

Noble Energy

Weld County, CO (NAD 83)

Sec. 1-T5N-R64W

Lucci B01-99HZ

Design: MWD Survey

Sperry Drilling Services Final Survey Report

24 March, 2011

Well Coordinates: 1,402,731.86 N, 3,276,879.10 E (40° 26' 04.70" N, 104° 30' 19.18" W)
Ground Level: 4,612.00 ft

Local Coordinate Origin:	Centered on Well Lucci B01-99HZ
Viewing Datum:	RKB 24' @ 4636.00ft (H&P 315)
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 Lucci B01-99HZ - 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
737.00	0.69	134.20	736.98	-3.09	3.18	4.43	0.09
First MWD Survey							
860.00	0.78	120.31	859.97	-4.03	4.44	5.99	0.16
952.00	1.17	126.46	951.96	-4.91	5.73	7.54	0.44
1,044.00	1.04	125.85	1,043.94	-5.95	7.16	9.31	0.14
1,136.00	1.10	121.23	1,135.93	-6.90	8.60	11.01	0.11
1,227.00	1.01	146.71	1,226.91	-8.02	9.78	12.64	0.52
1,382.00	0.85	127.33	1,381.89	-9.86	11.45	15.11	0.23
1,477.00	0.73	120.50	1,476.88	-10.60	12.53	16.41	0.16
1,571.00	0.91	117.35	1,570.87	-11.24	13.71	17.72	0.20
1,666.00	1.04	145.91	1,665.86	-12.31	14.86	19.29	0.52
1,760.00	1.45	159.88	1,759.84	-14.13	15.75	21.16	0.54
1,854.00	1.44	158.00	1,853.81	-16.34	16.60	23.26	0.05
1,948.00	1.01	149.60	1,947.78	-18.15	17.46	25.10	0.49
2,043.00	1.12	161.63	2,042.77	-19.75	18.18	26.69	0.26
2,137.00	0.17	107.34	2,136.76	-20.67	18.60	27.61	1.10
2,232.00	0.64	51.61	2,231.76	-20.38	19.15	27.84	0.59
2,326.00	0.93	84.83	2,325.75	-19.98	20.32	28.46	0.56
2,421.00	0.78	32.70	2,420.74	-19.37	21.44	28.89	0.80
2,515.00	0.62	50.63	2,514.73	-18.51	22.18	28.88	0.29
2,610.00	0.33	33.84	2,609.73	-17.96	22.73	28.92	0.34
2,704.00	0.55	93.29	2,703.73	-17.76	23.33	29.25	0.51
2,799.00	0.59	145.26	2,798.73	-18.19	24.06	30.08	0.53
2,894.00	0.59	182.62	2,893.72	-19.08	24.32	30.86	0.40
2,988.00	0.54	133.32	2,987.72	-19.86	24.62	31.60	0.50
3,083.00	0.66	273.77	3,082.71	-20.13	24.40	31.62	1.19
3,177.00	0.32	73.97	3,176.71	-20.03	24.11	31.33	1.03
3,272.00	0.81	187.66	3,271.71	-20.62	24.28	31.85	1.04
3,366.00	1.20	230.03	3,365.70	-21.91	23.43	32.07	0.86
3,460.00	1.08	243.11	3,459.68	-22.94	21.89	31.59	0.30
3,555.00	0.47	256.10	3,554.67	-23.44	20.71	31.03	0.66
3,649.00	0.90	259.74	3,648.66	-23.67	19.61	30.35	0.46
3,744.00	0.42	254.21	3,743.65	-23.89	18.54	29.70	0.51
3,838.00	0.86	278.53	3,837.65	-23.88	17.51	28.92	0.54
3,933.00	1.18	296.64	3,932.63	-23.34	15.93	27.38	0.47
4,028.00	1.25	266.12	4,027.61	-22.97	14.03	25.70	0.68
4,122.00	1.52	276.08	4,121.59	-22.91	11.76	23.96	0.38
4,217.00	1.14	290.62	4,216.56	-22.44	9.63	22.04	0.53
4,406.00	2.02	283.31	4,405.49	-21.01	4.62	17.34	0.48
4,501.00	1.56	298.81	4,500.44	-20.00	1.86	14.60	0.70
4,595.00	2.28	279.56	4,594.39	-19.08	-1.10	11.77	1.02
4,690.00	2.05	286.37	4,689.32	-18.28	-4.60	8.62	0.36
4,784.00	2.26	295.26	4,783.25	-17.02	-7.89	5.31	0.42
4,879.00	2.00	296.57	4,878.19	-15.48	-11.06	1.91	0.28
4,974.00	1.60	277.19	4,973.14	-14.57	-13.86	-0.79	0.76
5,068.00	0.84	297.03	5,067.12	-14.09	-15.78	-2.55	0.91
5,163.00	0.33	11.78	5,162.12	-13.51	-16.34	-3.36	0.86
5,257.00	1.31	66.42	5,256.11	-12.81	-15.30	-3.03	1.22
5,352.00	1.15	77.04	5,351.09	-12.16	-13.38	-2.02	0.29

Design Report for Lucci B01-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,446.00	0.49	95.46	5,445.08	-11.99	-12.06	-1.14	0.75
5,541.00	0.71	98.33	5,540.07	-12.12	-11.07	-0.32	0.23
5,635.00	0.99	87.78	5,634.06	-12.17	-9.68	0.76	0.34
5,730.00	1.26	105.12	5,729.04	-12.41	-7.86	2.29	0.45
5,792.00	1.42	125.51	5,791.02	-13.03	-6.57	3.67	0.81
5,855.00	1.70	121.60	5,854.00	-13.98	-5.14	5.37	0.48
5,887.00	2.97	117.92	5,885.97	-14.61	-4.00	6.64	3.99
5,918.00	5.54	104.98	5,916.89	-15.38	-1.85	8.76	8.80
5,950.00	7.24	112.59	5,948.69	-16.55	1.51	12.06	5.92
5,981.00	9.17	115.91	5,979.37	-18.38	5.53	16.29	6.41
6,013.00	12.36	117.24	6,010.80	-21.06	10.87	22.07	10.00
6,044.00	14.63	113.13	6,040.94	-24.12	17.42	29.01	7.94
6,076.00	17.08	113.50	6,071.72	-27.58	25.45	37.32	7.66
6,107.00	18.77	117.22	6,101.22	-31.68	34.06	46.50	6.58
6,139.00	19.93	119.02	6,131.41	-36.68	43.41	56.82	4.08
6,170.00	21.89	118.49	6,160.37	-42.00	53.11	67.62	6.35
6,202.00	23.27	119.04	6,189.92	-47.91	63.88	79.61	4.36
6,233.00	26.34	117.91	6,218.05	-54.11	75.31	92.29	10.02
6,265.00	29.89	117.25	6,246.27	-61.08	88.68	106.93	11.14
6,296.00	32.41	119.53	6,272.80	-68.72	102.78	122.56	8.97
6,327.00	34.75	120.69	6,298.63	-77.32	117.60	139.38	7.83
6,359.00	37.96	119.06	6,324.39	-86.76	134.05	157.96	10.48
6,390.00	41.48	117.93	6,348.24	-96.20	151.47	177.28	11.59
6,422.00	44.77	116.99	6,371.59	-106.28	170.88	198.51	10.48
6,453.00	48.22	117.38	6,392.93	-116.55	190.87	220.31	11.17
6,485.00	51.32	118.60	6,413.59	-128.02	212.44	244.08	10.11
6,516.00	53.60	119.10	6,432.48	-139.89	233.97	268.08	7.47
6,548.00	55.61	119.43	6,451.01	-152.64	256.72	293.59	6.34
6,579.00	57.27	119.67	6,468.15	-165.38	279.19	318.88	5.39
6,611.00	58.52	121.30	6,485.16	-179.13	302.55	345.50	5.82
6,642.00	59.44	121.07	6,501.13	-192.89	325.28	371.65	3.04
6,674.00	62.39	119.96	6,516.69	-207.08	349.37	399.12	9.70
6,705.00	64.65	118.88	6,530.51	-220.71	373.54	426.27	7.93
6,737.00	66.52	117.90	6,543.73	-234.56	399.17	454.67	6.47
6,768.00	67.88	117.61	6,555.75	-247.87	424.46	482.45	4.47
6,800.00	70.12	118.46	6,567.21	-261.91	450.82	511.52	7.43
6,831.00	72.97	118.09	6,577.03	-275.84	476.72	540.16	9.26
6,863.00	75.09	117.93	6,585.83	-290.28	503.88	570.10	6.64
6,894.00	78.21	117.90	6,592.99	-304.40	530.53	599.44	10.06
6,926.00	80.96	116.86	6,598.77	-318.87	558.47	629.98	9.17
6,957.00	83.30	117.70	6,603.02	-332.95	585.76	659.77	8.01
6,989.00	85.12	117.77	6,606.25	-347.76	613.94	690.72	5.69
7,012.00	86.37	118.40	6,607.95	-358.56	634.18	713.04	6.08
7,054.00	89.07	118.98	6,609.62	-378.71	670.99	753.99	6.57
7,116.00	88.58	121.63	6,610.89	-409.98	724.50	814.83	4.35
7,178.00	88.64	122.65	6,612.40	-442.96	776.98	876.02	1.65
7,240.00	89.07	123.25	6,613.64	-476.67	829.00	937.35	1.19
7,302.00	90.56	123.83	6,613.84	-510.93	880.67	998.77	2.58
7,364.00	90.49	125.33	6,613.27	-546.11	931.72	1,060.34	2.42
7,426.00	90.62	127.19	6,612.67	-582.78	981.70	1,122.09	3.01
7,488.00	90.68	129.26	6,611.96	-621.14	1,030.40	1,184.00	3.34

Design Report for Lucci B01-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,551.00	89.94	130.96	6,611.62	-661.72	1,078.58	1,246.98	2.94
7,615.00	90.80	133.12	6,611.21	-704.58	1,126.11	1,310.97	3.63
7,680.00	91.23	135.69	6,610.06	-750.05	1,172.54	1,375.86	4.01
7,744.00	89.75	137.01	6,609.51	-796.35	1,216.71	1,439.61	3.10
7,807.00	88.46	137.47	6,610.50	-842.60	1,259.48	1,502.26	2.17
7,871.00	89.32	137.97	6,611.74	-889.94	1,302.52	1,565.85	1.55
7,934.00	89.88	138.16	6,612.18	-936.81	1,344.62	1,628.41	0.94
7,998.00	91.67	137.33	6,611.31	-984.17	1,387.65	1,692.00	3.08
8,062.00	91.11	136.84	6,609.76	-1,031.03	1,431.22	1,755.65	1.16
8,126.00	90.49	136.18	6,608.86	-1,077.45	1,475.26	1,819.39	1.41
8,189.00	90.12	137.47	6,608.53	-1,123.40	1,518.37	1,882.09	2.13
8,253.00	90.62	135.19	6,608.11	-1,169.68	1,562.55	1,945.84	3.65
8,317.00	90.25	135.25	6,607.63	-1,215.11	1,607.63	2,009.69	0.59
8,381.00	89.75	135.88	6,607.63	-1,260.81	1,652.44	2,073.51	1.26
8,445.00	89.94	134.31	6,607.80	-1,306.14	1,697.62	2,137.37	2.47
8,509.00	88.95	132.35	6,608.42	-1,350.05	1,744.17	2,201.33	3.43
8,573.00	90.06	131.34	6,608.98	-1,392.74	1,791.84	2,265.32	2.34
8,636.00	89.69	131.88	6,609.11	-1,434.58	1,838.94	2,328.32	1.04
8,700.00	89.50	132.10	6,609.56	-1,477.39	1,886.51	2,392.31	0.45
8,764.00	88.77	132.35	6,610.53	-1,520.40	1,933.90	2,456.30	1.21
8,827.00	90.31	131.98	6,611.04	-1,562.69	1,980.59	2,519.29	2.51
8,891.00	89.69	131.80	6,611.04	-1,605.42	2,028.24	2,583.28	1.01
8,955.00	90.93	132.60	6,610.69	-1,648.41	2,075.65	2,647.27	2.31
9,019.00	90.74	132.42	6,609.76	-1,691.65	2,122.82	2,711.25	0.41
9,083.00	90.19	132.94	6,609.24	-1,735.03	2,169.87	2,775.23	1.18
9,146.00	90.12	131.93	6,609.07	-1,777.54	2,216.36	2,838.22	1.61
9,209.00	90.12	133.24	6,608.94	-1,820.17	2,262.75	2,901.20	2.08
9,273.00	89.57	133.33	6,609.11	-1,864.05	2,309.34	2,965.16	0.87
9,336.00	87.46	133.51	6,610.74	-1,907.34	2,355.08	3,028.09	3.36
9,400.00	87.52	134.96	6,613.54	-1,951.94	2,400.89	3,091.95	2.27
9,464.00	87.96	135.09	6,616.07	-1,997.18	2,446.09	3,155.76	0.72
9,527.00	87.52	135.57	6,618.55	-2,041.95	2,490.34	3,218.56	1.03
9,591.00	88.33	135.24	6,620.87	-2,087.49	2,535.25	3,282.36	1.37
9,655.00	88.09	134.96	6,622.87	-2,132.80	2,580.40	3,346.18	0.58
9,719.00	89.81	134.98	6,624.04	-2,178.02	2,625.67	3,410.04	2.69
9,783.00	90.12	134.30	6,624.08	-2,222.99	2,671.21	3,473.93	1.17
9,847.00	90.56	134.63	6,623.70	-2,267.82	2,716.88	3,537.84	0.86
9,911.00	90.12	135.28	6,623.32	-2,313.04	2,762.17	3,601.70	1.23
9,975.00	90.68	135.08	6,622.87	-2,358.44	2,807.28	3,665.56	0.93
10,039.00	90.93	134.19	6,621.98	-2,403.40	2,852.82	3,729.44	1.44
10,103.00	90.62	133.83	6,621.11	-2,447.86	2,898.84	3,793.37	0.74
10,166.00	90.31	134.01	6,620.60	-2,491.56	2,944.22	3,856.30	0.57
10,229.00	89.94	134.05	6,620.46	-2,535.34	2,989.52	3,919.23	0.59
10,293.00	89.38	133.51	6,620.84	-2,579.62	3,035.72	3,983.17	1.22
10,357.00	89.81	133.40	6,621.29	-2,623.64	3,082.18	4,047.12	0.69
10,421.00	90.62	133.23	6,621.05	-2,667.54	3,128.75	4,111.08	1.29
10,485.00	92.47	134.47	6,619.33	-2,711.86	3,174.88	4,174.99	3.48
10,549.00	92.23	133.90	6,616.70	-2,756.43	3,220.74	4,238.86	0.97
10,612.00	93.03	134.23	6,613.81	-2,800.20	3,265.96	4,301.72	1.37
10,675.00	92.59	134.30	6,610.72	-2,844.12	3,311.02	4,364.56	0.71

Design Report for Lucci B01-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,739.00	91.86	133.58	6,608.24	-2,888.50	3,357.07	4,428.44	1.60
10,802.00	90.93	132.62	6,606.71	-2,931.53	3,403.05	4,491.39	2.12
10,866.00	93.96	134.64	6,603.98	-2,975.64	3,449.33	4,555.27	5.69
10,929.00	94.40	134.98	6,599.38	-3,019.92	3,493.90	4,617.99	0.88
10,993.00	94.02	134.77	6,594.68	-3,064.95	3,539.13	4,681.69	0.68
11,057.00	92.90	134.85	6,590.82	-3,109.98	3,584.46	4,745.45	1.75
11,120.00	91.61	134.33	6,588.34	-3,154.17	3,629.29	4,808.30	2.21
11,183.00	91.36	134.88	6,586.71	-3,198.39	3,674.12	4,871.18	0.96
11,247.00	91.42	135.33	6,585.16	-3,243.72	3,719.28	4,935.02	0.71
11,310.00	90.00	136.52	6,584.38	-3,288.97	3,763.10	4,997.81	2.94
11,374.00	89.38	135.87	6,584.72	-3,335.16	3,807.40	5,061.57	1.40
11,437.00	88.95	135.93	6,585.64	-3,380.40	3,851.24	5,124.36	0.69
11,502.00	88.58	135.73	6,587.04	-3,427.01	3,896.52	5,189.15	0.65
11,564.00	88.15	136.00	6,588.81	-3,471.49	3,939.67	5,250.93	0.82
Final MWD Survey							
11,600.00	88.15	136.00	6,589.97	-3,497.37	3,964.67	5,286.79	0.00

Survey Projection to TD - Estimated BHL: 1325' FSL, 695' FEL

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
737.00	736.98	-3.09	3.18	First MWD Survey
11,564.00	6,588.81	-3,471.49	3,939.67	Final MWD Survey
11,600.00	6,589.97	-3,497.37	3,964.67	Survey Projection to TD
11,600.00	6,589.97	-3,497.37	3,964.67	Estimated BHL: 1325' FSL, 695' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Lucci B01-99HZ Tgt	131.32	Slot	0.00	0.00	0.00

Survey tool program

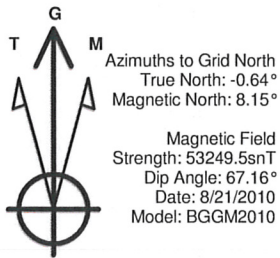
From (ft)	To (ft)	Survey/Plan	Survey Tool
737.00	11,600.00	Sperry MWD Survey	MWD

Project: Weld County, CO (NAD 83)
 Site: Sec. 1-T5N-R64W
 Well: Lucci B01-99HZ

Noble Energy

HALLIBURTON

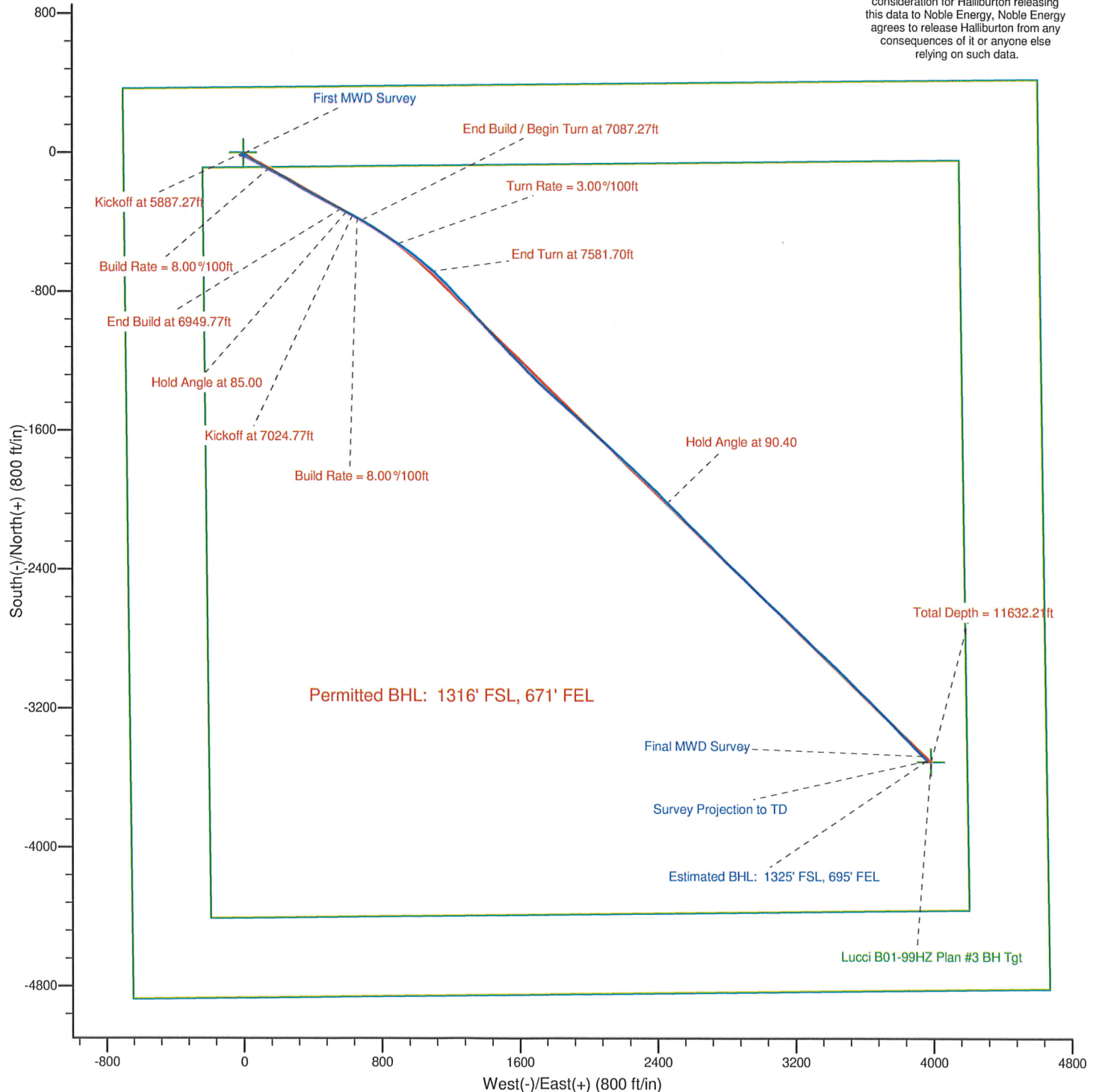
Sperry Drilling



LEGEND

- Lucci B01-99HZ,
- MWD Survey

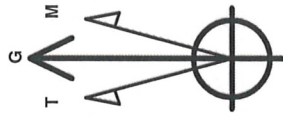
Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Lucci B01-99HZ well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the 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. 1-T5N-R64W
 Well: Lucci B01-99HZ

HALLIBURTON
 Sperry Drilling



Azimuths to Grid North
 True North: -0.64°
 Magnetic North: 8.15°
 Magnetic Field
 Strength: 53249.5snT
 Dip Angle: 67.16°
 Date: 8/21/2010
 Model: BGGM2010

LEGEND

— Lucci B01-99HZ,
 — MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Lucci B01-99HZ 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.

