

Noble Energy

Weld County, CO (NAD 83)

Sec. 31-T6N-R62W

Wells Ranch USX AE31-99HZ

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

09 March, 2011

Well Coordinates: 1,407,441.90 N, 3,313,613.55 E (40° 26' 46.90" N, 104° 22' 23.38" W)

Ground Level: 4,694.00 ft

Local Coordinate Origin: Centered on Well Wells Ranch USX AE31-99HZ

Viewing Datum: RKB 16' @ 4710.00ft (Cade 22)

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 Wells Ranch USX AE31-99HZ - 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
724.00	0.19	261.73	724.00	-0.17	-1.19	-0.74	0.03
First MWD Survey							
816.00	0.08	197.14	816.00	-0.26	-1.36	-0.81	0.19
909.00	0.20	212.79	909.00	-0.45	-1.46	-0.75	0.13
998.00	0.19	261.57	998.00	-0.61	-1.69	-0.81	0.18
1,091.00	0.24	257.90	1,091.00	-0.67	-2.04	-1.02	0.06
1,181.00	0.39	247.10	1,181.00	-0.83	-2.50	-1.25	0.18
1,276.00	0.51	230.11	1,275.99	-1.23	-3.13	-1.43	0.19
1,371.00	0.44	232.81	1,370.99	-1.72	-3.74	-1.54	0.08
1,466.00	0.40	231.26	1,465.99	-2.15	-4.29	-1.64	0.04
1,561.00	0.44	267.10	1,560.98	-2.37	-4.91	-1.94	0.27
1,656.00	0.11	262.54	1,655.98	-2.40	-5.37	-2.25	0.35
1,751.00	0.38	219.17	1,750.98	-2.66	-5.66	-2.28	0.33
1,845.00	0.58	232.84	1,844.98	-3.19	-6.23	-2.34	0.24
1,941.00	0.74	243.45	1,940.97	-3.76	-7.18	-2.63	0.21
2,036.00	0.51	251.84	2,035.97	-4.16	-8.13	-3.04	0.26
2,131.00	0.82	229.99	2,130.96	-4.73	-9.05	-3.32	0.42
2,227.00	0.45	210.38	2,226.95	-5.50	-9.77	-3.31	0.44
2,322.00	0.27	179.24	2,321.95	-6.04	-9.95	-3.07	0.27
2,417.00	0.27	174.50	2,416.95	-6.49	-9.93	-2.75	0.02
2,512.00	0.21	111.94	2,511.95	-6.78	-9.74	-2.42	0.27
2,607.00	0.23	114.46	2,606.95	-6.92	-9.41	-2.07	0.02
2,703.00	0.12	127.36	2,702.95	-7.06	-9.15	-1.79	0.12
2,798.00	0.08	150.99	2,797.95	-7.18	-9.04	-1.63	0.06
2,893.00	0.12	48.80	2,892.95	-7.17	-8.94	-1.56	0.17
3,020.00	0.44	94.19	3,019.95	-7.12	-8.35	-1.17	0.29
3,115.00	0.41	113.86	3,114.95	-7.29	-7.67	-0.56	0.16
3,211.00	0.54	103.46	3,210.94	-7.53	-6.92	0.15	0.16
3,305.00	1.40	131.46	3,304.93	-8.39	-5.63	1.68	1.02
3,399.00	1.33	156.02	3,398.90	-10.15	-4.32	3.84	0.62
3,493.00	1.43	163.32	3,492.88	-12.27	-3.54	5.86	0.21
3,588.00	1.54	169.62	3,587.84	-14.66	-2.97	7.92	0.21
3,683.00	1.62	173.47	3,682.81	-17.25	-2.59	9.98	0.14
3,778.00	1.49	171.72	3,777.77	-19.81	-2.26	11.98	0.15
3,905.00	1.07	165.16	3,904.74	-22.59	-1.72	14.28	0.35
4,000.00	1.09	164.42	3,999.72	-24.32	-1.25	15.81	0.03
4,095.00	0.91	146.81	4,094.71	-25.82	-0.59	17.32	0.37
4,190.00	1.01	130.12	4,189.70	-26.99	0.46	18.89	0.31
4,286.00	0.94	152.82	4,285.68	-28.24	1.47	20.48	0.41
4,382.00	0.67	166.79	4,381.67	-29.48	1.95	21.69	0.35
4,477.00	0.64	176.86	4,476.67	-30.55	2.11	22.54	0.13
4,573.00	0.32	194.30	4,572.66	-31.35	2.07	23.06	0.36
4,699.00	0.48	203.96	4,698.66	-32.17	1.77	23.40	0.14
4,826.00	0.60	209.89	4,825.65	-33.23	1.22	23.74	0.10
4,919.00	0.55	202.05	4,918.65	-34.07	0.81	24.01	0.10
5,046.00	0.33	117.74	5,045.65	-34.81	0.91	24.59	0.48
5,141.00	0.17	131.68	5,140.65	-35.03	1.26	24.99	0.18
5,236.00	0.21	159.01	5,235.65	-35.28	1.42	25.29	0.10
5,330.00	0.26	183.39	5,329.65	-35.66	1.47	25.58	0.12

Design Report for Wells Ranch USX AE31-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,425.00	0.50	168.38	5,424.64	-36.28	1.54	26.06	0.27
5,521.00	0.35	154.52	5,520.64	-36.95	1.75	26.68	0.19
5,631.00	0.38	189.84	5,630.64	-37.62	1.84	27.19	0.20
5,673.00	0.24	216.32	5,672.64	-37.82	1.76	27.28	0.47
5,705.00	0.23	202.78	5,704.64	-37.94	1.70	27.31	0.18
5,737.00	0.40	172.97	5,736.64	-38.11	1.68	27.42	0.72
5,768.00	2.28	145.29	5,767.63	-38.72	2.05	28.11	6.24
5,800.00	4.58	138.69	5,799.57	-40.20	3.26	30.00	7.28
5,832.00	7.60	134.78	5,831.38	-42.65	5.60	33.39	9.52
5,864.00	10.71	131.13	5,862.97	-46.10	9.34	38.48	9.88
5,895.00	13.89	128.81	5,893.26	-50.33	14.41	45.07	10.38
5,927.00	16.70	129.03	5,924.12	-55.63	20.98	53.48	8.78
5,959.00	19.26	132.44	5,954.56	-62.09	28.45	63.35	8.65
5,990.00	21.94	135.35	5,983.57	-69.66	36.29	74.25	9.25
6,022.00	24.23	134.61	6,013.01	-78.53	45.17	86.79	7.21
6,054.00	27.08	132.80	6,041.85	-88.09	55.19	100.64	9.24
6,086.00	29.88	129.26	6,069.98	-98.09	66.71	115.88	10.21
6,118.00	33.34	128.40	6,097.23	-108.60	79.78	132.59	10.90
6,150.00	35.71	130.08	6,123.59	-120.07	93.82	150.68	7.98
6,182.00	37.14	131.73	6,149.34	-132.52	108.17	169.66	5.42
6,213.00	40.00	132.09	6,173.57	-145.43	122.55	188.98	9.25
6,245.00	43.88	131.89	6,197.37	-159.73	138.45	210.35	12.13
6,276.00	47.52	131.42	6,219.02	-174.47	155.02	232.53	11.79
6,308.00	49.23	132.30	6,240.27	-190.44	172.84	256.44	5.73
6,340.00	49.98	133.66	6,261.01	-207.05	190.66	280.81	4.00
6,371.00	51.27	134.97	6,280.68	-223.79	207.81	304.76	5.29
6,403.00	52.40	133.23	6,300.45	-241.30	225.88	329.92	5.54
6,434.00	55.60	131.86	6,318.67	-258.25	244.35	354.99	10.92
6,466.00	58.83	131.04	6,336.00	-276.05	264.52	381.87	10.32
6,498.00	62.22	130.68	6,351.74	-294.27	285.59	409.70	10.64
6,529.00	64.60	131.04	6,365.61	-312.41	306.55	437.39	7.75
6,561.00	65.71	131.77	6,379.06	-331.62	328.33	466.41	4.04
6,592.00	66.95	131.00	6,391.51	-350.38	349.63	494.78	4.60
6,624.00	68.78	130.54	6,403.56	-369.74	372.08	524.39	5.87
6,656.00	71.60	131.16	6,414.41	-389.43	394.85	554.47	9.00
6,688.00	74.18	132.43	6,423.82	-409.81	417.65	585.03	8.91
6,719.00	75.79	132.99	6,431.85	-430.12	439.64	614.97	5.48
6,751.00	78.26	132.85	6,439.04	-451.35	462.48	646.15	7.73
6,782.00	81.64	132.43	6,444.44	-472.03	484.93	676.67	10.98
6,798.00	83.14	132.06	6,446.56	-482.69	496.67	692.52	9.65
6,878.00	87.03	132.28	6,453.42	-536.19	555.73	772.19	4.87
6,910.00	86.85	132.07	6,455.12	-557.64	579.41	804.14	0.86
6,942.00	87.90	132.89	6,456.59	-579.23	602.99	836.10	4.16
6,974.00	88.21	132.47	6,457.68	-600.91	626.50	868.08	1.63
7,006.00	88.46	132.98	6,458.61	-622.61	650.00	900.06	1.77
7,070.00	88.83	133.16	6,460.12	-666.31	696.74	964.05	0.64
7,134.00	90.99	134.27	6,460.22	-710.53	742.99	1,028.04	3.79
7,166.00	91.73	135.45	6,459.46	-733.10	765.67	1,060.02	4.35
7,230.00	91.54	135.18	6,457.63	-778.58	810.66	1,123.96	0.52
7,294.00	92.84	135.51	6,455.19	-824.07	855.60	1,187.88	2.10
7,358.00	91.73	134.36	6,452.64	-869.24	900.87	1,251.80	2.50

Design Report for Wells Ranch USX AE31-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,390.00	91.24	134.52	6,451.81	-891.64	923.71	1,283.78	1.61
7,422.00	91.85	134.97	6,450.94	-914.15	946.43	1,315.76	2.37
7,486.00	90.93	134.71	6,449.39	-959.27	991.80	1,379.73	1.49
7,549.00	90.19	134.10	6,448.78	-1,003.35	1,036.80	1,442.71	1.52
7,613.00	89.75	134.67	6,448.81	-1,048.12	1,082.54	1,506.70	1.13
7,677.00	89.69	134.26	6,449.12	-1,092.94	1,128.22	1,570.69	0.65
7,740.00	90.00	132.70	6,449.29	-1,136.29	1,173.93	1,633.69	2.52
7,804.00	90.31	133.36	6,449.12	-1,179.97	1,220.71	1,697.69	1.14
7,868.00	90.93	132.90	6,448.43	-1,223.72	1,267.42	1,761.68	1.21
7,932.00	90.49	132.03	6,447.63	-1,266.92	1,314.62	1,825.67	1.52
7,996.00	90.43	131.29	6,447.12	-1,309.46	1,362.44	1,889.63	1.16
8,060.00	90.99	131.96	6,446.33	-1,351.97	1,410.27	1,953.60	1.36
8,124.00	89.63	131.41	6,445.98	-1,394.53	1,458.07	2,017.56	2.29
8,188.00	89.57	130.28	6,446.43	-1,436.39	1,506.48	2,081.50	1.77
8,252.00	89.26	129.28	6,447.08	-1,477.33	1,555.66	2,145.36	1.64
8,316.00	90.43	130.41	6,447.25	-1,518.34	1,604.80	2,209.24	2.54
8,379.00	91.55	131.86	6,446.17	-1,559.77	1,652.24	2,272.17	2.91
8,443.00	90.62	133.29	6,444.95	-1,603.06	1,699.36	2,336.15	2.66
8,507.00	90.80	132.67	6,444.16	-1,646.69	1,746.17	2,400.14	1.01
8,571.00	91.67	134.17	6,442.78	-1,690.67	1,792.65	2,464.13	2.71
8,634.00	90.93	134.95	6,441.35	-1,734.86	1,837.52	2,527.10	1.71
8,698.00	91.05	134.76	6,440.25	-1,779.99	1,882.89	2,591.07	0.35
8,762.00	89.75	135.05	6,439.80	-1,825.17	1,928.21	2,655.04	2.08
8,826.00	90.49	133.88	6,439.67	-1,870.00	1,973.89	2,719.03	2.16
8,890.00	91.61	134.17	6,438.49	-1,914.47	2,019.90	2,783.02	1.81
8,954.00	89.69	133.00	6,437.77	-1,958.59	2,066.25	2,847.01	3.51
9,018.00	90.37	132.16	6,437.73	-2,001.89	2,113.38	2,911.00	1.69
9,081.00	90.56	133.04	6,437.22	-2,044.53	2,159.75	2,973.99	1.43
9,145.00	90.00	132.90	6,436.91	-2,088.16	2,206.58	3,037.99	0.90
9,209.00	89.57	134.30	6,437.15	-2,132.29	2,252.92	3,101.99	2.29
9,273.00	89.75	133.85	6,437.53	-2,176.81	2,298.90	3,165.98	0.76
9,337.00	89.69	134.97	6,437.84	-2,221.59	2,344.62	3,229.97	1.75
9,401.00	89.88	137.18	6,438.08	-2,267.69	2,389.01	3,293.90	3.47
9,465.00	90.12	136.36	6,438.08	-2,314.32	2,432.85	3,357.79	1.33
9,529.00	90.25	136.56	6,437.88	-2,360.71	2,476.93	3,421.70	0.37
9,593.00	90.62	135.01	6,437.39	-2,406.58	2,521.56	3,485.64	2.49
9,656.00	90.56	131.35	6,436.74	-2,449.68	2,567.49	3,548.62	5.81
9,719.00	90.43	130.61	6,436.20	-2,490.99	2,615.05	3,611.56	1.19
9,783.00	90.37	132.60	6,435.75	-2,533.48	2,662.90	3,675.53	3.11
9,847.00	90.12	133.67	6,435.48	-2,577.24	2,709.60	3,739.52	1.72
9,910.00	90.19	135.44	6,435.31	-2,621.44	2,754.50	3,802.51	2.81
9,974.00	90.00	133.00	6,435.20	-2,666.07	2,800.36	3,866.50	3.82
10,038.00	92.10	132.88	6,434.03	-2,709.66	2,847.20	3,930.48	3.29
10,101.00	90.74	131.11	6,432.47	-2,751.79	2,894.00	3,993.44	3.54
10,164.00	89.57	130.21	6,432.29	-2,792.84	2,941.79	4,056.36	2.34
10,227.00	90.19	129.63	6,432.43	-2,833.27	2,990.11	4,119.24	1.35
10,291.00	89.38	130.35	6,432.67	-2,874.40	3,039.14	4,183.13	1.69
10,355.00	90.25	130.12	6,432.87	-2,915.74	3,088.00	4,247.03	1.41
10,419.00	90.43	131.22	6,432.49	-2,957.44	3,136.54	4,310.95	1.74
10,482.00	88.95	131.07	6,432.83	-2,998.89	3,183.98	4,373.90	2.36

Design Report for Wells Ranch USX AE31-99HZ - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,545.00	89.13	130.66	6,433.89	-3,040.11	3,231.62	4,436.83	0.71
10,609.00	89.51	131.13	6,434.65	-3,082.00	3,279.99	4,500.76	0.94
10,672.00	89.75	130.39	6,435.06	-3,123.13	3,327.71	4,563.69	1.23
10,736.00	90.80	129.45	6,434.75	-3,164.20	3,376.79	4,627.57	2.20
10,800.00	91.61	129.36	6,433.40	-3,204.82	3,426.23	4,691.39	1.27
10,853.00	93.34	130.40	6,431.11	-3,238.77	3,466.87	4,744.24	3.81
Final MWD Survey							
10,890.00	93.34	130.40	6,428.96	-3,262.71	3,494.99	4,781.12	0.00
Survey Projection to TD - Estimated BHL: 528' FSL, 1091' FEL							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
724.00	724.00	-0.17	-1.19	First MWD Survey
10,853.00	6,431.11	-3,238.77	3,466.87	Final MWD Survey
10,890.00	6,428.96	-3,262.71	3,494.99	Survey Projection to TD
10,890.00	6,428.96	-3,262.71	3,494.99	Estimated BHL: 528' FSL, 1091' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Wells Ranch USX AE 31-99HZ	133.43	Slot	0.00	0.00	0.00

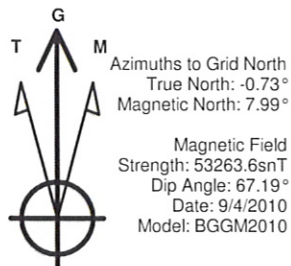
Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
724.00	10,890.00	Sperry MWD Survey	MWD

Noble Energy

HALLIBURTON

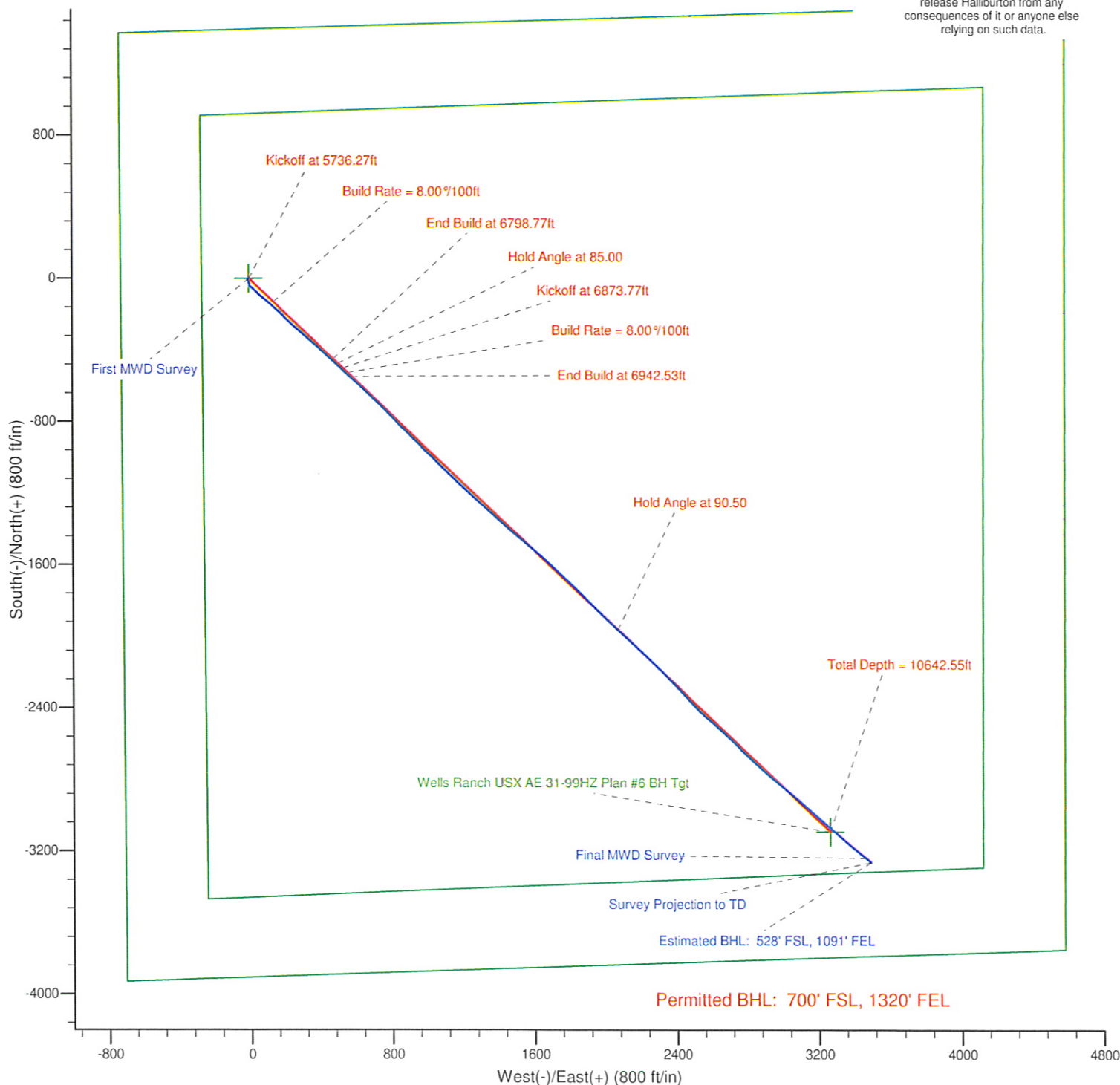
Sperry Drilling



LEGEND

- Wells Ranch USX AE31-99HZ,
- MWD Survey

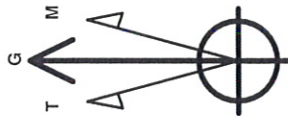
Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Wells Ranch USX AE31-99HZ well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide 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. 31-T6N-R62W
Well: Wells Ranch USX AE31-99HZ

HALLIBURTON
Sperry Drilling



Azimuths to Grid North
True North: -0.73°
Magnetic North: 7.99°
Magnetic Field
Strength: 53263.6snT
Dip Angle: 67.19°
Date: 9/4/2010
Model: BGGM2010

LEGEND

- Wells Ranch USX AE31-99HZ,
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Wells Ranch USX AE31-99HZ 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.

