

Noble Energy

Weld County, CO (NAD 83)

Sec. 36-T5N-R65W (Schmidt 06 PAD)

Schmidt PC C06-69HC - A1

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

31 December, 2012

Well Coordinates: 1,371,584.41 N, 3,249,622.18 E (40° 20' 59.78" N, 104° 36' 15.73" W)

Ground Level: 4,775.00 ft

Local Coordinate Origin: Centered on Well Schmidt PC C06-69HC - Slot A1

Viewing Datum: KB @ 4788.00ft (Ensign 132)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Design Report for Schmidt PC C06-69HC - 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
760.00	0.00	0.00	760.00	0.00	0.00	0.00	0.00
Surface Casing Assumed Vertical at 760.00ft							
824.00	0.07	56.33	824.00	0.02	0.03	0.03	0.11
First MWD Survey							
1,110.00	0.10	295.93	1,110.00	0.23	-0.05	-0.07	0.05
1,204.00	0.85	16.57	1,204.00	0.93	0.08	-0.02	0.89
1,296.00	2.67	134.37	1,295.96	0.09	1.81	1.79	3.43
1,388.00	6.47	146.38	1,387.66	-5.73	6.21	6.77	4.24
1,479.00	8.34	148.32	1,477.89	-15.62	12.51	14.06	2.07
1,571.00	9.88	141.85	1,568.73	-27.50	20.89	23.62	2.01
1,663.00	11.23	146.72	1,659.18	-41.20	30.69	34.78	1.76
1,756.00	11.16	137.59	1,750.41	-55.42	41.73	47.23	1.91
1,848.00	12.31	141.27	1,840.49	-69.64	53.87	60.77	1.49
1,939.00	12.87	143.24	1,929.30	-85.33	66.00	74.46	0.78
2,032.00	12.41	145.41	2,020.05	-101.85	77.87	87.98	0.71
2,126.00	12.19	141.73	2,111.89	-117.96	89.76	101.46	0.87
2,219.00	11.23	142.18	2,202.96	-132.82	101.39	114.56	1.04
2,313.00	10.48	141.81	2,295.27	-146.77	112.29	126.85	0.80
2,409.00	10.43	138.51	2,389.68	-160.14	123.44	139.32	0.63
2,503.00	10.92	137.53	2,482.05	-173.09	135.09	152.24	0.56
2,598.00	11.98	138.80	2,575.16	-187.14	147.66	166.20	1.15
2,694.00	11.80	138.69	2,669.10	-202.01	160.70	180.71	0.19
2,789.00	12.36	138.18	2,762.00	-216.88	173.90	195.37	0.60
2,884.00	12.61	138.02	2,854.75	-232.17	187.61	210.59	0.27
2,980.00	12.63	138.53	2,948.43	-247.83	201.57	226.09	0.12
3,075.00	12.94	135.35	3,041.08	-263.17	215.93	241.95	0.81
3,170.00	11.02	137.86	3,134.01	-277.48	229.49	256.92	2.09
3,265.00	10.56	132.39	3,227.33	-290.08	242.02	270.68	1.18
3,360.00	9.72	130.95	3,320.84	-301.20	254.50	284.25	0.92
3,455.00	10.18	137.51	3,414.42	-312.65	266.23	297.10	1.29
3,550.00	10.92	137.24	3,507.81	-325.45	278.01	310.13	0.78
3,645.00	10.42	134.46	3,601.17	-338.07	290.25	323.61	0.76
3,740.00	11.45	138.95	3,694.44	-351.20	302.58	337.23	1.41
3,835.00	12.29	139.05	3,787.41	-365.95	315.40	351.50	0.88
3,930.00	11.68	146.49	3,880.35	-381.60	327.33	364.99	1.75
4,025.00	12.29	145.60	3,973.27	-397.96	338.35	377.64	0.67
4,120.00	11.92	145.58	4,066.16	-414.40	349.61	390.54	0.39
4,215.00	12.73	143.65	4,158.97	-430.92	361.36	403.93	0.96
4,310.00	10.07	145.68	4,252.09	-446.22	372.25	416.34	2.83
4,405.00	10.04	145.09	4,345.63	-459.87	381.67	427.12	0.11
4,501.00	10.31	143.66	4,440.12	-473.65	391.55	438.37	0.39
4,596.00	10.79	142.58	4,533.52	-487.56	401.99	450.20	0.55
4,691.00	10.76	141.45	4,626.84	-501.56	412.92	462.51	0.22
4,785.00	10.37	142.86	4,719.25	-515.16	423.50	474.44	0.50
4,880.00	10.98	146.02	4,812.60	-529.48	433.72	486.08	0.89
4,975.00	10.27	148.52	4,905.97	-544.21	443.20	497.03	0.89
5,070.00	11.01	144.46	4,999.34	-558.81	452.89	508.18	1.11
5,165.00	11.23	143.53	5,092.56	-573.63	463.66	520.43	0.30
5,260.00	10.52	144.61	5,185.85	-588.14	474.19	532.39	0.78

Design Report for Schmidt PC C06-69HC - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,355.00	9.99	134.77	5,279.34	-601.01	485.06	544.53	1.92
5,449.00	9.25	132.51	5,372.02	-611.86	496.42	556.95	0.88
5,544.00	7.75	120.19	5,465.98	-620.24	507.58	568.92	2.47
5,639.00	5.47	121.70	5,560.34	-625.84	516.97	578.84	2.41
5,734.00	4.26	129.84	5,655.00	-630.48	523.54	585.85	1.46
5,829.00	2.26	109.02	5,749.84	-633.36	528.02	590.60	2.41
5,924.00	2.16	100.43	5,844.77	-634.29	531.55	594.21	0.36
6,114.00	2.46	93.84	6,034.62	-635.21	539.14	601.86	0.21
6,208.00	2.28	95.16	6,128.54	-635.52	543.01	605.74	0.20
6,272.00	3.47	101.50	6,192.46	-636.02	546.18	608.94	1.92
6,303.00	6.28	102.86	6,223.34	-636.58	548.75	611.56	9.07
6,335.00	8.14	98.99	6,255.09	-637.32	552.70	615.56	6.00
6,367.00	9.85	92.31	6,286.69	-637.79	557.67	620.55	6.25
6,398.00	12.10	89.09	6,317.13	-637.84	563.57	626.43	7.52
6,446.00	15.78	86.78	6,363.70	-637.40	575.12	637.87	7.75
6,493.00	19.26	85.87	6,408.52	-636.48	589.23	651.82	7.43
6,541.00	23.31	86.81	6,453.23	-635.38	606.62	669.00	8.47
6,588.00	27.22	88.21	6,495.73	-634.53	626.66	688.84	8.42
6,636.00	31.18	90.33	6,537.62	-634.26	650.06	712.09	8.53
6,683.00	34.97	89.45	6,577.00	-634.20	675.71	737.59	8.13
6,731.00	38.89	87.38	6,615.36	-633.38	704.53	766.17	8.57
6,778.00	42.97	87.06	6,650.87	-631.88	735.28	796.60	8.69
6,826.00	46.58	88.02	6,684.93	-630.44	769.05	830.04	7.65
6,873.00	49.76	87.18	6,716.28	-628.96	804.03	864.69	6.90
6,921.00	52.87	88.56	6,746.28	-627.58	841.47	901.78	6.86
6,968.00	55.12	88.66	6,773.90	-626.66	879.48	939.49	4.79
7,016.00	58.51	88.47	6,800.17	-625.65	919.63	979.33	7.07
7,063.00	62.51	89.07	6,823.30	-624.78	960.52	1,019.91	8.58
7,111.00	65.52	90.67	6,844.33	-624.69	1,003.66	1,062.81	6.95
7,158.00	68.65	91.11	6,862.63	-625.36	1,046.94	1,105.93	6.72
7,206.00	71.80	91.76	6,878.87	-626.50	1,092.09	1,150.95	6.69
7,253.00	76.16	90.55	6,891.84	-627.40	1,137.25	1,195.96	9.60
7,301.00	81.06	90.12	6,901.31	-627.67	1,184.29	1,242.78	10.25
7,338.00	84.13	89.87	6,906.08	-627.67	1,220.97	1,279.27	8.32
7,459.00	86.98	92.31	6,915.46	-629.97	1,341.56	1,399.45	3.10
7,555.00	88.67	89.94	6,919.10	-631.85	1,437.47	1,495.03	3.03
7,650.00	89.75	88.41	6,920.41	-630.49	1,532.44	1,589.36	1.97
7,745.00	90.58	88.13	6,920.14	-627.62	1,627.40	1,683.51	0.92
7,840.00	89.97	88.50	6,919.68	-624.82	1,722.36	1,777.68	0.75
7,936.00	90.00	88.35	6,919.71	-622.19	1,818.32	1,872.85	0.16
8,030.00	90.15	88.40	6,919.59	-619.52	1,912.28	1,966.04	0.17
8,125.00	88.68	88.35	6,920.56	-616.83	2,007.24	2,060.21	1.55
8,220.00	89.91	88.65	6,921.72	-614.34	2,102.19	2,154.40	1.33
8,315.00	89.47	88.12	6,922.24	-611.66	2,197.15	2,248.58	0.73
8,411.00	92.40	88.87	6,920.67	-609.14	2,293.10	2,343.75	3.15
8,506.00	91.97	87.46	6,917.05	-606.10	2,387.98	2,437.80	1.55
8,601.00	90.80	88.05	6,914.75	-602.38	2,482.87	2,531.81	1.38
8,695.00	91.57	88.34	6,912.81	-599.42	2,576.81	2,624.93	0.88
8,790.00	89.91	87.93	6,911.58	-596.33	2,671.75	2,719.05	1.80
8,885.00	90.37	87.50	6,911.35	-592.54	2,766.67	2,813.07	0.66
8,980.00	89.14	87.51	6,911.76	-588.41	2,861.58	2,907.04	1.29

Design Report for Schmidt PC C06-69HC - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,075.00	90.15	88.72	6,912.35	-585.28	2,956.52	3,001.16	1.66
9,170.00	89.72	89.53	6,912.45	-583.83	3,051.51	3,095.49	0.97
9,265.00	90.80	91.59	6,912.02	-584.76	3,146.50	3,190.06	2.45
9,360.00	90.03	92.81	6,911.33	-588.41	3,241.42	3,284.86	1.52
9,455.00	91.39	91.60	6,910.16	-592.06	3,336.34	3,379.64	1.92
9,550.00	89.63	89.83	6,909.31	-593.25	3,431.32	3,474.24	2.63
9,645.00	89.88	89.34	6,909.72	-592.56	3,526.32	3,568.66	0.58
9,740.00	91.17	88.32	6,908.85	-590.62	3,621.29	3,662.92	1.73
9,835.00	89.72	88.37	6,908.11	-587.87	3,716.24	3,757.09	1.53
9,930.00	89.39	87.16	6,908.85	-584.17	3,811.17	3,851.12	1.32
10,025.00	89.78	87.68	6,909.54	-579.89	3,906.07	3,945.07	0.68
10,120.00	88.65	87.74	6,910.84	-576.10	4,000.98	4,039.08	1.19
10,215.00	89.26	88.23	6,912.57	-572.76	4,095.91	4,133.16	0.82
10,310.00	90.12	88.52	6,913.08	-570.06	4,190.87	4,227.33	0.96
10,405.00	88.86	88.58	6,913.93	-567.66	4,285.83	4,321.54	1.33
10,500.00	89.48	88.54	6,915.30	-565.27	4,380.79	4,415.74	0.65
10,595.00	91.08	90.08	6,914.84	-564.13	4,475.78	4,510.10	2.34
10,690.00	88.59	89.69	6,915.11	-563.94	4,570.77	4,604.57	2.65
10,785.00	89.08	90.41	6,917.05	-564.02	4,665.75	4,699.05	0.92
10,881.00	89.78	90.36	6,918.00	-564.67	4,761.74	4,794.59	0.73
10,976.00	89.79	91.14	6,918.36	-565.91	4,856.73	4,889.20	0.82
11,071.00	89.72	89.49	6,918.76	-566.43	4,951.72	4,983.74	1.74
11,166.00	89.63	89.66	6,919.30	-565.73	5,046.72	5,078.16	0.20
11,261.00	89.97	90.37	6,919.63	-565.75	5,141.72	5,172.65	0.83
11,356.00	89.94	90.26	6,919.71	-566.28	5,236.72	5,267.20	0.12
11,397.00	90.59	90.50	6,919.52	-566.55	5,277.72	5,308.01	1.69
Final MWD Survey							
11,454.00	90.59	90.50	6,918.93	-567.04	5,334.71	5,364.75	0.00
Survey Projection to TD - Estimated BHL: 88' FNL, 534' FEL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
760.00	760.00	0.00	0.00	Surface Casing Assumed Vertical at 760.00ft
824.00	824.00	0.02	0.03	First MWD Survey
11,397.00	6,919.52	-566.55	5,277.72	Final MWD Survey
11,454.00	6,918.93	-567.04	5,334.71	Survey Projection to TD
11,454.00	6,918.93	-567.04	5,334.71	Estimated BHL: 88' FNL, 534' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Schmidt PC C06-69HC_PlanA - Rev1_BHL Tgt	95.93	Slot	0.00	0.00	0.00

Design Report for Schmidt PC C06-69HC - MWD Survey

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
760.00	11,454.00	Sperry MWD Surveys	MWD

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
Schmidt PC	0.00	0.00	-11.00	0.00	0.00	1,371,584.41	3,249,622.18	40° 20' 59.784 N	104° 36' 15.732 W
- actual wellpath misses target center by 11.00ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				658.00	-551.00	1,371,033.43	3,250,280.15		
Point 2				-4,605.00	-589.00	1,370,995.43	3,245,017.37		
Point 3				-4,677.00	4,704.00	1,376,288.21	3,244,945.37		
Point 4				599.00	4,709.00	1,376,293.21	3,250,221.15		
Point 5				658.00	-551.00	1,371,033.43	3,250,280.15		
Schmidt PC	0.00	0.00	6,906.47	-553.96	5,335.27	1,371,030.47	3,254,957.23	40° 20' 53.772 N	104° 35' 6.900 W
- actual wellpath misses target center by 18.08ft at 11454.00ft MD (6918.93 TVD, -567.04 N, 5334.71 E)									
- Point									
Schmidt PC	0.00	0.00	-11.00	0.00	0.00	1,371,584.41	3,249,622.18	40° 20' 59.784 N	104° 36' 15.732 W
- actual wellpath misses target center by 11.00ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				198.00	-91.00	1,371,493.41	3,249,820.17		
Point 2				-4,145.00	-129.00	1,371,455.41	3,245,477.35		
Point 3				-4,217.00	4,244.00	1,375,828.23	3,245,405.35		
Point 4				139.00	4,249.00	1,375,833.23	3,249,761.17		
Point 5				198.00	-91.00	1,371,493.41	3,249,820.17		
Schmidt PC	0.00	0.00	-11.00	0.00	0.00	1,371,584.41	3,249,622.18	40° 20' 59.784 N	104° 36' 15.732 W
- actual wellpath misses target center by 11.00ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				658.00	-551.00	1,371,033.43	3,250,280.15		
Point 2				5,872.00	-472.00	1,371,112.43	3,255,493.93		
Point 3				5,745.00	-5,716.00	1,365,868.65	3,255,366.94		
Point 4				708.00	-5,826.00	1,365,758.65	3,250,330.15		
Point 5				658.00	-551.00	1,371,033.43	3,250,280.15		
Schmidt PC	0.00	0.00	-11.00	0.00	0.00	1,371,584.41	3,249,622.18	40° 20' 59.784 N	104° 36' 15.732 W
- actual wellpath misses target center by 11.00ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				1,118.00	-1,011.00	1,370,573.45	3,250,740.13		
Point 2				5,412.00	-932.00	1,370,652.45	3,255,033.95		
Point 3				5,285.00	-5,256.00	1,366,328.63	3,254,906.96		
Point 4				1,168.00	-5,366.00	1,366,218.63	3,250,790.13		
Point 5				1,118.00	-1,011.00	1,370,573.45	3,250,740.13		

North Reference Sheet for Sec. 36-T5N-R65W (Schmidt 06 PAD) - Schmidt PC C06-69HC

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

Vertical Depths are relative to KB @ 4788.00ft (Ensign 132). Northing and Easting are relative to Schmidt PC C06-69HC - Slot A1

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: 0.99995834

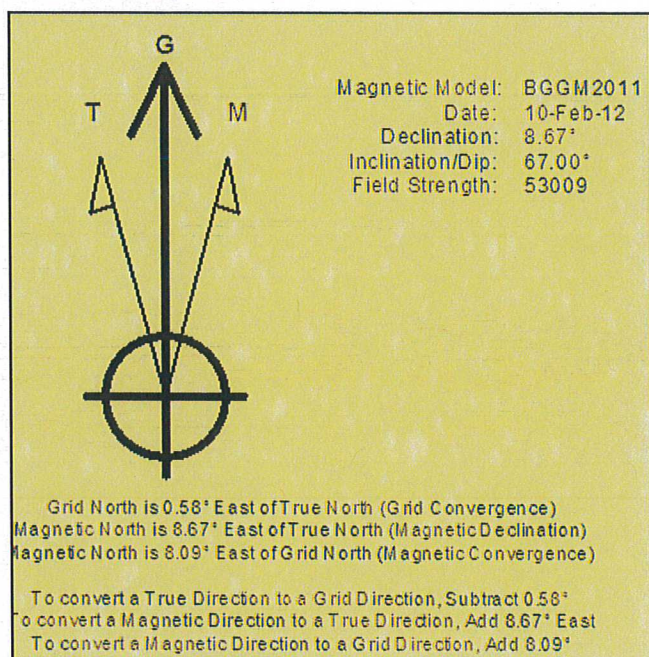
Grid Coordinates of Well: 1,371,584.41 ft N, 3,249,622.18 ft E

Geographical Coordinates of Well: 40° 20' 59.78" N, 104° 36' 15.73" W

Grid Convergence at Surface is: 0.58°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,454.00ft
the Bottom Hole Displacement is 5,364.76ft in the Direction of 96.07° (Grid).

Magnetic Convergence at surface is: -8.09° (10 February 2012, , BGGM2011)



Project: Weld County, CO (NAD 83)
 Site: Sec. 36-T5N-R65W (Schmidt 06 PAD)
 Well: Schmidt PC C06-69HC

Noble Energy

HALLIBURTON

Sperry Drilling



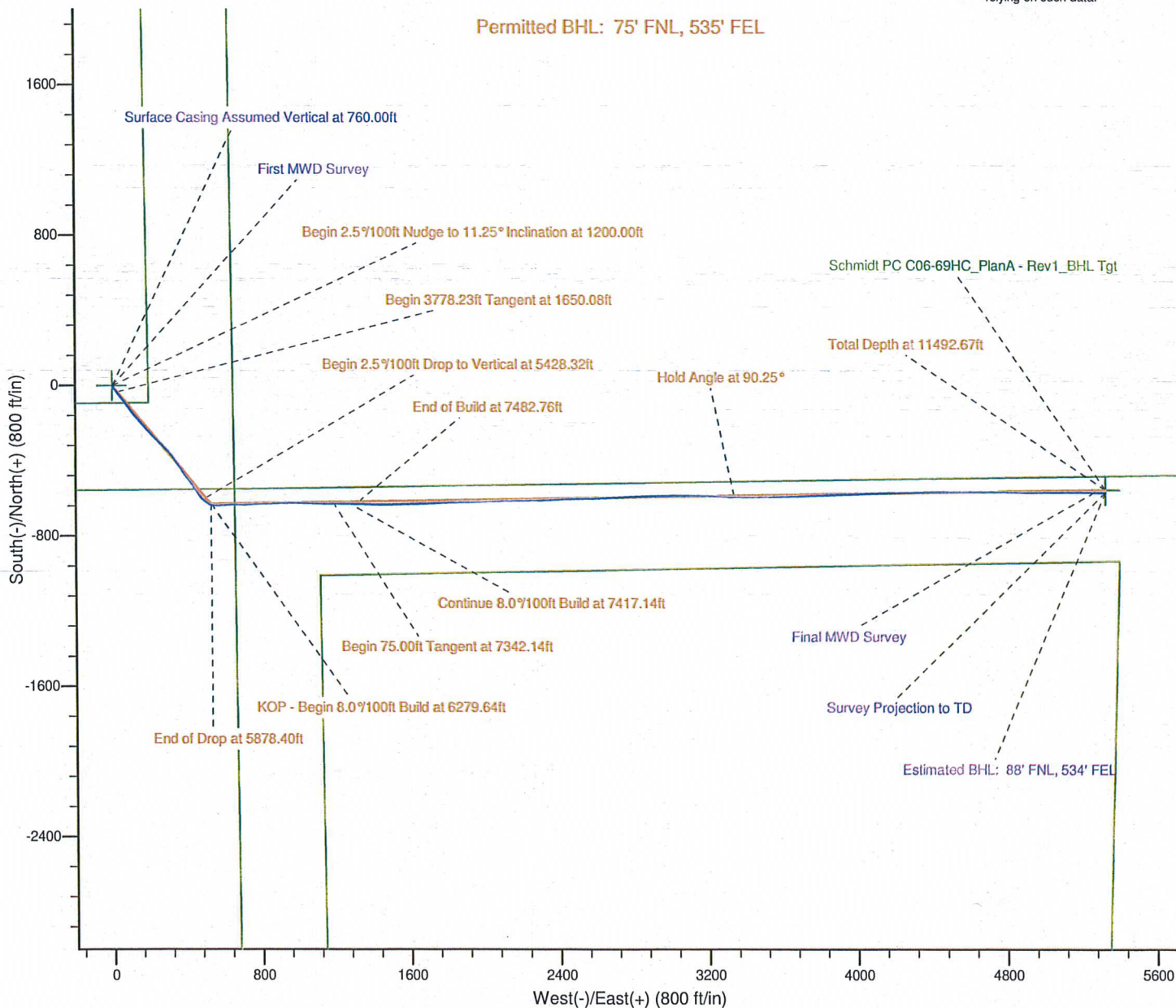
Azimuths to Grid North
 True North: -0.58°
 Magnetic North: 8.09°

Magnetic Field
 Strength: 53009.0snT
 Dip Angle: 67.00°
 Date: 2/10/2012
 Model: BGGM2011

LEGEND

- Schmidt PC C06-69HC, Plan A, Plan A - Rev 1 Proposal V0
- MWD Survey

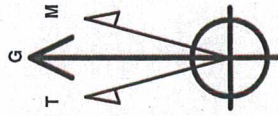
Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Schmidt PC C06-69HC well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them 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.



Noble Energy

Project: Weld County, CO (NAD 83)
 Site: Sec. 36-T5N-R65W (Schmidt 06 PAD)
 Well: Schmidt PC C06-69HC

HALLIBURTON
 Sperry Drilling



Azimuths to Grid North
 True North: -0.58°
 Magnetic North: 8.09°
 Magnetic Field
 Strength: 53009.0snT
 Dip Angle: 67.00°
 Date: 2/10/2012
 Model: BGGM2011

LEGEND

- Schmidt PC C06-69HC, Plan A, Plan A - Rev 1 Proposal V0
- MWD Survey

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