

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 17-T4S-R65W (Eastern Hills 4-65 Pad)

Eastern Hills 4-65 17-18 1DH

Plan A (Lateral) (Need MagVar before Drilling)

Plan: Rev A1

Sperry Drilling Services

Proposal Report

30 March, 2015

Well Coordinates: 1,683,421.27 N, 3,230,399.92 E (39° 42' 24.99" N, 104° 40' 51.94" W)

Ground Level: 5,621.80 usft

Local Coordinate Origin:

Centered on Well Eastern Hills 4-65 17-18 1DH

Viewing Datum:

KB 24 ft @ 5645.80usft (Unknown)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

HALLIBURTON

Charge for permit plan will be credited back to Conoco Phillips if well is drilled using Sperry Drilling as the directional provider.

Project: Arapahoe County, Colorado
Site: Sec. 17-T4S-R65W (Eastern Hills 4-65 Pad)
Well: Eastern Hills 4-65 17-18 1DH
Wellbore: Plan A (Lateral) (Need MagVar before Drilling)
Plan: Rev A1

Conoco Phillips Company

HALLIBURTON
Sperry Drilling

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	2175.00	0.00	0.00	2175.00	0.00	0.00	0.00	0.00	0.00	
3	2385.00	3.15	0.00	2384.89	5.77	0.00	1.50	0.00	0.18	
4	6881.90	3.15	0.00	6875.00	252.88	0.00	0.00	0.00	7.93	
5	7091.90	0.00	0.00	7084.89	258.65	0.00	1.50	180.00	8.11	
6	7326.06	0.00	0.00	7319.05	258.65	0.00	0.00	0.00	8.11	
7	8222.99	89.69	270.24	7892.00	261.06	-569.88	10.00	270.24	577.79	
8	17179.67	89.69	270.24	7940.00	299.02	-9526.36	0.00	0.00	9531.05	Eastern Hills 4-65 17-18 1DH (Lat)_Rev A1_BHL Tgt

Plan: Rev A1 (Eastern Hills 4-65 17-18 1DH/Plan A (Lateral) (Need MagVar before Drilling))

Created By: Kansa B. Becker

Date: 17:15, May 12 2015

Checked: _____

Date: _____

Reviewed: _____

Date: _____

Approved: _____

Date: _____

T

M

Azimuths to True North

Magnetic Field

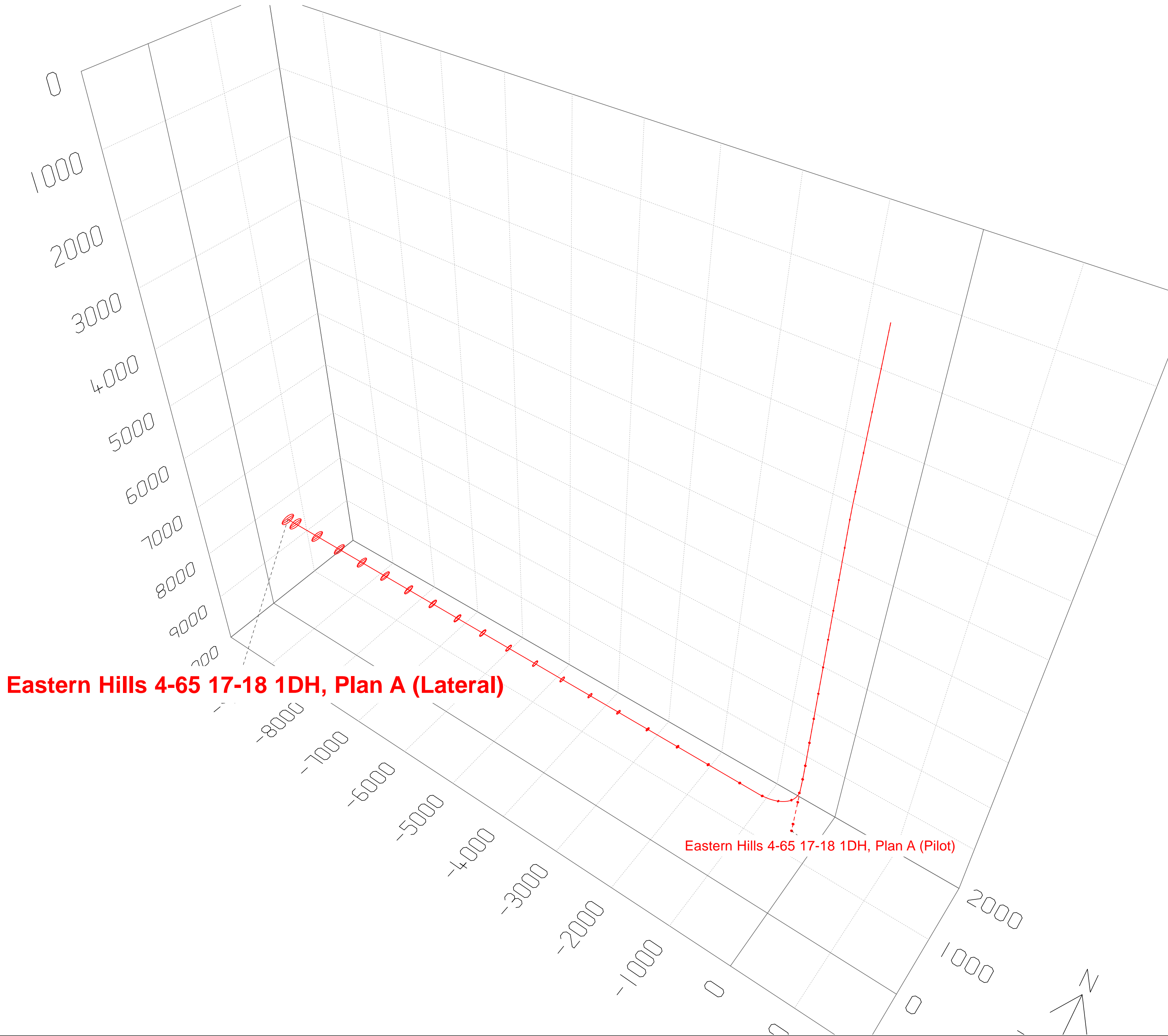
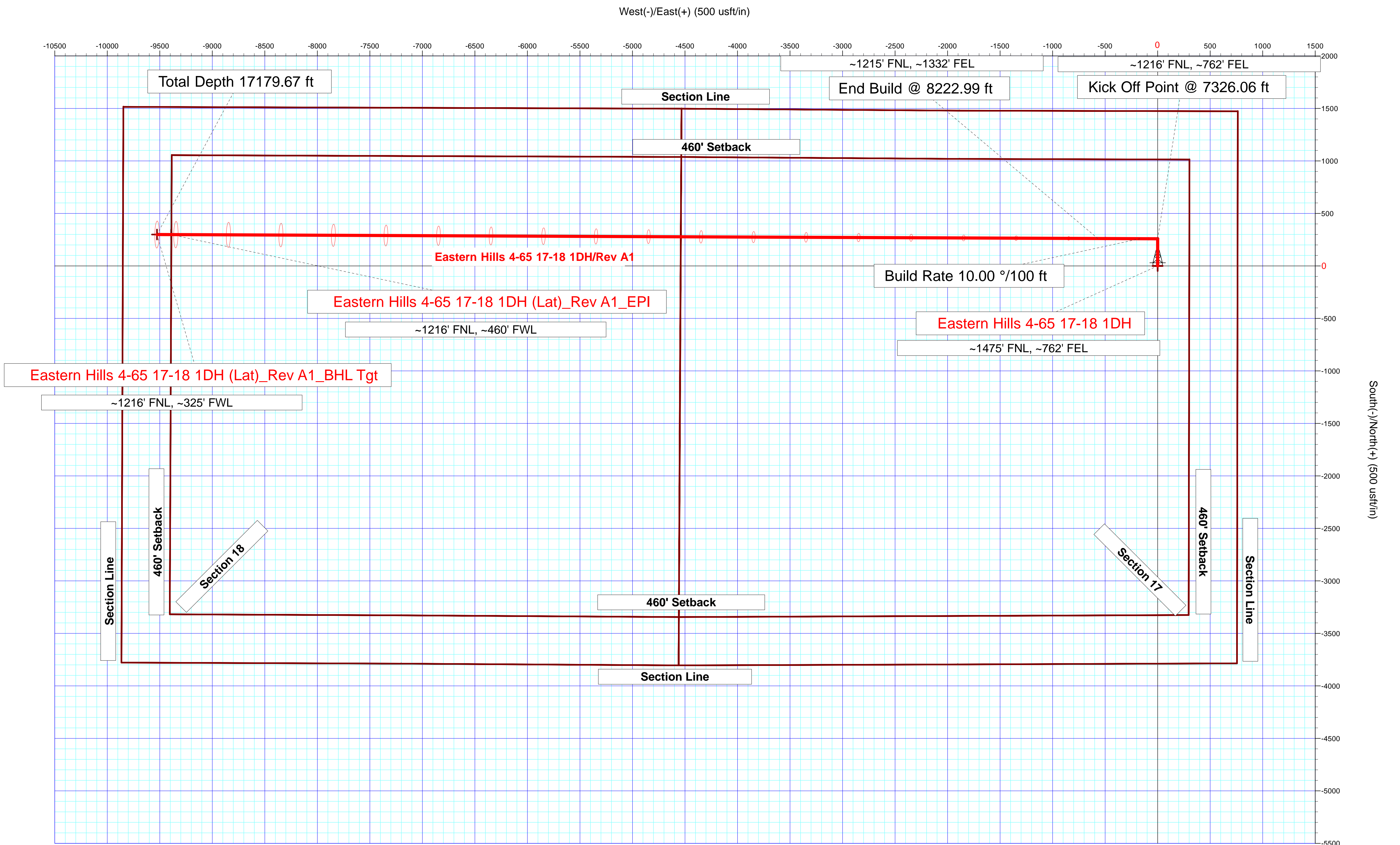
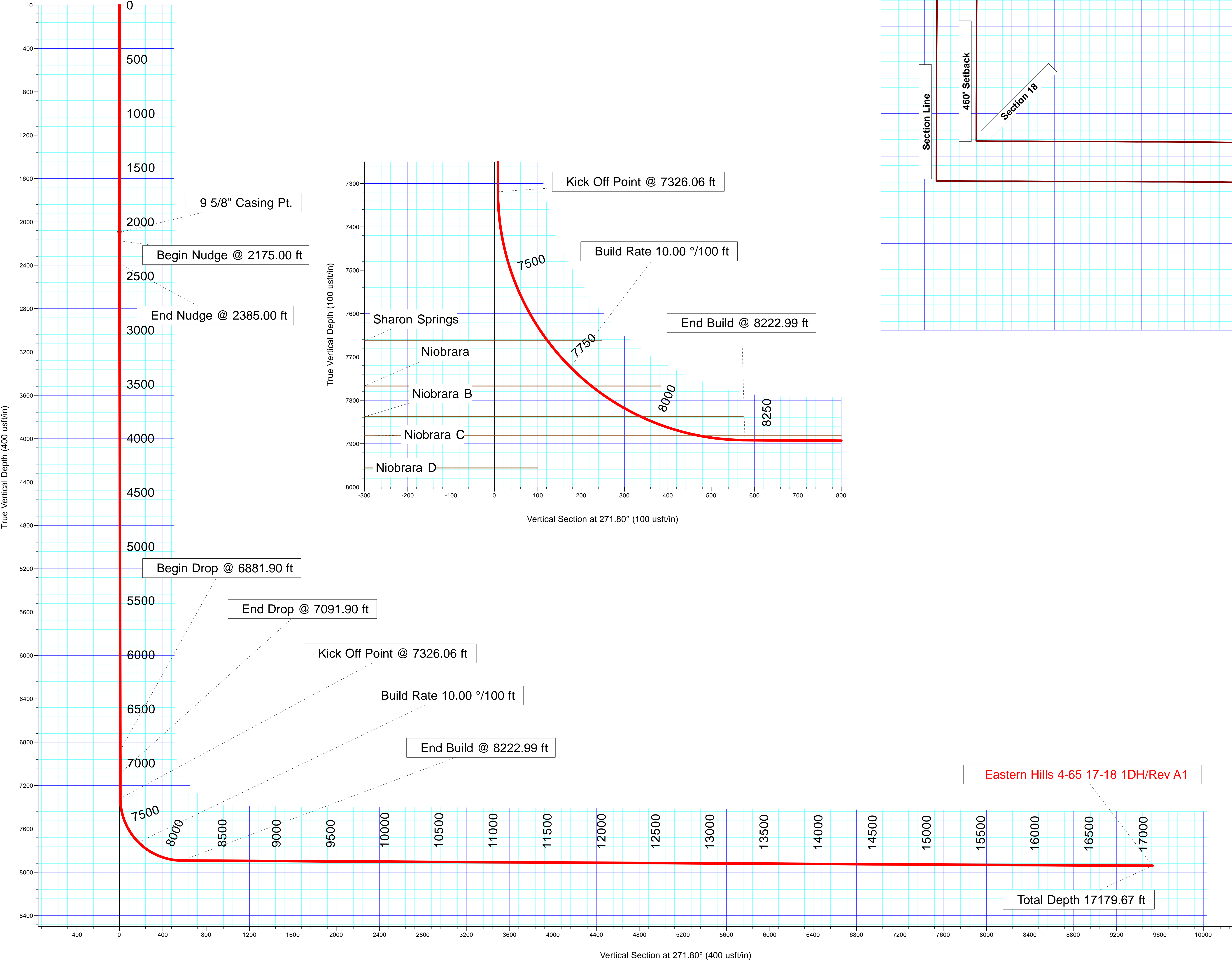
Magnetic North: 8.27°

Strength: 52111.5snT

Dip Angle: 66.33°

Date: 3/23/2016

Model: BGGM2014



Plan Report for Eastern Hills 4-65 17-18 1DH - Rev A1

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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,720.00	0.00	0.00	1,720.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills										
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,897.00	0.00	0.00	1,897.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Shale										
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,097.00	0.00	0.00	2,097.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Casing Pt.										
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,175.00	0.00	0.00	2,175.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2175.00 ft										
2,200.00	0.38	0.00	2,200.00	0.08	0.00	0.00	1.50	1.50	0.00	0.00
2,300.00	1.88	0.00	2,299.98	2.05	0.00	0.06	1.50	1.50	0.00	0.00
2,385.00	3.15	0.00	2,384.89	5.77	0.00	0.18	1.50	1.50	0.00	0.00
End Nudge @ 2385.00 ft										
2,400.00	3.15	0.00	2,399.87	6.60	0.00	0.21	0.00	0.00	0.00	0.00
2,500.00	3.15	0.00	2,499.72	12.09	0.00	0.38	0.00	0.00	0.00	0.00
2,600.00	3.15	0.00	2,599.57	17.59	0.00	0.55	0.00	0.00	0.00	0.00
2,700.00	3.15	0.00	2,699.42	23.08	0.00	0.72	0.00	0.00	0.00	0.00
2,800.00	3.15	0.00	2,799.27	28.58	0.00	0.90	0.00	0.00	0.00	0.00
2,900.00	3.15	0.00	2,899.12	34.07	0.00	1.07	0.00	0.00	0.00	0.00
3,000.00	3.15	0.00	2,998.97	39.57	0.00	1.24	0.00	0.00	0.00	0.00
3,100.00	3.15	0.00	3,098.81	45.06	0.00	1.41	0.00	0.00	0.00	0.00
3,200.00	3.15	0.00	3,198.66	50.56	0.00	1.59	0.00	0.00	0.00	0.00
3,300.00	3.15	0.00	3,298.51	56.05	0.00	1.76	0.00	0.00	0.00	0.00
3,400.00	3.15	0.00	3,398.36	61.55	0.00	1.93	0.00	0.00	0.00	0.00
3,500.00	3.15	0.00	3,498.21	67.04	0.00	2.10	0.00	0.00	0.00	0.00
3,600.00	3.15	0.00	3,598.06	72.54	0.00	2.28	0.00	0.00	0.00	0.00
3,700.00	3.15	0.00	3,697.91	78.03	0.00	2.45	0.00	0.00	0.00	0.00
3,800.00	3.15	0.00	3,797.76	83.53	0.00	2.62	0.00	0.00	0.00	0.00
3,900.00	3.15	0.00	3,897.61	89.02	0.00	2.79	0.00	0.00	0.00	0.00
4,000.00	3.15	0.00	3,997.45	94.52	0.00	2.97	0.00	0.00	0.00	0.00
4,100.00	3.15	0.00	4,097.30	100.01	0.00	3.14	0.00	0.00	0.00	0.00
4,200.00	3.15	0.00	4,197.15	105.51	0.00	3.31	0.00	0.00	0.00	0.00
4,300.00	3.15	0.00	4,297.00	111.00	0.00	3.48	0.00	0.00	0.00	0.00
4,400.00	3.15	0.00	4,396.85	116.50	0.00	3.65	0.00	0.00	0.00	0.00
4,500.00	3.15	0.00	4,496.70	121.99	0.00	3.83	0.00	0.00	0.00	0.00
4,600.00	3.15	0.00	4,596.55	127.49	0.00	4.00	0.00	0.00	0.00	0.00
4,700.00	3.15	0.00	4,696.40	132.98	0.00	4.17	0.00	0.00	0.00	0.00

Plan Report for Eastern Hills 4-65 17-18 1DH - Rev A1

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 (°)
4,800.00	3.15	0.00	4,796.25	138.48	0.00	4.34	0.00	0.00	0.00	0.00
4,900.00	3.15	0.00	4,896.09	143.97	0.00	4.52	0.00	0.00	0.00	0.00
5,000.00	3.15	0.00	4,995.94	149.47	0.00	4.69	0.00	0.00	0.00	0.00
5,100.00	3.15	0.00	5,095.79	154.96	0.00	4.86	0.00	0.00	0.00	0.00
5,200.00	3.15	0.00	5,195.64	160.46	0.00	5.03	0.00	0.00	0.00	0.00
5,300.00	3.15	0.00	5,295.49	165.95	0.00	5.21	0.00	0.00	0.00	0.00
5,400.00	3.15	0.00	5,395.34	171.45	0.00	5.38	0.00	0.00	0.00	0.00
5,500.00	3.15	0.00	5,495.19	176.94	0.00	5.55	0.00	0.00	0.00	0.00
5,600.00	3.15	0.00	5,595.04	182.44	0.00	5.72	0.00	0.00	0.00	0.00
5,700.00	3.15	0.00	5,694.89	187.93	0.00	5.90	0.00	0.00	0.00	0.00
5,800.00	3.15	0.00	5,794.73	193.43	0.00	6.07	0.00	0.00	0.00	0.00
5,900.00	3.15	0.00	5,894.58	198.92	0.00	6.24	0.00	0.00	0.00	0.00
6,000.00	3.15	0.00	5,994.43	204.42	0.00	6.41	0.00	0.00	0.00	0.00
6,100.00	3.15	0.00	6,094.28	209.91	0.00	6.59	0.00	0.00	0.00	0.00
6,200.00	3.15	0.00	6,194.13	215.41	0.00	6.76	0.00	0.00	0.00	0.00
6,300.00	3.15	0.00	6,293.98	220.90	0.00	6.93	0.00	0.00	0.00	0.00
6,400.00	3.15	0.00	6,393.83	226.40	0.00	7.10	0.00	0.00	0.00	0.00
6,500.00	3.15	0.00	6,493.68	231.89	0.00	7.28	0.00	0.00	0.00	0.00
6,600.00	3.15	0.00	6,593.53	237.39	0.00	7.45	0.00	0.00	0.00	0.00
6,700.00	3.15	0.00	6,693.37	242.88	0.00	7.62	0.00	0.00	0.00	0.00
6,800.00	3.15	0.00	6,793.22	248.38	0.00	7.79	0.00	0.00	0.00	0.00
6,881.90	3.15	0.00	6,875.00	252.88	0.00	7.93	0.00	0.00	0.00	0.00
Begin Drop @ 6881.90 ft										
6,900.00	2.88	0.00	6,893.07	253.83	0.00	7.96	1.50	-1.50	0.00	180.00
7,000.00	1.38	0.00	6,993.00	257.54	0.00	8.08	1.50	-1.50	0.00	180.00
7,091.90	0.00	0.00	7,084.89	258.65	0.00	8.11	1.50	-1.50	0.00	-180.00
End Drop @ 7091.90 ft										
7,100.00	0.00	0.00	7,092.99	258.65	0.00	8.11	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,192.99	258.65	0.00	8.11	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,292.99	258.65	0.00	8.11	0.00	0.00	0.00	0.00
7,326.06	0.00	0.00	7,319.05	258.65	0.00	8.11	0.00	0.00	0.00	0.00
Kick Off Point @ 7326.06 ft										
7,400.00	7.39	270.24	7,392.79	258.67	-4.76	12.88	10.00	10.00	-121.39	-89.76
7,500.00	17.39	270.24	7,490.33	258.76	-26.20	34.31	10.00	10.00	0.00	0.00
7,600.00	27.39	270.24	7,582.68	258.92	-64.25	72.34	10.00	10.00	0.00	0.00
7,694.97	36.89	270.24	7,663.00	259.13	-114.72	122.80	10.00	10.00	0.00	0.00
Sharon Springs										
7,700.00	37.39	270.24	7,667.01	259.15	-117.76	125.83	10.00	10.00	0.00	0.00
7,775.00	44.89	270.24	7,723.45	259.36	-167.07	175.12	10.00	10.00	0.00	0.00
Build Rate 10.00 °/100 ft										
7,800.00	47.39	270.24	7,740.76	259.43	-185.09	193.14	10.00	10.00	0.00	0.00
7,840.33	51.43	270.24	7,767.00	259.56	-215.71	223.75	10.00	10.00	0.00	0.00
Niobrara										
7,900.00	57.39	270.24	7,801.71	259.77	-264.22	272.24	10.00	10.00	0.00	0.00
7,975.29	64.92	270.24	7,838.00	260.05	-330.11	338.11	10.00	10.00	0.00	0.00
Niobrara B										
8,000.00	67.39	270.24	7,847.99	260.14	-352.72	360.71	10.00	10.00	0.00	0.00
8,100.00	77.39	270.24	7,878.20	260.55	-447.91	455.87	10.00	10.00	0.00	0.00
8,118.81	79.28	270.24	7,882.00	260.62	-466.33	474.28	10.00	10.00	0.00	0.00
Niobrara C										
8,200.00	87.39	270.24	7,891.42	260.97	-546.91	554.82	10.00	10.00	0.00	0.00
8,222.99	89.69	270.24	7,892.00	261.06	-569.88	577.79	10.00	10.00	0.00	0.00
End Build @ 8222.99 ft										
8,300.00	89.69	270.24	7,892.41	261.39	-646.89	654.78	0.00	0.00	0.00	0.00
8,400.00	89.69	270.24	7,892.95	261.81	-746.89	754.74	0.00	0.00	0.00	0.00
8,500.00	89.69	270.24	7,893.48	262.24	-846.89	854.70	0.00	0.00	0.00	0.00
8,600.00	89.69	270.24	7,894.02	262.66	-946.89	954.66	0.00	0.00	0.00	0.00
8,700.00	89.69	270.24	7,894.56	263.08	-1,046.89	1,054.62	0.00	0.00	0.00	0.00

Plan Report for Eastern Hills 4-65 17-18 1DH - Rev A1

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 (°)
8,800.00	89.69	270.24	7,895.09	263.51	-1,146.88	1,154.59	0.00	0.00	0.00	0.00
8,900.00	89.69	270.24	7,895.63	263.93	-1,246.88	1,254.55	0.00	0.00	0.00	0.00
9,000.00	89.69	270.24	7,896.16	264.36	-1,346.88	1,354.51	0.00	0.00	0.00	0.00
9,100.00	89.69	270.24	7,896.70	264.78	-1,446.88	1,454.47	0.00	0.00	0.00	0.00
9,200.00	89.69	270.24	7,897.24	265.20	-1,546.87	1,554.43	0.00	0.00	0.00	0.00
9,300.00	89.69	270.24	7,897.77	265.63	-1,646.87	1,654.39	0.00	0.00	0.00	0.00
9,400.00	89.69	270.24	7,898.31	266.05	-1,746.87	1,754.36	0.00	0.00	0.00	0.00
9,500.00	89.69	270.24	7,898.84	266.48	-1,846.87	1,854.32	0.00	0.00	0.00	0.00
9,600.00	89.69	270.24	7,899.38	266.90	-1,946.86	1,954.28	0.00	0.00	0.00	0.00
9,700.00	89.69	270.24	7,899.92	267.32	-2,046.86	2,054.24	0.00	0.00	0.00	0.00
9,800.00	89.69	270.24	7,900.45	267.75	-2,146.86	2,154.20	0.00	0.00	0.00	0.00
9,900.00	89.69	270.24	7,900.99	268.17	-2,246.86	2,254.17	0.00	0.00	0.00	0.00
10,000.00	89.69	270.24	7,901.52	268.59	-2,346.86	2,354.13	0.00	0.00	0.00	0.00
10,100.00	89.69	270.24	7,902.06	269.02	-2,446.85	2,454.09	0.00	0.00	0.00	0.00
10,200.00	89.69	270.24	7,902.59	269.44	-2,546.85	2,554.05	0.00	0.00	0.00	0.00
10,300.00	89.69	270.24	7,903.13	269.87	-2,646.85	2,654.01	0.00	0.00	0.00	0.00
10,400.00	89.69	270.24	7,903.67	270.29	-2,746.85	2,753.97	0.00	0.00	0.00	0.00
10,500.00	89.69	270.24	7,904.20	270.71	-2,846.84	2,853.94	0.00	0.00	0.00	0.00
10,600.00	89.69	270.24	7,904.74	271.14	-2,946.84	2,953.90	0.00	0.00	0.00	0.00
10,700.00	89.69	270.24	7,905.27	271.56	-3,046.84	3,053.86	0.00	0.00	0.00	0.00
10,800.00	89.69	270.24	7,905.81	271.98	-3,146.84	3,153.82	0.00	0.00	0.00	0.00
10,900.00	89.69	270.24	7,906.35	272.41	-3,246.83	3,253.78	0.00	0.00	0.00	0.00
11,000.00	89.69	270.24	7,906.88	272.83	-3,346.83	3,353.74	0.00	0.00	0.00	0.00
11,100.00	89.69	270.24	7,907.42	273.26	-3,446.83	3,453.71	0.00	0.00	0.00	0.00
11,200.00	89.69	270.24	7,907.95	273.68	-3,546.83	3,553.67	0.00	0.00	0.00	0.00
11,300.00	89.69	270.24	7,908.49	274.10	-3,646.82	3,653.63	0.00	0.00	0.00	0.00
11,400.00	89.69	270.24	7,909.03	274.53	-3,746.82	3,753.59	0.00	0.00	0.00	0.00
11,500.00	89.69	270.24	7,909.56	274.95	-3,846.82	3,853.55	0.00	0.00	0.00	0.00
11,600.00	89.69	270.24	7,910.10	275.38	-3,946.82	3,953.51	0.00	0.00	0.00	0.00
11,700.00	89.69	270.24	7,910.63	275.80	-4,046.82	4,053.48	0.00	0.00	0.00	0.00
11,800.00	89.69	270.24	7,911.17	276.22	-4,146.81	4,153.44	0.00	0.00	0.00	0.00
11,900.00	89.69	270.24	7,911.71	276.65	-4,246.81	4,253.40	0.00	0.00	0.00	0.00
12,000.00	89.69	270.24	7,912.24	277.07	-4,346.81	4,353.36	0.00	0.00	0.00	0.00
12,100.00	89.69	270.24	7,912.78	277.49	-4,446.81	4,453.32	0.00	0.00	0.00	0.00
12,200.00	89.69	270.24	7,913.31	277.92	-4,546.80	4,553.28	0.00	0.00	0.00	0.00
12,300.00	89.69	270.24	7,913.85	278.34	-4,646.80	4,653.25	0.00	0.00	0.00	0.00
12,400.00	89.69	270.24	7,914.38	278.77	-4,746.80	4,753.21	0.00	0.00	0.00	0.00
12,500.00	89.69	270.24	7,914.92	279.19	-4,846.80	4,853.17	0.00	0.00	0.00	0.00
12,600.00	89.69	270.24	7,915.46	279.61	-4,946.79	4,953.13	0.00	0.00	0.00	0.00
12,700.00	89.69	270.24	7,915.99	280.04	-5,046.79	5,053.09	0.00	0.00	0.00	0.00
12,800.00	89.69	270.24	7,916.53	280.46	-5,146.79	5,153.06	0.00	0.00	0.00	0.00
12,900.00	89.69	270.24	7,917.06	280.88	-5,246.79	5,253.02	0.00	0.00	0.00	0.00
13,000.00	89.69	270.24	7,917.60	281.31	-5,346.79	5,352.98	0.00	0.00	0.00	0.00
13,100.00	89.69	270.24	7,918.14	281.73	-5,446.78	5,452.94	0.00	0.00	0.00	0.00
13,200.00	89.69	270.24	7,918.67	282.16	-5,546.78	5,552.90	0.00	0.00	0.00	0.00
13,300.00	89.69	270.24	7,919.21	282.58	-5,646.78	5,652.86	0.00	0.00	0.00	0.00
13,400.00	89.69	270.24	7,919.74	283.00	-5,746.78	5,752.83	0.00	0.00	0.00	0.00
13,500.00	89.69	270.24	7,920.28	283.43	-5,846.77	5,852.79	0.00	0.00	0.00	0.00
13,600.00	89.69	270.24	7,920.82	283.85	-5,946.77	5,952.75	0.00	0.00	0.00	0.00
13,700.00	89.69	270.24	7,921.35	284.28	-6,046.77	6,052.71	0.00	0.00	0.00	0.00
13,800.00	89.69	270.24	7,921.89	284.70	-6,146.77	6,152.67	0.00	0.00	0.00	0.00
13,900.00	89.69	270.24	7,922.42	285.12	-6,246.76	6,252.63	0.00	0.00	0.00	0.00
14,000.00	89.69	270.24	7,922.96	285.55	-6,346.76	6,352.60	0.00	0.00	0.00	0.00
14,100.00	89.69	270.24	7,923.50	285.97	-6,446.76	6,452.56	0.00	0.00	0.00	0.00
14,200.00	89.69	270.24	7,924.03	286.39	-6,546.76	6,552.52	0.00	0.00	0.00	0.00
14,300.00	89.69	270.24	7,924.57	286.82	-6,646.75	6,652.48	0.00	0.00	0.00	0.00
14,400.00	89.69	270.24	7,925.10	287.24	-6,746.75	6,752.44	0.00	0.00	0.00	0.00
14,500.00	89.69	270.24	7,925.64	287.67	-6,846.75	6,852.40	0.00	0.00	0.00	0.00
14,600.00	89.69	270.24	7,926.18	288.09	-6,946.75	6,952.37	0.00	0.00	0.00	0.00
14,700.00	89.69	270.24	7,926.71	288.51	-7,046.75	7,052.33	0.00	0.00	0.00	0.00

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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 (°)
14,800.00	89.69	270.24	7,927.25	288.94	-7,146.74	7,152.29	0.00	0.00	0.00	0.00
14,900.00	89.69	270.24	7,927.78	289.36	-7,246.74	7,252.25	0.00	0.00	0.00	0.00
15,000.00	89.69	270.24	7,928.32	289.78	-7,346.74	7,352.21	0.00	0.00	0.00	0.00
15,100.00	89.69	270.24	7,928.85	290.21	-7,446.74	7,452.18	0.00	0.00	0.00	0.00
15,200.00	89.69	270.24	7,929.39	290.63	-7,546.73	7,552.14	0.00	0.00	0.00	0.00
15,300.00	89.69	270.24	7,929.93	291.06	-7,646.73	7,652.10	0.00	0.00	0.00	0.00
15,400.00	89.69	270.24	7,930.46	291.48	-7,746.73	7,752.06	0.00	0.00	0.00	0.00
15,500.00	89.69	270.24	7,931.00	291.90	-7,846.73	7,852.02	0.00	0.00	0.00	0.00
15,600.00	89.69	270.24	7,931.53	292.33	-7,946.72	7,951.98	0.00	0.00	0.00	0.00
15,700.00	89.69	270.24	7,932.07	292.75	-8,046.72	8,051.95	0.00	0.00	0.00	0.00
15,800.00	89.69	270.24	7,932.61	293.17	-8,146.72	8,151.91	0.00	0.00	0.00	0.00
15,900.00	89.69	270.24	7,933.14	293.60	-8,246.72	8,251.87	0.00	0.00	0.00	0.00
16,000.00	89.69	270.24	7,933.68	294.02	-8,346.72	8,351.83	0.00	0.00	0.00	0.00
16,100.00	89.69	270.24	7,934.21	294.45	-8,446.71	8,451.79	0.00	0.00	0.00	0.00
16,200.00	89.69	270.24	7,934.75	294.87	-8,546.71	8,551.75	0.00	0.00	0.00	0.00
16,300.00	89.69	270.24	7,935.29	295.29	-8,646.71	8,651.72	0.00	0.00	0.00	0.00
16,400.00	89.69	270.24	7,935.82	295.72	-8,746.71	8,751.68	0.00	0.00	0.00	0.00
16,500.00	89.69	270.24	7,936.36	296.14	-8,846.70	8,851.64	0.00	0.00	0.00	0.00
16,600.00	89.69	270.24	7,936.89	296.57	-8,946.70	8,951.60	0.00	0.00	0.00	0.00
16,700.00	89.69	270.24	7,937.43	296.99	-9,046.70	9,051.56	0.00	0.00	0.00	0.00
16,800.00	89.69	270.24	7,937.97	297.41	-9,146.70	9,151.52	0.00	0.00	0.00	0.00
16,900.00	89.69	270.24	7,938.50	297.84	-9,246.69	9,251.49	0.00	0.00	0.00	0.00
17,000.00	89.69	270.24	7,939.04	298.26	-9,346.69	9,351.45	0.00	0.00	0.00	0.00
17,100.00	89.69	270.24	7,939.57	298.68	-9,446.69	9,451.41	0.00	0.00	0.00	0.00
17,179.67	89.69	270.24	7,940.00	299.02	-9,526.36	9,531.05	0.00	0.00	0.00	0.00
Total Depth 17179.67 ft										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,175.00	2,175.00	0.00	0.00	Begin Nudge @ 2175.00 ft
2,385.00	2,384.89	5.77	0.00	End Nudge @ 2385.00 ft
6,881.90	6,875.00	252.88	0.00	Begin Drop @ 6881.90 ft
7,091.90	7,084.89	258.65	0.00	End Drop @ 7091.90 ft
7,326.06	7,319.05	258.65	0.00	Kick Off Point @ 7326.06 ft
7,775.00	7,723.45	259.36	-167.07	Build Rate 10.00 °/100 ft
8,222.99	7,892.00	261.06	-569.88	End Build @ 8222.99 ft
17,179.67	7,940.00	299.02	-9,526.36	Total Depth 17179.67 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	+E/-W (usft)	Start TVD (usft)
Target	Eastern Hills 4-65 17-18 1DH (Lat)_Rev A1_BHL Tgt	271.80	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	2,097.00	Rev A1	MWD+IFR1+MS_WY
2,097.00	17,179.67	Rev A1	MWD+IFR1+MS_WY

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Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,097.00	2,097.00	9 5/8" Casing Pt.	9-5/8	13-1/2

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,720.00	1,720.00	Fox Hills			
1,897.00	1,897.00	Pierre Shale			
7,694.97	7,663.00	Sharon Springs			
7,840.33	7,767.00	Niobrara			
7,975.29	7,838.00	Niobrara B			
8,118.81	7,882.00	Niobrara C			

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Eastern Hills 4-65 17-18 1DH_SB	0.00	0.00	0.00	Polygon
Eastern Hills 4-65 17-18 1DH_SL	0.00	0.00	0.00	Polygon
Eastern Hills 4-65 17-18 1DH_SHL	0.00	0.00	0.00	Point
State-Smith 1-16_(1500 ft Radius)	3.10	776.30	1,418.28	Circle
Eastern Hills 4-65 17-18 1DH (Lat)_Rev A1_BH	7,940.00	299.02	-9,526.36	Point
Eastern Hills 4-65 17-18 1DH (Lat)_Rev A1_EP	7,940.00	298.24	-9,391.03	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.56 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 8,222.99 usft
Net Tortousity applicable to Plans:	0.56 °/100usft	Directional Difficulty Index:	6.570

Audit Info

North Reference Sheet for Sec. 17-T4S-R65W (Eastern Hills 4-65 Pad) - Eastern Hills 4-65 17-18 1DH - Plan A (Lateral) (Need MagVar before Drilling)

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

Vertical Depths are relative to KB 24 ft @ 5645.80usft (Unknown). Northing and Easting are relative to Eastern Hills 4-65 17-18 1DH

Coordinate System is US State Plane 1983, Colorado Central 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:39° 45' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99999177

Grid Coordinates of Well: 1,683,421.27 usft N, 3,230,399.92 usft E

Geographical Coordinates of Well: 39° 42' 24.99" N, 104° 40' 51.94" W

Grid Convergence at Surface is: 0.52°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,179.67usft the Bottom Hole Displacement is 9,531.05usft in the Direction of 271.80° (True).

Magnetic Convergence at surface is: -7.76° (23 March 2016, , BGGM2014)

