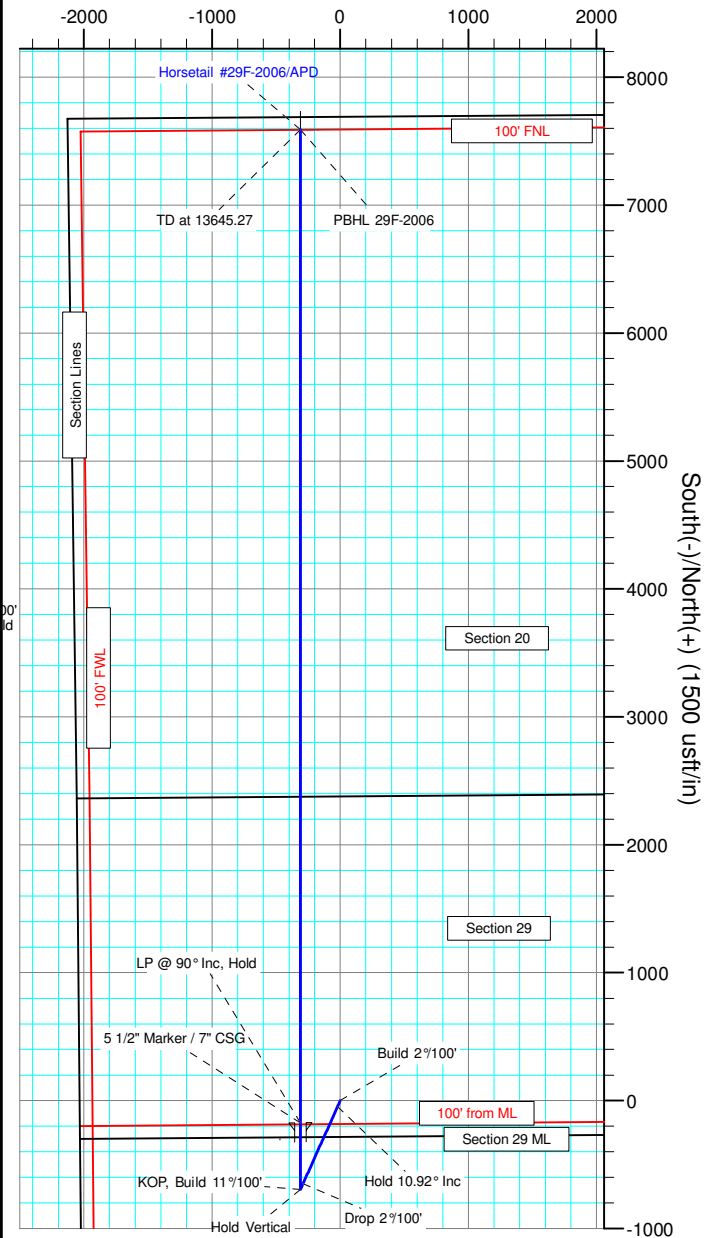
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 29F-2006	5516.00	7588.41	-311.33	1550342.07	3476425.40	40° 49' 52.940 N	103° 46' 41.940 W

SHL:
2376' FNL, 2034' FWL
Sec29-T10N-R57W

BHL:
100' FNL, 1815' FWL
Sec20-T10N-R57W

5 1/2" Marker / 7" CSG:
2550' FNL, 1723' FWL
Sec29-T10N-R57W

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



Vertical Section at 357.65° (1000 usft/in)



Whiting Petroleum Corp.

**Weld County, CO
Sec 29-T10N-R57W
Horsetail #29F-2006**

Hz

Plan: APD

Standard Planning Report

19 January, 2016



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	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 29-T10N-R57W			
Site Position:		Northing:	1,545,081.96 usft	Latitude: 40° 49' 1.290 N
From:	Lat/Long	Easting:	3,474,781.92 usft	Longitude: 103° 47' 4.639 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence: 1.11 °

Well	Horsetail #29F-2006			
Well Position	+N/-S	-2,361.05 usft	Northing:	1,542,761.14 usft
	+E/-W	2,056.89 usft	Easting:	3,476,884.09 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level: 4,698.00 usft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/15/2016	7.85	67.37	52,868

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	357.65

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	
845.98	10.92	204.13	842.68	-47.34	-21.21	2.00	2.00	0.00	204.13	
4,318.49	10.92	204.13	4,252.32	-647.66	-290.13	0.00	0.00	0.00	0.00	
4,864.47	0.00	0.00	4,795.00	-695.00	-311.33	2.00	-2.00	0.00	180.00	
5,064.47	0.00	0.00	4,995.00	-695.00	-311.33	0.00	0.00	0.00	0.00	
5,882.86	90.00	360.00	5,516.00	-174.00	-311.33	11.00	11.00	0.00	360.00	
13,645.27	90.00	360.00	5,516.00	7,588.41	-311.33	0.00	0.00	0.00	0.00	PBHL 29F-2006



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	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	204.13	399.98	-1.59	-0.71	-1.56	2.00	2.00	0.00
500.00	4.00	204.13	499.84	-6.37	-2.85	-6.25	2.00	2.00	0.00
600.00	6.00	204.13	599.45	-14.32	-6.42	-14.05	2.00	2.00	0.00
700.00	8.00	204.13	698.70	-25.44	-11.40	-24.96	2.00	2.00	0.00
800.00	10.00	204.13	797.47	-39.72	-17.79	-38.96	2.00	2.00	0.00
845.98	10.92	204.13	842.68	-47.34	-21.21	-46.43	2.00	2.00	0.00
Hold 10.92° Inc									
900.00	10.92	204.13	895.72	-56.68	-25.39	-55.59	0.00	0.00	0.00
1,000.00	10.92	204.13	993.91	-73.96	-33.13	-72.54	0.00	0.00	0.00
1,100.00	10.92	204.13	1,092.10	-91.25	-40.88	-89.50	0.00	0.00	0.00
1,200.00	10.92	204.13	1,190.29	-108.54	-48.62	-106.46	0.00	0.00	0.00
1,300.00	10.92	204.13	1,288.48	-125.83	-56.37	-123.41	0.00	0.00	0.00
1,400.00	10.92	204.13	1,386.67	-143.12	-64.11	-140.37	0.00	0.00	0.00
1,500.00	10.92	204.13	1,484.86	-160.40	-71.85	-157.32	0.00	0.00	0.00
1,566.34	10.92	204.13	1,550.00	-171.87	-76.99	-168.57	0.00	0.00	0.00
Upper Pierre									
1,600.00	10.92	204.13	1,583.05	-177.69	-79.60	-174.28	0.00	0.00	0.00
1,700.00	10.92	204.13	1,681.24	-194.98	-87.34	-191.24	0.00	0.00	0.00
1,800.00	10.92	204.13	1,779.43	-212.27	-95.09	-208.19	0.00	0.00	0.00
1,900.00	10.92	204.13	1,877.62	-229.56	-102.83	-225.15	0.00	0.00	0.00
2,000.00	10.92	204.13	1,975.81	-246.84	-110.58	-242.10	0.00	0.00	0.00
2,100.00	10.92	204.13	2,074.00	-264.13	-118.32	-259.06	0.00	0.00	0.00
2,200.00	10.92	204.13	2,172.18	-281.42	-126.06	-276.02	0.00	0.00	0.00
2,300.00	10.92	204.13	2,270.37	-298.71	-133.81	-292.97	0.00	0.00	0.00
2,400.00	10.92	204.13	2,368.56	-316.00	-141.55	-309.93	0.00	0.00	0.00
2,500.00	10.92	204.13	2,466.75	-333.28	-149.30	-326.88	0.00	0.00	0.00
2,600.00	10.92	204.13	2,564.94	-350.57	-157.04	-343.84	0.00	0.00	0.00
2,700.00	10.92	204.13	2,663.13	-367.86	-164.79	-360.79	0.00	0.00	0.00
2,800.00	10.92	204.13	2,761.32	-385.15	-172.53	-377.75	0.00	0.00	0.00
2,900.00	10.92	204.13	2,859.51	-402.43	-180.27	-394.71	0.00	0.00	0.00
3,000.00	10.92	204.13	2,957.70	-419.72	-188.02	-411.66	0.00	0.00	0.00
3,100.00	10.92	204.13	3,055.89	-437.01	-195.76	-428.62	0.00	0.00	0.00
3,200.00	10.92	204.13	3,154.08	-454.30	-203.51	-445.57	0.00	0.00	0.00
3,300.00	10.92	204.13	3,252.27	-471.59	-211.25	-462.53	0.00	0.00	0.00
3,400.00	10.92	204.13	3,350.46	-488.87	-218.99	-479.49	0.00	0.00	0.00
3,500.00	10.92	204.13	3,448.65	-506.16	-226.74	-496.44	0.00	0.00	0.00
3,552.30	10.92	204.13	3,500.00	-515.20	-230.79	-505.31	0.00	0.00	0.00
Hygiene									
3,600.00	10.92	204.13	3,546.84	-523.45	-234.48	-513.40	0.00	0.00	0.00
3,700.00	10.92	204.13	3,645.03	-540.74	-242.23	-530.35	0.00	0.00	0.00
3,705.07	10.92	204.13	3,650.00	-541.61	-242.62	-531.21	0.00	0.00	0.00
Lower Pierre									
3,800.00	10.92	204.13	3,743.21	-558.03	-249.97	-547.31	0.00	0.00	0.00
3,900.00	10.92	204.13	3,841.40	-575.31	-257.72	-564.27	0.00	0.00	0.00
4,000.00	10.92	204.13	3,939.59	-592.60	-265.46	-581.22	0.00	0.00	0.00
4,100.00	10.92	204.13	4,037.78	-609.89	-273.20	-598.18	0.00	0.00	0.00
4,200.00	10.92	204.13	4,135.97	-627.18	-280.95	-615.13	0.00	0.00	0.00
4,300.00	10.92	204.13	4,234.16	-644.47	-288.69	-632.09	0.00	0.00	0.00
4,318.49	10.92	204.13	4,252.32	-647.66	-290.13	-635.22	0.00	0.00	0.00



WOG Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	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)
Drop 2°/100'									
4,400.00	9.29	204.13	4,332.56	-660.71	-295.97	-648.02	2.00	-2.00	0.00
4,500.00	7.29	204.13	4,431.51	-673.87	-301.86	-660.93	2.00	-2.00	0.00
4,600.00	5.29	204.13	4,530.90	-683.87	-306.34	-670.73	2.00	-2.00	0.00
4,700.00	3.29	204.13	4,630.62	-690.69	-309.40	-677.43	2.00	-2.00	0.00
4,800.00	1.29	204.13	4,730.53	-694.34	-311.03	-681.00	2.00	-2.00	0.00
4,864.47	0.00	0.00	4,795.00	-695.00	-311.33	-681.65	2.00	-2.00	0.00
Hold Vertical									
4,900.00	0.00	0.00	4,830.53	-695.00	-311.33	-681.65	0.00	0.00	0.00
5,000.00	0.00	0.00	4,930.53	-695.00	-311.33	-681.65	0.00	0.00	0.00
5,064.47	0.00	0.00	4,995.00	-695.00	-311.33	-681.65	0.00	0.00	0.00
KOP, Build 11°/100'									
5,100.00	3.91	360.00	5,030.50	-693.79	-311.33	-680.44	11.00	11.00	0.00
5,200.00	14.90	360.00	5,129.00	-677.47	-311.33	-664.14	11.00	11.00	0.00
5,300.00	25.90	360.00	5,222.59	-642.66	-311.33	-629.36	11.00	11.00	0.00
5,400.00	36.90	360.00	5,307.81	-590.64	-311.33	-577.38	11.00	11.00	0.00
5,461.91	43.71	360.00	5,355.00	-550.62	-311.33	-537.39	11.00	11.00	0.00
P200 Marker									
5,490.34	46.83	360.00	5,375.00	-530.43	-311.33	-517.22	11.00	11.00	0.00
P300 Marker									
5,500.00	47.90	360.00	5,381.55	-523.32	-311.33	-510.12	11.00	11.00	0.00
5,514.32	49.47	360.00	5,391.00	-512.56	-311.33	-499.37	11.00	11.00	0.00
P350 Marker									
5,536.42	51.90	360.00	5,405.00	-495.47	-311.33	-482.29	11.00	11.00	0.00
Sharon Springs									
5,542.95	52.62	360.00	5,409.00	-490.30	-311.33	-477.12	11.00	11.00	0.00
Niobrara									
5,572.03	55.82	360.00	5,426.00	-466.71	-311.33	-453.56	11.00	11.00	0.00
Top A Chalk									
5,600.00	58.89	360.00	5,441.08	-443.17	-311.33	-430.03	11.00	11.00	0.00
5,630.35	62.23	360.00	5,456.00	-416.73	-311.33	-403.62	11.00	11.00	0.00
Top A Marl									
5,657.46	65.21	360.00	5,468.00	-392.43	-311.33	-379.34	11.00	11.00	0.00
A Marl									
5,677.37	67.40	360.00	5,476.00	-374.20	-311.33	-361.12	11.00	11.00	0.00
Top Upper B									
5,700.00	69.89	360.00	5,484.24	-353.13	-311.33	-340.07	11.00	11.00	0.00
5,753.40	75.76	360.00	5,500.00	-302.12	-311.33	-289.11	11.00	11.00	0.00
Base Upper B									
5,800.00	80.89	360.00	5,509.43	-256.51	-311.33	-243.53	11.00	11.00	0.00
5,882.86	90.00	360.00	5,516.00	-174.00	-311.33	-161.09	11.00	11.00	0.00
LP @ 90° Inc, Hold - Top Lower B - 5 1/2" Marker / 7" CSG									
5,900.00	90.00	360.00	5,516.00	-156.86	-311.33	-143.96	0.00	0.00	0.00
6,000.00	90.00	360.00	5,516.00	-56.86	-311.33	-44.05	0.00	0.00	0.00
6,100.00	90.00	360.00	5,516.00	43.14	-311.33	55.87	0.00	0.00	0.00
6,200.00	90.00	360.00	5,516.00	143.14	-311.33	155.78	0.00	0.00	0.00
6,300.00	90.00	360.00	5,516.00	243.14	-311.33	255.70	0.00	0.00	0.00
6,400.00	90.00	360.00	5,516.00	343.14	-311.33	355.62	0.00	0.00	0.00
6,500.00	90.00	360.00	5,516.00	443.14	-311.33	455.53	0.00	0.00	0.00
6,600.00	90.00	360.00	5,516.00	543.14	-311.33	555.45	0.00	0.00	0.00
6,700.00	90.00	360.00	5,516.00	643.14	-311.33	655.36	0.00	0.00	0.00
6,800.00	90.00	360.00	5,516.00	743.14	-311.33	755.28	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	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)
6,900.00	90.00	360.00	5,516.00	843.14	-311.33	855.20	0.00	0.00	0.00
7,000.00	90.00	360.00	5,516.00	943.14	-311.33	955.11	0.00	0.00	0.00
7,100.00	90.00	360.00	5,516.00	1,043.14	-311.33	1,055.03	0.00	0.00	0.00
7,200.00	90.00	360.00	5,516.00	1,143.14	-311.33	1,154.94	0.00	0.00	0.00
7,300.00	90.00	360.00	5,516.00	1,243.14	-311.33	1,254.86	0.00	0.00	0.00
7,400.00	90.00	360.00	5,516.00	1,343.14	-311.33	1,354.78	0.00	0.00	0.00
7,500.00	90.00	360.00	5,516.00	1,443.14	-311.33	1,454.69	0.00	0.00	0.00
7,600.00	90.00	360.00	5,516.00	1,543.14	-311.33	1,554.61	0.00	0.00	0.00
7,700.00	90.00	360.00	5,516.00	1,643.14	-311.33	1,654.52	0.00	0.00	0.00
7,800.00	90.00	360.00	5,516.00	1,743.14	-311.33	1,754.44	0.00	0.00	0.00
7,900.00	90.00	360.00	5,516.00	1,843.14	-311.33	1,854.36	0.00	0.00	0.00
8,000.00	90.00	360.00	5,516.00	1,943.14	-311.33	1,954.27	0.00	0.00	0.00
8,100.00	90.00	360.00	5,516.00	2,043.14	-311.33	2,054.19	0.00	0.00	0.00
8,200.00	90.00	360.00	5,516.00	2,143.14	-311.33	2,154.10	0.00	0.00	0.00
8,300.00	90.00	360.00	5,516.00	2,243.14	-311.33	2,254.02	0.00	0.00	0.00
8,400.00	90.00	360.00	5,516.00	2,343.14	-311.33	2,353.94	0.00	0.00	0.00
8,500.00	90.00	360.00	5,516.00	2,443.14	-311.33	2,453.85	0.00	0.00	0.00
8,600.00	90.00	360.00	5,516.00	2,543.14	-311.33	2,553.77	0.00	0.00	0.00
8,700.00	90.00	360.00	5,516.00	2,643.14	-311.33	2,653.68	0.00	0.00	0.00
8,800.00	90.00	360.00	5,516.00	2,743.14	-311.33	2,753.60	0.00	0.00	0.00
8,900.00	90.00	360.00	5,516.00	2,843.14	-311.33	2,853.52	0.00	0.00	0.00
9,000.00	90.00	360.00	5,516.00	2,943.14	-311.33	2,953.43	0.00	0.00	0.00
9,100.00	90.00	360.00	5,516.00	3,043.14	-311.33	3,053.35	0.00	0.00	0.00
9,200.00	90.00	360.00	5,516.00	3,143.14	-311.33	3,153.26	0.00	0.00	0.00
9,300.00	90.00	360.00	5,516.00	3,243.14	-311.33	3,253.18	0.00	0.00	0.00
9,400.00	90.00	360.00	5,516.00	3,343.14	-311.33	3,353.10	0.00	0.00	0.00
9,500.00	90.00	360.00	5,516.00	3,443.14	-311.33	3,453.01	0.00	0.00	0.00
9,600.00	90.00	360.00	5,516.00	3,543.14	-311.33	3,552.93	0.00	0.00	0.00
9,700.00	90.00	360.00	5,516.00	3,643.14	-311.33	3,652.84	0.00	0.00	0.00
9,800.00	90.00	360.00	5,516.00	3,743.14	-311.33	3,752.76	0.00	0.00	0.00
9,900.00	90.00	360.00	5,516.00	3,843.14	-311.33	3,852.67	0.00	0.00	0.00
10,000.00	90.00	360.00	5,516.00	3,943.14	-311.33	3,952.59	0.00	0.00	0.00
10,100.00	90.00	360.00	5,516.00	4,043.14	-311.33	4,052.51	0.00	0.00	0.00
10,200.00	90.00	360.00	5,516.00	4,143.14	-311.33	4,152.42	0.00	0.00	0.00
10,300.00	90.00	360.00	5,516.00	4,243.14	-311.33	4,252.34	0.00	0.00	0.00
10,400.00	90.00	360.00	5,516.00	4,343.14	-311.33	4,352.25	0.00	0.00	0.00
10,500.00	90.00	360.00	5,516.00	4,443.14	-311.33	4,452.17	0.00	0.00	0.00
10,600.00	90.00	360.00	5,516.00	4,543.14	-311.33	4,552.09	0.00	0.00	0.00
10,700.00	90.00	360.00	5,516.00	4,643.14	-311.33	4,652.00	0.00	0.00	0.00
10,800.00	90.00	360.00	5,516.00	4,743.14	-311.33	4,751.92	0.00	0.00	0.00
10,900.00	90.00	360.00	5,516.00	4,843.14	-311.33	4,851.83	0.00	0.00	0.00
11,000.00	90.00	360.00	5,516.00	4,943.14	-311.33	4,951.75	0.00	0.00	0.00
11,100.00	90.00	360.00	5,516.00	5,043.14	-311.33	5,051.67	0.00	0.00	0.00
11,200.00	90.00	360.00	5,516.00	5,143.14	-311.33	5,151.58	0.00	0.00	0.00
11,300.00	90.00	360.00	5,516.00	5,243.14	-311.33	5,251.50	0.00	0.00	0.00
11,400.00	90.00	360.00	5,516.00	5,343.14	-311.33	5,351.41	0.00	0.00	0.00
11,500.00	90.00	360.00	5,516.00	5,443.14	-311.33	5,451.33	0.00	0.00	0.00
11,600.00	90.00	360.00	5,516.00	5,543.14	-311.33	5,551.25	0.00	0.00	0.00
11,700.00	90.00	360.00	5,516.00	5,643.14	-311.33	5,651.16	0.00	0.00	0.00
11,800.00	90.00	360.00	5,516.00	5,743.14	-311.33	5,751.08	0.00	0.00	0.00
11,900.00	90.00	360.00	5,516.00	5,843.14	-311.33	5,850.99	0.00	0.00	0.00
12,000.00	90.00	360.00	5,516.00	5,943.14	-311.33	5,950.91	0.00	0.00	0.00
12,100.00	90.00	360.00	5,516.00	6,043.14	-311.33	6,050.83	0.00	0.00	0.00
12,200.00	90.00	360.00	5,516.00	6,143.14	-311.33	6,150.74	0.00	0.00	0.00



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	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)	
12,300.00	90.00	360.00	5,516.00	6,243.14	-311.33	6,250.66	0.00	0.00	0.00	
12,400.00	90.00	360.00	5,516.00	6,343.14	-311.33	6,350.57	0.00	0.00	0.00	
12,500.00	90.00	360.00	5,516.00	6,443.14	-311.33	6,450.49	0.00	0.00	0.00	
12,600.00	90.00	360.00	5,516.00	6,543.14	-311.33	6,550.41	0.00	0.00	0.00	
12,700.00	90.00	360.00	5,516.00	6,643.14	-311.33	6,650.32	0.00	0.00	0.00	
12,800.00	90.00	360.00	5,516.00	6,743.14	-311.33	6,750.24	0.00	0.00	0.00	
12,900.00	90.00	360.00	5,516.00	6,843.14	-311.33	6,850.15	0.00	0.00	0.00	
13,000.00	90.00	360.00	5,516.00	6,943.14	-311.33	6,950.07	0.00	0.00	0.00	
13,100.00	90.00	360.00	5,516.00	7,043.14	-311.33	7,049.99	0.00	0.00	0.00	
13,200.00	90.00	360.00	5,516.00	7,143.14	-311.33	7,149.90	0.00	0.00	0.00	
13,300.00	90.00	360.00	5,516.00	7,243.14	-311.33	7,249.82	0.00	0.00	0.00	
13,400.00	90.00	360.00	5,516.00	7,343.14	-311.33	7,349.73	0.00	0.00	0.00	
13,500.00	90.00	360.00	5,516.00	7,443.14	-311.33	7,449.65	0.00	0.00	0.00	
13,600.00	90.00	360.00	5,516.00	7,543.14	-311.33	7,549.56	0.00	0.00	0.00	
13,645.27	90.00	360.00	5,516.00	7,588.41	-311.33	7,594.80	0.00	0.00	0.00	
TD at 13645.27										

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 29F-2006	0.00	0.00	5,516.00	7,588.41	-311.33	1,550,342.07	3,476,425.40	40° 49' 52.940 N	103° 46' 41.940 W	
- plan hits target center										
- Point										

Casing Points									
Measured Depth (usft)	Vertical Depth (usft)	Name				Casing Diameter (in)	Hole Diameter (in)		
5,882.86	5,516.00	5 1/2" Marker / 7" CSG				5.500	8.750		



WOG

Planning Report

Database:	LandmarkEDM	Local Co-ordinate Reference:	Well Horsetail #29F-2006
Company:	Whiting Petroleum Corp.	TVD Reference:	KBE @ 4719.00usft
Project:	Weld County, CO	MD Reference:	KBE @ 4719.00usft
Site:	Sec 29-T10N-R57W	North Reference:	True
Well:	Horsetail #29F-2006	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	APD		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,566.34	1,550.00	Upper Pierre				
3,552.30	3,500.00	Hygiene				
3,705.07	3,650.00	Lower Pierre				
5,461.91	5,355.00	P200 Marker				
5,490.34	5,375.00	P300 Marker				
5,514.32	5,391.00	P350 Marker				
5,536.42	5,405.00	Sharon Springs				
5,542.95	5,409.00	Niobrara				
5,572.03	5,426.00	Top A Chalk				
5,630.35	5,456.00	Top A Marl				
5,657.46	5,468.00	A Marl				
5,677.37	5,476.00	Top Upper B				
5,753.40	5,500.00	Base Upper B				
5,882.86	5,516.00	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'	
845.98	842.68	-47.34	-21.21	Hold 10.92° Inc	
4,318.49	4,252.32	-647.66	-290.13	Drop 2°/100'	
4,864.47	4,795.00	-695.00	-311.33	Hold Vertical	
5,064.47	4,995.00	-695.00	-311.33	KOP, Build 11°/100'	
5,882.86	5,516.00	-174.00	-311.33	LP @ 90° Inc, Hold	
13,645.27	5,516.00	7,588.41	-311.33	TD at 13645.27	