

Noble Energy

Weld County, CO (NAD 83)

Sec. 28-T5N-R66W

Wiest J28-65-1HN

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

26 December, 2012

Well Coordinates: 1,377,875.36 N, 3,197,160.59 E (40° 22' 06.64" N, 104° 47' 32.68" W)

Ground Level: 4,863.00 ft

Local Coordinate Origin:

Centered on Well Wiest J28-65-1HN

Viewing Datum:

KB=24' @ 4887.00ft (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: 431

HALLIBURTON

Design Report for Wiest J28-65-1HN - 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
805.00	0.00	0.00	805.00	0.00	0.00	0.00	0.00
Surface Casing Assumed Vertical at 805.00ft							
824.00	1.02	162.46	824.00	-0.16	0.05	0.03	5.37
First MWD Survey							
917.00	1.11	174.59	916.98	-1.85	0.39	0.14	0.26
1,197.00	1.07	186.57	1,196.93	-7.14	0.34	-0.59	0.08
1,476.00	1.23	182.02	1,475.88	-12.73	-0.06	-1.72	0.07
1,569.00	1.31	238.16	1,568.86	-14.28	-1.00	-2.86	1.29
1,662.00	2.79	289.30	1,661.80	-14.10	-4.04	-5.85	2.38
1,755.00	4.17	317.19	1,754.63	-10.87	-8.47	-9.82	2.31
1,849.00	7.75	330.75	1,848.11	-2.83	-13.90	-14.15	4.07
1,944.00	9.41	327.71	1,942.05	9.33	-21.17	-19.78	1.81
2,039.00	12.49	332.28	2,035.31	24.99	-30.10	-26.58	3.37
2,134.00	15.13	332.24	2,127.56	45.06	-40.66	-34.43	2.78
2,229.00	15.71	328.56	2,219.14	67.00	-53.14	-43.94	1.20
2,513.00	11.62	322.83	2,495.05	122.63	-90.50	-73.71	1.52
2,608.00	13.13	319.99	2,587.84	138.52	-103.21	-84.25	1.71
2,703.00	15.89	322.92	2,679.81	157.16	-118.00	-96.47	3.01
2,797.00	16.20	320.12	2,770.15	177.49	-134.16	-109.84	0.89
2,892.00	18.74	320.87	2,860.76	199.50	-152.29	-124.94	2.68
2,987.00	17.00	320.52	2,951.17	222.06	-170.76	-140.30	1.84
3,082.00	15.52	319.95	3,042.37	242.51	-187.76	-154.50	1.57
3,177.00	16.48	326.26	3,133.69	263.44	-203.43	-167.29	2.09
3,271.00	15.97	324.42	3,223.95	285.05	-218.36	-179.27	0.77
3,366.00	17.21	327.09	3,314.99	307.48	-233.60	-191.46	1.53
3,461.00	17.26	321.46	3,405.73	330.30	-250.02	-204.75	1.76
3,556.00	15.32	319.87	3,496.92	350.92	-266.89	-218.79	2.10
3,651.00	14.08	312.98	3,588.81	368.40	-283.43	-232.91	2.25
3,746.00	13.99	314.13	3,680.98	384.27	-300.13	-247.39	0.31
3,841.00	14.80	318.67	3,773.00	401.38	-316.39	-261.28	1.46
3,936.00	18.25	324.04	3,864.06	422.54	-333.14	-275.12	3.97
4,031.00	19.40	325.19	3,953.98	447.53	-350.88	-289.45	1.27
4,126.00	19.04	325.68	4,043.69	473.29	-368.63	-303.68	0.42
4,221.00	14.28	320.23	4,134.68	495.10	-384.87	-316.94	5.27
4,315.00	11.07	319.80	4,226.37	510.91	-398.11	-328.00	3.42
4,410.00	8.17	316.80	4,320.03	522.80	-408.62	-336.87	3.10
4,505.00	6.49	320.14	4,414.25	531.84	-416.68	-343.68	1.82
4,600.00	4.10	319.75	4,508.84	538.56	-422.32	-348.39	2.52
4,695.00	2.66	305.24	4,603.67	542.42	-426.32	-351.85	1.75
4,790.00	1.78	281.86	4,698.60	544.00	-429.56	-354.86	1.31
4,885.00	2.11	277.40	4,793.55	544.53	-432.74	-357.94	0.38
4,980.00	1.51	271.13	4,888.50	544.78	-435.72	-360.87	0.66
5,075.00	1.45	259.62	4,983.47	544.58	-438.16	-363.31	0.32
5,170.00	1.70	265.39	5,078.43	544.25	-440.75	-365.92	0.31
5,265.00	1.66	263.90	5,173.39	543.99	-443.52	-368.70	0.06
5,360.00	0.63	194.65	5,268.37	543.34	-445.02	-370.27	1.63
5,454.00	0.76	161.08	5,362.37	542.25	-444.95	-370.34	0.45
5,549.00	0.80	191.82	5,457.36	541.01	-444.88	-370.44	0.44
5,644.00	0.57	214.22	5,552.35	539.97	-445.28	-370.97	0.37

Design Report for Wiest J28-65-1HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,739.00	0.84	236.20	5,647.35	539.19	-446.12	-371.91	0.40
5,834.00	0.97	190.69	5,742.33	538.01	-446.85	-372.79	0.75
5,929.00	1.01	183.98	5,837.32	536.39	-447.06	-373.21	0.13
6,023.00	0.99	169.69	5,931.31	534.76	-446.97	-373.33	0.27
6,118.00	1.16	165.89	6,026.29	533.02	-446.59	-373.18	0.19
6,213.00	1.47	183.74	6,121.26	530.87	-446.44	-373.31	0.54
6,308.00	1.67	192.51	6,216.23	528.31	-446.81	-374.02	0.33
6,403.00	1.56	191.44	6,311.19	525.69	-447.37	-374.91	0.12
6,587.00	1.05	200.25	6,495.14	521.65	-448.45	-376.51	0.30
6,634.00	1.22	147.27	6,542.14	520.83	-448.33	-376.50	2.18
6,682.00	3.04	94.37	6,590.10	520.30	-446.78	-375.03	5.21
6,729.00	6.70	92.74	6,636.93	520.07	-442.80	-371.11	7.79
6,777.00	10.49	94.01	6,684.38	519.63	-435.64	-364.07	7.91
6,824.00	13.54	91.43	6,730.34	519.20	-425.87	-354.44	6.59
6,872.00	14.83	90.06	6,776.88	519.05	-414.11	-342.80	2.78
6,919.00	18.71	86.82	6,821.87	519.46	-400.57	-329.32	8.49
6,966.00	23.19	85.08	6,865.75	520.67	-383.81	-312.55	9.62
7,013.00	27.81	85.69	6,908.16	522.29	-363.65	-292.35	9.85
7,061.00	32.75	85.82	6,949.60	524.08	-339.52	-268.19	10.29
7,108.00	38.13	84.99	6,987.88	526.28	-312.36	-240.98	11.49
7,156.00	43.35	86.36	7,024.24	528.62	-281.14	-209.72	11.03
7,203.00	48.26	88.87	7,056.99	529.99	-247.48	-176.17	11.12
7,251.00	52.45	90.06	7,087.61	530.32	-210.53	-139.50	8.94
7,298.00	56.01	88.03	7,115.08	530.97	-172.41	-101.62	8.35
7,345.00	59.54	88.30	7,140.14	532.24	-132.68	-62.06	7.53
7,392.00	64.21	87.52	7,162.29	533.76	-91.27	-20.80	10.04
7,440.00	69.09	88.10	7,181.31	535.44	-47.25	23.06	10.23
7,487.00	73.30	87.65	7,196.46	537.09	-2.80	67.35	9.00
7,535.00	78.14	87.47	7,208.30	539.07	43.66	113.67	10.09
7,562.00	80.19	87.96	7,213.37	540.13	70.16	140.08	7.80
7,639.00	85.52	88.86	7,222.94	542.25	146.50	216.04	7.02
7,698.00	87.19	89.52	7,226.70	543.08	205.38	274.52	3.04
7,793.00	88.92	89.61	7,229.92	543.80	300.32	368.74	1.82
7,887.00	91.70	89.24	7,229.41	544.74	394.30	462.04	2.98
7,982.00	91.20	89.52	7,227.01	545.77	489.26	556.33	0.60
8,077.00	91.79	89.19	7,224.53	546.84	584.23	650.62	0.71
8,172.00	91.66	88.89	7,221.67	548.43	679.17	744.96	0.34
8,267.00	91.42	88.73	7,219.12	550.40	774.11	839.35	0.30
8,362.00	90.68	90.17	7,217.37	551.31	869.09	933.63	1.70
8,457.00	90.74	91.74	7,216.20	549.73	964.07	1,027.59	1.65
8,552.00	91.02	93.56	7,214.74	545.34	1,058.95	1,121.08	1.94
8,647.00	88.46	91.66	7,215.17	541.01	1,153.84	1,214.59	3.36
8,742.00	88.74	90.93	7,217.49	538.87	1,248.78	1,308.45	0.82
8,836.00	87.96	91.23	7,220.20	537.10	1,342.73	1,401.36	0.89
8,931.00	88.67	90.46	7,222.99	535.70	1,437.68	1,495.31	1.10
9,025.00	90.25	88.50	7,223.88	536.55	1,531.66	1,588.60	2.68
9,072.00	90.65	86.92	7,223.51	538.43	1,578.62	1,635.40	3.47
9,120.00	90.74	86.49	7,222.93	541.19	1,626.54	1,683.27	0.92
9,215.00	90.92	86.56	7,221.55	546.94	1,721.35	1,778.02	0.20
9,310.00	90.00	85.52	7,220.79	553.50	1,816.12	1,872.84	1.46
9,405.00	90.92	84.92	7,220.02	561.42	1,910.78	1,967.73	1.16

Design Report for Wiest J28-65-1HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,500.00	91.33	85.89	7,218.16	569.03	2,005.46	2,062.58	1.11
9,595.00	92.10	88.02	7,215.31	574.07	2,100.28	2,157.25	2.38
9,690.00	91.05	89.09	7,212.70	576.47	2,195.21	2,251.68	1.58
9,785.00	89.88	90.25	7,211.93	577.01	2,290.20	2,345.93	1.73
9,880.00	90.22	90.75	7,211.85	576.19	2,385.20	2,440.01	0.64
9,975.00	89.85	91.08	7,211.79	574.67	2,480.18	2,533.98	0.52
10,069.00	90.28	90.99	7,211.69	572.97	2,574.17	2,626.94	0.47
10,164.00	90.37	91.36	7,211.15	571.02	2,669.15	2,720.85	0.40
10,259.00	90.37	91.56	7,210.53	568.60	2,764.11	2,814.69	0.21
10,354.00	90.18	91.97	7,210.08	565.68	2,859.07	2,908.45	0.48
10,449.00	89.14	90.24	7,210.64	563.84	2,954.04	3,002.37	2.12
10,543.00	90.19	88.61	7,211.19	564.79	3,048.03	3,095.68	2.06
10,638.00	90.83	89.13	7,210.34	566.66	3,143.01	3,190.09	0.87
10,733.00	90.40	89.90	7,209.33	567.46	3,238.00	3,284.37	0.93
10,828.00	90.06	91.32	7,208.94	566.45	3,332.99	3,378.42	1.54
10,923.00	90.31	91.88	7,208.64	563.80	3,427.95	3,472.22	0.65
11,018.00	90.43	90.96	7,208.02	561.45	3,522.92	3,566.07	0.98
11,113.00	90.31	91.96	7,207.41	559.03	3,617.89	3,659.90	1.06
11,208.00	89.85	91.21	7,207.28	556.40	3,712.85	3,753.71	0.93
11,303.00	88.89	88.56	7,208.32	556.59	3,807.83	3,847.91	2.97
11,398.00	88.86	88.12	7,210.19	559.34	3,902.77	3,942.40	0.46
11,493.00	90.12	87.75	7,211.03	562.76	3,997.71	4,036.96	1.38
11,588.00	89.45	86.90	7,211.39	567.20	4,092.60	4,131.62	1.14
11,683.00	89.63	87.68	7,212.15	571.69	4,187.49	4,226.29	0.84
11,778.00	90.28	88.09	7,212.23	575.19	4,282.43	4,320.87	0.81
11,795.00	90.52	87.85	7,212.11	575.80	4,299.41	4,337.79	2.00
Final MWD Survey							
11,856.00	90.52	87.85	7,211.55	578.08	4,360.37	4,398.52	0.00
Survey Projection to TD - Estimated BHL: 2454' FSL, 537' FEL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
805.00	805.00	0.00	0.00	Surface Casing Assumed Vertical at 805.00ft
824.00	824.00	-0.16	0.05	First MWD Survey
11,795.00	7,212.11	575.80	4,299.41	Final MWD Survey
11,856.00	7,211.55	578.08	4,360.37	Survey Projection to TD
11,856.00	7,211.55	578.08	4,360.37	Estimated BHL: 2454' FSL, 537' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Wiest J28-65-1HN_PlanB - Rev0_BH	82.50	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
805.00	11,856.00	Sperry MWD Surveys	MWD

Design Report for Wiest J28-65-1HN - MWD Survey

Targets

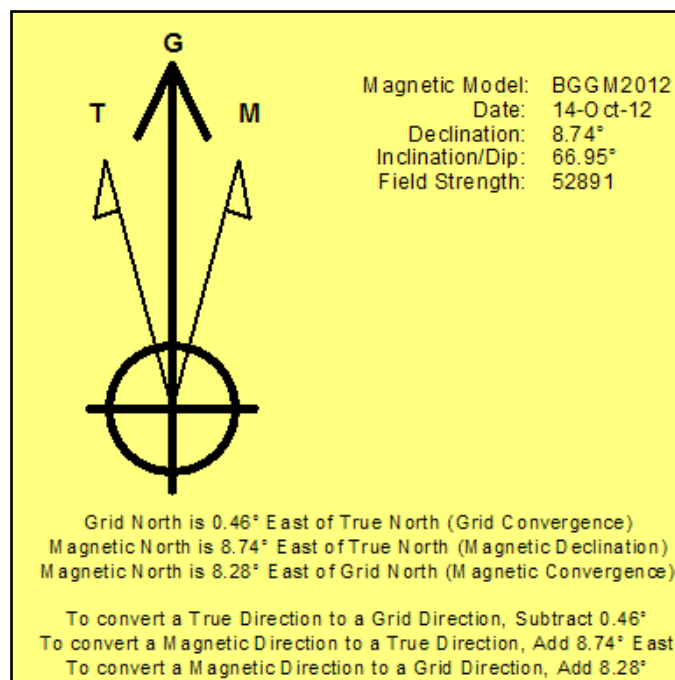
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Wiest	0.00	0.00	7,212.54	574.39	4,361.92	1,378,449.72	3,201,522.34	40° 22' 11.964 N	104° 46' 36.264 W
- actual wellpath misses target center by 4.13ft at 11856.00ft MD (7211.55 TVD, 578.08 N, 4360.37 E)									
- Point									
Wiest	0.00	0.00	0.00	0.00	0.00	1,377,875.36	3,197,160.59	40° 22' 6.636 N	104° 47' 32.676 W
- actual wellpath hits target center									
- Polygon									
Point 1				3.00	732.00	1,378,607.33	3,197,163.59		
Point 2				4.00	2,903.00	1,380,778.24	3,197,164.59		
Point 3				2,174.00	2,927.00	1,380,802.24	3,199,334.50		
Point 4				4,344.00	2,967.00	1,380,842.24	3,201,504.41		
Point 5				4,443.00	765.00	1,378,640.33	3,201,603.41		
Point 6				4,354.00	-1,410.00	1,376,465.42	3,201,514.41		
Point 7				2,178.00	-1,435.00	1,376,440.42	3,199,338.50		
Point 8				2.00	-1,464.00	1,376,411.42	3,197,162.59		
Point 9				3.00	732.00	1,378,607.33	3,197,163.59		
Wiest	0.00	0.00	0.00	0.00	0.00	1,377,875.36	3,197,160.59	40° 22' 6.636 N	104° 47' 32.676 W
- actual wellpath hits target center									
- Polygon									
Point 1				-457.00	732.00	1,378,607.33	3,196,703.61		
Point 2				-456.00	3,363.00	1,381,238.22	3,196,704.61		
Point 3				2,174.00	3,387.00	1,381,262.22	3,199,334.50		
Point 4				4,804.00	3,427.00	1,381,302.22	3,201,964.39		
Point 5				4,903.00	765.00	1,378,640.33	3,202,063.39		
Point 6				4,814.00	-1,870.00	1,376,005.43	3,201,974.39		
Point 7				2,178.00	-1,895.00	1,375,980.44	3,199,338.50		
Point 8				-458.00	-1,924.00	1,375,951.44	3,196,702.61		
Point 9				-457.00	732.00	1,378,607.33	3,196,703.61		

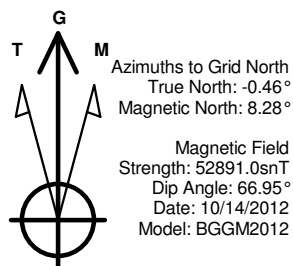
North Reference Sheet for Sec. 28-T5N-R66W - Wiest J28-65-1HN

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.
Vertical Depths are relative to KB=24' @ 4887.00ft (H&P 322). Northing and Easting are relative to Wiest J28-65-1HN
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: 0.99995895

Grid Coordinates of Well: 1,377,875.36 ft N, 3,197,160.59 ft E
Geographical Coordinates of Well: 40° 22' 06.64" N, 104° 47' 32.68" W
Grid Convergence at Surface is: 0.46°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,856.00ft
the Bottom Hole Displacement is 4,398.52ft in the Direction of 82.45° (Grid).
Magnetic Convergence at surface is: -8.28° (14 October 2012, , BGGM2012)

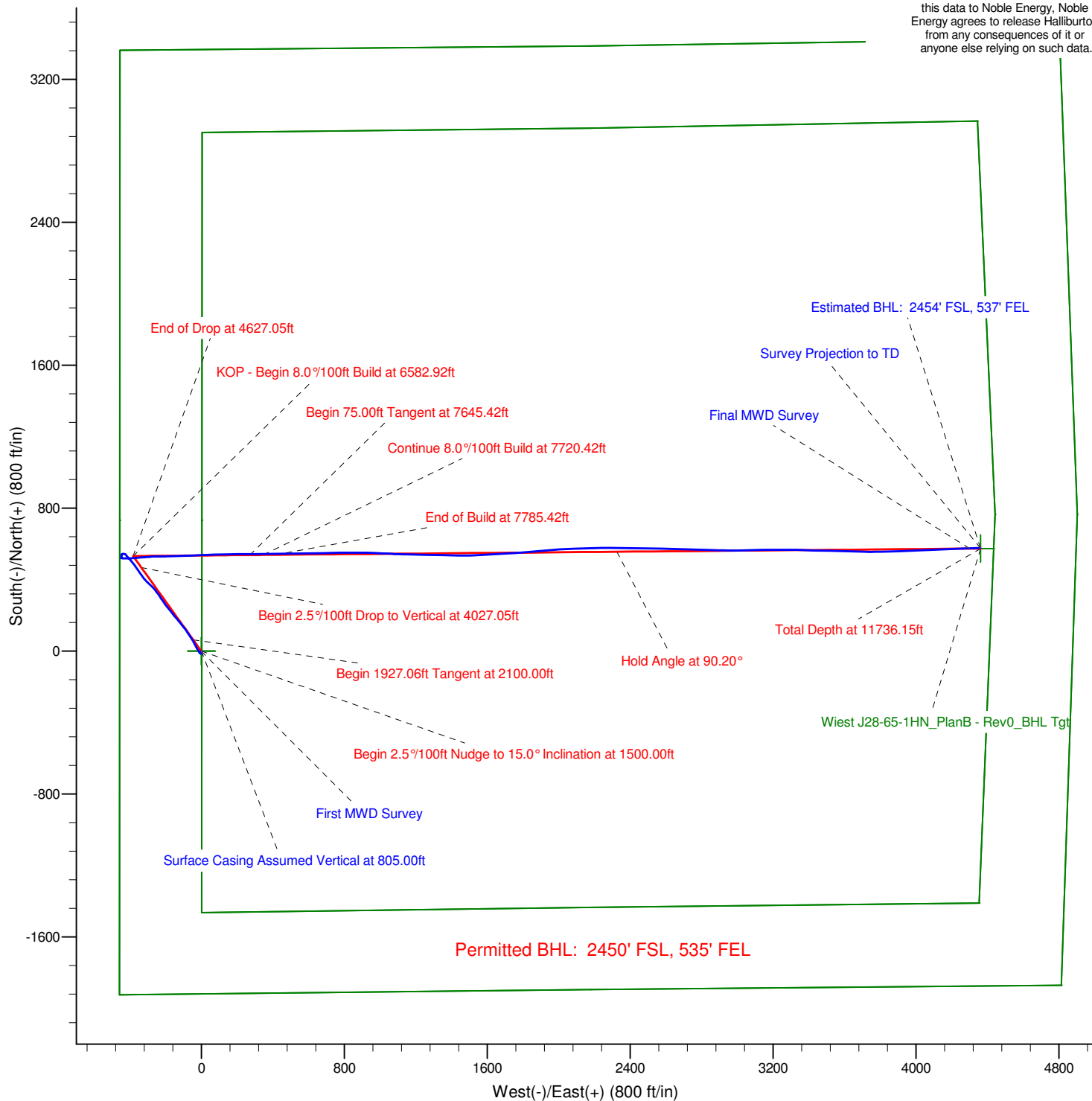




LEGEND

- Wiest J28-65-1HN, Plan B, Plan B - Rev 0 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Wiest J28-65-1HN 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.

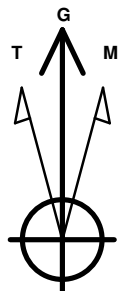


Project: Weld County, CO (NAD 83)
Site: Sec. 28-T5N-R66W
Well: Wiest J28-65-1HN

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
True North: -0.46°
Magnetic North: 8.28°

Magnetic Field
Strength: 52891.0snT
Dip Angle: 66.95°
Date: 10/14/2012
Model: BGGM2012

LEGEND

— Wiest J28-65-1HN, Plan B, Plan B - Rev 0 Proposal V0
— MWD Survey

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("Halliburton") recently completed directional
drilling and MWD operations at the Weist
J28-65-1HN well located at Weld County, CO.

At the conclusion of the job Halliburton
performed a final survey on the well. Noble
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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.

