

Noble Energy

Weld County, CO (NAD 83)

Sec. 36-T5N-R64W

Sooner State B36-63HN

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

19 April, 2012

Well Coordinates: 1,371,736.84 N, 3,281,761.26 E (40° 20' 57.88" N, 104° 29' 20.62" W)

Ground Level: 4,600.00 ft

Local Coordinate Origin:

Centered on Well Sooner State B36-63HN

Viewing Datum:

KB @ 4624.00ft (H&P 343)

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

Design Report for Sooner State B36-63HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
572.00	0.00	0.00	572.00	0.00	0.00	0.00	0.00
Surface Casing Assumed Vertical at 572.00ft							
642.00	0.52	290.08	642.00	0.11	-0.30	0.31	0.74
First MWD Survey							
832.00	0.52	256.18	831.99	0.20	-1.95	1.95	0.16
926.00	0.56	272.23	925.99	0.12	-2.82	2.80	0.17
1,116.00	0.68	254.70	1,115.98	-0.15	-4.83	4.75	0.12
1,208.00	0.88	267.58	1,207.97	-0.32	-6.07	5.94	0.29
1,300.00	2.94	27.21	1,299.93	1.75	-5.69	5.90	3.76
1,392.00	6.53	19.45	1,391.60	8.78	-2.87	4.22	3.95
1,485.00	6.97	9.90	1,483.96	19.33	-0.14	3.19	1.29
1,577.00	9.65	13.40	1,574.99	32.33	2.61	2.52	2.96
1,669.00	11.69	13.42	1,665.39	48.90	6.56	1.23	2.22
1,761.00	14.19	14.59	1,755.05	68.88	11.56	-0.56	2.73
1,854.00	14.00	11.88	1,845.25	90.92	16.75	-2.21	0.74
1,946.00	16.05	13.46	1,934.10	114.18	22.00	-3.73	2.27
2,038.00	16.70	11.83	2,022.37	139.49	27.67	-5.34	0.87
2,136.00	14.63	9.47	2,116.72	165.48	32.59	-6.10	2.21
2,232.00	14.05	12.19	2,209.73	188.83	37.05	-6.82	0.93
2,327.00	14.09	9.95	2,301.88	211.49	41.48	-7.63	0.57
2,423.00	15.46	15.61	2,394.71	235.33	46.95	-9.26	2.07
2,518.00	16.87	12.80	2,485.95	260.97	53.41	-11.60	1.70
2,614.00	17.05	10.55	2,577.78	288.38	59.07	-12.87	0.71
2,709.00	17.33	9.58	2,668.54	316.03	63.98	-13.36	0.42
2,900.00	16.93	7.76	2,851.07	371.63	72.46	-12.98	0.35
2,996.00	16.70	7.82	2,942.96	399.15	76.23	-12.35	0.24
3,091.00	13.98	8.17	3,034.57	424.04	79.72	-11.88	2.86
3,186.00	13.43	8.23	3,126.86	446.31	82.93	-11.53	0.58
3,282.00	12.88	17.09	3,220.35	467.58	87.67	-12.86	2.17
3,377.00	13.78	21.24	3,312.79	488.24	94.88	-16.73	1.38
3,473.00	15.52	20.90	3,405.67	510.90	103.60	-21.77	1.81
3,568.00	16.14	20.04	3,497.07	535.18	112.66	-26.89	0.70
3,664.00	15.93	16.43	3,589.33	560.35	120.96	-31.12	1.06
3,759.00	16.48	15.92	3,680.56	585.81	128.34	-34.39	0.60
3,855.00	15.52	13.74	3,772.84	611.39	135.13	-37.06	1.18
3,950.00	13.69	6.86	3,864.77	634.90	139.49	-37.67	2.65
4,046.00	13.42	5.34	3,958.10	657.27	141.89	-36.50	0.47
4,141.00	12.49	2.69	4,050.68	678.51	143.39	-34.64	1.16
4,237.00	13.48	0.83	4,144.23	700.06	144.04	-31.89	1.12
4,332.00	13.16	1.57	4,236.67	721.95	144.50	-28.89	0.38
4,428.00	14.64	5.61	4,329.86	744.95	145.99	-26.73	1.84
4,523.00	13.36	6.44	4,422.03	767.80	148.39	-25.50	1.36
4,619.00	12.62	5.12	4,515.58	789.27	150.57	-24.27	0.83
4,714.00	11.89	5.26	4,608.41	809.35	152.39	-22.90	0.77
4,810.00	10.80	5.81	4,702.53	828.15	154.21	-21.74	1.14
4,905.00	10.49	6.50	4,795.90	845.59	156.09	-20.84	0.35
5,001.00	9.18	8.57	4,890.49	861.85	158.22	-20.38	1.41
5,096.00	6.00	7.11	4,984.64	874.27	159.97	-20.15	3.35
5,191.00	3.57	11.91	5,079.30	882.10	161.19	-20.12	2.59

Design Report for Sooner State B36-63HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,287.00	1.38	13.66	5,175.21	886.14	162.08	-20.37	2.28
5,382.00	0.56	355.26	5,270.20	887.72	162.31	-20.35	0.91
5,478.00	0.77	43.15	5,366.19	888.66	162.72	-20.60	0.60
5,573.00	0.79	62.56	5,461.18	889.42	163.73	-21.48	0.28
5,669.00	0.61	79.92	5,557.17	889.82	164.82	-22.49	0.29
5,764.00	1.51	80.50	5,652.16	890.11	166.56	-24.16	0.95
5,859.00	1.64	81.67	5,747.12	890.52	169.14	-26.64	0.14
5,955.00	2.82	288.21	5,843.09	891.45	168.25	-25.62	4.53
6,003.00	7.58	278.99	5,890.88	892.32	164.00	-21.29	10.04
6,050.00	11.76	280.06	5,937.20	893.64	156.22	-13.39	8.90
6,098.00	15.22	282.08	5,983.87	895.81	145.24	-2.21	7.27
6,146.00	19.41	278.42	6,029.68	898.30	131.18	12.07	9.02
6,194.00	22.25	269.06	6,074.56	899.32	114.20	29.00	9.10
6,241.00	25.95	265.22	6,117.45	898.32	95.04	47.75	8.55
6,289.00	29.12	267.15	6,160.01	896.86	72.91	69.38	6.86
6,337.00	32.32	269.24	6,201.27	896.11	48.40	93.46	7.03
6,385.00	36.70	271.15	6,240.82	896.23	21.22	120.32	9.40
6,432.00	40.76	272.84	6,277.48	897.27	-8.16	149.50	8.93
6,480.00	45.03	270.52	6,312.63	898.20	-40.80	181.88	9.48
6,528.00	48.53	267.98	6,345.50	897.72	-75.77	216.34	8.25
6,576.00	51.05	265.90	6,376.49	895.75	-112.37	252.17	6.21
6,623.00	53.26	264.01	6,405.33	892.48	-149.33	288.15	5.67
6,671.00	57.70	264.70	6,432.52	888.60	-188.68	326.40	9.33
6,719.00	60.83	265.58	6,457.05	885.11	-229.78	366.44	6.71
6,767.00	64.53	266.81	6,479.08	882.29	-272.33	408.00	8.04
6,814.00	68.29	267.25	6,497.88	880.06	-315.33	450.12	8.05
6,862.00	71.76	266.52	6,514.28	877.60	-360.37	494.21	7.37
6,910.00	74.65	267.27	6,528.15	875.12	-406.25	539.12	6.20
6,958.00	77.73	268.32	6,539.60	873.33	-452.82	584.83	6.76
7,005.00	81.21	269.14	6,548.19	872.30	-499.01	630.28	7.60
7,114.00	86.58	270.16	6,559.78	871.65	-607.35	737.16	5.01
7,210.00	89.04	268.05	6,563.45	870.15	-703.26	831.63	3.37
7,305.00	90.80	267.62	6,563.58	866.56	-798.19	924.81	1.91
7,401.00	89.35	267.54	6,563.45	862.50	-894.10	1,018.88	1.51
7,496.00	91.20	267.40	6,563.00	858.31	-989.00	1,111.94	1.95
7,592.00	91.23	267.84	6,560.96	854.33	-1,084.89	1,206.00	0.46
7,687.00	90.15	267.92	6,559.82	850.81	-1,179.82	1,299.19	1.14
7,783.00	90.77	267.62	6,559.05	847.08	-1,275.74	1,393.33	0.72
7,878.00	89.97	266.21	6,558.43	841.96	-1,370.60	1,486.19	1.71
7,973.00	89.63	265.95	6,558.77	835.47	-1,465.38	1,578.76	0.45
8,069.00	88.64	264.73	6,560.21	827.67	-1,561.05	1,672.00	1.64
8,164.00	88.34	262.97	6,562.72	817.50	-1,655.46	1,763.63	1.88
8,260.00	89.11	265.47	6,564.85	807.83	-1,750.94	1,856.40	2.72
8,355.00	90.22	266.54	6,565.41	801.22	-1,845.71	1,948.93	1.62
8,451.00	90.80	267.68	6,564.56	796.38	-1,941.58	2,042.84	1.33
8,546.00	91.76	267.57	6,562.43	792.44	-2,036.47	2,135.93	1.02
8,641.00	89.81	269.08	6,561.13	789.66	-2,131.42	2,229.25	2.60
8,737.00	89.72	268.87	6,561.53	787.95	-2,227.40	2,323.76	0.24
8,832.00	91.57	270.17	6,560.46	787.15	-2,322.39	2,417.43	2.38
8,928.00	90.19	269.35	6,558.98	786.75	-2,418.37	2,512.16	1.67
9,023.00	90.99	269.64	6,558.00	785.91	-2,513.36	2,605.83	0.90

Design Report for Sooner State B36-63HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,118.00	90.25	270.02	6,556.98	785.63	-2,608.35	2,699.59	0.88
9,214.00	90.77	272.00	6,556.12	787.32	-2,704.33	2,794.63	2.13
9,309.00	90.25	271.21	6,555.28	789.98	-2,799.29	2,888.82	1.00
9,405.00	89.41	269.90	6,555.56	790.91	-2,895.28	2,983.76	1.62
9,500.00	90.43	269.03	6,555.69	790.02	-2,990.27	3,077.42	1.41
9,596.00	89.04	266.68	6,556.14	786.43	-3,086.20	3,171.58	2.84
9,691.00	89.69	266.81	6,557.19	781.04	-3,181.04	3,264.39	0.70
9,787.00	89.78	266.41	6,557.63	775.36	-3,276.87	3,358.12	0.43
9,882.00	89.78	266.01	6,558.00	769.08	-3,371.66	3,450.74	0.42
9,977.00	90.28	265.79	6,557.95	762.29	-3,466.42	3,543.24	0.58
10,073.00	90.25	266.70	6,557.51	756.00	-3,562.21	3,636.84	0.95
10,168.00	88.09	267.93	6,558.88	751.55	-3,657.09	3,729.83	2.62
10,264.00	88.55	268.38	6,561.70	748.46	-3,752.99	3,824.06	0.67
10,359.00	88.89	268.49	6,563.82	745.87	-3,847.94	3,917.40	0.38
10,455.00	89.78	268.11	6,564.93	743.02	-3,943.89	4,011.70	1.01
10,550.00	90.43	267.94	6,564.76	739.75	-4,038.83	4,104.94	0.71
10,645.00	91.97	267.68	6,562.77	736.12	-4,133.74	4,198.09	1.64
10,741.00	90.62	267.79	6,560.60	732.33	-4,229.63	4,292.19	1.41
10,837.00	90.59	267.10	6,559.59	728.05	-4,325.53	4,386.22	0.72
10,932.00	90.12	267.57	6,559.00	723.63	-4,420.43	4,479.23	0.70
11,000.00	91.23	267.24	6,558.20	720.55	-4,488.35	4,545.82	1.70
Final MWD Survey							
11,055.00	91.23	267.24	6,557.01	717.90	-4,543.28	4,599.64	0.00
Survey Projection to TD - Estimated BHL: 1143' FSL, 534' FWL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
572.00	572.00	0.00	0.00	Surface Casing Assumed Vertical at 572.00ft
642.00	642.00	0.11	-0.30	First MWD Survey
11,000.00	6,558.20	720.55	-4,488.35	Final MWD Survey
11,055.00	6,557.01	717.90	-4,543.28	Survey Projection to TD
11,055.00	6,557.01	717.90	-4,543.28	Estimated BHL: 1143' FSL, 534' FWL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Sooner State B36-63HN_PlanA - Rev2_BHL Tgt	279.07	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
572.00	11,055.00	Sperry MWD Surveys	MWD

Design Report for Sooner State B36-63HN - MWD Survey

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Sooner State	0.00	0.00	0.00	0.00	0.00	1,371,736.84	3,281,761.26	40° 20' 57.876 N	104° 29' 20.616 W
- actual wellpath hits target center									
- Polygon									
Point 1				-217.00	200.00	1,371,936.83	3,281,544.27		
Point 2				-4,596.00	126.00	1,371,862.84	3,277,165.46		
Point 3				-4,708.00	4,491.00	1,376,227.66	3,277,053.46		
Point 4				-347.00	4,540.00	1,376,276.65	3,281,414.28		
Point 5				-217.00	200.00	1,371,936.83	3,281,544.27		
Sooner State	0.00	0.00	0.00	0.00	0.00	1,371,736.84	3,281,761.26	40° 20' 57.876 N	104° 29' 20.616 W
- actual wellpath hits target center									
- Polygon									
Point 1				243.00	-260.00	1,371,476.85	3,282,004.25		
Point 2				-5,056.00	-334.00	1,371,402.86	3,276,705.48		
Point 3				-5,168.00	4,951.00	1,376,687.64	3,276,593.48		
Point 4				113.00	5,000.00	1,376,736.63	3,281,874.26		
Point 5				243.00	-260.00	1,371,476.85	3,282,004.25		
Sooner State	0.00	0.00	6,562.00	725.00	-4,541.66	1,372,461.81	3,277,219.79	40° 21' 5.547 N	104° 30' 19.166 W
- actual wellpath misses target center by 8.58ft at 11052.94ft MD (6557.06 TVD, 718.00 N, -4541.22 E)									
- Point									

North Reference Sheet for Sec. 36-T5N-R64W - Sooner State B36-63HN

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

Vertical Depths are relative to KB @ 4624.00ft (H&P 343). Northing and Easting are relative to Sooner State B36-63HN

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° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995832

Grid Coordinates of Well: 1,371,736.84 ft N, 3,281,761.26 ft E

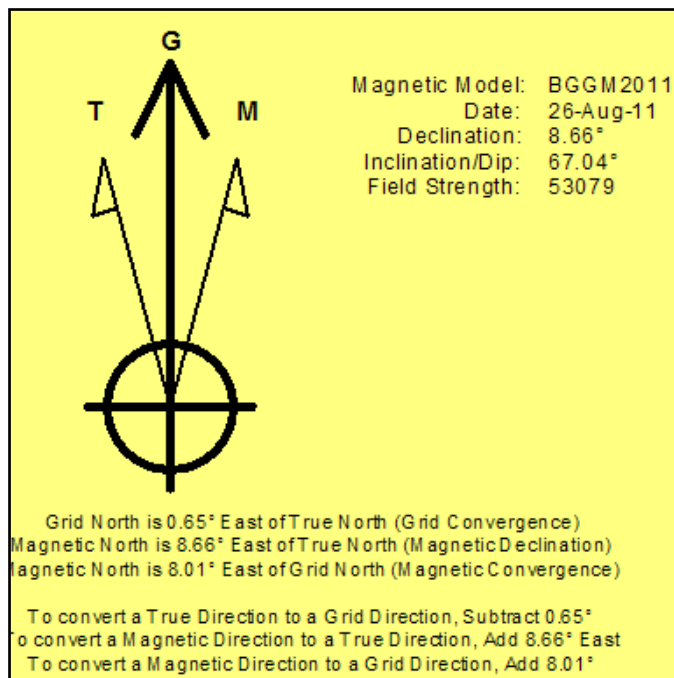
Geographical Coordinates of Well: 40° 20' 57.88" N, 104° 29' 20.62" W

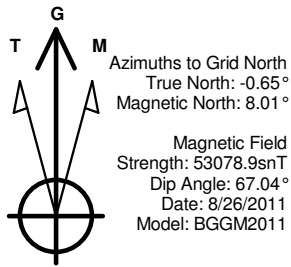
Grid Convergence at Surface is: 0.65°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,055.00ft

the Bottom Hole Displacement is 4,599.64ft in the Direction of 278.98° (Grid).

Magnetic Convergence at surface is: -8.01° (26 August 2011, , BGGM2011)

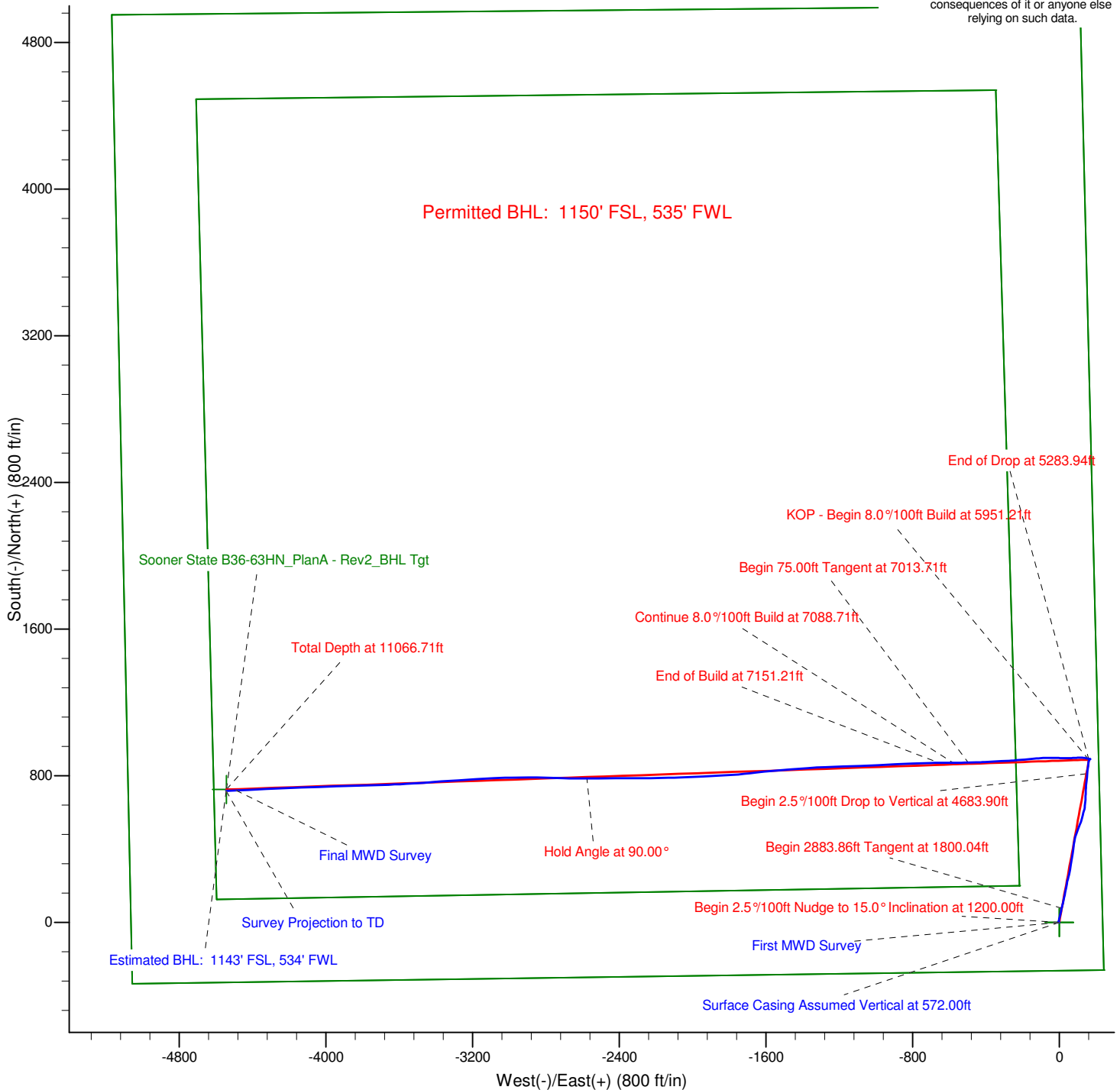




LEGEND

- Sooner State B36-63HN, Plan A, Plan A - Rev 2 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Sooner State B36-63HN well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.

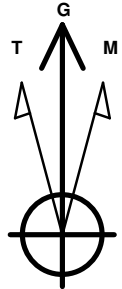


Project: Weld County, CO (NAD 83)
Site: Sec. 36-T5N-R64W
Well: Sooner State B36-63HN

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
True North: -0.65°
Magnetic North: 8.01°

Magnetic Field
Strength: 53078.9snT
Dip Angle: 67.04°
Date: 8/26/2011
Model: BGGM2011

LEGEND

- Sooner State B36-63HN, Plan A, Plan A - Rev 2 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Sooner State B36-63HN well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.

