Noble Energy

Garfield County, CO (NAD 83)
Sec. 2-T8S-R96W (SGV 2O PAD)
Hyrup 2-34C

Plan #2

Design: Vaughn Gyro and Sperry MWD Survey

Sperry Drilling Services

Final Survey Report

07 March, 2011

Well Coordinates: 1,571,012.30 N, 2,272,717.97 E (39° 22' 22.47" N, 108° 04' 22.90" W)
Ground Level: 5,800.60 ft

Local Coordinate Origin:	Centered on Well Hyrup 2-34C
Viewing Datum:	RKB 24' @ 5824.60ft (H&P 322)
TVDs to System:	N
North Reference:	Grid
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied
Version: 2003.16 Build: 43I

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Design Report for Hyrup 2-34C - Vaughn Gyro and Sperry 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
128.00	0.84	4.29	128.00	0.94	0.07	-0.13	0.66
Surveys from 128.00ft to 311.00ft are Vaughn Gyro Surveys							
159.00	0.33	270.51	158.99	1.16	0.00	-0.07	2.98
189.00	1.85	245.50	188.99	0.96	-0.53	0.47	5.19
220.00	3.10	249.92	219.96	0.47	-1.77	1.74	4.08
311.00	4.58	252.84	310.75	-1.45	-7.55	7.63	1.64
Tie-On to Vaughn Gyro Survey							
340.00	4.55	266.72	339.66	-1.86	-9.81	9.91	3.80
First Sperry MWD Survey							
432.00	6.89	270.81	431.20	-1.99	-18.97	19.06	2.58
523.00	7.35	276.09	521.50	-1.29	-30.22	30.24	0.88
615.00	7.93	276.23	612.68	0.02	-42.38	42.30	0.63
709.00	8.58	276.46	705.70	1.51	-55.79	55.59	0.69
803.00	8.86	276.04	798.62	3.06	-69.96	69.64	0.31
898.00	9.42	270.39	892.41	3.89	-85.01	84.61	1.11
992.00	9.72	265.82	985.11	3.36	-100.61	100.22	0.87
1,087.00	9.96	265.86	1,078.71	2.18	-116.81	116.45	0.25
1,181.00	10.73	265.86	1,171.18	0.96	-133.64	133.33	0.82
1,275.00	11.57	266.22	1,263.40	-0.29	-151.78	151.51	0.90
1,370.00	12.30	264.90	1,356.35	-1.82	-171.36	171.15	0.82
1,448.00	12.35	267.54	1,432.55	-2.91	-187.97	187.79	0.73
1,558.00	12.36	264.44	1,540.01	-4.56	-211.44	211.32	0.60
1,653.00	11.58	262.27	1,632.94	-6.83	-231.01	230.99	0.95
1,747.00	9.81	267.18	1,725.31	-8.49	-248.36	248.41	2.12
1,841.00	9.09	261.35	1,818.03	-10.00	-263.70	263.81	1.27
1,936.00	10.19	265.34	1,911.69	-11.81	-279.49	279.69	1.35
2,030.00	9.35	274.22	2,004.33	-11.93	-295.40	295.57	1.83
2,124.00	8.30	269.19	2,097.22	-11.46	-309.80	309.91	1.39
2,219.00	9.19	270.37	2,191.11	-11.51	-324.24	324.33	0.96
2,315.00	8.92	266.97	2,285.92	-11.85	-339.34	339.42	0.62
2,407.00	8.87	263.47	2,376.81	-13.04	-353.51	353.64	0.59
2,502.00	10.04	269.57	2,470.52	-13.93	-369.07	369.22	1.62
2,596.00	9.44	269.64	2,563.17	-14.04	-384.97	385.10	0.64
2,690.00	8.81	269.24	2,655.98	-14.18	-399.87	399.99	0.67
2,784.00	8.20	264.75	2,748.94	-14.89	-413.75	413.88	0.96
2,879.00	8.33	271.25	2,842.96	-15.36	-427.38	427.51	0.99
2,973.00	7.86	270.44	2,936.02	-15.16	-440.61	440.71	0.51
3,067.00	7.48	272.27	3,029.18	-14.87	-453.15	453.21	0.48
3,162.00	7.99	269.84	3,123.32	-14.65	-465.93	465.95	0.64
3,256.00	8.41	269.73	3,216.36	-14.70	-479.34	479.33	0.45
3,350.00	8.45	268.49	3,309.34	-14.91	-493.12	493.10	0.20
3,445.00	7.55	264.36	3,403.42	-15.71	-506.31	506.31	1.12
3,539.00	5.32	266.14	3,496.82	-16.61	-516.80	516.84	2.38
3,633.00	4.35	261.83	3,590.48	-17.41	-524.68	524.75	1.10
3,728.00	3.18	249.66	3,685.28	-18.84	-530.71	530.87	1.48
3,822.00	3.73	252.02	3,779.11	-20.69	-536.07	536.32	0.60
3,916.00	2.36	263.00	3,872.97	-21.87	-540.90	541.22	1.58
4,011.00	0.97	275.51	3,967.93	-22.03	-543.64	543.96	1.50
4,105.00	1.52	250.73	4,061.91	-22.36	-545.61	545.95	0.81

Design Report for Hyrup 2-34C - Vaughn Gyro and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,199.00	1.68	246.27	4,155.87	-23.33	-548.05	548.44	0.22
4,293.00	1.73	241.62	4,249.83	-24.56	-550.56	551.02	0.16
4,388.00	1.93	242.59	4,344.78	-25.98	-553.24	553.79	0.21
4,482.00	2.53	243.00	4,438.71	-27.65	-556.49	557.14	0.64
4,576.00	2.88	221.66	4,532.61	-30.35	-559.91	560.72	1.13
4,670.00	3.12	217.76	4,626.48	-34.14	-563.05	564.08	0.34
4,765.00	3.83	223.05	4,721.30	-38.50	-566.80	568.09	0.82
4,859.00	2.10	233.48	4,815.17	-41.82	-570.32	571.82	1.92
4,954.00	2.21	226.34	4,910.11	-44.12	-573.05	574.68	0.31
5,048.00	1.45	209.25	5,004.06	-46.41	-574.94	576.71	0.99
5,142.00	1.64	206.40	5,098.02	-48.65	-576.12	578.02	0.22
5,237.00	1.40	190.38	5,192.99	-51.01	-576.93	578.98	0.51
5,331.00	2.12	214.77	5,286.95	-53.57	-578.13	580.33	1.09
5,425.00	1.10	221.50	5,380.91	-55.67	-579.72	582.05	1.10
5,520.00	1.51	214.98	5,475.88	-57.38	-581.04	583.47	0.46
5,555.00	1.51	238.68	5,510.87	-58.00	-581.70	584.17	1.77
Final Sperry MWD Survey							
5,614.00	1.51	238.68	5,569.85	-58.81	-583.03	585.54	0.00
Survey Projection to TD - Estimated BHL: 271' FSL, 2253' FEL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
128.00	128.00	0.94	0.07	Surveys from 128.00ft to 311.00ft are Vaughn Gyro Surveys
311.00	310.75	-1.45	-7.55	Tie-On to Vaughn Gyro Survey
340.00	339.66	-1.86	-9.81	First Sperry MWD Survey
5,555.00	5,510.87	-58.00	-581.70	Final Sperry MWD Survey
5,614.00	5,569.85	-58.81	-583.03	Survey Projection to TD
5,614.00	5,569.85	-58.81	-583.03	Estimated BHL: 271' FSL, 2253' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Hyrup 2-34C Plan #2 BH Tgt	266.46	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
128.00	311.00	Vaughn Gyro Surveys	NS-GYRO-MS
340.00	5,614.00	Sperry MWD Surveys	MWD

Design Report for Hyrup 2-34C - Vaughn Gyro and Sperry 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
Hyrup 2-34C Plan #2	0.00	1.62	5,620.00	-35.13	-568.67	1,570,977.17	2,272,149.33	39° 22' 21.959 N	108° 4' 30.123 W
- actual wellpath misses target center by 57.29ft at 5614.00ft MD (5569.85 TVD, -58.81 N, -583.03 E) - Point									
Hyrup 2-34C Plan #2	0.00	0.00	3,976.00	-35.13	-568.67	1,570,977.17	2,272,149.33	39° 22' 21.959 N	108° 4' 30.123 W
- actual wellpath misses target center by 28.13ft at 4019.64ft MD (3976.57 TVD, -22.02 N, -543.79 E) - Rectangle (sides W100.00 H200.00 D1,644.00)									
Hyrup 2-34C Plan #2	0.00	360.00	3,976.00	-10.13	-518.67	1,571,002.17	2,272,199.33	39° 22' 22.220 N	108° 4' 29.496 W
- actual wellpath misses target center by 27.78ft at 4018.50ft MD (3975.43 TVD, -22.02 N, -543.77 E) - Rectangle (sides W25.00 H25.00 D0.00)									

North Reference Sheet for Sec. 2-T8S-R96W (SGV 2O PAD) - Hyrup 2-34C - Plan #2

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

Vertical Depths are relative to RKB 24' @ 5824.60ft (H&P 322). Northing and Easting are relative to Hyrup 2-34C

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° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99994714

Grid Coordinates of Well: 1,571,012.30 ft N, 2,272,717.97 ft E

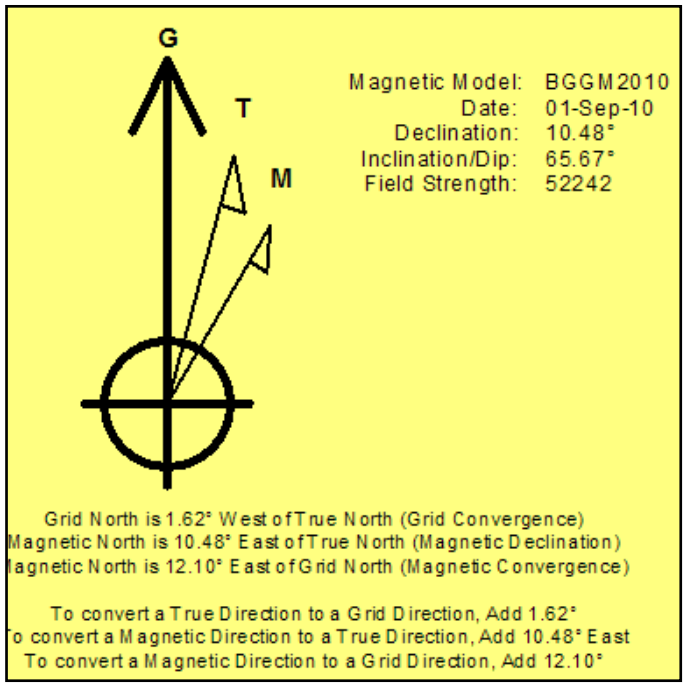
Geographical Coordinates of Well: 39° 22' 22.47" N, 108° 04' 22.90" W

Grid Convergence at Surface is: -1.62°

Based upon Minimum Curvature type calculations, at a Measured Depth of 5,614.00ft

the Bottom Hole Displacement is 585.99ft in the Direction of 264.24° (Grid).

Magnetic Convergence at surface is: -12.10° (1 September 2010, , BGGM2010)



Project: Garfield County, CO (NAD 83)
Site: Sec. 2-T8S-R96W (SGV 2O PAD)
Well: Hyrup 2-34C

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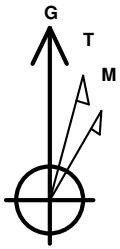


Azimuths to Grid North
True North: 1.62°
Magnetic North: 12.10°

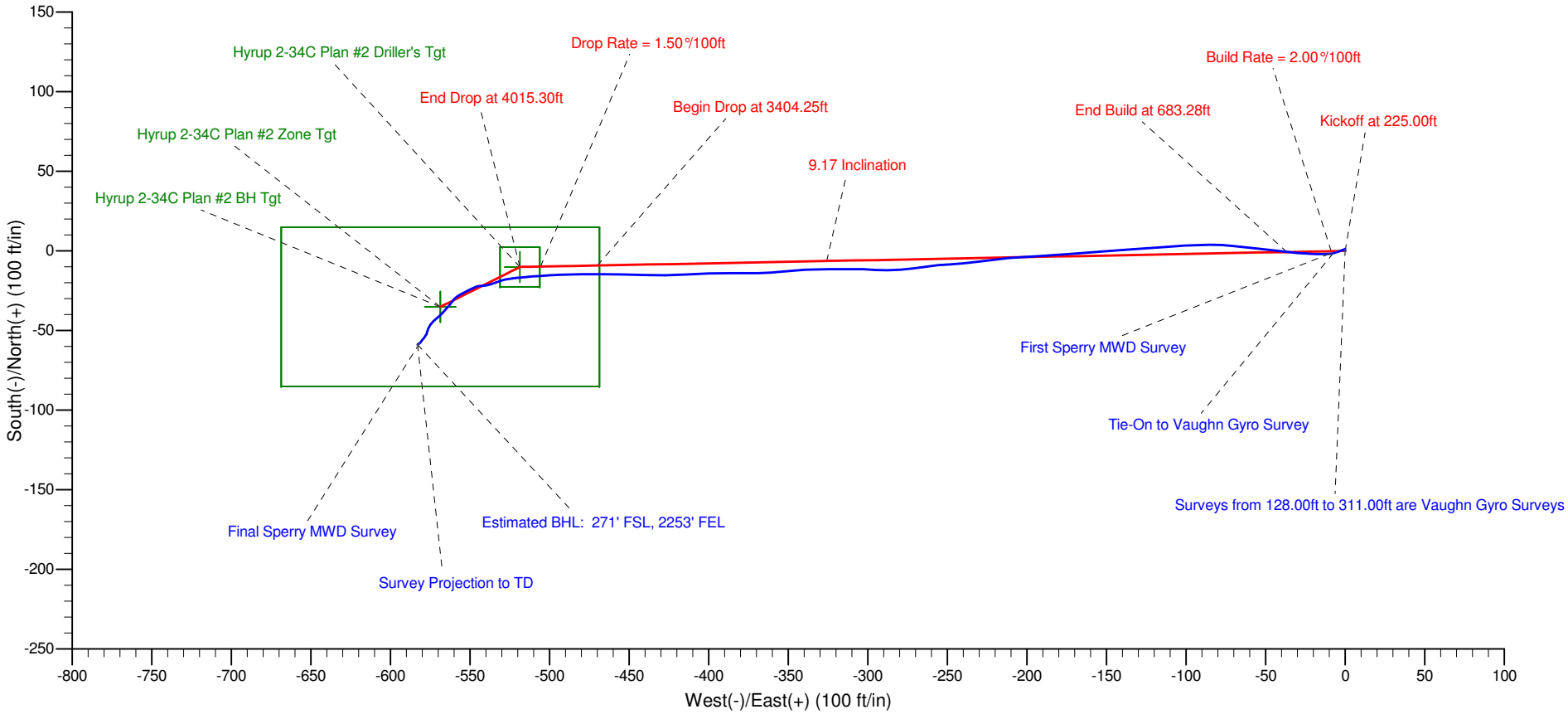
Magnetic Field
Strength: 52242.2snT
Dip Angle: 65.67°
Date: 9/1/2010
Model: BGGM2010

LEGEND

Hyrup 2-34C, Plan #2, Plan #2 Proposal V0
Vaughn Gyro and Sperry MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Hyrup 2-34C well located at Garfield 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.

Permitted BHL: 295' FSL, 2239' FEL



Project: Garfield County, CO (NAD 83)
Site: Sec. 2-T8S-R96W (SGV 2O PAD)
Well: Hyrup 2-34C

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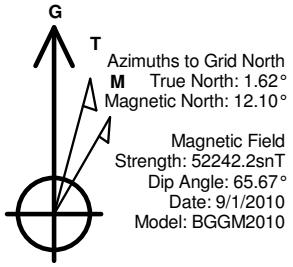
HALLIBURTON
Sperry Drilling



Azimuths to Grid North
True North: 1.62°
Magnetic North: 12.10°

Magnetic Field
Strength: 52242.2snT
Dip Angle: 65.67°
Date: 9/1/2010
Model: BGGM2010

LEGEND

Hyrup 2-34C, Plan #2, Plan #2 Proposal V0
Vaughn Gyro and Sperry MWD Survey

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