

Whiting Oil and Gas Corporation

Weld County, CO
Sec. 30-T10N-R57W
Horsetail #30F-1943

Plan A

Plan: Rev A0

Sperry Drilling Services

Proposal Report

21 November, 2013

Well Coordinates: 1,542,708.64 N, 3,471,549.11 E (40° 48' 38.46" N, 103° 47' 47.27" W)

Ground Level: 4,781.70 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-1943

KB 22 ft @ 4803.70usft (Frontier 26)

N

True

API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO
Site: Sec. 30-T10N-R57W
Well: Horsetail #30F-1943
Wellbore: Plan A
Plan: Rev A0

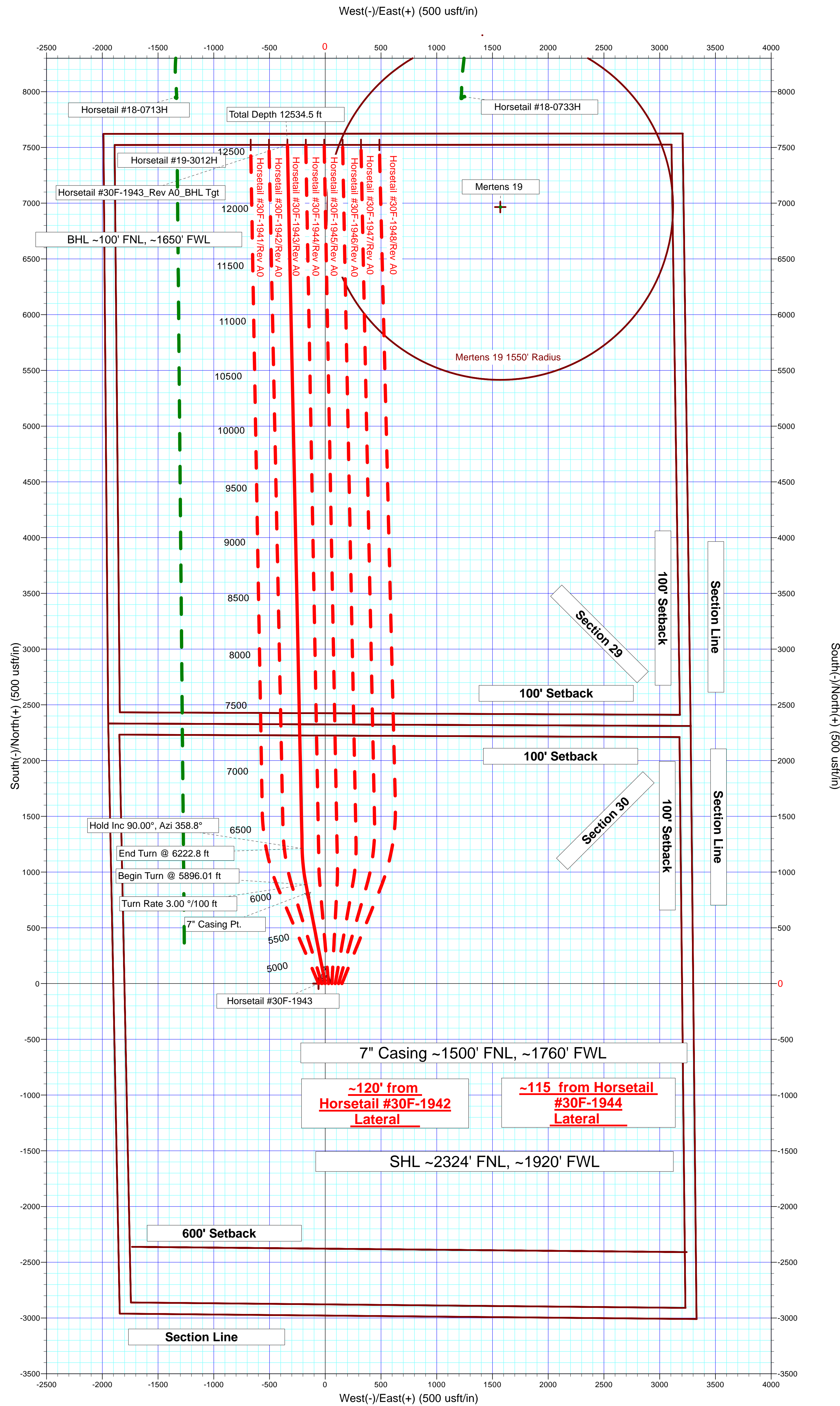
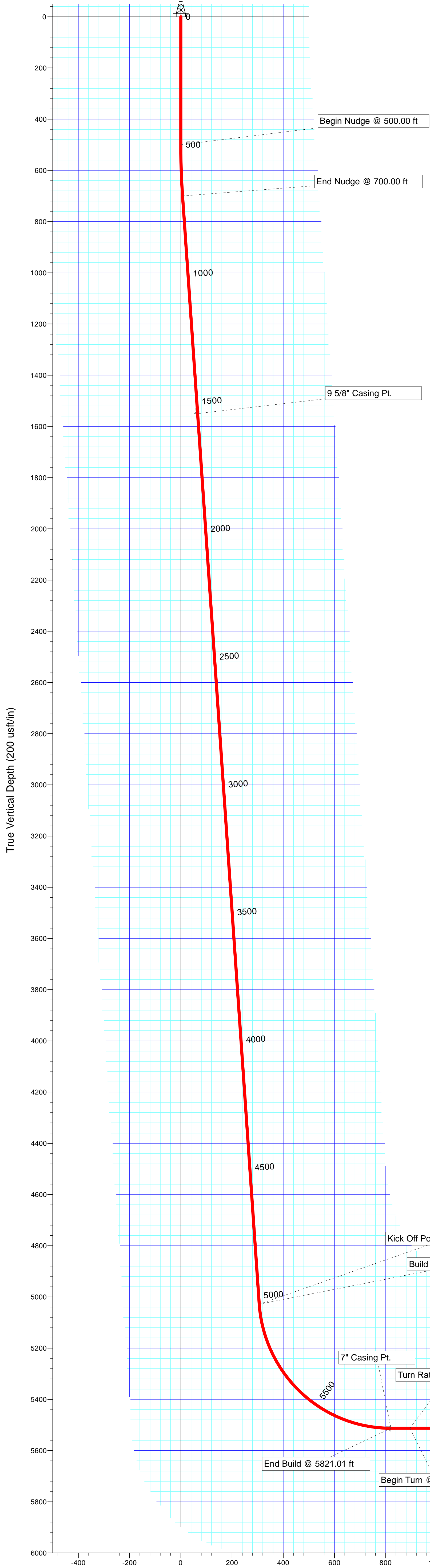
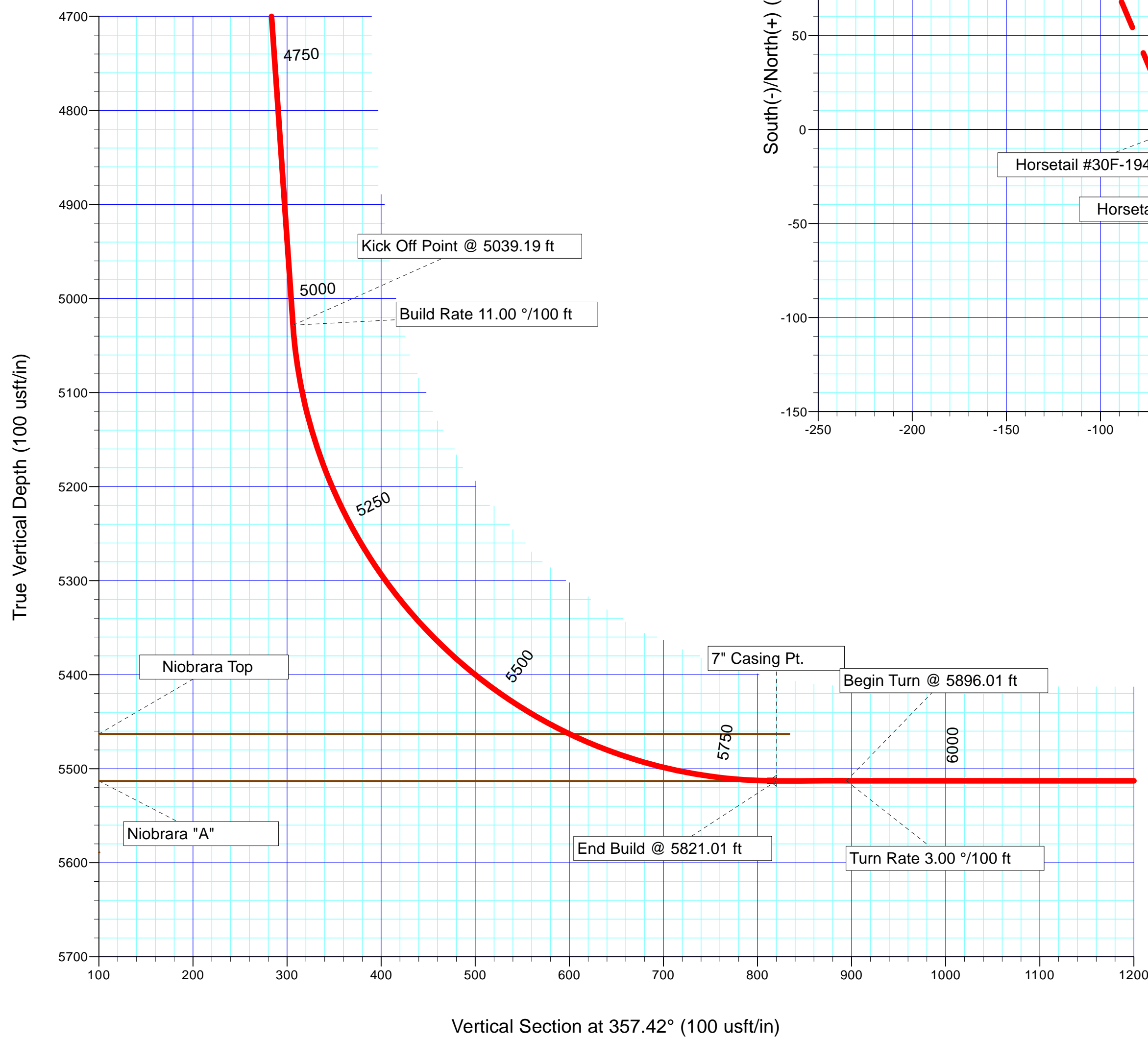
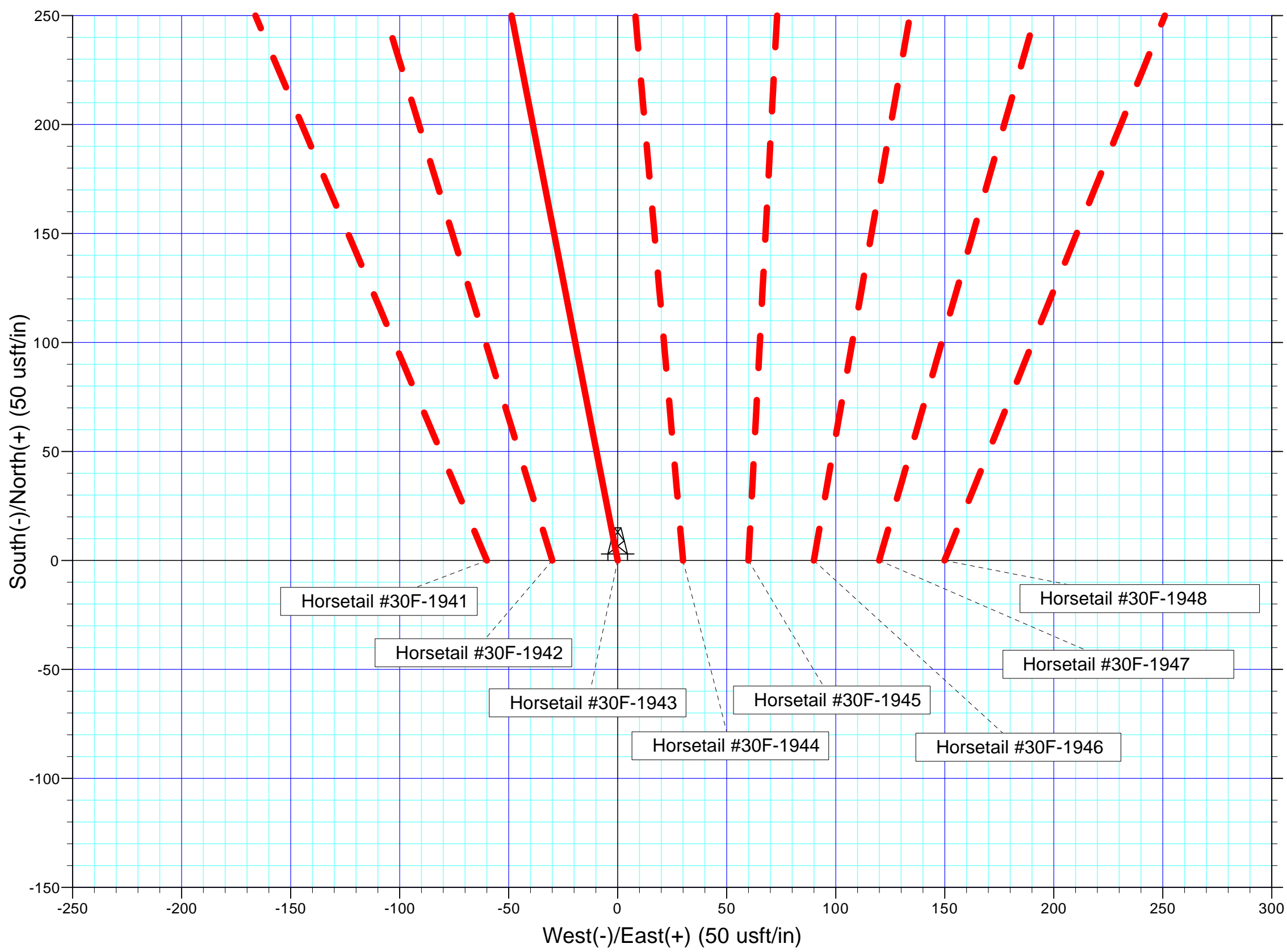
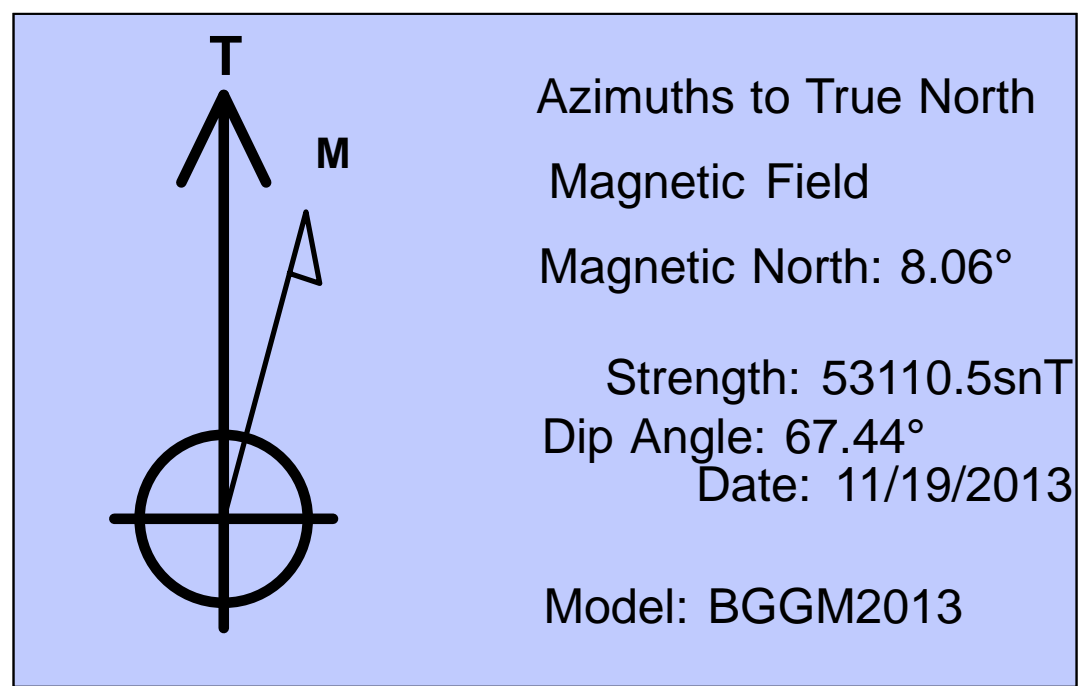
Whiting Oil and Gas Corporation



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	700.00	4.00	349.00	699.84	6.85	-1.33	2.00	349.00	6.90	
4	5039.19	4.00	349.00	5028.46	303.98	-59.09	0.00	0.00	306.33	
5	5821.01	90.00	349.00	5513.00	814.03	-158.23	11.00	0.00	820.33	
6	5896.01	90.00	349.00	5513.00	887.65	-172.54	0.00	0.00	894.52	
7	6222.80	90.00	358.80	5513.00	1212.19	-207.22	3.00	90.00	1220.29	
8	12534.59	90.00	358.80	5513.00	7522.62	-339.00	0.00	0.00	7530.25	Horsetail #30F-1943_Rev A0_BHL Tgt

Plan: Rev A0 (Horsetail #30F-1943/Plan A)

Created By: Troy L. Stoute Date: 10:00, November 21 2013
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____



Vertical Section at 357.42° (200 usft/in)

Plan Report for Horsetail #30F-1943 - Rev A0

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)	Toolface Azimuth (°)
0.00	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	0.00
200.00	0.00	0.00	200.00	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	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 500.00 ft										
600.00	2.00	349.00	599.98	1.71	-0.33	1.73	2.00	2.00	0.00	349.00
700.00	4.00	349.00	699.84	6.85	-1.33	6.90	2.00	2.00	0.00	0.00
End Nudge @ 700.00 ft										
800.00	4.00	349.00	799.59	13.70	-2.66	13.80	0.00	0.00	0.00	0.00
900.00	4.00	349.00	899.35	20.55	-3.99	20.70	0.00	0.00	0.00	0.00
1,000.00	4.00	349.00	999.11	27.39	-5.32	27.60	0.00	0.00	0.00	0.00
1,100.00	4.00	349.00	1,098.86	34.24	-6.66	34.51	0.00	0.00	0.00	0.00
1,200.00	4.00	349.00	1,198.62	41.09	-7.99	41.41	0.00	0.00	0.00	0.00
1,300.00	4.00	349.00	1,298.38	47.94	-9.32	48.31	0.00	0.00	0.00	0.00
1,400.00	4.00	349.00	1,398.13	54.78	-10.65	55.21	0.00	0.00	0.00	0.00
1,500.00	4.00	349.00	1,497.89	61.63	-11.98	62.11	0.00	0.00	0.00	0.00
1,552.24	4.00	349.00	1,550.00	65.21	-12.67	65.71	0.00	0.00	0.00	0.00
9 5/8" Casing Pt.										
1,600.00	4.00	349.00	1,597.65	68.48	-13.31	69.01	0.00	0.00	0.00	0.00
1,700.00	4.00	349.00	1,697.40	75.33	-14.64	75.91	0.00	0.00	0.00	0.00
1,800.00	4.00	349.00	1,797.16	82.17	-15.97	82.81	0.00	0.00	0.00	0.00
1,900.00	4.00	349.00	1,896.91	89.02	-17.30	89.71	0.00	0.00	0.00	0.00
2,000.00	4.00	349.00	1,996.67	95.87	-18.63	96.61	0.00	0.00	0.00	0.00
2,100.00	4.00	349.00	2,096.43	102.72	-19.97	103.51	0.00	0.00	0.00	0.00
2,200.00	4.00	349.00	2,196.18	109.56	-21.30	110.41	0.00	0.00	0.00	0.00
2,300.00	4.00	349.00	2,295.94	116.41	-22.63	117.31	0.00	0.00	0.00	0.00
2,400.00	4.00	349.00	2,395.70	123.26	-23.96	124.21	0.00	0.00	0.00	0.00
2,500.00	4.00	349.00	2,495.45	130.10	-25.29	131.11	0.00	0.00	0.00	0.00
2,600.00	4.00	349.00	2,595.21	136.95	-26.62	138.01	0.00	0.00	0.00	0.00
2,700.00	4.00	349.00	2,694.97	143.80	-27.95	144.91	0.00	0.00	0.00	0.00
2,800.00	4.00	349.00	2,794.72	150.65	-29.28	151.81	0.00	0.00	0.00	0.00
2,900.00	4.00	349.00	2,894.48	157.49	-30.61	158.71	0.00	0.00	0.00	0.00
3,000.00	4.00	349.00	2,994.23	164.34	-31.94	165.61	0.00	0.00	0.00	0.00
3,100.00	4.00	349.00	3,093.99	171.19	-33.28	172.51	0.00	0.00	0.00	0.00
3,200.00	4.00	349.00	3,193.75	178.04	-34.61	179.41	0.00	0.00	0.00	0.00
3,300.00	4.00	349.00	3,293.50	184.88	-35.94	186.32	0.00	0.00	0.00	0.00
3,400.00	4.00	349.00	3,393.26	191.73	-37.27	193.22	0.00	0.00	0.00	0.00
3,500.00	4.00	349.00	3,493.02	198.58	-38.60	200.12	0.00	0.00	0.00	0.00
3,600.00	4.00	349.00	3,592.77	205.43	-39.93	207.02	0.00	0.00	0.00	0.00
3,700.00	4.00	349.00	3,692.53	212.27	-41.26	213.92	0.00	0.00	0.00	0.00
3,800.00	4.00	349.00	3,792.29	219.12	-42.59	220.82	0.00	0.00	0.00	0.00
3,900.00	4.00	349.00	3,892.04	225.97	-43.92	227.72	0.00	0.00	0.00	0.00
4,000.00	4.00	349.00	3,991.80	232.82	-45.26	234.62	0.00	0.00	0.00	0.00
4,100.00	4.00	349.00	4,091.56	239.66	-46.59	241.52	0.00	0.00	0.00	0.00
4,200.00	4.00	349.00	4,191.31	246.51	-47.92	248.42	0.00	0.00	0.00	0.00
4,300.00	4.00	349.00	4,291.07	253.36	-49.25	255.32	0.00	0.00	0.00	0.00
4,400.00	4.00	349.00	4,390.82	260.21	-50.58	262.22	0.00	0.00	0.00	0.00
4,500.00	4.00	349.00	4,490.58	267.05	-51.91	269.12	0.00	0.00	0.00	0.00
4,600.00	4.00	349.00	4,590.34	273.90	-53.24	276.02	0.00	0.00	0.00	0.00
4,700.00	4.00	349.00	4,690.09	280.75	-54.57	282.92	0.00	0.00	0.00	0.00
4,800.00	4.00	349.00	4,789.85	287.60	-55.90	289.82	0.00	0.00	0.00	0.00
4,900.00	4.00	349.00	4,889.61	294.44	-57.23	296.72	0.00	0.00	0.00	0.00
5,000.00	4.00	349.00	4,989.36	301.29	-58.57	303.62	0.00	0.00	0.00	0.00
5,039.19	4.00	349.00	5,028.46	303.98	-59.09	306.33	0.00	0.00	0.00	0.00
Build Rate 11.00 °/100 ft - Kick Off Point @ 5039.19 ft										
5,100.00	10.69	349.00	5,088.73	311.60	-60.57	314.01	11.00	11.00	0.00	0.00

Plan Report for Horsetail #30F-1943 - Rev A0

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)	Toolface Azimuth (°)
5,200.00	21.69	349.00	5,184.62	338.93	-65.88	341.55	11.00	11.00	0.00	0.00
5,300.00	32.69	349.00	5,273.44	383.71	-74.59	386.68	11.00	11.00	0.00	0.00
5,400.00	43.69	349.00	5,351.91	444.31	-86.36	447.75	11.00	11.00	0.00	0.00
5,500.00	54.69	349.00	5,417.17	518.49	-100.78	522.50	11.00	11.00	0.00	0.00
5,590.93	64.69	349.00	5,463.00	595.45	-115.74	600.05	11.00	11.00	0.00	0.00
Niobrara Top										
5,600.00	65.69	349.00	5,466.81	603.53	-117.31	608.20	11.00	11.00	0.00	0.00
5,700.00	76.69	349.00	5,499.00	696.31	-135.35	701.70	11.00	11.00	0.00	0.00
5,800.00	87.69	349.00	5,512.57	793.41	-154.22	799.55	11.00	11.00	0.00	0.00
5,821.01	90.00	349.00	5,513.00	814.03	-158.23	820.33	11.00	11.00	0.00	0.00
End Build @ 5821.01 ft - Niobrara "A" - 7" Casing Pt.										
5,896.01	90.00	349.00	5,513.00	887.65	-172.54	894.52	0.00	0.00	0.00	0.00
Turn Rate 3.00 °/100 ft - Begin Turn @ 5896.01 ft										
5,900.00	90.00	349.12	5,513.00	891.57	-173.30	898.47	3.00	0.00	3.00	90.00
6,000.00	90.00	352.12	5,513.00	990.22	-189.60	997.75	3.00	0.00	3.00	90.00
6,100.00	90.00	355.12	5,513.00	1,089.59	-200.71	1,097.52	3.00	0.00	3.00	90.00
6,200.00	90.00	358.12	5,513.00	1,189.41	-206.60	1,197.50	3.00	0.00	3.00	90.00
6,222.80	90.00	358.80	5,513.00	1,212.20	-207.22	1,220.30	3.00	0.00	3.00	90.00
Hold Inc 90.00°, Azi 358.8° - End Turn @ 6222.8 ft										
6,300.00	90.00	358.80	5,513.00	1,289.38	-208.83	1,297.47	0.00	0.00	0.00	0.00
6,400.00	90.00	358.80	5,513.00	1,389.36	-210.92	1,397.45	0.00	0.00	0.00	0.00
6,500.00	90.00	358.80	5,513.00	1,489.34	-213.00	1,497.42	0.00	0.00	0.00	0.00
6,600.00	90.00	358.80	5,513.00	1,589.31	-215.09	1,597.39	0.00	0.00	0.00	0.00
6,700.00	90.00	358.80	5,513.00	1,689.29	-217.18	1,697.36	0.00	0.00	0.00	0.00
6,800.00	90.00	358.80	5,513.00	1,789.27	-219.27	1,797.33	0.00	0.00	0.00	0.00
6,900.00	90.00	358.80	5,513.00	1,889.25	-221.36	1,897.30	0.00	0.00	0.00	0.00
7,000.00	90.00	358.80	5,513.00	1,989.23	-223.44	1,997.27	0.00	0.00	0.00	0.00
7,100.00	90.00	358.80	5,513.00	2,089.21	-225.53	2,097.24	0.00	0.00	0.00	0.00
7,200.00	90.00	358.80	5,513.00	2,189.18	-227.62	2,197.21	0.00	0.00	0.00	0.00
7,300.00	90.00	358.80	5,513.00	2,289.16	-229.71	2,297.18	0.00	0.00	0.00	0.00
7,400.00	90.00	358.80	5,513.00	2,389.14	-231.79	2,397.15	0.00	0.00	0.00	0.00
7,500.00	90.00	358.80	5,513.00	2,489.12	-233.88	2,497.12	0.00	0.00	0.00	0.00
7,600.00	90.00	358.80	5,513.00	2,589.10	-235.97	2,597.10	0.00	0.00	0.00	0.00
7,700.00	90.00	358.80	5,513.00	2,689.08	-238.06	2,697.07	0.00	0.00	0.00	0.00
7,800.00	90.00	358.80	5,513.00	2,789.05	-240.15	2,797.04	0.00	0.00	0.00	0.00
7,900.00	90.00	358.80	5,513.00	2,889.03	-242.23	2,897.01	0.00	0.00	0.00	0.00
8,000.00	90.00	358.80	5,513.00	2,989.01	-244.32	2,996.98	0.00	0.00	0.00	0.00
8,100.00	90.00	358.80	5,513.00	3,088.99	-246.41	3,096.95	0.00	0.00	0.00	0.00
8,200.00	90.00	358.80	5,513.00	3,188.97	-248.50	3,196.92	0.00	0.00	0.00	0.00
8,300.00	90.00	358.80	5,513.00	3,288.94	-250.59	3,296.89	0.00	0.00	0.00	0.00
8,400.00	90.00	358.80	5,513.00	3,388.92	-252.67	3,396.86	0.00	0.00	0.00	0.00
8,500.00	90.00	358.80	5,513.00	3,488.90	-254.76	3,496.83	0.00	0.00	0.00	0.00
8,600.00	90.00	358.80	5,513.00	3,588.88	-256.85	3,596.80	0.00	0.00	0.00	0.00
8,700.00	90.00	358.80	5,513.00	3,688.86	-258.94	3,696.77	0.00	0.00	0.00	0.00
8,800.00	90.00	358.80	5,513.00	3,788.84	-261.03	3,796.75	0.00	0.00	0.00	0.00
8,900.00	90.00	358.80	5,513.00	3,888.81	-263.11	3,896.72	0.00	0.00	0.00	0.00
9,000.00	90.00	358.80	5,513.00	3,988.79	-265.20	3,996.69	0.00	0.00	0.00	0.00
9,100.00	90.00	358.80	5,513.00	4,088.77	-267.29	4,096.66	0.00	0.00	0.00	0.00
9,200.00	90.00	358.80	5,513.00	4,188.75	-269.38	4,196.63	0.00	0.00	0.00	0.00
9,300.00	90.00	358.80	5,513.00	4,288.73	-271.47	4,296.60	0.00	0.00	0.00	0.00
9,400.00	90.00	358.80	5,513.00	4,388.70	-273.55	4,396.57	0.00	0.00	0.00	0.00
9,500.00	90.00	358.80	5,513.00	4,488.68	-275.64	4,496.54	0.00	0.00	0.00	0.00
9,600.00	90.00	358.80	5,513.00	4,588.66	-277.73	4,596.51	0.00	0.00	0.00	0.00
9,700.00	90.00	358.80	5,513.00	4,688.64	-279.82	4,696.48	0.00	0.00	0.00	0.00
9,800.00	90.00	358.80	5,513.00	4,788.62	-281.91	4,796.45	0.00	0.00	0.00	0.00
9,900.00	90.00	358.80	5,513.00	4,888.60	-283.99	4,896.42	0.00	0.00	0.00	0.00
10,000.00	90.00	358.80	5,513.00	4,988.57	-286.08	4,996.40	0.00	0.00	0.00	0.00
10,100.00	90.00	358.80	5,513.00	5,088.55	-288.17	5,096.37	0.00	0.00	0.00	0.00
10,200.00	90.00	358.80	5,513.00	5,188.53	-290.26	5,196.34	0.00	0.00	0.00	0.00

Plan Report for Horsetail #30F-1943 - Rev A0

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)	Toolface Azimuth (°)
10,300.00	90.00	358.80	5,513.00	5,288.51	-292.35	5,296.31	0.00	0.00	0.00	0.00
10,400.00	90.00	358.80	5,513.00	5,388.49	-294.43	5,396.28	0.00	0.00	0.00	0.00
10,500.00	90.00	358.80	5,513.00	5,488.46	-296.52	5,496.25	0.00	0.00	0.00	0.00
10,600.00	90.00	358.80	5,513.00	5,588.44	-298.61	5,596.22	0.00	0.00	0.00	0.00
10,700.00	90.00	358.80	5,513.00	5,688.42	-300.70	5,696.19	0.00	0.00	0.00	0.00
10,800.00	90.00	358.80	5,513.00	5,788.40	-302.79	5,796.16	0.00	0.00	0.00	0.00
10,900.00	90.00	358.80	5,513.00	5,888.38	-304.87	5,896.13	0.00	0.00	0.00	0.00
11,000.00	90.00	358.80	5,513.00	5,988.36	-306.96	5,996.10	0.00	0.00	0.00	0.00
11,100.00	90.00	358.80	5,513.00	6,088.33	-309.05	6,096.07	0.00	0.00	0.00	0.00
11,200.00	90.00	358.80	5,513.00	6,188.31	-311.14	6,196.05	0.00	0.00	0.00	0.00
11,300.00	90.00	358.80	5,513.00	6,288.29	-313.23	6,296.02	0.00	0.00	0.00	0.00
11,400.00	90.00	358.80	5,513.00	6,388.27	-315.31	6,395.99	0.00	0.00	0.00	0.00
11,500.00	90.00	358.80	5,513.00	6,488.25	-317.40	6,495.96	0.00	0.00	0.00	0.00
11,600.00	90.00	358.80	5,513.00	6,588.22	-319.49	6,595.93	0.00	0.00	0.00	0.00
11,700.00	90.00	358.80	5,513.00	6,688.20	-321.58	6,695.90	0.00	0.00	0.00	0.00
11,800.00	90.00	358.80	5,513.00	6,788.18	-323.66	6,795.87	0.00	0.00	0.00	0.00
11,900.00	90.00	358.80	5,513.00	6,888.16	-325.75	6,895.84	0.00	0.00	0.00	0.00
12,000.00	90.00	358.80	5,513.00	6,988.14	-327.84	6,995.81	0.00	0.00	0.00	0.00
12,100.00	90.00	358.80	5,513.00	7,088.12	-329.93	7,095.78	0.00	0.00	0.00	0.00
12,200.00	90.00	358.80	5,513.00	7,188.09	-332.02	7,195.75	0.00	0.00	0.00	0.00
12,300.00	90.00	358.80	5,513.00	7,288.07	-334.10	7,295.72	0.00	0.00	0.00	0.00
12,400.00	90.00	358.80	5,513.00	7,388.05	-336.19	7,395.70	0.00	0.00	0.00	0.00
12,500.00	90.00	358.80	5,513.00	7,488.03	-338.28	7,495.67	0.00	0.00	0.00	0.00
12,534.50	90.00	358.80	5,513.00	7,522.52	-339.00	7,530.16	0.00	0.00	0.00	0.00
Total Depth 12534.5 ft										
12,534.59	90.00	358.80	5,513.00	7,522.62	-339.00	7,530.25	0.00	0.00	0.00	0.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
500.00	500.00	0.00	0.00	Begin Nudge @ 500.00 ft
700.00	699.84	6.85	-1.33	End Nudge @ 700.00 ft
5,039.19	5,028.46	303.98	-59.09	Build Rate 11.00 °/100 ft
5,039.19	5,028.46	303.98	-59.09	Kick Off Point @ 5039.19 ft
5,821.01	5,513.00	814.03	-158.23	End Build @ 5821.01 ft
5,896.01	5,513.00	887.65	-172.54	Turn Rate 3.00 °/100 ft
5,896.01	5,513.00	887.65	-172.54	Begin Turn @ 5896.01 ft
6,222.80	5,513.00	1,212.20	-207.22	Hold Inc 90.00°, Azi 358.8°
6,222.80	5,513.00	1,212.20	-207.22	End Turn @ 6222.8 ft
12,534.50	5,513.00	7,522.52	-339.00	Total Depth 12534.5 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
Target	Horsetail #30F-1943_Rev A0_BHL Tgt	357.42	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	1,550.00	Rev A0	MWD+IFR1+MS+sag
1,550.00	5,821.01	Rev A0	MWD+IFR1+MS+sag
5,821.01	12,534.59	Rev A0	MWD+IFR1+MS+sag

Plan Report for Horsetail #30F-1943 - Rev A0**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,552.24	1,550.00	9 5/8" Casing Pt.	9-5/8	13-1/2
5,821.01	5,513.00	7" Casing Pt.	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,590.93	5,463.00	Niobrara Top		0.00	
5,821.01	5,513.00	Niobrara "A"		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Horsetail #30F-1943_Rev A0_BHL Tgt	5,513.00	7,522.62	-339.00	Point
Horsetail #30F-1941_Rev A0_BHL Tgt	5,513.00	7,522.62	-668.78	Point
Horsetail #29E-3201A_Rev A0_BHL Tgt	5,524.50	-7,719.72	3,727.44	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.80 °/100usft	Maximum Dogleg over Survey:	11.00 °/100usft at 5,821.01 usft
Net Tortousity applicable to Plans:	0.80 °/100usft	Directional Difficulty Index:	6.427

Audit Info

North Reference Sheet for Sec. 30-T10N-R57W - Horsetail #30F-1943 - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to KB 22 ft @ 4803.70usft (Frontier 26). Northing and Easting are relative to Horsetail #30F-1943

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 1.00000455

Grid Coordinates of Well: 1,542,708.64 usft N, 3,471,549.11 usft E

Geographical Coordinates of Well: 40° 48' 38.46" N, 103° 47' 47.27" W

Grid Convergence at Surface is: 1.10°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,534.59usft

the Bottom Hole Displacement is 7,530.25usft in the Direction of 357.42° (True).

Magnetic Convergence at surface is: -6.96° (19 November 2013, , BGGM2013)

