



# WHITING PETROLEUM CORP.

Project: Weld County, CO  
Site: Sec 8-T10N-R57W  
Well: Horsetail #08B-1712  
Wellbore: Original Hole  
Design: Original Hole



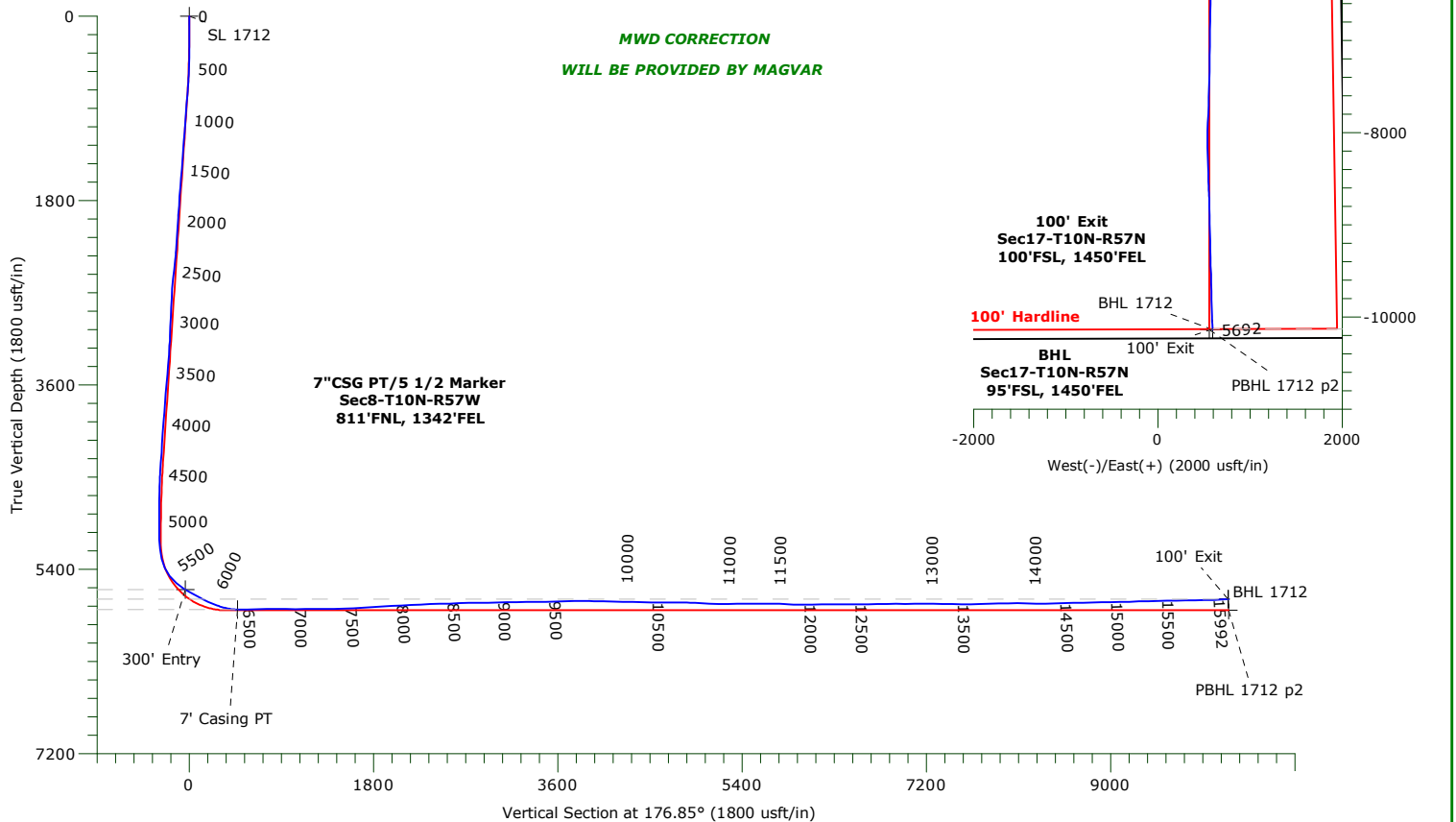
Precision  
Directional Services

## LEGEND

- Horsetail #08B-1712, Original Hole, Plan #2 V0
- Original Hole

## ANNOTATIONS

TVD	MD	Inc	+N/-S	+E/-W	Annotation
5598.17	5738.00	58.71	67.40	542.80	300' Entry
5793.30	6292.00	89.70	-443.94	551.54	7' Casing PT
5691.94	15986.00	93.56	-10131.35	592.58	100' Exit



## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SL 1712	0.00	0.00	0.00	1560719.58	3477667.97	40.8597833°N	103.7730972°W	Point
300' Entry 1712	5598.17	67.40	542.80	1560797.54	3478209.36	40.8599683°N	103.7711350°W	Point
BHL 1712	5691.57	-10137.33	592.92	1550595.72	3478458.19	40.8319597°N	103.7709547°W	Point
100' Exit 1712	5691.94	-10131.35	592.58	1550601.69	3478457.73	40.8319761°N	103.7709559°W	Point
7' Casing PT Entry 1712	5793.30	-443.94	551.54	1560286.46	3478228.05	40.8585648°N	103.7711034°W	Point
PBHL 1712 p2	5801.00	-10137.84	557.31	1550594.51	3478422.60	40.8319583°N	103.7710833°W	Point

# **WHITING PETROLEUM CORP.**

**Weld County, CO**

**Sec 8-T10N-R57W**

**Horsetail #08B-1712**

**Original Hole**

**Design: Original Hole**

## **Standard Survey Report**

**15 June, 2016**

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	COMPASS_ROCKIES

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

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

<b>Well</b>	Horsetail #08B-1712		
<b>Well Position</b>	<b>+N-S</b>	0.0 usft	<b>Northing:</b>
	<b>+E-W</b>	0.0 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<b>Wellbore</b>	Original Hole				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/2/2015	7.85	67.44	53,077

<b>Design</b>	Original Hole				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	176.85	

<b>Survey Program</b>	<b>Date</b> 6/15/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
131.0	15,928.0	Survey #1 (Original Hole)	MWD+IFR1+MS+sag	Fixed:v2:crustal dec & 3-axis correction + sag
15,992.0	15,992.0	Survey #2 (Original Hole)	BLIND	OWSG BLIND

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
131.0	1.10	114.83	131.0	-0.5	1.1	0.6	0.84	0.84	0.00	
223.0	1.69	110.45	223.0	-1.4	3.2	1.5	0.65	0.64	-4.76	
315.0	3.58	80.67	314.9	-1.4	7.3	1.8	2.47	2.05	-32.37	
406.0	4.73	78.95	405.6	-0.2	13.8	1.0	1.27	1.26	-1.89	
497.0	6.57	73.82	496.2	2.0	22.5	-0.7	2.09	2.02	-5.64	
588.0	7.49	60.05	586.5	6.4	32.6	-4.6	2.10	1.01	-15.13	
680.0	9.59	60.76	677.5	13.1	44.5	-10.7	2.29	2.28	0.77	
772.0	9.38	61.35	768.2	20.5	57.8	-17.3	0.25	-0.23	0.64	
863.0	8.72	59.85	858.1	27.5	70.3	-23.6	0.77	-0.73	-1.65	

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	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)
955.0	8.25	58.06	949.1	34.5	81.9	-29.9	0.59	-0.51	-1.95
1,047.0	8.66	53.94	1,040.1	42.0	93.1	-36.9	0.79	0.45	-4.48
1,138.0	8.53	56.67	1,130.1	49.8	104.3	-44.0	0.47	-0.14	3.00
1,230.0	8.38	55.45	1,221.1	57.3	115.5	-50.9	0.25	-0.16	-1.33
1,321.0	8.45	55.85	1,311.1	64.8	126.5	-57.8	0.10	0.08	0.44
1,413.0	8.99	58.17	1,402.0	72.4	138.2	-64.7	0.70	0.59	2.52
1,504.0	8.89	56.66	1,491.9	80.0	150.1	-71.7	0.28	-0.11	-1.66
1,594.0	8.97	57.98	1,580.8	87.6	161.9	-78.6	0.24	0.09	1.47
1,685.0	9.15	57.90	1,670.7	95.2	174.0	-85.5	0.20	0.20	-0.09
1,777.0	8.50	58.76	1,761.6	102.6	186.0	-92.2	0.72	-0.71	0.93
1,868.0	7.60	55.72	1,851.7	109.5	196.7	-98.5	1.09	-0.99	-3.34
1,959.0	6.67	54.57	1,942.0	115.9	206.0	-104.4	1.03	-1.02	-1.26
1,986.0	6.53	55.03	1,968.8	117.7	208.5	-106.1	0.55	-0.52	1.70
2,116.0	6.60	54.54	2,098.0	126.3	220.7	-114.0	0.07	0.05	-0.38
2,210.0	6.30	47.24	2,191.4	132.9	228.9	-120.2	0.93	-0.32	-7.77
2,305.0	6.11	44.64	2,285.8	140.1	236.3	-126.9	0.36	-0.20	-2.74
2,399.0	9.90	49.45	2,378.9	148.9	245.9	-135.1	4.09	4.03	5.12
2,494.0	9.57	45.71	2,472.5	159.7	257.8	-145.3	0.75	-0.35	-3.94
2,588.0	9.52	52.09	2,565.2	169.9	269.5	-154.9	1.13	-0.05	6.79
2,682.0	9.61	49.26	2,657.9	179.8	281.6	-164.1	0.51	0.10	-3.01
2,777.0	8.64	72.99	2,751.7	187.1	294.4	-170.6	4.06	-1.02	24.98
2,871.0	8.56	71.20	2,844.7	191.4	307.8	-174.2	0.30	-0.09	-1.90
2,965.0	8.32	70.60	2,937.7	195.9	320.8	-178.0	0.27	-0.26	-0.64
3,059.0	8.11	69.34	3,030.7	200.5	333.4	-181.9	0.29	-0.22	-1.34
3,154.0	7.74	65.92	3,124.8	205.5	345.6	-186.2	0.63	-0.39	-3.60
3,248.0	9.56	65.11	3,217.7	211.4	358.4	-191.4	1.94	1.94	-0.86
3,342.0	9.31	61.10	3,310.4	218.3	372.2	-197.6	0.75	-0.27	-4.27
3,437.0	9.03	58.70	3,404.2	225.9	385.2	-204.4	0.50	-0.29	-2.53
3,531.0	9.05	57.00	3,497.1	233.8	397.8	-211.6	0.28	0.02	-1.81
3,626.0	9.27	55.51	3,590.9	242.2	410.3	-219.3	0.34	0.23	-1.57
3,720.0	9.23	56.36	3,683.6	250.7	422.8	-227.0	0.15	-0.04	0.90
3,815.0	10.71	62.31	3,777.2	259.0	437.0	-234.6	1.90	1.56	6.26
3,909.0	9.95	58.07	3,869.7	267.3	451.6	-242.1	1.14	-0.81	-4.51
4,003.0	9.24	55.94	3,962.4	275.9	464.8	-249.9	0.84	-0.76	-2.27
4,121.0	9.08	64.98	4,078.9	285.1	481.1	-258.2	1.23	-0.14	7.66
4,216.0	8.95	63.87	4,172.7	291.5	494.5	-263.9	0.23	-0.14	-1.17
4,310.0	8.55	62.40	4,265.6	298.0	507.2	-269.7	0.49	-0.43	-1.56
4,404.0	8.30	60.36	4,358.6	304.6	519.3	-275.6	0.41	-0.27	-2.17
4,498.0	8.20	55.05	4,451.6	311.8	530.7	-282.1	0.82	-0.11	-5.65
4,593.0	4.83	66.55	4,546.0	317.2	540.0	-287.1	3.79	-3.55	12.11
4,687.0	3.06	62.60	4,639.8	320.0	545.8	-289.5	1.90	-1.88	-4.20
4,782.0	2.72	62.41	4,734.6	322.2	550.1	-291.5	0.36	-0.36	-0.20
4,876.0	3.08	86.63	4,828.5	323.4	554.6	-292.4	1.35	0.38	25.77

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	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)
4,971.0	2.90	83.25	4,923.4	323.8	559.5	-292.6	0.27	-0.19	-3.56
5,065.0	1.09	161.07	5,017.3	323.2	562.1	-291.9	3.06	-1.93	82.79
5,159.0	1.09	161.60	5,111.3	321.5	562.7	-290.1	0.01	0.00	0.56
5,254.0	7.17	194.68	5,206.0	314.9	561.5	-283.6	6.62	6.40	34.82
5,348.0	13.35	192.92	5,298.5	298.7	557.6	-267.6	6.58	6.57	-1.87
5,442.0	24.86	186.50	5,387.2	268.4	552.9	-237.6	12.43	12.24	-6.83
5,536.0	38.21	183.81	5,467.1	219.5	548.7	-189.0	14.28	14.20	-2.86
5,630.0	49.00	181.72	5,535.1	154.8	545.7	-124.6	11.58	11.48	-2.22
5,725.0	58.23	182.05	5,591.4	78.5	543.2	-48.5	9.72	9.72	0.35
5,820.0	61.75	180.84	5,638.9	-3.7	541.1	33.5	3.87	3.71	-1.27
5,914.0	61.77	177.23	5,683.4	-86.5	542.5	116.2	3.38	0.02	-3.84
6,009.0	66.02	176.40	5,725.2	-171.7	547.3	201.5	4.54	4.47	-0.87
6,103.0	71.07	176.51	5,759.5	-259.0	552.7	289.0	5.37	5.37	0.12
6,198.0	79.00	180.21	5,784.1	-350.6	555.2	380.6	9.15	8.35	3.89
6,292.0	89.70	184.30	5,793.3	-443.9	551.5	473.6	12.18	11.38	4.35
6,387.0	90.97	178.36	5,792.7	-538.9	549.3	568.2	6.39	1.34	-6.25
6,481.0	92.06	177.21	5,790.3	-632.8	553.0	662.2	1.69	1.16	-1.22
6,576.0	91.07	177.05	5,787.7	-727.6	557.7	757.2	1.06	-1.04	-0.17
6,670.0	89.24	178.02	5,787.4	-821.5	561.8	851.1	2.20	-1.95	1.03
6,764.0	89.39	179.18	5,788.5	-915.5	564.1	945.1	1.24	0.16	1.23
6,859.0	90.06	180.69	5,789.0	-1,010.5	564.2	1,039.9	1.74	0.71	1.59
6,954.0	90.36	180.11	5,788.6	-1,105.5	563.5	1,134.8	0.69	0.32	-0.61
7,048.0	90.17	180.22	5,788.2	-1,199.5	563.2	1,228.6	0.23	-0.20	0.12
7,142.0	90.37	179.45	5,787.8	-1,293.5	563.5	1,322.5	0.85	0.21	-0.82
7,236.0	90.54	179.87	5,787.0	-1,387.5	564.1	1,416.4	0.48	0.18	0.45
7,330.0	92.20	181.18	5,784.8	-1,481.4	563.2	1,510.1	2.25	1.77	1.39
7,425.0	93.04	181.38	5,780.4	-1,576.3	561.1	1,604.7	0.91	0.88	0.21
7,519.0	93.09	180.72	5,775.4	-1,670.1	559.4	1,698.4	0.70	0.05	-0.70
7,614.0	93.73	180.45	5,769.8	-1,765.0	558.4	1,793.0	0.73	0.67	-0.28
7,708.0	92.49	181.18	5,764.7	-1,858.8	557.1	1,886.6	1.53	-1.32	0.78
7,802.0	93.48	181.45	5,759.8	-1,952.7	554.9	1,980.2	1.09	1.05	0.29
7,896.0	92.56	181.06	5,754.8	-2,046.5	552.8	2,073.8	1.06	-0.98	-0.41
7,990.0	93.58	181.38	5,749.8	-2,140.4	550.8	2,167.4	1.14	1.09	0.34
8,085.0	93.42	181.29	5,744.0	-2,235.2	548.6	2,261.9	0.19	-0.17	-0.09
8,179.0	92.10	181.03	5,739.4	-2,329.0	546.7	2,355.5	1.43	-1.40	-0.28
8,273.0	90.57	180.49	5,737.3	-2,423.0	545.5	2,449.3	1.73	-1.63	-0.57
8,367.0	91.64	179.82	5,735.4	-2,517.0	545.2	2,543.1	1.34	1.14	-0.71
8,461.0	93.57	179.83	5,731.2	-2,610.9	545.5	2,636.9	2.05	2.05	0.01
8,555.0	91.42	179.30	5,727.1	-2,704.8	546.2	2,730.7	2.36	-2.29	-0.56
8,649.0	89.55	178.38	5,726.3	-2,798.7	548.1	2,824.6	2.22	-1.99	-0.98
8,744.0	89.98	178.12	5,726.7	-2,893.7	551.0	2,919.6	0.53	0.45	-0.27
8,838.0	91.74	177.80	5,725.3	-2,987.6	554.4	3,013.6	1.90	1.87	-0.34
8,933.0	90.69	178.39	5,723.2	-3,082.5	557.5	3,108.5	1.27	-1.11	0.62

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	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)	
9,026.0	91.42	179.25	5,721.5	-3,175.5	559.5	3,201.5	1.21	0.78	0.92	
9,120.0	91.52	181.06	5,719.1	-3,269.5	559.2	3,295.3	1.93	0.11	1.93	
9,214.0	89.96	182.33	5,717.9	-3,363.4	556.4	3,388.9	2.14	-1.66	1.35	
9,309.0	90.44	182.41	5,717.6	-3,458.3	552.5	3,483.5	0.51	0.51	0.08	
9,403.0	92.38	182.47	5,715.3	-3,552.2	548.5	3,577.0	2.06	2.06	0.06	
9,498.0	92.15	181.81	5,711.5	-3,647.1	545.0	3,671.5	0.74	-0.24	-0.69	
9,592.0	89.06	181.60	5,710.5	-3,741.0	542.2	3,765.2	3.29	-3.29	-0.22	
9,686.0	90.23	181.47	5,711.1	-3,835.0	539.6	3,858.8	1.25	1.24	-0.14	
9,781.0	88.99	180.70	5,711.7	-3,930.0	537.8	3,953.6	1.54	-1.31	-0.81	
9,875.0	88.44	177.89	5,713.9	-4,023.9	539.0	4,047.5	3.05	-0.59	-2.99	
9,969.0	88.82	177.17	5,716.1	-4,117.8	543.0	4,141.4	0.87	0.40	-0.77	
10,064.0	88.68	177.90	5,718.2	-4,212.7	547.1	4,236.4	0.78	-0.15	0.77	
10,158.0	89.17	177.25	5,719.9	-4,306.6	551.1	4,330.4	0.87	0.52	-0.69	
10,252.0	88.60	179.41	5,721.8	-4,400.5	553.8	4,424.3	2.38	-0.61	2.30	
10,347.0	88.53	180.77	5,724.1	-4,495.5	553.7	4,519.1	1.43	-0.07	1.43	
10,441.0	90.59	181.44	5,724.9	-4,589.5	551.9	4,612.9	2.30	2.19	0.71	
10,535.0	89.89	179.69	5,724.5	-4,683.5	551.0	4,706.7	2.01	-0.74	-1.86	
10,629.0	89.72	177.45	5,724.8	-4,777.4	553.3	4,800.6	2.39	-0.18	-2.38	
10,723.0	88.17	179.22	5,726.5	-4,871.4	556.0	4,894.6	2.50	-1.65	1.88	
10,818.0	86.64	179.30	5,730.8	-4,966.3	557.3	4,989.4	1.61	-1.61	0.08	
10,909.0	87.58	178.97	5,735.4	-5,057.1	558.6	5,080.2	1.09	1.03	-0.36	
11,001.0	88.42	180.08	5,738.6	-5,149.1	559.4	5,172.0	1.51	0.91	1.21	
11,093.0	91.10	180.38	5,739.0	-5,241.1	559.0	5,263.9	2.93	2.91	0.33	
11,184.0	90.33	179.75	5,737.9	-5,332.0	558.9	5,354.7	1.09	-0.85	-0.69	
11,275.0	90.93	179.22	5,736.9	-5,423.0	559.7	5,445.6	0.88	0.66	-0.58	
11,366.0	90.02	179.43	5,736.1	-5,514.0	560.8	5,536.5	1.03	-1.00	0.23	
11,458.0	90.16	179.29	5,736.0	-5,606.0	561.8	5,628.4	0.22	0.15	-0.15	
11,550.0	88.61	178.66	5,737.0	-5,698.0	563.5	5,720.4	1.82	-1.68	-0.68	
11,641.0	87.04	178.30	5,740.4	-5,788.9	565.9	5,811.2	1.77	-1.73	-0.40	
11,733.0	88.64	178.96	5,743.9	-5,880.8	568.1	5,903.1	1.88	1.74	0.72	
11,825.0	89.69	179.91	5,745.2	-5,972.8	569.0	5,995.0	1.54	1.14	1.03	
11,916.0	91.47	179.55	5,744.3	-6,063.8	569.4	6,085.9	2.00	1.96	-0.40	
12,008.0	90.37	180.74	5,742.8	-6,155.8	569.2	6,177.7	1.76	-1.20	1.29	
12,099.0	90.32	180.12	5,742.3	-6,246.8	568.5	6,268.6	0.68	-0.05	-0.68	
12,191.0	89.81	179.45	5,742.2	-6,338.8	568.9	6,360.4	0.92	-0.55	-0.73	
12,282.0	89.76	179.23	5,742.5	-6,429.7	569.9	6,451.3	0.25	-0.05	-0.24	
12,372.0	90.18	180.64	5,742.6	-6,519.7	570.0	6,541.2	1.63	0.47	1.57	
12,463.0	90.31	181.39	5,742.2	-6,610.7	568.4	6,632.0	0.84	0.14	0.82	
12,555.0	90.98	181.28	5,741.1	-6,702.7	566.3	6,723.7	0.74	0.73	-0.12	
12,646.0	91.78	181.52	5,738.9	-6,793.6	564.0	6,814.4	0.92	0.88	0.26	
12,737.0	89.44	180.27	5,738.0	-6,884.6	562.6	6,905.1	2.92	-2.57	-1.37	
12,828.0	89.51	180.30	5,738.8	-6,975.6	562.2	6,996.0	0.08	0.08	0.03	
12,919.0	91.20	179.79	5,738.2	-7,066.6	562.1	7,086.8	1.94	1.86	-0.56	
13,011.0	89.80	180.64	5,737.4	-7,158.6	561.7	7,178.7	1.78	-1.52	0.92	

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	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)
13,102.0	89.22	181.04	5,738.2	-7,249.6	560.4	7,269.4	0.77	-0.64	0.44
13,193.0	88.91	181.54	5,739.7	-7,340.6	558.4	7,360.1	0.65	-0.34	0.55
13,286.0	88.68	181.66	5,741.7	-7,433.5	555.8	7,452.8	0.28	-0.25	0.13
13,377.0	89.36	181.26	5,743.2	-7,524.5	553.4	7,543.5	0.87	0.75	-0.44
13,468.0	90.39	180.97	5,743.4	-7,615.4	551.7	7,634.2	1.18	1.13	-0.32
13,559.0	91.40	180.70	5,742.0	-7,706.4	550.3	7,725.0	1.15	1.11	-0.30
13,651.0	93.73	183.36	5,737.9	-7,798.2	547.1	7,816.5	3.84	2.53	2.89
13,742.0	90.43	183.23	5,734.6	-7,889.0	541.9	7,906.9	3.63	-3.63	-0.14
13,835.0	90.94	181.88	5,733.5	-7,981.9	537.7	7,999.4	1.55	0.55	-1.45
13,926.0	89.65	179.75	5,733.0	-8,072.9	536.4	8,090.2	2.74	-1.42	-2.34
14,018.0	88.99	178.79	5,734.1	-8,164.9	537.6	8,182.1	1.27	-0.72	-1.04
14,109.0	89.72	178.13	5,735.1	-8,255.8	540.0	8,273.1	1.08	0.80	-0.73
14,201.0	90.37	178.56	5,735.0	-8,347.8	542.7	8,365.0	0.85	0.71	0.47
14,292.0	90.91	178.74	5,734.0	-8,438.8	544.8	8,456.0	0.63	0.59	0.20
14,384.0	91.41	178.30	5,732.2	-8,530.7	547.2	8,547.9	0.72	0.54	-0.48
14,476.0	92.29	177.07	5,729.2	-8,622.6	550.9	8,639.8	1.64	0.96	-1.34
14,567.0	90.53	178.29	5,727.0	-8,713.5	554.6	8,730.8	2.35	-1.93	1.34
14,658.0	91.28	179.09	5,725.5	-8,804.5	556.7	8,821.7	1.20	0.82	0.88
14,750.0	92.13	178.34	5,722.8	-8,896.4	558.8	8,913.7	1.23	0.92	-0.82
14,841.0	90.43	178.48	5,720.7	-8,987.3	561.3	9,004.6	1.87	-1.87	0.15
14,933.0	90.79	178.90	5,719.8	-9,079.3	563.4	9,096.5	0.60	0.39	0.46
15,023.0	92.08	178.59	5,717.5	-9,169.3	565.4	9,186.5	1.47	1.43	-0.34
15,115.0	91.51	178.91	5,714.6	-9,261.2	567.4	9,278.4	0.71	-0.62	0.35
15,206.0	92.35	178.63	5,711.6	-9,352.1	569.3	9,369.3	0.97	0.92	-0.31
15,298.0	92.07	178.14	5,708.0	-9,444.0	571.9	9,461.2	0.61	-0.30	-0.53
15,390.0	89.87	178.14	5,706.5	-9,535.9	574.9	9,553.1	2.39	-2.39	0.00
15,481.0	90.39	178.37	5,706.3	-9,626.9	577.7	9,644.1	0.62	0.57	0.25
15,573.0	90.75	179.37	5,705.3	-9,718.9	579.5	9,736.0	1.16	0.39	1.09
15,664.0	91.24	178.52	5,703.8	-9,809.8	581.2	9,827.0	1.08	0.54	-0.93
15,755.0	90.92	178.50	5,702.0	-9,900.8	583.5	9,917.9	0.35	-0.35	-0.02
15,847.0	92.15	178.50	5,699.6	-9,992.7	585.9	10,009.8	1.34	1.34	0.00
15,928.0	93.56	176.74	5,695.5	-10,073.6	589.3	10,090.7	2.78	1.74	-2.17
15,992.0	93.56	176.74	5,691.6	-10,137.3	592.9	10,154.6	0.00	0.00	0.00

# Precision Drilling Corporation

## Survey Report

<b>Company:</b>	WHITING PETROLEUM CORP.	<b>Local Co-ordinate Reference:</b>	Well Horsetail #08B-1712
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Site:</b>	Sec 8-T10N-R57W	<b>MD Reference:</b>	4890'GL+21'KB @ 4911.0usft (Unit 409)
<b>Well:</b>	Horsetail #08B-1712	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Original Hole	<b>Database:</b>	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 1712 - actual wellpath hits target center - Point	0.00	0.00	0.0	0.0	0.0	1,560,719.58	3,477,667.97	40.8597833°N	103.7730972°W
300' Entry 1712 - actual wellpath hits target center - Point	0.00	0.00	5,598.2	67.4	542.8	1,560,797.54	3,478,209.36	40.8599683°N	103.7711350°W
BHL 1712 - actual wellpath hits target center - Point	0.00	0.00	5,691.6	-10,137.3	592.9	1,550,595.72	3,478,458.19	40.8319597°N	103.7709547°W
100' Exit 1712 - actual wellpath hits target center - Point	0.00	0.00	5,691.9	-10,131.3	592.6	1,550,601.69	3,478,457.73	40.8319762°N	103.7709559°W
7" Casing PT Entry 17 - actual wellpath hits target center - Point	0.00	0.00	5,793.3	-443.9	551.5	1,560,286.47	3,478,228.05	40.8585648°N	103.7711034°W
PBHL 1712 p2 - actual wellpath misses target center by 114.8usft at 15983.7usft MD (5692.1 TVD, -10129.1 N, 592.4 E) - Point	0.00	0.00	5,801.0	-10,137.8	557.3	1,550,594.52	3,478,422.60	40.8319583°N	103.7710833°W

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,738.0	5,598.2	67.4	542.8	300' Entry
6,292.0	5,793.3	-443.9	551.5	7' Casing PT
15,986.0	5,691.9	-10,131.3	592.6	100' Exit

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_