

WHITING PETROLEUM CORP.

Weld County, CO

Sec 8-T10N-R57W

Horsetail #08C-1738

Original Hole

Design: Original Hole

Standard Survey Report

15 June, 2016

Precision Drilling Corporation

Survey Report

Company:	WHITING PETROLEUM CORP.	Local Co-ordinate Reference:	Well Horsetail #08C-1738
Project:	Weld County, CO	TVD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Site:	Sec 8-T10N-R57W	MD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Well:	Horsetail #08C-1738	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	COMPASS_ROCKIES

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 8-T10N-R57W		
Site Position:		Northing:	1,561,022.64 usft
From:	Lat/Long	Easting:	3,474,249.13 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13.20 in
		Latitude:	40.8607970°N
		Longitude:	103.7854330°W
		Grid Convergence:	1.11 °

Well	Horsetail #08C-1738		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	4/25/2016	7.83	67.40	52,860

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	182.61	

Survey Program	Date	6/15/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
222.0	16,087.0	Survey #1 (Original Hole)	MWD+IFR1+MS+sag	Fixed:v2:crustal dec & 3-axis correction + sag OWSG BLIND	
16,150.0	16,150.0	Survey #2 (Original Hole)	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	0.79	141.12	222.0	-1.2	1.0	1.1	0.36	0.36	0.00	
313.0	1.01	316.25	313.0	-1.1	0.8	1.1	1.98	0.24	192.45	
405.0	2.58	300.77	404.9	0.5	-1.5	-0.5	1.77	1.71	-16.83	
496.0	4.41	317.36	495.8	4.2	-5.7	-3.9	2.28	2.01	18.23	
588.0	6.23	314.37	587.4	10.3	-11.6	-9.7	2.00	1.98	-3.25	
678.0	8.05	305.89	676.7	17.4	-20.2	-16.4	2.33	2.02	-9.42	
769.0	7.97	306.67	766.8	24.9	-30.5	-23.5	0.15	-0.09	0.86	
860.0	7.31	304.22	857.0	31.9	-40.3	-30.0	0.81	-0.73	-2.69	
951.0	6.87	305.66	947.3	38.3	-49.5	-36.0	0.52	-0.48	1.58	

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Well:	Horsetail #08C-1738	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	COMPASS_ROCKIES

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)
1,042.0	6.51	306.51	1,037.7	44.6	-58.1	-41.9	0.41	-0.40	0.93
1,134.0	6.39	307.22	1,129.1	50.8	-66.3	-47.7	0.16	-0.13	0.77
1,226.0	6.41	309.47	1,220.5	57.1	-74.4	-53.7	0.27	0.02	2.45
1,317.0	6.89	300.19	1,310.9	63.1	-83.0	-59.3	1.29	0.53	-10.20
1,409.0	7.64	302.72	1,402.2	69.2	-92.9	-64.9	0.89	0.82	2.75
1,500.0	8.03	303.80	1,492.3	76.0	-103.3	-71.2	0.46	0.43	1.19
1,591.0	7.95	305.35	1,582.4	83.2	-113.7	-77.9	0.25	-0.09	1.70
1,683.0	8.37	306.46	1,673.5	90.8	-124.3	-85.1	0.49	0.46	1.21
1,774.0	8.24	307.06	1,763.5	98.7	-134.8	-92.4	0.17	-0.14	0.66
1,866.0	8.07	307.59	1,854.6	106.6	-145.2	-99.9	0.20	-0.18	0.58
1,958.0	6.97	309.52	1,945.8	114.1	-154.6	-106.9	1.23	-1.20	2.10
2,117.0	6.26	307.21	2,103.8	125.5	-169.0	-117.7	0.48	-0.45	-1.45
2,212.0	5.93	302.09	2,198.2	131.2	-177.3	-123.0	0.67	-0.35	-5.39
2,306.0	5.81	299.35	2,291.7	136.1	-185.5	-127.5	0.32	-0.13	-2.91
2,400.0	8.59	314.76	2,385.0	143.4	-194.7	-134.4	3.58	2.96	16.39
2,495.0	8.11	311.78	2,479.0	152.9	-204.7	-143.4	0.68	-0.51	-3.14
2,589.0	7.47	309.45	2,572.1	161.2	-214.4	-151.2	0.76	-0.68	-2.48
2,683.0	7.22	309.94	2,665.3	168.8	-223.6	-158.5	0.27	-0.27	0.52
2,776.0	7.01	306.85	2,757.6	176.0	-232.6	-165.2	0.47	-0.23	-3.32
2,966.0	6.77	306.95	2,946.2	189.7	-250.9	-178.1	0.13	-0.13	0.05
3,060.0	6.59	306.31	3,039.6	196.2	-259.6	-184.2	0.21	-0.19	-0.68
3,154.0	6.31	302.66	3,133.0	202.2	-268.3	-189.8	0.53	-0.30	-3.88
3,249.0	5.63	306.67	3,227.5	207.8	-276.5	-195.0	0.84	-0.72	4.22
3,343.0	5.04	311.12	3,321.1	213.3	-283.3	-200.1	0.77	-0.63	4.73
3,437.0	7.02	293.73	3,414.6	218.3	-291.6	-204.8	2.84	2.11	-18.50
3,531.0	6.92	295.98	3,507.9	223.1	-302.0	-209.1	0.31	-0.11	2.39
3,626.0	6.40	294.96	3,602.2	227.8	-311.9	-213.4	0.56	-0.55	-1.07
3,720.0	6.12	296.22	3,695.7	232.2	-321.2	-217.4	0.33	-0.30	1.34
3,815.0	8.13	297.59	3,789.9	237.6	-331.7	-222.2	2.12	2.12	1.44
3,909.0	7.05	295.69	3,883.1	243.2	-342.8	-227.3	1.18	-1.15	-2.02
4,003.0	5.80	299.23	3,976.5	248.0	-352.1	-231.7	1.39	-1.33	3.77
4,121.0	5.30	294.21	4,094.0	253.1	-362.3	-236.4	0.59	-0.42	-4.25
4,216.0	7.74	289.79	4,188.4	257.1	-372.3	-239.9	2.62	2.57	-4.65
4,310.0	6.98	293.13	4,281.6	261.5	-383.5	-243.8	0.93	-0.81	3.55
4,405.0	7.66	298.63	4,375.8	266.8	-394.4	-248.6	1.03	0.72	5.79
4,499.0	6.43	305.51	4,469.1	272.9	-404.2	-254.2	1.58	-1.31	7.32
4,593.0	6.64	303.19	4,562.5	278.9	-413.0	-259.8	0.36	0.22	-2.47
4,687.0	6.25	299.99	4,655.9	284.4	-422.0	-264.9	0.56	-0.41	-3.40
4,781.0	5.44	291.60	4,749.4	288.6	-430.5	-268.7	1.25	-0.86	-8.93
4,875.0	4.47	294.44	4,843.0	291.8	-438.0	-271.5	1.06	-1.03	3.02
4,970.0	4.04	287.17	4,937.8	294.3	-444.6	-273.7	0.73	-0.45	-7.65
5,064.0	3.41	290.91	5,031.6	296.3	-450.4	-275.4	0.72	-0.67	3.98
5,158.0	0.94	219.30	5,125.5	296.7	-453.5	-275.7	3.45	-2.63	-76.18

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Survey

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5,252.0	0.44	251.72	5,219.5	296.0	-454.3	-275.0	0.65	-0.53	34.49
5,347.0	7.10	177.05	5,314.3	290.0	-454.3	-269.0	7.36	7.01	-78.60
5,441.0	16.28	180.07	5,406.2	271.0	-454.1	-250.0	9.78	9.77	3.21
5,535.0	24.92	180.86	5,494.1	237.9	-454.4	-217.0	9.20	9.19	0.84
5,630.0	31.61	178.86	5,577.8	193.0	-454.2	-172.1	7.11	7.04	-2.11
5,724.0	37.69	181.39	5,655.1	139.5	-454.4	-118.7	6.65	6.47	2.69
5,818.0	42.97	179.93	5,726.7	78.7	-455.0	-57.9	5.71	5.62	-1.55
5,913.0	47.91	179.63	5,793.3	11.1	-454.8	9.6	5.20	5.20	-0.32
5,944.0	51.00	177.55	5,813.5	-12.5	-454.2	33.1	11.20	9.97	-6.71
6,007.0	59.68	179.54	5,849.3	-64.2	-452.9	84.8	14.02	13.78	3.16
6,102.0	72.28	180.04	5,887.9	-150.8	-452.6	171.3	13.27	13.26	0.53
6,134.0	76.35	181.09	5,896.5	-181.6	-452.9	202.1	13.11	12.72	3.28
6,171.0	81.76	182.23	5,903.5	-217.9	-454.0	238.4	14.93	14.62	3.08
6,195.0	85.29	182.63	5,906.2	-241.7	-455.0	262.2	14.80	14.71	1.67
6,236.0	90.59	183.26	5,907.7	-282.6	-457.1	303.2	13.02	12.93	1.54
6,290.0	91.33	182.83	5,906.8	-336.6	-460.0	357.2	1.58	1.37	-0.80
6,384.0	90.00	184.14	5,905.7	-430.4	-465.7	451.1	1.99	-1.41	1.39
6,478.0	89.91	182.28	5,905.8	-524.2	-470.9	545.1	1.98	-0.10	-1.98
6,573.0	90.08	182.11	5,905.8	-619.2	-474.6	640.1	0.25	0.18	-0.18
6,667.0	90.51	182.47	5,905.3	-713.1	-478.3	734.1	0.60	0.46	0.38
6,762.0	90.97	180.66	5,904.1	-808.0	-480.9	829.1	1.97	0.48	-1.91
6,856.0	91.29	179.87	5,902.2	-902.0	-481.4	923.0	0.91	0.34	-0.84
6,950.0	92.66	180.24	5,899.0	-995.9	-481.5	1,016.8	1.51	1.46	0.39
7,045.0	90.76	178.42	5,896.2	-1,090.9	-480.3	1,111.6	2.77	-2.00	-1.92
7,139.0	90.20	179.84	5,895.4	-1,184.9	-478.9	1,205.5	1.62	-0.60	1.51
7,233.0	88.54	179.67	5,896.4	-1,278.9	-478.5	1,299.3	1.78	-1.77	-0.18
7,327.0	88.03	179.25	5,899.2	-1,372.8	-477.6	1,393.1	0.70	-0.54	-0.45
7,422.0	88.44	178.78	5,902.1	-1,467.8	-476.0	1,487.9	0.66	0.43	-0.49
7,517.0	89.03	177.70	5,904.2	-1,562.7	-473.1	1,582.6	1.30	0.62	-1.14
7,610.0	90.46	178.74	5,904.7	-1,655.6	-470.2	1,675.3	1.90	1.54	1.12
7,705.0	91.39	178.82	5,903.1	-1,750.6	-468.2	1,770.1	0.98	0.98	0.08
7,799.0	91.64	178.50	5,900.6	-1,844.5	-466.0	1,863.9	0.43	0.27	-0.34
7,893.0	92.51	177.91	5,897.2	-1,938.4	-463.0	1,957.5	1.12	0.93	-0.63
7,988.0	92.01	179.78	5,893.5	-2,033.3	-461.1	2,052.2	2.04	-0.53	1.97
8,082.0	90.26	179.74	5,891.6	-2,127.3	-460.7	2,146.1	1.86	-1.86	-0.04
8,177.0	89.80	179.30	5,891.6	-2,222.3	-459.9	2,241.0	0.67	-0.48	-0.46
8,271.0	90.25	178.48	5,891.5	-2,316.3	-458.1	2,334.8	1.00	0.48	-0.87
8,365.0	89.60	179.07	5,891.7	-2,410.3	-456.1	2,428.5	0.93	-0.69	0.63
8,460.0	89.64	178.80	5,892.3	-2,505.3	-454.3	2,523.3	0.29	0.04	-0.28
8,554.0	89.93	180.75	5,892.6	-2,599.2	-454.0	2,617.2	2.10	0.31	2.07
8,649.0	90.73	180.65	5,892.1	-2,694.2	-455.1	2,712.2	0.85	0.84	-0.11
8,743.0	91.71	179.96	5,890.1	-2,788.2	-455.6	2,806.1	1.27	1.04	-0.73
8,837.0	91.15	179.22	5,887.7	-2,882.2	-455.0	2,899.9	0.99	-0.60	-0.79

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Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
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Survey

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8,931.0	91.23	178.32	5,885.8	-2,976.1	-452.9	2,993.7	0.96	0.09	-0.96
9,025.0	88.69	179.63	5,885.9	-3,070.1	-451.3	3,087.5	3.04	-2.70	1.39
9,120.0	87.87	181.22	5,888.7	-3,165.1	-452.0	3,182.4	1.88	-0.86	1.67
9,214.0	88.37	181.10	5,891.8	-3,259.0	-453.9	3,276.3	0.55	0.53	-0.13
9,308.0	88.90	180.39	5,894.0	-3,353.0	-455.1	3,370.2	0.94	0.56	-0.76
9,402.0	89.72	180.07	5,895.2	-3,446.9	-455.5	3,464.1	0.94	0.87	-0.34
9,497.0	90.68	179.34	5,894.8	-3,541.9	-455.0	3,559.0	1.27	1.01	-0.77
9,591.0	89.23	180.71	5,894.9	-3,635.9	-455.0	3,652.9	2.12	-1.54	1.46
9,686.0	90.48	181.53	5,895.2	-3,730.9	-456.9	3,747.9	1.57	1.32	0.86
9,780.0	89.51	180.44	5,895.2	-3,824.9	-458.5	3,841.8	1.55	-1.03	-1.16
9,874.0	88.52	181.31	5,896.8	-3,918.9	-459.9	3,935.8	1.40	-1.05	0.93
9,969.0	88.42	181.98	5,899.3	-4,013.8	-462.6	4,030.7	0.71	-0.11	0.71
10,064.0	89.15	181.73	5,901.3	-4,108.7	-465.7	4,125.7	0.81	0.77	-0.26
10,158.0	90.08	181.50	5,902.0	-4,202.7	-468.4	4,219.7	1.02	0.99	-0.24
10,252.0	90.08	181.28	5,901.8	-4,296.7	-470.7	4,313.6	0.23	0.00	-0.23
10,346.0	91.06	179.86	5,900.9	-4,390.6	-471.6	4,407.6	1.84	1.04	-1.51
10,441.0	90.65	179.14	5,899.5	-4,485.6	-470.8	4,502.4	0.87	-0.43	-0.76
10,535.0	91.14	180.81	5,898.0	-4,579.6	-470.7	4,596.3	1.85	0.52	1.78
10,630.0	92.30	180.65	5,895.2	-4,674.6	-471.9	4,691.2	1.23	1.22	-0.17
10,724.0	92.71	179.42	5,891.0	-4,768.5	-472.0	4,785.0	1.38	0.44	-1.31
10,818.0	92.28	180.28	5,887.0	-4,862.4	-471.7	4,878.8	1.02	-0.46	0.91
10,910.0	92.08	180.48	5,883.5	-4,954.3	-472.3	4,970.7	0.31	-0.22	0.22
11,001.0	90.86	181.58	5,881.1	-5,045.3	-474.0	5,061.6	1.80	-1.34	1.21
11,092.0	90.65	181.56	5,879.9	-5,136.2	-476.5	5,152.6	0.23	-0.23	-0.02
11,184.0	89.89	180.76	5,879.5	-5,228.2	-478.3	5,244.6	1.20	-0.83	-0.87
11,276.0	89.91	179.96	5,879.6	-5,320.2	-478.9	5,336.5	0.87	0.02	-0.87
11,367.0	90.22	179.26	5,879.5	-5,411.2	-478.3	5,427.4	0.84	0.34	-0.77
11,457.0	90.72	178.67	5,878.8	-5,501.2	-476.7	5,517.2	0.86	0.56	-0.66
11,548.0	89.60	178.75	5,878.6	-5,592.2	-474.6	5,608.0	1.23	-1.23	0.09
11,639.0	89.85	178.68	5,879.0	-5,683.1	-472.6	5,698.8	0.29	0.27	-0.08
11,730.0	90.65	178.77	5,878.6	-5,774.1	-470.6	5,789.5	0.88	0.88	0.10
11,821.0	90.14	178.99	5,878.0	-5,865.1	-468.8	5,880.4	0.61	-0.56	0.24
11,913.0	89.73	178.99	5,878.1	-5,957.1	-467.2	5,972.2	0.45	-0.45	0.00
12,005.0	90.07	178.28	5,878.2	-6,049.0	-465.0	6,063.9	0.86	0.37	-0.77
12,096.0	90.16	179.12	5,878.0	-6,140.0	-462.9	6,154.7	0.93	0.10	0.92
12,188.0	89.15	179.90	5,878.6	-6,232.0	-462.1	6,246.6	1.39	-1.10	0.85
12,280.0	89.53	179.37	5,879.7	-6,324.0	-461.5	6,338.5	0.71	0.41	-0.58
12,371.0	89.83	179.86	5,880.2	-6,415.0	-460.9	6,429.3	0.63	0.33	0.54
12,462.0	88.86	179.57	5,881.2	-6,506.0	-460.5	6,520.2	1.11	-1.07	-0.32
12,553.0	89.20	179.23	5,882.7	-6,597.0	-459.5	6,611.1	0.53	0.37	-0.37
12,645.0	88.99	178.97	5,884.2	-6,689.0	-458.1	6,702.9	0.36	-0.23	-0.28
12,737.0	89.39	181.07	5,885.5	-6,780.9	-458.1	6,794.8	2.32	0.43	2.28
12,829.0	89.46	180.00	5,886.4	-6,872.9	-459.0	6,886.7	1.17	0.08	-1.16
12,921.0	90.51	180.11	5,886.4	-6,964.9	-459.0	6,978.6	1.15	1.14	0.12

Precision Drilling Corporation

Survey Report

Company:	WHITING PETROLEUM CORP.	Local Co-ordinate Reference:	Well Horsetail #08C-1738
Project:	Weld County, CO	TVD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Site:	Sec 8-T10N-R57W	MD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Well:	Horsetail #08C-1738	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	COMPASS_ROCKIES

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)
13,013.0	91.17	179.16	5,885.1	-7,056.9	-458.5	7,070.5	1.26	0.72	-1.03
13,104.0	90.58	181.08	5,883.7	-7,147.9	-458.7	7,161.4	2.21	-0.65	2.11
13,196.0	91.21	180.36	5,882.3	-7,239.9	-459.8	7,253.3	1.04	0.68	-0.78
13,288.0	90.76	180.59	5,880.7	-7,331.9	-460.6	7,345.2	0.55	-0.49	0.25
13,380.0	91.74	180.93	5,878.7	-7,423.8	-461.8	7,437.2	1.13	1.07	0.37
13,472.0	91.33	181.84	5,876.2	-7,515.8	-464.0	7,529.1	1.08	-0.45	0.99
13,563.0	90.38	181.77	5,874.9	-7,606.7	-466.9	7,620.1	1.05	-1.04	-0.08
13,655.0	90.42	182.27	5,874.2	-7,698.7	-470.1	7,712.1	0.55	0.04	0.54
13,747.0	90.91	182.36	5,873.2	-7,790.6	-473.8	7,804.1	0.54	0.53	0.10
13,839.0	88.61	181.10	5,873.5	-7,882.5	-476.6	7,896.0	2.85	-2.50	-1.37
13,930.0	87.68	179.98	5,876.5	-7,973.5	-477.5	7,986.9	1.60	-1.02	-1.23
14,022.0	87.68	179.76	5,880.2	-8,065.4	-477.3	8,078.8	0.24	0.00	-0.24
14,113.0	87.85	179.27	5,883.8	-8,156.3	-476.5	8,169.6	0.57	0.19	-0.54
14,203.0	88.21	179.76	5,886.9	-8,246.3	-475.7	8,259.4	0.68	0.40	0.54
14,294.0	89.41	180.08	5,888.7	-8,337.2	-475.6	8,350.2	1.36	1.32	0.35
14,385.0	88.96	179.47	5,890.0	-8,428.2	-475.2	8,441.1	0.83	-0.49	-0.67
14,476.0	90.45	179.29	5,890.5	-8,519.2	-474.3	8,532.0	1.65	1.64	-0.20
14,568.0	90.17	178.67	5,890.0	-8,611.2	-472.6	8,623.8	0.74	-0.30	-0.67
14,659.0	91.16	177.69	5,888.9	-8,702.2	-469.7	8,714.5	1.53	1.09	-1.08
14,751.0	92.03	180.71	5,886.4	-8,794.1	-468.5	8,806.3	3.41	0.95	3.28
14,843.0	93.11	180.04	5,882.3	-8,886.0	-469.1	8,898.1	1.38	1.17	-0.73
14,934.0	91.87	181.66	5,878.3	-8,976.9	-470.4	8,989.0	2.24	-1.36	1.78
15,026.0	89.65	181.47	5,877.1	-9,068.8	-472.9	9,081.0	2.42	-2.41	-0.21
15,117.0	90.05	180.42	5,877.3	-9,159.8	-474.4	9,171.9	1.23	0.44	-1.15
15,208.0	89.31	180.37	5,877.8	-9,250.8	-475.0	9,262.9	0.82	-0.81	-0.05
15,299.0	90.15	180.23	5,878.3	-9,341.8	-475.5	9,353.8	0.94	0.92	-0.15
15,390.0	90.86	180.11	5,877.5	-9,432.8	-475.8	9,444.7	0.79	0.78	-0.13
15,481.0	91.13	180.88	5,875.9	-9,523.8	-476.6	9,535.6	0.90	0.30	0.85
15,571.0	89.73	179.92	5,875.2	-9,613.8	-477.2	9,625.6	1.89	-1.56	-1.07
15,664.0	89.31	179.69	5,876.0	-9,706.8	-476.9	9,718.4	0.51	-0.45	-0.25
15,756.0	89.85	180.71	5,876.7	-9,798.8	-477.2	9,810.4	1.25	0.59	1.11
15,848.0	89.33	179.94	5,877.3	-9,890.8	-477.7	9,902.3	1.01	-0.57	-0.84
15,939.0	90.02	180.45	5,877.8	-9,981.8	-478.0	9,993.2	0.94	0.76	0.56
16,030.0	90.35	180.99	5,877.5	-10,072.8	-479.2	10,084.1	0.70	0.36	0.59
16,087.0	90.62	180.92	5,877.1	-10,129.8	-480.1	10,141.1	0.49	0.47	-0.12
16,150.0	90.62	180.92	5,876.4	-10,192.8	-481.1	10,204.1	0.00	0.00	0.00

Precision Drilling Corporation

Survey Report

Company:	WHITING PETROLEUM CORP.	Local Co-ordinate Reference:	Well Horsetail #08C-1738
Project:	Weld County, CO	TVD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Site:	Sec 8-T10N-R57W	MD Reference:	4914.2'GL+21'KB @ 4935.2usft (Unit 409)
Well:	Horsetail #08C-1738	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Original Hole	Database:	COMPASS_ROCKIES

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SL 1738 - actual wellpath hits target center - Point	0.00	0.00	0.0	0.0	0.0	1,560,748.88	3,476,519.97	40.8599250°N	103.7772444°W
300' Entry 1738 - actual wellpath hits target center - Point	0.00	0.00	5,788.6	16.2	-454.8	1,560,756.28	3,476,064.93	40.8599695°N	103.7788886°W
BHL 1738 - actual wellpath hits target center - Point	0.00	0.00	5,876.4	-10,192.7	-481.1	1,550,548.70	3,476,236.94	40.8319493°N	103.7789831°W
100' Exit 1738 - actual wellpath hits target center - Point	0.00	0.00	5,876.4	-10,190.7	-481.1	1,550,550.70	3,476,236.93	40.8319548°N	103.7789829°W
PBHL 1738 - actual wellpath misses target center by 31.4usft at 16150.0usft MD (5876.4 TVD, -10192.8 N, -481.1 E) - Point	0.00	0.00	5,900.0	-10,204.6	-464.3	1,550,537.14	3,476,254.00	40.8319167°N	103.7789222°W
7' Casing PT 1738 - actual wellpath hits target center - Point	0.00	0.00	5,907.7	-282.6	-457.1	1,560,457.40	3,476,068.45	40.8591492°N	103.7788969°W

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,906.0	5,788.6	16.3	-454.8	300' Entry
6,236.0	5,907.7	-282.6	-457.1	7' Casing PT
16,148.0	5,876.4	-10,190.8	-481.1	100' Exit

Checked By: _____ Approved By: _____ Date: _____