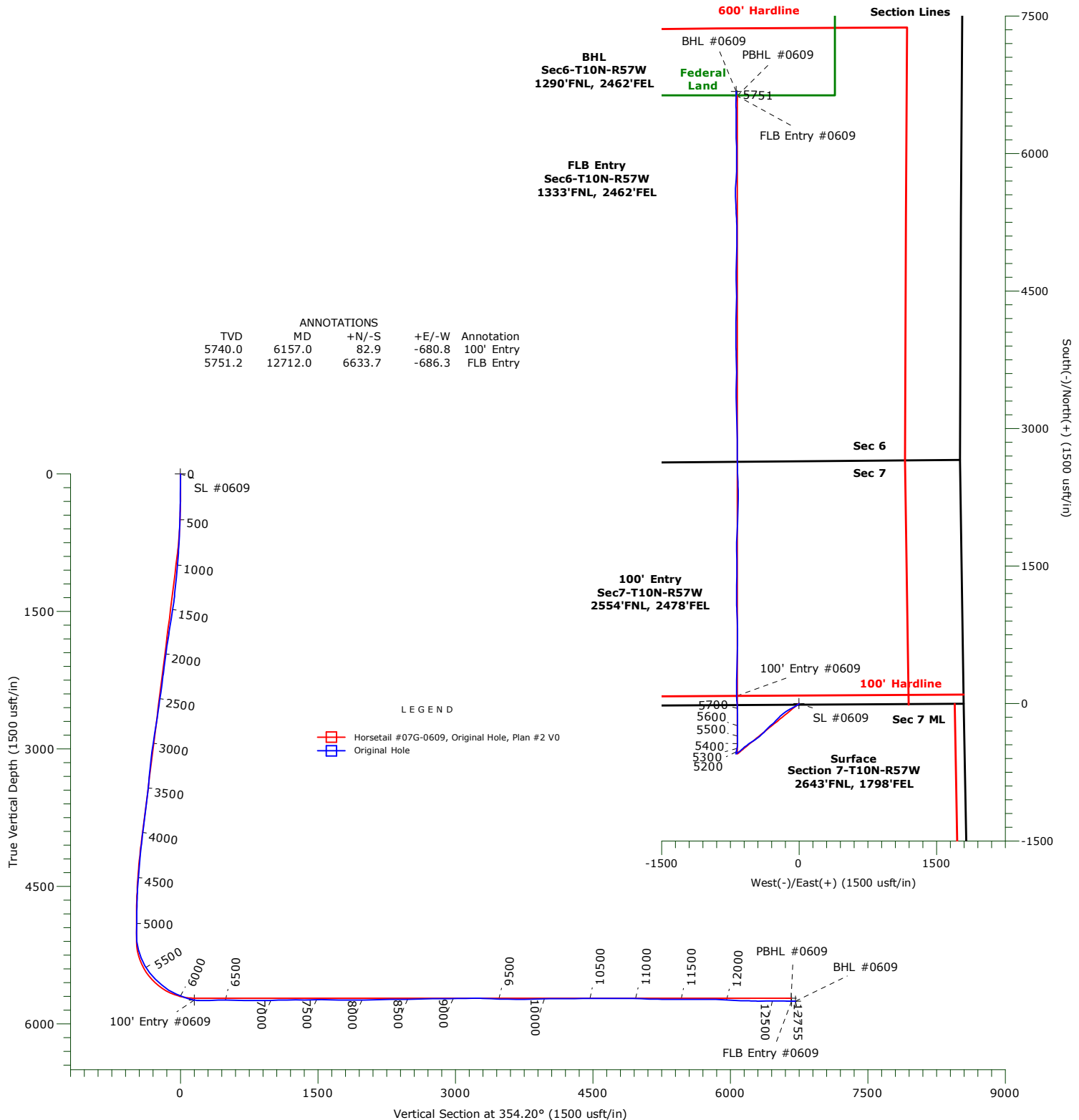




Whiting Petroleum Corp.
Project: Weld County, CO
Site: Sec 7-T10N-R57W
Well: Horsetail #07G-0609
Wellbore: Original Hole
Design: Original Hole



WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SL #0609	0.0	0.0	0.0	1558332.60	3472544.02	40.853505°N	103.791783°W	Point
PBHL #0609	5720.0	6630.1	-673.8	1564948.51	3471742.67	40.871703°N	103.794219°W	Point
100' Entry #0609	5740.0	82.9	-680.8	1558402.37	3471861.72	40.853733°N	103.794244°W	Point
BHL #0609	5751.1	6676.7	-685.4	1564994.89	3471730.15	40.871831°N	103.794261°W	Point
FLB Entry #0609	5751.2	6633.7	-686.3	1564951.89	3471730.09	40.871713°N	103.794265°W	Point

Precision Drilling Corporation

Survey Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #07G-0609
Project:	Weld County, CO	TVD Reference:	KBE @ 4916.0usft
Site:	Sec 7-T10N-R57W	MD Reference:	KBE @ 4916.0usft
Well:	Horsetail #07G-0609	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Single User

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:	1,558,398.04 usft	Latitude:	40.853825°N	
From:	Lat/Long	Easting:	3,469,889.54 usft	Longitude:	103.801372°W	
Position Uncertainty:		0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.10 °

Well	Horsetail #07G-0609					
Well Position	+N-S	0.0 usft	Northing:	1,558,332.61 usft	Latitude:	40.853506°N
	+E-W	0.0 usft	Easting:	3,472,544.02 usft	Longitude:	103.791784°W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,895.0 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	01/06/15	7.88	67.44	53,088

Design	Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	354.20	

Survey Program	Date	03/29/16			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
222.0	12,695.0	Survey #1 (Original Hole)	MWD+IFR+MS	MWD + IFR + Multi Station	
12,755.0	12,755.0	Survey #2 (Original Hole)	BLIND	OWSG BLIND	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
222.0	0.68	106.68	222.0	-0.4	1.3	-0.5	0.31	0.31	0.00	
314.0	0.95	188.48	314.0	-1.3	1.7	-1.5	1.18	0.29	88.91	
405.0	1.40	211.62	405.0	-3.0	1.0	-3.1	0.71	0.49	25.43	
497.0	2.56	226.05	496.9	-5.4	-1.1	-5.2	1.36	1.26	15.68	
589.0	4.30	234.63	588.7	-8.8	-5.4	-8.2	1.97	1.89	9.33	
681.0	5.74	237.44	680.4	-13.3	-12.1	-12.0	1.59	1.57	3.05	
772.0	6.39	235.89	770.9	-18.5	-20.1	-16.4	0.74	0.71	-1.70	
863.0	8.74	238.00	861.1	-25.1	-30.2	-21.9	2.60	2.58	2.32	
955.0	11.66	241.80	951.6	-33.2	-44.3	-28.5	3.26	3.17	4.13	

Precision Drilling Corporation

Survey Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #07G-0609
Project:	Weld County, CO	TVD Reference:	KBE @ 4916.0usft
Site:	Sec 7-T10N-R57W	MD Reference:	KBE @ 4916.0usft
Well:	Horsetail #07G-0609	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Single User

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,046.0	14.27	242.13	1,040.3	-42.7	-62.3	-36.2	2.87	2.87	0.36
1,138.0	14.26	242.07	1,129.5	-53.4	-82.3	-44.8	0.02	-0.01	-0.07
1,229.0	13.55	241.14	1,217.8	-63.7	-101.6	-53.2	0.82	-0.78	-1.02
1,321.0	13.14	240.73	1,307.3	-74.1	-120.1	-61.5	0.46	-0.45	-0.45
1,412.0	15.30	234.83	1,395.5	-86.0	-139.0	-71.6	2.86	2.37	-6.48
1,504.0	15.81	230.92	1,484.1	-100.9	-158.6	-84.4	1.27	0.55	-4.25
1,596.0	16.16	230.61	1,572.6	-117.0	-178.3	-98.3	0.39	0.38	-0.34
1,688.0	16.39	230.40	1,660.9	-133.4	-198.1	-112.6	0.26	0.25	-0.23
1,780.0	14.34	225.20	1,749.6	-149.7	-216.2	-127.0	2.68	-2.23	-5.65
1,872.0	12.84	224.00	1,839.0	-165.0	-231.4	-140.8	1.66	-1.63	-1.30
1,964.0	11.65	222.23	1,928.9	-179.3	-244.8	-153.6	1.36	-1.29	-1.92
2,057.0	11.33	222.53	2,020.1	-193.0	-257.3	-166.0	0.35	-0.34	0.32
2,152.0	10.64	220.34	2,113.3	-206.5	-269.2	-178.3	0.85	-0.73	-2.31
2,246.0	13.33	232.11	2,205.3	-219.8	-283.4	-190.0	3.85	2.86	12.52
2,340.0	13.51	229.54	2,296.7	-233.6	-300.3	-202.0	0.66	0.19	-2.73
2,434.0	13.07	229.19	2,388.2	-247.6	-316.7	-214.4	0.48	-0.47	-0.37
2,529.0	12.19	226.81	2,480.9	-261.5	-332.2	-226.6	1.08	-0.93	-2.51
2,624.0	14.06	223.84	2,573.4	-276.7	-347.5	-240.2	2.09	1.97	-3.13
2,718.0	13.49	223.08	2,664.7	-293.0	-362.9	-254.8	0.64	-0.61	-0.81
2,813.0	12.98	221.79	2,757.2	-309.0	-377.5	-269.3	0.62	-0.54	-1.36
2,907.0	14.21	228.54	2,848.6	-324.5	-393.2	-283.1	2.13	1.31	7.18
3,001.0	13.71	228.19	2,939.8	-339.6	-410.2	-296.4	0.54	-0.53	-0.37
3,096.0	12.64	227.73	3,032.3	-354.1	-426.3	-309.2	1.13	-1.13	-0.48
3,190.0	11.22	227.30	3,124.3	-367.2	-440.6	-320.8	1.51	-1.51	-0.46
3,284.0	12.08	236.56	3,216.3	-378.8	-455.5	-330.9	2.19	0.91	9.85
3,379.0	10.16	236.31	3,309.5	-389.0	-470.8	-339.4	2.02	-2.02	-0.26
3,474.0	11.95	235.60	3,402.8	-399.2	-485.9	-348.0	1.89	1.88	-0.75
3,568.0	15.38	237.09	3,494.1	-411.4	-504.4	-358.4	3.67	3.65	1.59
3,757.0	14.55	235.21	3,676.7	-438.6	-544.9	-381.3	0.51	-0.44	-0.99
3,946.0	12.33	233.28	3,860.5	-464.2	-580.6	-403.2	1.20	-1.17	-1.02
4,040.0	12.45	228.66	3,952.3	-476.9	-596.2	-414.2	1.06	0.13	-4.91
4,158.0	10.32	228.60	4,068.0	-492.3	-613.7	-427.8	1.81	-1.81	-0.05
4,252.0	9.91	226.27	4,160.5	-503.5	-625.9	-437.6	0.62	-0.44	-2.48
4,347.0	8.94	230.33	4,254.2	-513.8	-637.5	-446.8	1.24	-1.02	4.27
4,441.0	8.66	235.05	4,347.1	-522.5	-648.9	-454.3	0.82	-0.30	5.02
4,536.0	7.67	234.09	4,441.2	-530.4	-659.9	-461.0	1.05	-1.04	-1.01
4,630.0	6.68	235.32	4,534.4	-537.1	-669.5	-466.7	1.07	-1.05	1.31
4,724.0	4.42	233.49	4,628.0	-542.4	-676.9	-471.2	2.41	-2.40	-1.95
4,818.0	2.73	248.17	4,721.8	-545.4	-681.9	-473.7	2.03	-1.80	15.62
4,913.0	1.30	238.79	4,816.7	-546.8	-684.9	-474.8	1.54	-1.51	-9.87
5,007.0	1.48	221.66	4,910.7	-548.3	-686.6	-476.1	0.48	0.19	-18.22
5,101.0	1.23	218.52	5,004.7	-550.0	-688.1	-477.6	0.28	-0.27	-3.34
5,195.0	4.72	353.88	5,098.6	-546.9	-689.1	-474.5	6.02	3.71	144.00

Precision Drilling Corporation

Survey Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #07G-0609
Project:	Weld County, CO	TVD Reference:	KBE @ 4916.0usft
Site:	Sec 7-T10N-R57W	MD Reference:	KBE @ 4916.0usft
Well:	Horsetail #07G-0609	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Single User

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,289.0	16.52	15.36	5,190.8	-530.1	-686.0	-458.1	13.03	12.55	22.85
5,383.0	22.38	13.73	5,279.4	-499.8	-678.2	-428.7	6.26	6.23	-1.73
5,478.0	29.25	4.84	5,364.9	-459.0	-671.9	-388.8	8.28	7.23	-9.36
5,572.0	39.47	359.07	5,442.5	-406.1	-670.4	-336.3	11.40	10.87	-6.14
5,667.0	45.34	359.08	5,512.6	-342.1	-671.5	-272.5	6.18	6.18	0.01
5,761.0	49.32	1.32	5,576.3	-273.0	-671.2	-203.8	4.58	4.23	2.38
5,855.0	58.24	0.24	5,631.8	-197.3	-670.2	-128.5	9.53	9.49	-1.15
5,949.0	66.93	359.34	5,675.0	-113.9	-670.5	-45.6	9.28	9.24	-0.96
6,044.0	69.78	356.61	5,710.1	-25.7	-673.7	42.5	4.02	3.00	-2.87
6,138.0	77.69	355.82	5,736.4	64.3	-679.6	132.6	8.45	8.41	-0.84
6,157.0	80.16	356.84	5,740.0	82.9	-680.8	151.3	14.02	12.99	5.39
100' Entry - 100' Entry #0609									
6,233.0	90.05	0.83	5,746.5	158.5	-682.3	226.6	14.02	13.02	5.24
6,327.0	93.11	0.92	5,743.9	252.4	-680.9	320.0	3.26	3.26	0.10
6,421.0	90.71	1.48	5,740.8	346.4	-678.9	413.2	2.62	-2.55	0.60
6,515.0	88.67	2.10	5,741.3	440.3	-676.0	506.4	2.27	-2.17	0.66
6,610.0	88.94	1.55	5,743.3	535.2	-673.0	600.5	0.64	0.28	-0.58
6,705.0	89.16	1.09	5,744.8	630.2	-670.8	694.8	0.54	0.23	-0.48
6,799.0	89.71	0.11	5,745.8	724.2	-669.8	788.2	1.20	0.59	-1.04
6,893.0	90.43	358.78	5,745.6	818.2	-670.7	881.8	1.61	0.77	-1.41
6,988.0	91.14	357.80	5,744.3	913.1	-673.6	976.5	1.27	0.75	-1.03
7,083.0	92.01	357.24	5,741.7	1,008.0	-677.7	1,071.3	1.09	0.92	-0.59
7,177.0	91.20	359.19	5,739.1	1,101.9	-680.6	1,165.1	2.25	-0.86	2.07
7,271.0	89.12	0.70	5,738.8	1,195.9	-680.7	1,258.6	2.73	-2.21	1.61
7,365.0	90.64	0.55	5,739.0	1,289.9	-679.7	1,352.0	1.62	1.62	-0.16
7,459.0	92.32	0.21	5,736.6	1,383.9	-679.0	1,445.4	1.82	1.79	-0.36
7,553.0	88.91	0.15	5,735.6	1,477.8	-678.7	1,538.9	3.63	-3.63	-0.06
7,648.0	88.54	359.00	5,737.7	1,572.8	-679.4	1,633.4	1.27	-0.39	-1.21
7,742.0	88.86	358.29	5,739.8	1,666.8	-681.7	1,727.1	0.83	0.34	-0.76
7,835.0	89.37	2.70	5,741.3	1,759.7	-680.9	1,819.5	4.77	0.55	4.74
7,930.0	90.59	3.08	5,741.3	1,854.6	-676.1	1,913.4	1.35	1.28	0.40
8,024.0	90.78	2.60	5,740.2	1,948.5	-671.4	2,006.4	0.55	0.20	-0.51
8,119.0	91.36	1.98	5,738.4	2,043.4	-667.6	2,100.4	0.89	0.61	-0.65
8,213.0	92.47	0.95	5,735.3	2,137.3	-665.2	2,193.6	1.61	1.18	-1.10
8,307.0	89.74	0.21	5,733.5	2,231.3	-664.3	2,287.0	3.01	-2.90	-0.79
8,401.0	90.18	359.83	5,733.5	2,325.3	-664.2	2,380.5	0.62	0.47	-0.40
8,495.0	91.13	358.41	5,732.5	2,419.2	-665.7	2,474.1	1.82	1.01	-1.51
8,590.0	92.26	357.56	5,729.6	2,514.1	-669.0	2,568.9	1.49	1.19	-0.89
8,681.0	90.99	359.47	5,727.1	2,605.1	-671.4	2,659.6	2.52	-1.40	2.10
8,773.0	91.38	358.29	5,725.2	2,697.0	-673.2	2,751.3	1.35	0.42	-1.28
8,865.0	89.77	0.46	5,724.2	2,789.0	-674.2	2,842.9	2.94	-1.75	2.36
8,956.0	90.14	359.58	5,724.3	2,880.0	-674.1	2,933.4	1.05	0.41	-0.97
9,047.0	90.79	358.73	5,723.6	2,971.0	-675.5	3,024.0	1.18	0.71	-0.93

Precision Drilling Corporation

Survey Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #07G-0609
Project:	Weld County, CO	TVD Reference:	KBE @ 4916.0usft
Site:	Sec 7-T10N-R57W	MD Reference:	KBE @ 4916.0usft
Well:	Horsetail #07G-0609	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Single User

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,139.0	91.84	357.75	5,721.5	3,062.9	-678.3	3,115.8	1.56	1.14	-1.07
9,231.0	89.87	358.29	5,720.1	3,154.9	-681.5	3,207.6	2.22	-2.14	0.59
9,322.0	87.92	359.25	5,721.8	3,245.8	-683.4	3,298.3	2.39	-2.14	1.05
9,413.0	87.45	358.87	5,725.5	3,336.7	-684.9	3,388.9	0.66	-0.52	-0.42
9,505.0	88.29	1.44	5,728.9	3,428.7	-684.7	3,480.3	2.94	0.91	2.79
9,597.0	88.66	0.77	5,731.4	3,520.6	-682.9	3,571.6	0.83	0.40	-0.73
9,688.0	89.39	359.88	5,732.9	3,611.6	-682.4	3,662.1	1.26	0.80	-0.98
9,780.0	90.52	359.23	5,733.0	3,703.6	-683.1	3,753.7	1.42	1.23	-0.71
9,871.0	91.56	358.56	5,731.4	3,794.5	-684.9	3,844.3	1.36	1.14	-0.74
9,963.0	92.29	357.50	5,728.3	3,886.4	-688.0	3,936.1	1.40	0.79	-1.15
10,055.0	90.01	0.11	5,726.4	3,978.4	-689.9	4,027.7	3.77	-2.48	2.84
10,147.0	90.01	359.94	5,726.4	4,070.4	-689.9	4,119.3	0.18	0.00	-0.18
10,239.0	89.99	2.21	5,726.4	4,162.4	-688.2	4,210.6	2.47	-0.02	2.47
10,331.0	90.83	1.76	5,725.7	4,254.3	-685.0	4,301.8	1.04	0.91	-0.49
10,423.0	92.03	0.82	5,723.4	4,346.3	-682.9	4,393.0	1.66	1.30	-1.02
10,514.0	88.77	359.71	5,722.8	4,437.2	-682.5	4,483.5	3.78	-3.58	-1.22
10,606.0	90.03	359.24	5,723.8	4,529.2	-683.3	4,575.1	1.46	1.37	-0.51
10,697.0	91.26	359.16	5,722.7	4,620.2	-684.6	4,665.7	1.35	1.35	-0.09
10,789.0	89.87	1.04	5,721.8	4,712.2	-684.4	4,757.2	2.54	-1.51	2.04
10,881.0	90.64	1.35	5,721.4	4,804.2	-682.5	4,848.6	0.90	0.84	0.34
10,971.0	88.19	1.35	5,722.4	4,894.1	-680.4	4,937.8	2.72	-2.72	0.00
11,063.0	87.77	0.34	5,725.6	4,986.1	-679.0	5,029.2	1.19	-0.46	-1.10
11,152.0	88.27	0.38	5,728.7	5,075.0	-678.5	5,117.6	0.56	0.56	0.04
11,243.0	88.67	359.81	5,731.1	5,166.0	-678.3	5,208.1	0.77	0.44	-0.63
11,334.0	89.75	358.28	5,732.4	5,257.0	-679.9	5,298.7	2.06	1.19	-1.68
11,424.0	91.17	355.78	5,731.6	5,346.8	-684.5	5,388.6	3.19	1.58	-2.78
11,515.0	88.95	357.77	5,731.5	5,437.7	-689.6	5,479.5	3.28	-2.44	2.19
11,607.0	89.94	358.50	5,732.4	5,529.6	-692.6	5,571.3	1.34	1.08	0.79
11,697.0	89.97	2.86	5,732.5	5,619.6	-691.6	5,660.7	4.84	0.03	4.84
11,789.0	90.72	3.82	5,731.9	5,711.4	-686.2	5,751.5	1.32	0.82	1.04
11,880.0	87.14	1.73	5,733.6	5,802.3	-681.8	5,841.5	4.56	-3.93	-2.30
11,972.0	86.90	0.35	5,738.4	5,894.1	-680.1	5,932.7	1.52	-0.26	-1.50
12,063.0	87.38	359.29	5,743.0	5,985.0	-680.4	6,023.1	1.28	0.53	-1.16
12,155.0	88.21	358.31	5,746.5	6,076.9	-682.3	6,114.8	1.40	0.90	-1.07
12,246.0	88.19	357.69	5,749.4	6,167.8	-685.5	6,205.5	0.68	-0.02	-0.68
12,340.0	89.71	1.50	5,751.1	6,261.8	-686.2	6,299.1	4.36	1.62	4.05
12,435.0	90.43	0.41	5,751.0	6,356.8	-684.6	6,393.4	1.38	0.76	-1.15
12,529.0	90.15	358.06	5,750.5	6,450.8	-685.9	6,487.1	2.52	-0.30	-2.50
12,623.0	89.29	0.04	5,751.0	6,544.7	-687.4	6,580.7	2.30	-0.91	2.11
12,695.0	90.17	1.19	5,751.3	6,616.7	-686.6	6,652.3	2.01	1.22	1.60
12,708.7	90.17	1.19	5,751.3	6,630.5	-686.4	6,665.9	0.00	0.00	0.00
PBHL #0609									
12,712.0	90.17	1.19	5,751.2	6,633.7	-686.3	6,669.1	0.00	0.00	0.00
FLB Entry - FLB Entry #0609									

Precision Drilling Corporation

Survey Report

Company:	Whiting Petroleum Corp.	Local Co-ordinate Reference:	Well Horsetail #07G-0609
Project:	Weld County, CO	TVD Reference:	KBE @ 4916.0usft
Site:	Sec 7-T10N-R57W	MD Reference:	KBE @ 4916.0usft
Well:	Horsetail #07G-0609	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	Single User

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,755.0	90.17	1.19	5,751.1	6,676.7	-685.4	6,711.8	0.00	0.00	0.00	
BHL #0609										

Design Targets										
Target Name										
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SL #0609	0.00	0.00	0.0	0.0	0.0	1,558,332.61	3,472,544.02	40.853506°N	103.791784°W	
- actual wellpath hits target center										
- Point										
PBHL #0609	0.00	0.00	5,720.0	6,630.1	-673.8	1,564,948.51	3,471,742.67	40.871703°N	103.794220°W	
- actual wellpath misses target center by 33.7usft at 12708.7usft MD (5751.3 TVD, 6630.5 N, -686.4 E)										
- Point										
100' Entry #0609	0.00	0.00	5,740.0	82.9	-680.8	1,558,402.38	3,471,861.72	40.853733°N	103.794245°W	
- actual wellpath hits target center										
- Point										
BHL #0609	0.00	0.00	5,751.1	6,676.7	-685.4	1,564,994.90	3,471,730.15	40.871831°N	103.794262°W	
- actual wellpath hits target center										
- Point										
FLB Entry #0609	0.00	0.00	5,751.2	6,633.7	-686.3	1,564,951.90	3,471,730.09	40.871713°N	103.794265°W	
- actual wellpath hits target center										
- Point										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
6,157.0	5,740.0	82.9	-680.8	100' Entry	
12,712.0	5,751.2	6,633.7	-686.3	FLB Entry	