

# Whiting Oil and Gas Corporation

Weld County, CO

Sec. 30-T10N-R57W (Horsetail #30F Pad)

Horsetail #30F-1944

Plan C

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

07 October, 2014

Well Coordinates: 1,542,709.17 N, 3,471,579.10 E (40° 48' 38.46" N, 103° 47' 46.88" W)

Ground Level: 4,780.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Horsetail #30F-1944

KB 17 ft @ 4797.00usft (Xtreme 18)

N

True

API - US Survey Feet - Custom

## HALLIBURTON

**Design Report for Horsetail #30F-1944 - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
139.00	0.32	320.95	139.00	0.30	-0.24	0.31	0.23
<b>First Sperry MWD Survey @ 139.00 ft</b>							
231.00	0.70	338.08	231.00	1.02	-0.62	1.04	0.44
323.00	0.69	328.85	322.99	2.02	-1.11	2.05	0.12
415.00	0.44	338.86	414.98	2.82	-1.53	2.86	0.29
507.00	0.12	78.08	506.98	3.17	-1.56	3.21	0.52
599.00	0.96	197.36	598.98	2.45	-1.70	2.50	1.11
691.00	2.55	193.04	690.93	-0.27	-2.39	-0.21	1.73
783.00	3.67	193.88	782.80	-5.13	-3.56	-5.03	1.22
875.00	4.82	198.03	874.54	-11.66	-5.46	-11.51	1.29
967.00	6.02	198.48	966.13	-19.91	-8.18	-19.68	1.31
1,060.00	6.80	197.54	1,058.55	-29.79	-11.39	-29.47	0.85
1,152.00	8.52	201.26	1,149.72	-41.33	-15.50	-40.90	1.94
1,243.00	9.61	200.94	1,239.59	-54.71	-20.66	-54.13	1.20
1,335.00	11.14	201.36	1,330.08	-70.16	-26.64	-69.41	1.67
1,427.00	12.97	203.82	1,420.05	-87.88	-34.05	-86.93	2.07
1,539.00	11.60	201.24	1,529.48	-109.88	-43.21	-108.66	1.32
1,615.00	13.08	195.54	1,603.73	-125.29	-48.28	-123.93	2.52
1,707.00	15.58	195.04	1,692.86	-147.25	-54.27	-145.72	2.72
1,798.00	14.76	184.42	1,780.70	-170.62	-58.34	-168.97	3.18
1,889.00	12.48	195.34	1,869.15	-191.66	-61.84	-189.91	3.77
1,982.00	11.72	196.39	1,960.08	-210.42	-67.16	-208.51	0.85
2,073.00	13.31	189.82	2,048.92	-229.61	-71.55	-227.58	2.34
2,165.00	13.76	187.35	2,138.37	-250.89	-74.76	-248.77	0.80
2,256.00	11.91	192.09	2,227.09	-270.81	-78.11	-268.59	2.34
2,348.00	11.49	192.04	2,317.18	-289.05	-82.01	-286.72	0.46
2,440.00	13.06	195.15	2,407.08	-308.05	-86.64	-305.58	1.85
2,532.00	12.83	195.64	2,496.74	-327.92	-92.11	-325.30	0.28
2,624.00	12.79	195.79	2,586.45	-347.56	-97.64	-344.78	0.06
2,716.00	13.01	195.71	2,676.13	-367.32	-103.21	-364.39	0.24
2,808.00	12.66	195.65	2,765.83	-387.00	-108.73	-383.91	0.38
2,899.00	12.30	194.99	2,854.68	-405.97	-113.93	-402.72	0.43
2,991.00	11.72	194.47	2,944.66	-424.48	-118.80	-421.10	0.64
3,083.00	12.63	194.97	3,034.59	-443.24	-123.73	-439.72	1.00
3,175.00	11.85	196.27	3,124.50	-462.03	-128.98	-458.36	0.90
3,267.00	11.61	194.97	3,214.58	-480.04	-134.02	-476.22	0.39
3,360.00	13.55	194.48	3,305.34	-499.63	-139.16	-495.67	2.09
3,452.00	13.33	196.02	3,394.82	-520.26	-144.78	-516.14	0.46
3,544.00	13.74	196.71	3,484.27	-540.92	-150.85	-536.62	0.48
3,636.00	14.06	197.16	3,573.58	-562.06	-157.29	-557.58	0.37
3,727.00	13.77	199.20	3,661.90	-582.85	-164.11	-578.18	0.63
3,820.00	13.11	201.28	3,752.36	-603.13	-171.58	-598.25	0.88
3,912.00	12.67	199.90	3,842.04	-622.34	-178.80	-617.26	0.58
4,003.00	11.82	196.01	3,930.97	-640.68	-184.77	-635.43	1.30
4,095.00	10.91	197.14	4,021.17	-658.06	-189.93	-652.66	1.02
4,187.00	9.58	194.08	4,111.70	-673.81	-194.36	-668.28	1.56
4,279.00	8.60	195.55	4,202.54	-687.86	-198.07	-682.23	1.09
4,371.00	6.68	184.84	4,293.72	-699.82	-200.36	-694.12	2.59
4,462.00	5.22	177.72	4,384.23	-709.23	-200.64	-703.52	1.79

**Design Report for Horsetail #30F-1944 - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,553.00	4.01	177.84	4,474.94	-716.55	-200.36	-710.84	1.33
4,646.00	2.14	204.24	4,567.80	-721.38	-200.95	-715.66	2.47
4,737.00	2.17	170.64	4,658.74	-724.63	-201.37	-718.90	1.37
4,829.00	2.14	168.17	4,750.68	-728.03	-200.73	-722.31	0.11
4,921.00	2.08	166.08	4,842.61	-731.33	-199.98	-725.63	0.11
5,012.00	0.32	74.95	4,933.59	-732.87	-199.33	-727.19	2.32
5,103.00	4.69	9.62	5,024.49	-729.13	-198.47	-723.48	5.02
5,196.00	24.46	6.89	5,114.05	-706.04	-195.49	-700.47	21.27
5,280.00	37.84	0.72	5,185.79	-662.80	-193.07	-657.32	16.36
5,310.00	37.92	0.30	5,209.47	-644.38	-192.91	-638.91	0.90
5,340.00	38.89	0.29	5,232.98	-625.75	-192.81	-620.28	3.23
5,368.00	40.22	0.94	5,254.57	-607.92	-192.62	-602.47	4.97
5,398.00	41.03	1.92	5,277.34	-588.39	-192.13	-582.96	3.44
5,428.00	41.93	1.90	5,299.81	-568.53	-191.47	-563.13	3.00
5,457.00	41.95	1.46	5,321.39	-549.16	-190.90	-543.77	1.02
5,486.00	41.75	2.07	5,342.99	-529.82	-190.30	-524.46	1.56
5,515.00	41.58	1.63	5,364.65	-510.55	-189.68	-505.21	1.17
5,544.00	41.82	1.52	5,386.31	-491.27	-189.15	-485.95	0.87
5,574.00	43.87	1.03	5,408.30	-470.87	-188.70	-465.58	6.92
5,603.00	45.69	0.36	5,428.88	-450.45	-188.45	-445.17	6.48
5,633.00	48.58	359.34	5,449.29	-428.46	-188.51	-423.19	9.95
5,662.00	50.80	359.03	5,468.05	-406.35	-188.83	-401.08	7.70
5,691.00	52.56	358.59	5,486.03	-383.61	-189.30	-378.33	6.18
5,720.00	55.33	358.05	5,503.10	-360.17	-189.99	-354.88	9.67
5,750.00	58.42	357.81	5,519.49	-335.07	-190.90	-329.76	10.32
5,779.00	61.31	358.25	5,534.05	-310.01	-191.76	-304.69	10.05
5,810.00	63.11	358.58	5,548.50	-282.59	-192.52	-277.26	5.88
5,840.00	63.14	358.46	5,562.06	-255.84	-193.21	-250.50	0.37
5,870.00	64.66	358.78	5,575.26	-228.91	-193.86	-223.56	5.16
5,900.00	67.05	359.25	5,587.53	-201.54	-194.33	-196.19	8.09
5,930.00	70.03	359.05	5,598.50	-173.63	-194.74	-168.28	9.95
5,959.00	72.86	358.89	5,607.73	-146.14	-195.24	-140.79	9.77
5,989.00	76.28	358.98	5,615.71	-117.23	-195.77	-111.87	11.40
6,019.00	80.18	359.59	5,621.83	-87.87	-196.14	-82.51	13.15
6,049.00	82.15	0.13	5,626.44	-58.23	-196.21	-52.88	6.80
6,098.00	87.13	1.50	5,631.01	-9.46	-195.52	-4.15	10.54
6,186.00	89.78	1.14	5,633.39	78.47	-193.49	83.70	3.04
6,272.00	91.39	0.96	5,632.51	164.45	-191.91	169.60	1.88
6,360.00	89.69	0.23	5,631.68	252.44	-191.00	257.53	2.10
6,445.00	88.09	358.99	5,633.33	337.42	-191.58	342.49	2.38
6,535.00	89.97	357.03	5,634.85	427.34	-194.70	432.47	3.02
6,624.00	89.60	355.18	5,635.18	516.13	-200.75	521.39	2.12
6,714.00	89.48	354.32	5,635.91	605.75	-208.98	611.20	0.96
6,798.00	89.72	355.62	5,636.49	689.42	-216.35	695.04	1.57
6,885.00	90.12	357.59	5,636.61	776.26	-221.50	781.99	2.31
6,975.00	90.98	0.99	5,635.75	866.24	-222.62	871.96	3.90
7,064.00	92.62	3.02	5,632.95	955.13	-219.50	960.74	2.93
7,151.00	91.23	1.64	5,630.03	1,042.01	-215.97	1,047.49	2.25
7,240.00	89.69	1.04	5,629.32	1,130.98	-213.89	1,136.37	1.86
7,285.00	89.51	359.74	5,629.63	1,175.97	-213.58	1,181.34	2.92
7,328.00	89.75	359.38	5,629.91	1,218.97	-213.91	1,224.33	1.01

**Design Report for Horsetail #30F-1944 - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,370.00	89.51	359.60	5,630.18	1,260.97	-214.29	1,266.32	0.78
7,415.00	89.41	0.55	5,630.60	1,305.97	-214.23	1,311.30	2.12
7,503.00	90.38	0.88	5,630.77	1,393.96	-213.13	1,399.23	1.16
7,547.00	89.41	2.03	5,630.85	1,437.94	-212.01	1,443.17	3.42
7,592.00	89.91	1.30	5,631.11	1,482.92	-210.70	1,488.10	1.97
7,682.00	88.21	1.42	5,632.59	1,572.88	-208.57	1,577.96	1.89
7,723.00	88.36	0.66	5,633.82	1,613.86	-207.83	1,618.90	1.89
7,768.00	88.92	1.54	5,634.88	1,658.83	-206.96	1,663.84	2.32
7,813.00	90.09	2.51	5,635.27	1,703.80	-205.37	1,708.75	3.38
7,858.00	90.99	2.59	5,634.85	1,748.76	-203.37	1,753.63	2.01
7,947.00	90.19	1.47	5,633.93	1,837.69	-200.22	1,842.45	1.55
7,992.00	90.10	1.36	5,633.82	1,882.68	-199.11	1,887.39	0.32
8,037.00	89.70	1.34	5,633.90	1,927.67	-198.05	1,932.33	0.89
8,082.00	90.71	1.65	5,633.74	1,972.65	-196.87	1,977.27	2.35
8,126.00	89.75	0.15	5,633.56	2,016.64	-196.18	2,021.23	4.05
8,171.00	88.45	358.66	5,634.27	2,061.63	-196.65	2,066.21	4.39
8,214.00	88.77	358.23	5,635.31	2,104.60	-197.81	2,109.20	1.25
8,303.00	89.20	357.80	5,636.89	2,193.54	-200.90	2,198.18	0.68
8,391.00	89.01	356.32	5,638.26	2,281.41	-205.41	2,286.14	1.70
8,480.00	90.59	359.02	5,638.57	2,370.32	-209.03	2,375.12	3.51
8,573.00	90.00	358.24	5,638.09	2,463.29	-211.25	2,468.12	1.05
8,665.00	90.15	358.94	5,637.97	2,555.27	-213.51	2,560.12	0.78
8,757.00	90.03	0.20	5,637.83	2,647.26	-214.20	2,652.10	1.38
8,849.00	89.85	0.19	5,637.92	2,739.26	-213.89	2,744.06	0.20
8,941.00	91.39	1.98	5,636.93	2,831.23	-212.15	2,835.95	2.57
9,033.00	92.90	1.72	5,633.49	2,923.12	-209.18	2,927.72	1.67
9,125.00	90.55	1.93	5,630.72	3,015.02	-206.25	3,019.51	2.56
9,217.00	89.29	1.40	5,630.84	3,106.98	-203.58	3,111.36	1.49
9,309.00	89.48	1.18	5,631.83	3,198.95	-201.51	3,203.24	0.32
9,401.00	86.57	359.19	5,635.00	3,290.88	-201.21	3,295.13	3.83
9,494.00	88.46	358.22	5,639.03	3,383.77	-203.31	3,388.04	2.28
9,541.00	88.80	358.19	5,640.16	3,430.73	-204.78	3,435.02	0.73
9,633.00	90.95	359.58	5,640.36	3,522.70	-206.57	3,527.01	2.78
9,677.00	91.05	359.89	5,639.59	3,566.70	-206.78	3,571.00	0.74
9,724.00	91.20	2.26	5,638.67	3,613.68	-205.90	3,617.93	5.05
9,769.00	91.94	2.75	5,637.44	3,658.62	-203.93	3,662.80	1.97
9,815.00	90.80	0.34	5,636.34	3,704.58	-202.69	3,708.72	5.79
9,860.00	89.72	359.26	5,636.13	3,749.58	-202.85	3,753.70	3.39
9,951.00	89.78	359.49	5,636.53	3,840.57	-203.84	3,844.69	0.26
10,043.00	90.40	359.09	5,636.38	3,932.57	-204.98	3,936.68	0.80
10,090.00	91.54	359.48	5,635.59	3,979.55	-205.57	3,983.67	2.56
10,135.00	90.83	359.19	5,634.66	4,024.54	-206.09	4,028.65	1.70
10,226.00	89.13	358.42	5,634.69	4,115.52	-207.99	4,119.65	2.05
10,317.00	90.70	1.35	5,634.82	4,206.50	-208.17	4,210.61	3.65
10,410.00	89.15	0.59	5,634.95	4,299.49	-206.59	4,303.51	1.86
10,501.00	90.56	0.00	5,635.18	4,390.48	-206.13	4,394.46	1.68
10,593.00	90.40	2.37	5,634.41	4,482.45	-204.22	4,486.35	2.58
10,684.00	88.37	359.76	5,635.38	4,573.42	-202.53	4,577.23	3.63
10,776.00	88.82	359.34	5,637.64	4,665.39	-203.25	4,669.19	0.67
10,868.00	89.38	358.79	5,639.08	4,757.37	-204.76	4,761.17	0.85

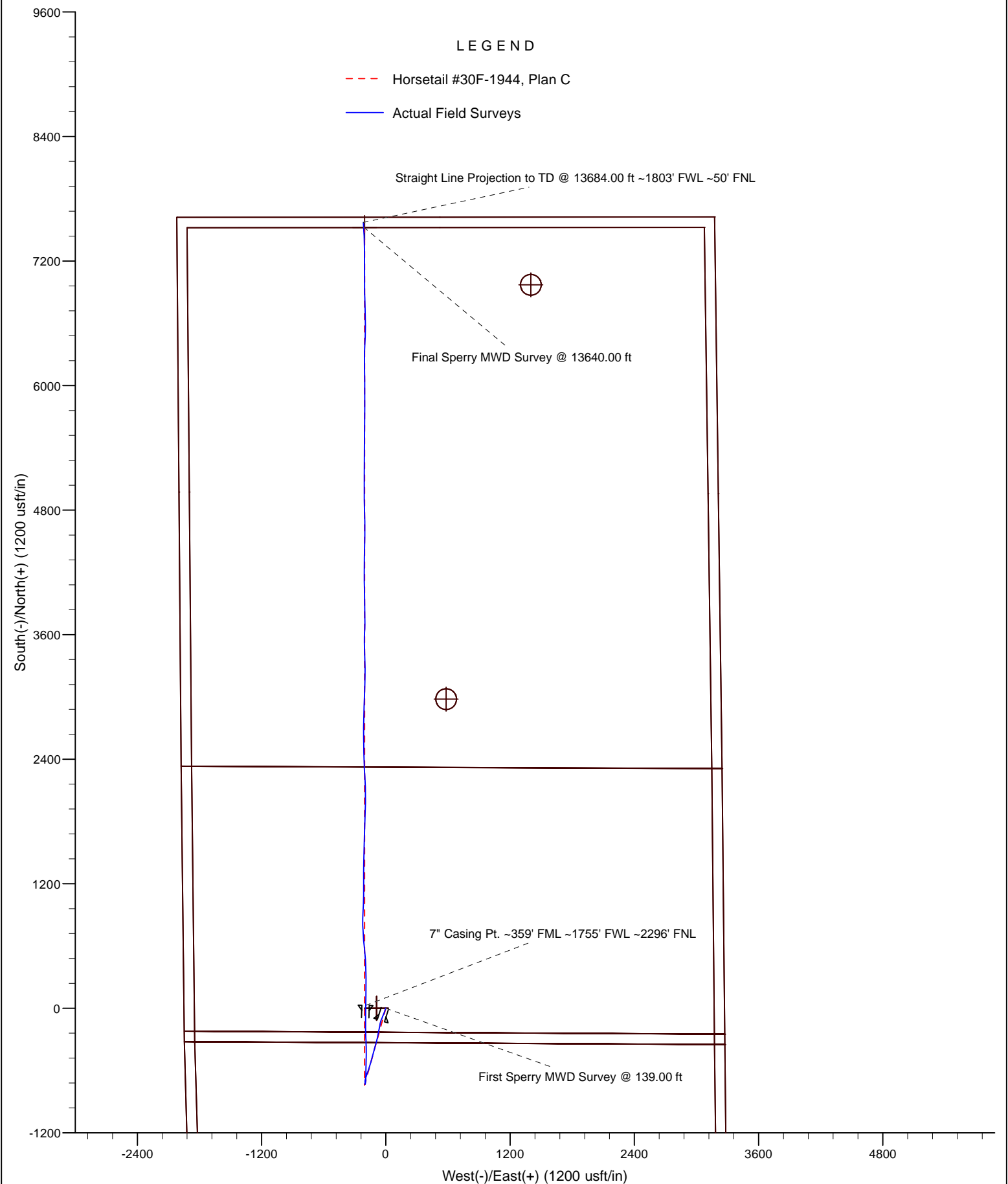
**Design Report for Horsetail #30F-1944 - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
10,960.00	89.26	358.63	5,640.18	4,849.34	-206.83	4,853.16	0.22
11,052.00	90.42	359.69	5,640.43	4,941.32	-208.17	4,945.15	1.71
11,144.00	89.91	359.64	5,640.17	5,033.32	-208.71	5,037.13	0.56
11,236.00	90.95	0.27	5,639.48	5,125.32	-208.79	5,129.09	1.32
11,327.00	91.11	0.93	5,637.84	5,216.30	-207.83	5,220.02	0.75
11,419.00	91.42	359.73	5,635.81	5,308.27	-207.30	5,311.94	1.35
11,511.00	89.81	0.49	5,634.82	5,400.26	-207.13	5,403.89	1.94
11,603.00	89.01	1.22	5,635.77	5,492.24	-205.75	5,495.81	1.18
11,695.00	88.33	359.95	5,637.90	5,584.21	-204.81	5,587.71	1.57
11,788.00	89.75	0.95	5,639.46	5,677.19	-204.08	5,680.64	1.87
11,834.00	89.85	0.50	5,639.62	5,723.19	-203.50	5,726.60	1.00
11,880.00	90.12	359.85	5,639.64	5,769.19	-203.36	5,772.58	1.53
11,926.00	90.82	0.13	5,639.26	5,815.19	-203.37	5,818.56	1.64
11,972.00	91.53	359.55	5,638.32	5,861.18	-203.50	5,864.54	1.99
12,064.00	90.09	359.88	5,637.01	5,953.16	-203.95	5,956.51	1.61
12,156.00	90.95	359.03	5,636.18	6,045.15	-204.83	6,048.49	1.31
12,202.00	91.29	359.09	5,635.28	6,091.14	-205.58	6,094.47	0.75
12,248.00	90.19	0.11	5,634.69	6,137.13	-205.91	6,140.46	3.26
12,294.00	90.52	359.81	5,634.40	6,183.13	-205.94	6,186.44	0.97
12,340.00	90.35	359.97	5,634.05	6,229.13	-206.03	6,232.43	0.51
12,431.00	90.34	0.43	5,633.50	6,320.13	-205.71	6,323.38	0.51
12,523.00	89.75	3.54	5,633.43	6,412.06	-202.52	6,415.19	3.44
12,615.00	88.43	1.76	5,634.89	6,503.94	-198.27	6,506.93	2.41
12,684.00	89.85	0.07	5,635.93	6,572.92	-197.17	6,575.85	3.20
12,730.00	90.24	358.86	5,635.89	6,618.92	-197.60	6,621.85	2.76
12,821.00	91.84	358.29	5,634.24	6,709.87	-199.86	6,712.83	1.87
12,958.00	89.20	358.74	5,633.00	6,846.81	-203.41	6,849.81	1.95
13,003.00	89.35	359.15	5,633.57	6,891.80	-204.24	6,894.80	0.97
13,050.00	89.84	359.68	5,633.90	6,938.79	-204.72	6,941.79	1.54
13,096.00	89.62	0.15	5,634.12	6,984.79	-204.79	6,987.78	1.13
13,141.00	89.30	359.83	5,634.54	7,029.79	-204.79	7,032.76	1.01
13,187.00	89.32	359.80	5,635.09	7,075.79	-204.94	7,078.74	0.08
13,280.00	90.44	359.38	5,635.29	7,168.78	-205.61	7,171.72	1.29
13,371.00	90.85	0.09	5,634.26	7,259.78	-206.03	7,262.69	0.90
13,462.00	90.86	358.49	5,632.91	7,350.76	-207.16	7,353.67	1.76
13,554.00	91.60	358.10	5,630.93	7,442.69	-209.89	7,445.65	0.91
13,640.00	91.76	356.67	5,628.41	7,528.56	-213.81	7,531.59	1.67
<b>Final Sperry MWD Survey @ 13640.00 ft</b>							
13,684.00	91.76	356.67	5,627.06	7,572.47	-216.37	7,575.55	0.00
<b>Straight Line Projection to TD @ 13684.00 ft</b>							

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
139.00	139.00	0.30	-0.24	First Sperry MWD Survey @ 139.00 ft
13,640.00	5,628.41	7,528.56	-213.81	Final Sperry MWD Survey @ 13640.00 ft
13,684.00	5,627.06	7,572.47	-216.37	Straight Line Projection to TD @ 13684.00 ft

# Whiting Oil and Gas Corporation



Project: Weld County, CO

Site: Sec. 30-T10N-R57W (Horsetail #30F Pad)  
Well: Horsetail #30F-1944

# Whiting Oil and Gas Corporation

