

Whiting Oil and Gas Corporation

Weld County, CO
Sec. 30-T10N-R57W
Horsetail #30F-1946

Plan A

Plan: Rev A0

Sperry Drilling Services

Proposal Report

21 November, 2013

Well Coordinates: 1,542,710.39 N, 3,471,639.06 E (40° 48' 38.46" N, 103° 47' 46.10" 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-1946

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-1946
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	10.00	699.84	6.87	1.21	2.00	10.00	6.68	
4	5115.38	4.00	10.00	5104.46	310.19	54.70	0.00	0.00	310.66	
5	5897.20	90.00	10.00	5589.00	821.90	144.92	11.00	0.00	823.14	
6	5872.20	90.00	10.00	5589.00	895.76	157.95	0.00	0.00	897.12	
7	6342.30	90.00	358.90	5589.00	1264.17	186.61	3.00	-90.00	1265.76	
8	12601.87	90.00	358.90	5589.00	7522.59	66.11	0.00	0.00	7522.88	Horsetail #30F-1946_Rev A0_BHL Tgt

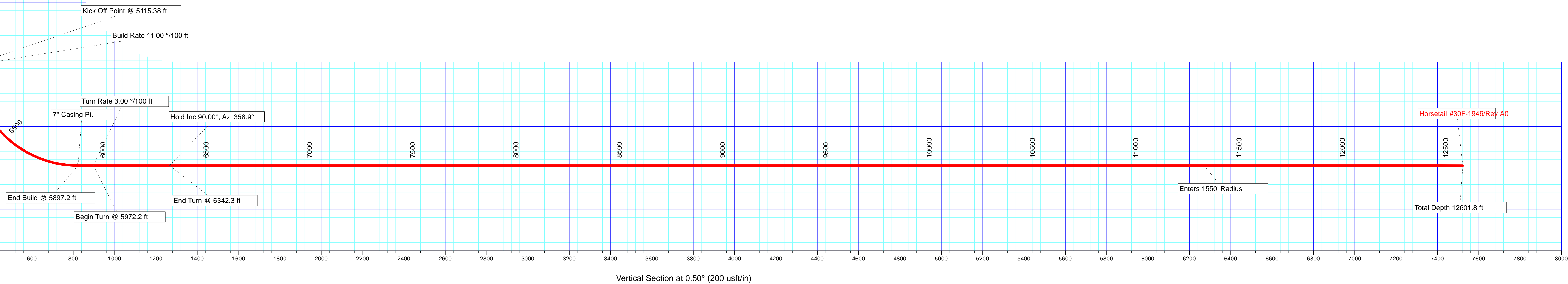
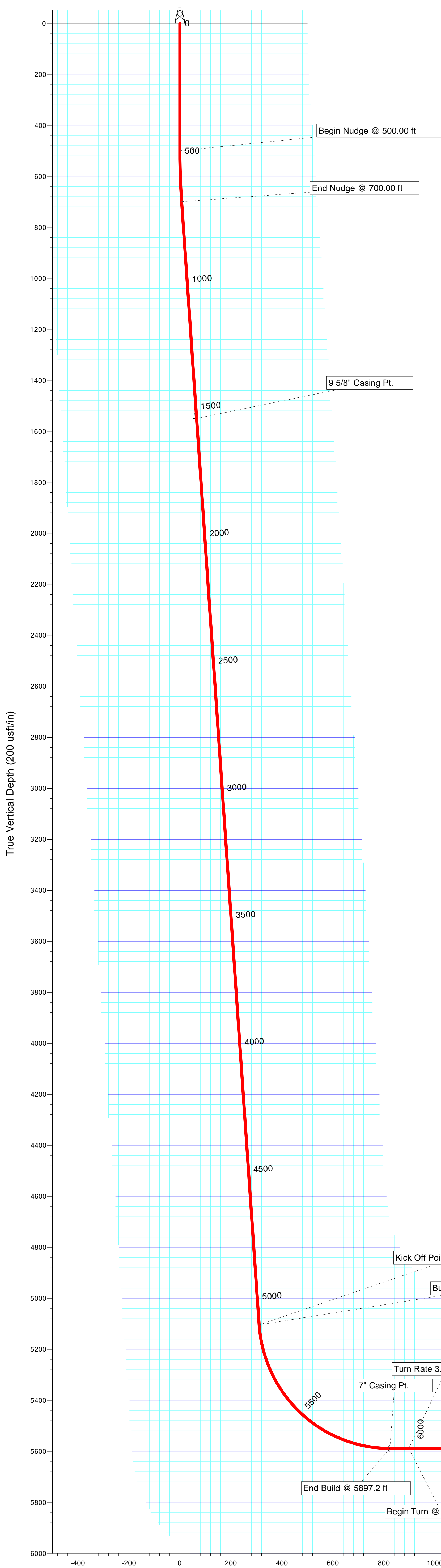
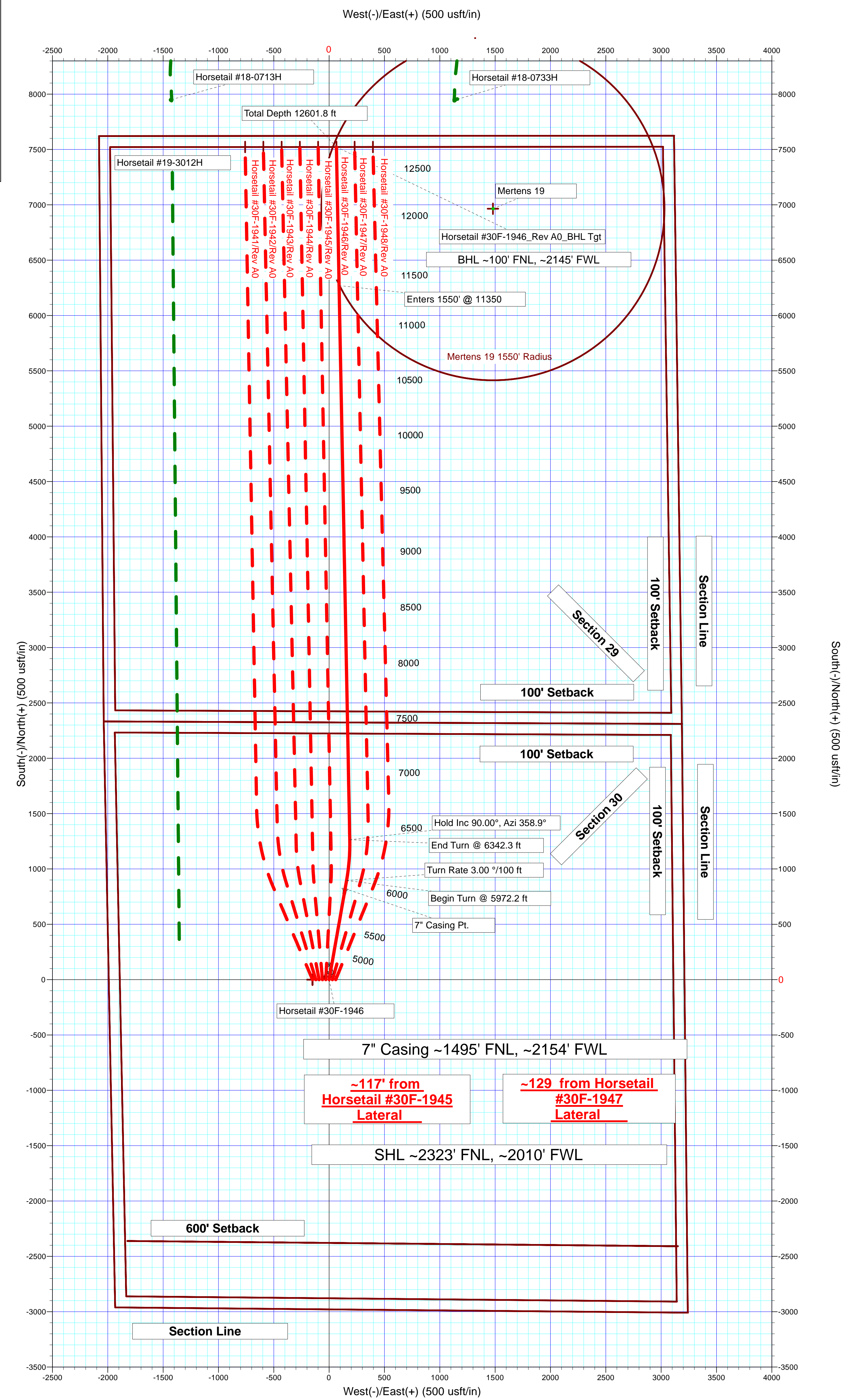
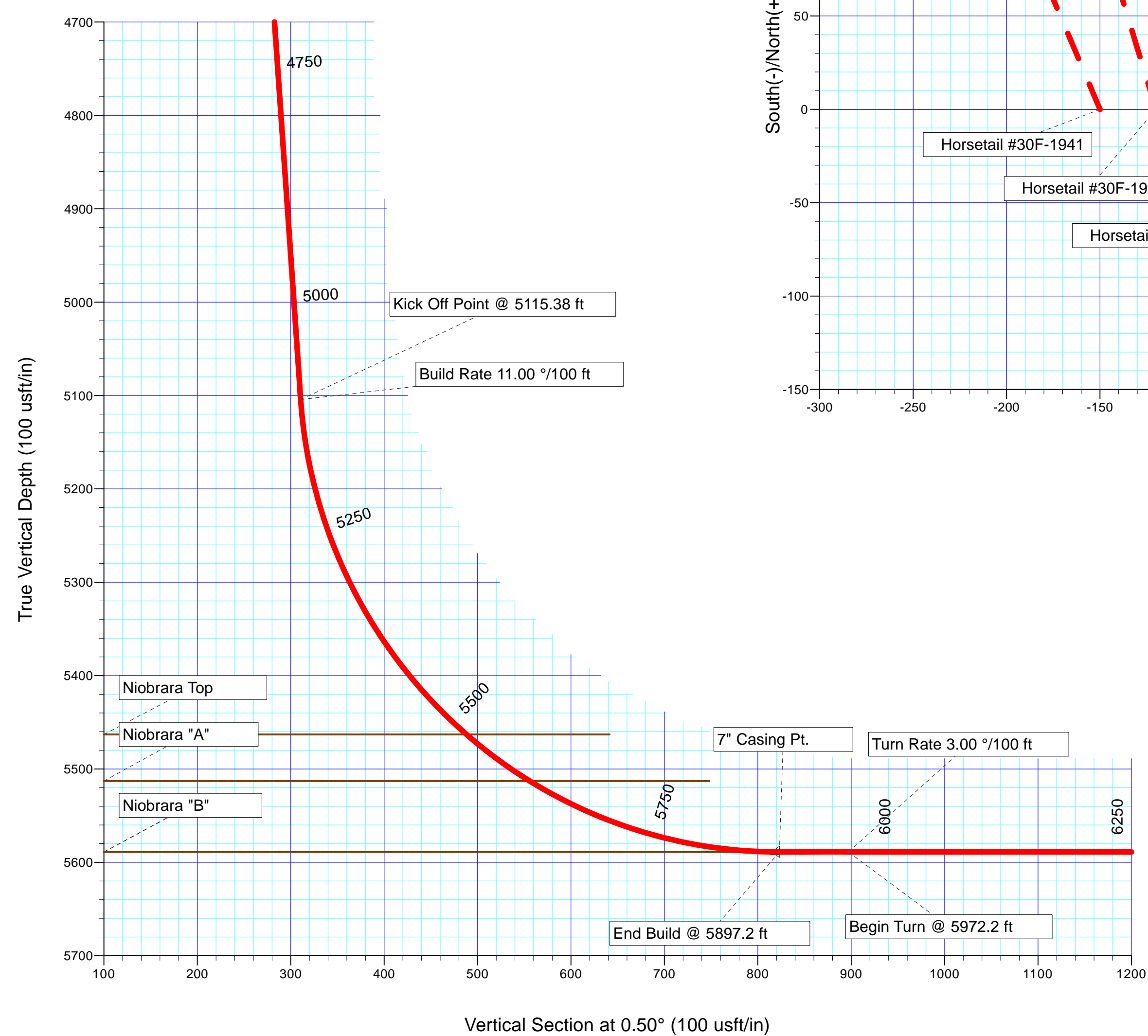
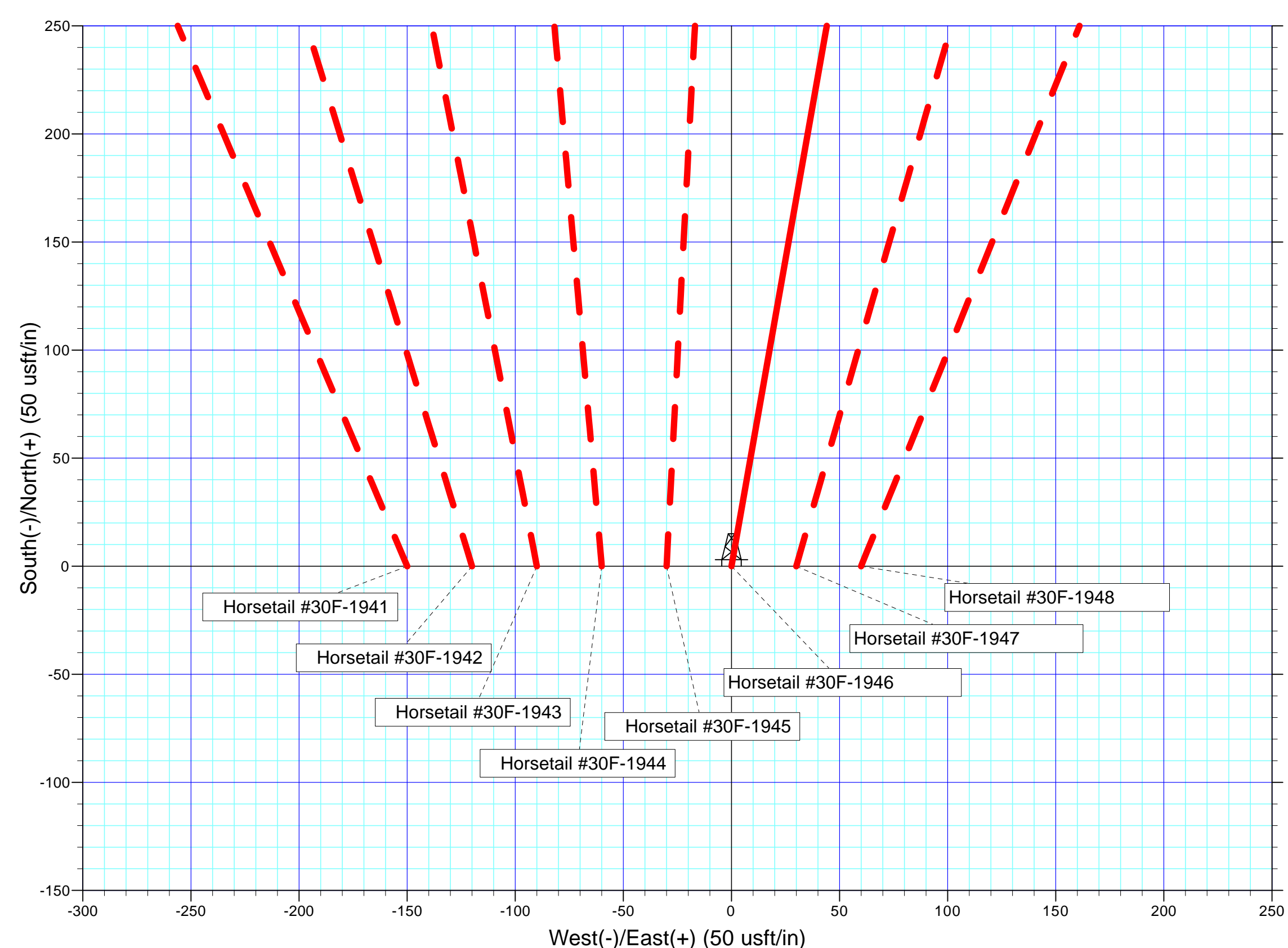
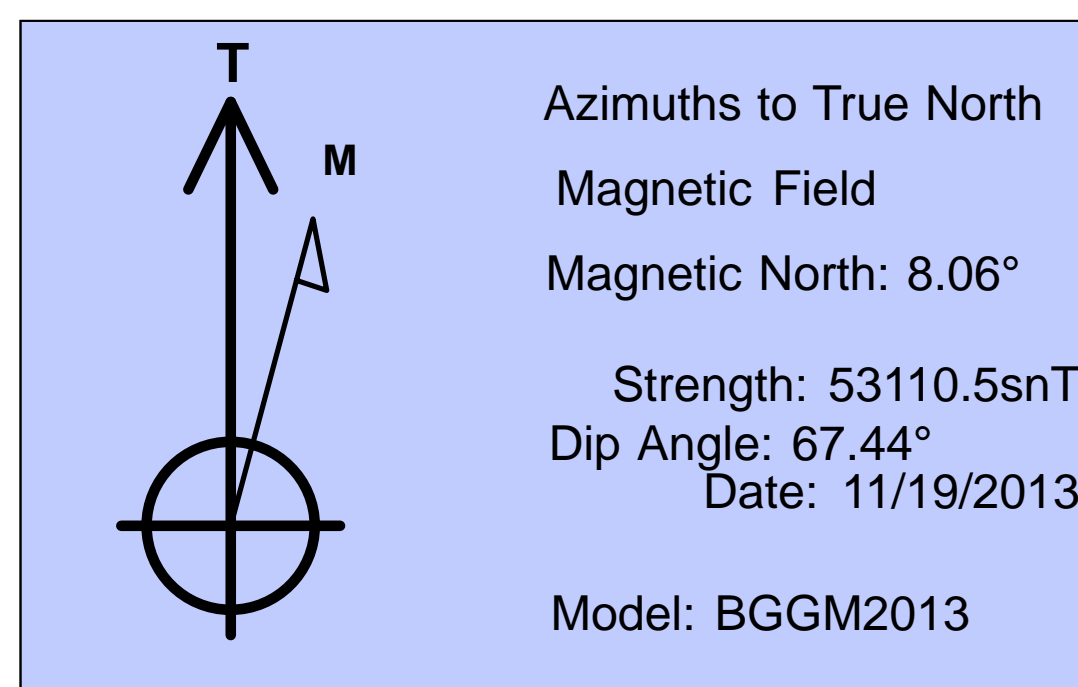
Plan: Rev A0 (Horsetail #30F-1946/Plan A)

Created By: Troy L. Stoute Date: 10:10, November 21 2013

Checked: _____ Date: _____

Reviewed: _____ Date: _____

Approved: _____ Date: _____



Plan Report for Horsetail #30F-1946 - 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	10.00	599.98	1.72	0.30	1.72	2.00	2.00	0.00	10.00
700.00	4.00	10.00	699.84	6.87	1.21	6.88	2.00	2.00	0.00	0.00
End Nudge @ 700.00 ft										
800.00	4.00	10.00	799.59	13.74	2.42	13.76	0.00	0.00	0.00	0.00
900.00	4.00	10.00	899.35	20.61	3.63	20.64	0.00	0.00	0.00	0.00
1,000.00	4.00	10.00	999.11	27.48	4.85	27.52	0.00	0.00	0.00	0.00
1,100.00	4.00	10.00	1,098.86	34.35	6.06	34.40	0.00	0.00	0.00	0.00
1,200.00	4.00	10.00	1,198.62	41.22	7.27	41.28	0.00	0.00	0.00	0.00
1,300.00	4.00	10.00	1,298.38	48.09	8.48	48.16	0.00	0.00	0.00	0.00
1,400.00	4.00	10.00	1,398.13	54.96	9.69	55.04	0.00	0.00	0.00	0.00
1,500.00	4.00	10.00	1,497.89	61.83	10.90	61.92	0.00	0.00	0.00	0.00
1,552.24	4.00	10.00	1,550.00	65.42	11.54	65.52	0.00	0.00	0.00	0.00
9 5/8" Casing Pt.										
1,600.00	4.00	10.00	1,597.65	68.70	12.11	68.80	0.00	0.00	0.00	0.00
1,700.00	4.00	10.00	1,697.40	75.57	13.32	75.68	0.00	0.00	0.00	0.00
1,800.00	4.00	10.00	1,797.16	82.44	14.54	82.56	0.00	0.00	0.00	0.00
1,900.00	4.00	10.00	1,896.91	89.31	15.75	89.44	0.00	0.00	0.00	0.00
2,000.00	4.00	10.00	1,996.67	96.18	16.96	96.32	0.00	0.00	0.00	0.00
2,100.00	4.00	10.00	2,096.43	103.05	18.17	103.20	0.00	0.00	0.00	0.00
2,200.00	4.00	10.00	2,196.18	109.92	19.38	110.08	0.00	0.00	0.00	0.00
2,300.00	4.00	10.00	2,295.94	116.79	20.59	116.96	0.00	0.00	0.00	0.00
2,400.00	4.00	10.00	2,395.70	123.66	21.80	123.84	0.00	0.00	0.00	0.00
2,500.00	4.00	10.00	2,495.45	130.53	23.02	130.72	0.00	0.00	0.00	0.00
2,600.00	4.00	10.00	2,595.21	137.40	24.23	137.60	0.00	0.00	0.00	0.00
2,700.00	4.00	10.00	2,694.97	144.27	25.44	144.48	0.00	0.00	0.00	0.00
2,800.00	4.00	10.00	2,794.72	151.14	26.65	151.36	0.00	0.00	0.00	0.00
2,900.00	4.00	10.00	2,894.48	158.01	27.86	158.24	0.00	0.00	0.00	0.00
3,000.00	4.00	10.00	2,994.23	164.87	29.07	165.12	0.00	0.00	0.00	0.00
3,100.00	4.00	10.00	3,093.99	171.74	30.28	172.00	0.00	0.00	0.00	0.00
3,200.00	4.00	10.00	3,193.75	178.61	31.49	178.88	0.00	0.00	0.00	0.00
3,300.00	4.00	10.00	3,293.50	185.48	32.71	185.76	0.00	0.00	0.00	0.00
3,400.00	4.00	10.00	3,393.26	192.35	33.92	192.64	0.00	0.00	0.00	0.00
3,500.00	4.00	10.00	3,493.02	199.22	35.13	199.52	0.00	0.00	0.00	0.00
3,600.00	4.00	10.00	3,592.77	206.09	36.34	206.40	0.00	0.00	0.00	0.00
3,700.00	4.00	10.00	3,692.53	212.96	37.55	213.28	0.00	0.00	0.00	0.00
3,800.00	4.00	10.00	3,792.29	219.83	38.76	220.16	0.00	0.00	0.00	0.00
3,900.00	4.00	10.00	3,892.04	226.70	39.97	227.04	0.00	0.00	0.00	0.00
4,000.00	4.00	10.00	3,991.80	233.57	41.18	233.92	0.00	0.00	0.00	0.00
4,100.00	4.00	10.00	4,091.56	240.44	42.40	240.80	0.00	0.00	0.00	0.00
4,200.00	4.00	10.00	4,191.31	247.31	43.61	247.68	0.00	0.00	0.00	0.00
4,300.00	4.00	10.00	4,291.07	254.18	44.82	254.56	0.00	0.00	0.00	0.00
4,400.00	4.00	10.00	4,390.82	261.05	46.03	261.44	0.00	0.00	0.00	0.00
4,500.00	4.00	10.00	4,490.58	267.92	47.24	268.32	0.00	0.00	0.00	0.00
4,600.00	4.00	10.00	4,590.34	274.79	48.45	275.20	0.00	0.00	0.00	0.00
4,700.00	4.00	10.00	4,690.09	281.66	49.66	282.08	0.00	0.00	0.00	0.00
4,800.00	4.00	10.00	4,789.85	288.53	50.88	288.96	0.00	0.00	0.00	0.00
4,900.00	4.00	10.00	4,889.61	295.40	52.09	295.84	0.00	0.00	0.00	0.00
5,000.00	4.00	10.00	4,989.36	302.27	53.30	302.73	0.00	0.00	0.00	0.00
5,100.00	4.00	10.00	5,089.12	309.14	54.51	309.61	0.00	0.00	0.00	0.00
5,115.38	4.00	10.00	5,104.46	310.19	54.70	310.66	0.00	0.00	0.00	0.00
Build Rate 11.00 °/100 ft - Kick Off Point @ 5115.38 ft										

Plan Report for Horsetail #30F-1946 - 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	13.31	10.00	5,188.03	322.72	56.90	323.21	11.00	11.00	0.00	0.00
5,300.00	24.31	10.00	5,282.54	354.42	62.49	354.96	11.00	11.00	0.00	0.00
5,400.00	35.31	10.00	5,369.18	403.30	71.11	403.91	11.00	11.00	0.00	0.00
5,500.00	46.31	10.00	5,444.75	467.56	82.44	468.27	11.00	11.00	0.00	0.00
5,527.17	49.30	10.00	5,463.00	487.39	85.94	488.12	11.00	11.00	0.00	0.00
Niobrara Top										
5,600.00	57.31	10.00	5,506.49	544.85	96.07	545.67	11.00	11.00	0.00	0.00
5,612.29	58.66	10.00	5,513.00	555.11	97.88	555.94	11.00	11.00	0.00	0.00
Niobrara "A"										
5,700.00	68.31	10.00	5,552.11	632.31	111.49	633.26	11.00	11.00	0.00	0.00
5,800.00	79.31	10.00	5,579.95	726.74	128.14	727.84	11.00	11.00	0.00	0.00
5,897.20	90.00	10.00	5,589.00	821.91	144.92	823.15	11.00	11.00	0.00	0.00
End Build @ 5897.2 ft - Niobrara "B" - 7" Casing Pt.										
5,900.00	90.00	10.00	5,589.00	824.66	145.41	825.91	0.00	0.00	0.00	0.00
5,972.20	90.00	10.00	5,589.00	895.77	157.95	897.12	0.00	0.00	0.00	0.00
Turn Rate 3.00 °/100 ft - Begin Turn @ 5972.2 ft										
6,000.00	90.00	9.17	5,589.00	923.18	162.58	924.57	3.00	0.00	-3.00	-90.00
6,100.00	90.00	6.17	5,589.00	1,022.27	175.91	1,023.78	3.00	0.00	-3.00	-90.00
6,200.00	90.00	3.17	5,589.00	1,121.93	184.05	1,123.50	3.00	0.00	-3.00	-90.00
6,300.00	90.00	0.17	5,589.00	1,221.88	186.95	1,223.47	3.00	0.00	-3.00	-90.00
6,342.30	90.00	358.90	5,589.00	1,264.17	186.61	1,265.77	3.00	0.00	-3.00	-90.00
Hold Inc 90.00°, Azi 358.9° - End Turn @ 6342.3 ft										
6,400.00	90.00	358.90	5,589.00	1,321.86	185.50	1,323.44	0.00	0.00	0.00	0.00
6,500.00	90.00	358.90	5,589.00	1,421.85	183.57	1,423.40	0.00	0.00	0.00	0.00
6,600.00	90.00	358.90	5,589.00	1,521.83	181.65	1,523.36	0.00	0.00	0.00	0.00
6,700.00	90.00	358.90	5,589.00	1,621.81	179.72	1,623.33	0.00	0.00	0.00	0.00
6,800.00	90.00	358.90	5,589.00	1,721.79	177.80	1,723.29	0.00	0.00	0.00	0.00
6,900.00	90.00	358.90	5,589.00	1,821.77	175.87	1,823.25	0.00	0.00	0.00	0.00
7,000.00	90.00	358.90	5,589.00	1,921.75	173.95	1,923.21	0.00	0.00	0.00	0.00
7,100.00	90.00	358.90	5,589.00	2,021.73	172.02	2,023.17	0.00	0.00	0.00	0.00
7,200.00	90.00	358.90	5,589.00	2,121.72	170.10	2,123.13	0.00	0.00	0.00	0.00
7,300.00	90.00	358.90	5,589.00	2,221.70	168.17	2,223.09	0.00	0.00	0.00	0.00
7,400.00	90.00	358.90	5,589.00	2,321.68	166.25	2,323.05	0.00	0.00	0.00	0.00
7,500.00	90.00	358.90	5,589.00	2,421.66	164.32	2,423.01	0.00	0.00	0.00	0.00
7,600.00	90.00	358.90	5,589.00	2,521.64	162.40	2,522.97	0.00	0.00	0.00	0.00
7,700.00	90.00	358.90	5,589.00	2,621.62	160.47	2,622.93	0.00	0.00	0.00	0.00
7,800.00	90.00	358.90	5,589.00	2,721.60	158.55	2,722.89	0.00	0.00	0.00	0.00
7,900.00	90.00	358.90	5,589.00	2,821.59	156.62	2,822.85	0.00	0.00	0.00	0.00
8,000.00	90.00	358.90	5,589.00	2,921.57	154.70	2,922.81	0.00	0.00	0.00	0.00
8,100.00	90.00	358.90	5,589.00	3,021.55	152.77	3,022.77	0.00	0.00	0.00	0.00
8,200.00	90.00	358.90	5,589.00	3,121.53	150.85	3,122.74	0.00	0.00	0.00	0.00
8,300.00	90.00	358.90	5,589.00	3,221.51	148.92	3,222.70	0.00	0.00	0.00	0.00
8,400.00	90.00	358.90	5,589.00	3,321.49	147.00	3,322.66	0.00	0.00	0.00	0.00
8,500.00	90.00	358.90	5,589.00	3,421.47	145.07	3,422.62	0.00	0.00	0.00	0.00
8,600.00	90.00	358.90	5,589.00	3,521.46	143.15	3,522.58	0.00	0.00	0.00	0.00
8,700.00	90.00	358.90	5,589.00	3,621.44	141.22	3,622.54	0.00	0.00	0.00	0.00
8,800.00	90.00	358.90	5,589.00	3,721.42	139.30	3,722.50	0.00	0.00	0.00	0.00
8,900.00	90.00	358.90	5,589.00	3,821.40	137.37	3,822.46	0.00	0.00	0.00	0.00
9,000.00	90.00	358.90	5,589.00	3,921.38	135.45	3,922.42	0.00	0.00	0.00	0.00
9,100.00	90.00	358.90	5,589.00	4,021.36	133.52	4,022.38	0.00	0.00	0.00	0.00
9,200.00	90.00	358.90	5,589.00	4,121.35	131.60	4,122.34	0.00	0.00	0.00	0.00
9,300.00	90.00	358.90	5,589.00	4,221.33	129.67	4,222.30	0.00	0.00	0.00	0.00
9,400.00	90.00	358.90	5,589.00	4,321.31	127.75	4,322.26	0.00	0.00	0.00	0.00
9,500.00	90.00	358.90	5,589.00	4,421.29	125.82	4,422.22	0.00	0.00	0.00	0.00
9,600.00	90.00	358.90	5,589.00	4,521.27	123.90	4,522.19	0.00	0.00	0.00	0.00
9,700.00	90.00	358.90	5,589.00	4,621.25	121.97	4,622.15	0.00	0.00	0.00	0.00
9,800.00	90.00	358.90	5,589.00	4,721.23	120.05	4,722.11	0.00	0.00	0.00	0.00
9,900.00	90.00	358.90	5,589.00	4,821.22	118.12	4,822.07	0.00	0.00	0.00	0.00
10,000.00	90.00	358.90	5,589.00	4,921.20	116.20	4,922.03	0.00	0.00	0.00	0.00

Plan Report for Horsetail #30F-1946 - 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 (°)
10,100.00	90.00	358.90	5,589.00	5,021.18	114.27	5,021.99	0.00	0.00	0.00	0.00
10,200.00	90.00	358.90	5,589.00	5,121.16	112.35	5,121.95	0.00	0.00	0.00	0.00
10,300.00	90.00	358.90	5,589.00	5,221.14	110.42	5,221.91	0.00	0.00	0.00	0.00
10,400.00	90.00	358.90	5,589.00	5,321.12	108.50	5,321.87	0.00	0.00	0.00	0.00
10,500.00	90.00	358.90	5,589.00	5,421.10	106.57	5,421.83	0.00	0.00	0.00	0.00
10,600.00	90.00	358.90	5,589.00	5,521.09	104.65	5,521.79	0.00	0.00	0.00	0.00
10,700.00	90.00	358.90	5,589.00	5,621.07	102.72	5,621.75	0.00	0.00	0.00	0.00
10,800.00	90.00	358.90	5,589.00	5,721.05	100.80	5,721.71	0.00	0.00	0.00	0.00
10,900.00	90.00	358.90	5,589.00	5,821.03	98.87	5,821.67	0.00	0.00	0.00	0.00
11,000.00	90.00	358.90	5,589.00	5,921.01	96.95	5,921.63	0.00	0.00	0.00	0.00
11,100.00	90.00	358.90	5,589.00	6,020.99	95.02	6,021.60	0.00	0.00	0.00	0.00
11,200.00	90.00	358.90	5,589.00	6,120.97	93.10	6,121.56	0.00	0.00	0.00	0.00
11,300.00	90.00	358.90	5,589.00	6,220.96	91.17	6,221.52	0.00	0.00	0.00	0.00
11,350.00	90.00	358.90	5,589.00	6,270.95	90.21	6,271.50	0.00	0.00	0.00	0.00
Enters 1550' Radius										
11,400.00	90.00	358.90	5,589.00	6,320.94	89.25	6,321.48	0.00	0.00	0.00	0.00
11,500.00	90.00	358.90	5,589.00	6,420.92	87.32	6,421.44	0.00	0.00	0.00	0.00
11,600.00	90.00	358.90	5,589.00	6,520.90	85.40	6,521.40	0.00	0.00	0.00	0.00
11,700.00	90.00	358.90	5,589.00	6,620.88	83.47	6,621.36	0.00	0.00	0.00	0.00
11,800.00	90.00	358.90	5,589.00	6,720.86	81.55	6,721.32	0.00	0.00	0.00	0.00
11,900.00	90.00	358.90	5,589.00	6,820.84	79.62	6,821.28	0.00	0.00	0.00	0.00
12,000.00	90.00	358.90	5,589.00	6,920.83	77.70	6,921.24	0.00	0.00	0.00	0.00
12,100.00	90.00	358.90	5,589.00	7,020.81	75.77	7,021.20	0.00	0.00	0.00	0.00
12,200.00	90.00	358.90	5,589.00	7,120.79	73.85	7,121.16	0.00	0.00	0.00	0.00
12,300.00	90.00	358.90	5,589.00	7,220.77	71.92	7,221.12	0.00	0.00	0.00	0.00
12,400.00	90.00	358.90	5,589.00	7,320.75	70.00	7,321.08	0.00	0.00	0.00	0.00
12,500.00	90.00	358.90	5,589.00	7,420.73	68.07	7,421.05	0.00	0.00	0.00	0.00
12,600.00	90.00	358.90	5,589.00	7,520.72	66.15	7,521.01	0.00	0.00	0.00	0.00
12,601.80	90.00	358.90	5,589.00	7,522.51	66.11	7,522.81	0.00	0.00	0.00	0.00
Total Depth 12601.8 ft										
12,601.87	90.00	358.90	5,589.00	7,522.59	66.11	7,522.88	0.00	0.00	0.00	0.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Begin Nudge @ 500.00 ft
700.00	699.84	6.87	1.21	End Nudge @ 700.00 ft
5,115.38	5,104.46	310.19	54.70	Build Rate 11.00 °/100 ft
5,115.38	5,104.46	310.19	54.70	Kick Off Point @ 5115.38 ft
5,897.20	5,589.00	821.91	144.92	End Build @ 5897.2 ft
5,972.20	5,589.00	895.77	157.95	Turn Rate 3.00 °/100 ft
5,972.20	5,589.00	895.77	157.95	Begin Turn @ 5972.2 ft
6,342.30	5,589.00	1,264.17	186.61	Hold Inc 90.00°, Azi 358.9°
6,342.30	5,589.00	1,264.17	186.61	End Turn @ 6342.3 ft
11,350.00	5,589.00	6,270.95	90.21	Enters 1550' Radius
12,601.80	5,589.00	7,522.51	66.11	Total Depth 12601.8 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Horsetail #30F-1946_Rev A0_BHL Tgt	0.50	Slot	0.00	0.00	0.00

Plan Report for Horsetail #30F-1946 - Rev A0**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	1,671.50	Rev A0	MWD+IFR1+MS+sag
1,671.50	5,897.20	Rev A0	MWD+IFR1+MS+sag
5,897.20	12,601.87	Rev A0	MWD+IFR1+MS+sag

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
5,897.20	5,589.00	7" Casing Pt.	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,527.17	5,463.00	Niobrara Top		0.00	
5,612.29	5,513.00	Niobrara "A"		0.00	
5,897.20	5,589.00	Niobrara "B"		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Horsetail #30F-1941_Rev A0_BHL Tgt	5,513.00	7,522.60	-758.72	Point
Horsetail #29E-3201A_Rev A0_BHL Tgt	5,524.50	-7,719.76	3,637.44	Point
Horsetail #30F-1946_Rev A0_BHL Tgt	5,589.00	7,522.59	66.11	Point
Horsetail #30F-1942_Rev A0_BHL Tgt	5,589.00	7,522.60	-594.22	Point
Horsetail #30F-1944_Rev A0_BHL Tgt	5,589.00	7,522.59	-264.44	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.80 °/100usft	Maximum Dogleg over Survey:	11.00 °/100usft at 5,897.20 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-1946 - 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-1946

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: 1,542,710.39 usft N, 3,471,639.06 usft E

Geographical Coordinates of Well: 40° 48' 38.46" N, 103° 47' 46.10" W

Grid Convergence at Surface is: 1.10°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,601.87usft the Bottom Hole Displacement is 7,522.88usft in the Direction of 0.50° (True).

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

