

Noble Energy

Weld County, CO (NAD 83)

Sec. 33-T7N-R63W (Wahlert 33 South PAD)

Wahlert AC33-63HN - A1

Design: MWD Survey

Sperry Drilling Services

Final Survey Report

14 December, 2012

Well Coordinates: 1,436,379.20 N, 3,291,813.79 E (40° 31' 35.47" N, 104° 27' 00.90" W)

Ground Level: 4,742.00 ft

Local Coordinate Origin: Centered on Well Wahlert AC33-63HN - Slot A1

Viewing Datum: KB @ 4766.00ft (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: 431

HALLIBURTON

Design Report for Wahlert AC33-63HN - 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
897.00	0.00	0.00	897.00	0.00	0.00	0.00	0.00
First MWD Survey							
971.00	0.32	355.57	971.00	0.21	-0.02	-0.01	0.43
1,249.00	0.75	301.40	1,248.99	1.93	-1.63	-1.59	0.22
1,532.00	0.63	320.45	1,531.97	4.09	-4.20	-4.12	0.09
1,816.00	0.28	88.01	1,815.96	5.32	-4.50	-4.39	0.29
2,099.00	0.77	263.78	2,098.96	5.14	-5.70	-5.60	0.37
2,388.00	0.86	266.03	2,387.93	4.78	-9.79	-9.70	0.03
2,675.00	0.88	280.07	2,674.89	5.01	-14.11	-14.01	0.07
2,962.00	0.29	294.44	2,961.88	5.70	-16.94	-16.83	0.21
3,249.00	0.61	243.68	3,248.87	5.32	-18.98	-18.86	0.17
3,536.00	2.57	230.62	3,535.75	0.56	-25.32	-25.30	0.69
3,631.00	1.98	219.44	3,630.67	-2.06	-28.01	-28.04	0.77
3,727.00	1.22	234.42	3,726.63	-3.93	-29.89	-29.96	0.90
3,823.00	1.32	228.79	3,822.61	-5.25	-31.56	-31.65	0.17
3,918.00	1.12	202.34	3,917.59	-6.83	-32.73	-32.86	0.62
4,014.00	1.12	149.40	4,013.57	-8.51	-32.61	-32.77	1.04
4,109.00	0.79	142.28	4,108.56	-9.83	-31.74	-31.93	0.37
4,205.00	0.94	144.11	4,204.55	-10.99	-30.87	-31.08	0.16
4,300.00	1.89	116.97	4,299.52	-12.33	-29.02	-29.26	1.20
4,396.00	1.96	131.79	4,395.47	-14.14	-26.38	-26.66	0.52
4,491.00	0.96	116.13	4,490.43	-15.58	-24.46	-24.76	1.12
4,587.00	1.19	61.05	4,586.42	-15.45	-22.86	-23.17	1.06
4,873.00	1.07	68.85	4,872.36	-13.05	-17.77	-18.03	0.07
5,159.00	1.30	47.37	5,158.30	-9.88	-12.90	-13.09	0.17
5,445.00	0.73	99.15	5,444.26	-7.98	-8.71	-8.87	0.36
5,730.00	0.53	98.15	5,729.25	-8.45	-5.61	-5.78	0.07
5,847.00	0.88	59.35	5,846.24	-8.07	-4.30	-4.46	0.49
5,909.00	0.83	55.47	5,908.23	-7.57	-3.52	-3.68	0.12
5,992.00	5.12	70.29	5,991.10	-5.98	0.46	0.34	5.21
6,024.00	8.56	82.18	6,022.87	-5.18	4.16	4.06	11.57
6,072.00	14.19	87.38	6,069.91	-4.42	13.59	13.50	11.91
6,120.00	17.33	93.24	6,116.10	-4.56	26.61	26.51	7.33
6,168.00	20.05	93.66	6,161.57	-5.49	41.96	41.84	5.67
6,215.00	22.16	90.79	6,205.41	-6.12	58.86	58.73	5.00
6,263.00	24.59	86.59	6,249.47	-5.65	77.89	77.76	6.14
6,310.00	27.36	84.34	6,291.72	-4.01	98.40	98.30	6.25
6,358.00	30.68	86.14	6,333.69	-2.09	121.60	121.54	7.15
6,406.00	35.03	87.43	6,374.00	-0.65	147.60	147.56	9.18
6,454.00	39.95	86.84	6,412.08	0.82	176.77	176.75	10.28
6,501.00	43.98	88.42	6,447.02	2.10	208.16	208.16	8.86
6,549.00	46.66	90.61	6,480.77	2.37	242.28	242.28	6.46
6,596.00	49.66	90.08	6,512.12	2.17	277.29	277.28	6.44
6,644.00	53.89	88.28	6,541.81	2.72	314.98	314.98	9.29
6,692.00	58.01	90.41	6,568.68	3.16	354.74	354.73	9.34
6,740.00	63.05	88.05	6,592.29	3.74	396.51	396.50	11.34
6,788.00	66.59	87.24	6,612.71	5.53	439.90	439.92	7.53
6,836.00	69.37	87.68	6,630.71	7.50	484.35	484.40	5.85
6,884.00	72.05	87.69	6,646.56	9.33	529.62	529.70	5.58

Design Report for Wahlert AC33-63HN - MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,932.00	76.09	88.25	6,659.73	10.96	575.73	575.84	8.49
6,970.00	79.71	88.60	6,667.70	11.98	612.87	612.99	9.57
7,099.00	85.49	90.54	6,684.31	12.93	740.73	740.84	4.72
7,195.00	90.86	89.25	6,687.36	13.11	836.64	836.74	5.75
7,290.00	90.25	89.21	6,686.44	14.38	931.63	931.73	0.64
7,386.00	88.76	89.00	6,687.27	15.88	1,027.61	1,027.73	1.57
7,482.00	89.81	88.66	6,688.47	17.84	1,123.58	1,123.72	1.15
7,577.00	91.30	89.97	6,687.55	18.98	1,218.57	1,218.70	2.09
7,672.00	90.31	87.75	6,686.22	20.87	1,313.53	1,313.69	2.56
7,768.00	91.36	87.36	6,684.82	24.96	1,409.43	1,409.65	1.17
7,863.00	89.94	86.63	6,683.74	29.94	1,504.29	1,504.59	1.68
7,958.00	90.93	86.44	6,683.02	35.68	1,599.12	1,599.51	1.06
8,054.00	89.75	87.95	6,682.45	40.38	1,695.00	1,695.46	2.00
8,149.00	90.62	87.99	6,682.14	43.75	1,789.93	1,790.45	0.92
8,244.00	91.79	87.94	6,680.14	47.12	1,884.85	1,885.42	1.23
8,340.00	91.60	89.28	6,677.30	49.45	1,980.78	1,981.37	1.41
8,436.00	90.74	90.13	6,675.34	49.94	2,076.76	2,077.34	1.26
8,531.00	89.32	90.03	6,675.29	49.81	2,171.75	2,172.32	1.50
8,627.00	91.61	90.48	6,674.51	49.38	2,267.74	2,268.28	2.43
8,723.00	90.43	90.46	6,672.81	48.59	2,363.72	2,364.22	1.23
8,816.00	89.26	90.19	6,673.06	48.07	2,456.72	2,457.19	1.29
8,911.00	87.96	89.99	6,675.36	47.92	2,551.69	2,552.14	1.38
9,006.00	89.44	89.95	6,677.52	47.97	2,646.66	2,647.09	1.56
9,102.00	92.16	89.81	6,676.18	48.17	2,742.64	2,743.06	2.84
9,198.00	90.56	88.96	6,673.90	49.20	2,838.61	2,839.02	1.89
9,294.00	89.07	88.69	6,674.21	51.17	2,934.58	2,935.02	1.58
9,389.00	90.25	88.38	6,674.77	53.60	3,029.55	3,030.01	1.28
9,485.00	89.88	87.93	6,674.66	56.69	3,125.50	3,126.01	0.61
9,580.00	91.61	87.37	6,673.43	60.58	3,220.41	3,220.97	1.91
9,676.00	89.75	86.43	6,672.29	65.77	3,316.25	3,316.91	2.17
9,771.00	89.51	86.07	6,672.90	71.99	3,411.05	3,411.81	0.46
9,867.00	90.62	88.02	6,672.79	76.93	3,506.91	3,507.75	2.34
9,963.00	92.72	88.74	6,670.00	79.65	3,602.83	3,603.70	2.31
10,058.00	91.18	89.64	6,666.76	80.99	3,697.76	3,698.64	1.88
10,154.00	87.53	89.71	6,667.84	81.53	3,793.74	3,794.61	3.80
10,249.00	87.65	89.91	6,671.84	81.85	3,888.65	3,889.51	0.25
10,345.00	87.96	89.34	6,675.52	82.48	3,984.58	3,985.43	0.68
10,441.00	88.83	89.47	6,678.20	83.47	4,080.54	4,081.39	0.92
10,536.00	92.04	89.96	6,677.48	83.94	4,175.52	4,176.36	3.42
10,631.00	91.17	89.70	6,674.82	84.23	4,270.48	4,271.31	0.96
10,727.00	91.24	88.37	6,672.80	85.84	4,366.44	4,367.29	1.39
10,817.00	93.46	88.09	6,669.11	88.62	4,456.32	4,457.20	2.49
Final MWD Survey							
10,885.00	93.46	88.09	6,665.01	90.88	4,524.16	4,525.07	0.00
Survey Projection to TD - Estimated BHL: 1321' FSL, 536' FEL							

Design Report for Wahlert AC33-63HN - MWD Survey

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
897.00	897.00	0.00	0.00	First MWD Survey
10,817.00	6,669.11	88.62	4,456.32	Final MWD Survey
10,885.00	6,665.01	90.88	4,524.16	Survey Projection to TD
10,885.00	6,665.01	90.88	4,524.16	Estimated BHL: 1321' FSL, 536' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Wahlert AC33-63HN_PlanA - Rev1_BH	88.86	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
897.00	10,885.00	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
Wahlert	0.00	0.00	6,667.31	90.42	4,525.07	1,436,469.62	3,296,338.72	40° 31' 35.832 N	104° 26' 2.292 W
- actual wellpath misses target center by 2.52ft at 10885.00ft MD (6665.01 TVD, 90.88 N, 4524.16 E)									
- Point									
Wahlert	0.00	0.00	0.00	0.00	0.00	1,436,379.20	3,291,813.79	40° 31' 35.472 N	104° 27' 0.900 W
- actual wellpath hits target center									
- Polygon									
Point 1				205.93	-826.02	1,435,553.21	3,292,019.71		
Point 2				140.31	3,521.99	1,439,901.08	3,291,954.09		
Point 3				4,526.32	3,632.61	1,440,011.69	3,296,339.96		
Point 4				4,619.93	-765.40	1,435,613.82	3,296,433.58		
Point 5				205.93	-826.02	1,435,553.21	3,292,019.71		
Wahlert	0.00	0.00	0.00	0.00	0.00	1,436,379.20	3,291,813.79	40° 31' 35.472 N	104° 27' 0.900 W
- actual wellpath hits target center									
- Polygon									
Point 1				-254.11	-1,285.98	1,435,093.27	3,291,559.69		
Point 2				-319.65	3,982.03	1,440,361.11	3,291,494.15		
Point 3				4,986.36	4,092.56	1,440,471.64	3,296,799.99		
Point 4				5,079.89	-1,225.44	1,435,153.80	3,296,893.52		
Point 5				-254.11	-1,285.98	1,435,093.27	3,291,559.69		

North Reference Sheet for Sec. 33-T7N-R63W (Wahlert 33 South PAD) - Wahlert AC33-63HN

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

Vertical Depths are relative to KB @ 4766.00ft (H&P 315). Northing and Easting are relative to Wahlert AC33-63HN - 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: 0.99996840

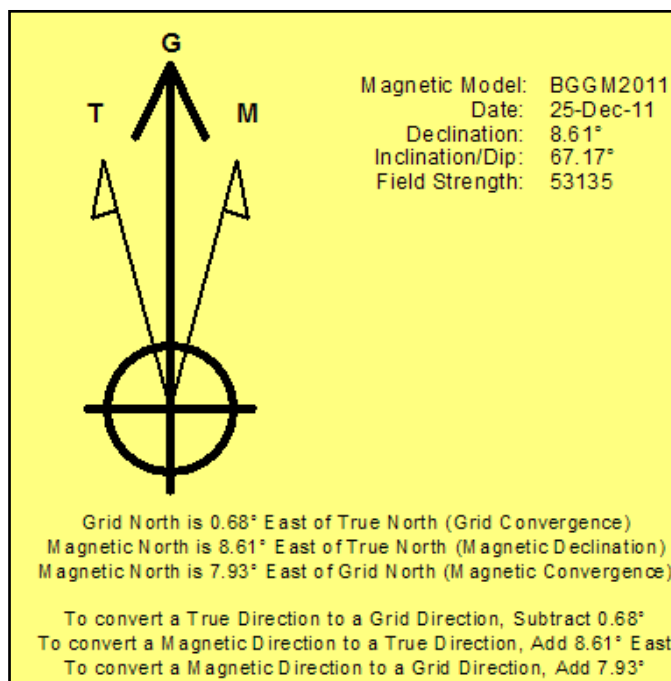
Grid Coordinates of Well: 1,436,379.20 ft N, 3,291,813.79 ft E

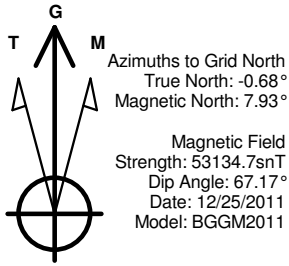
Geographical Coordinates of Well: 40° 31' 35.47" N, 104° 27' 00.90" W

Grid Convergence at Surface is: 0.68°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,885.00ft the Bottom Hole Displacement is 4,525.07ft in the Direction of 88.85° (Grid).

Magnetic Convergence at surface is: -7.93° (25 December 2011, , BGGM2011)

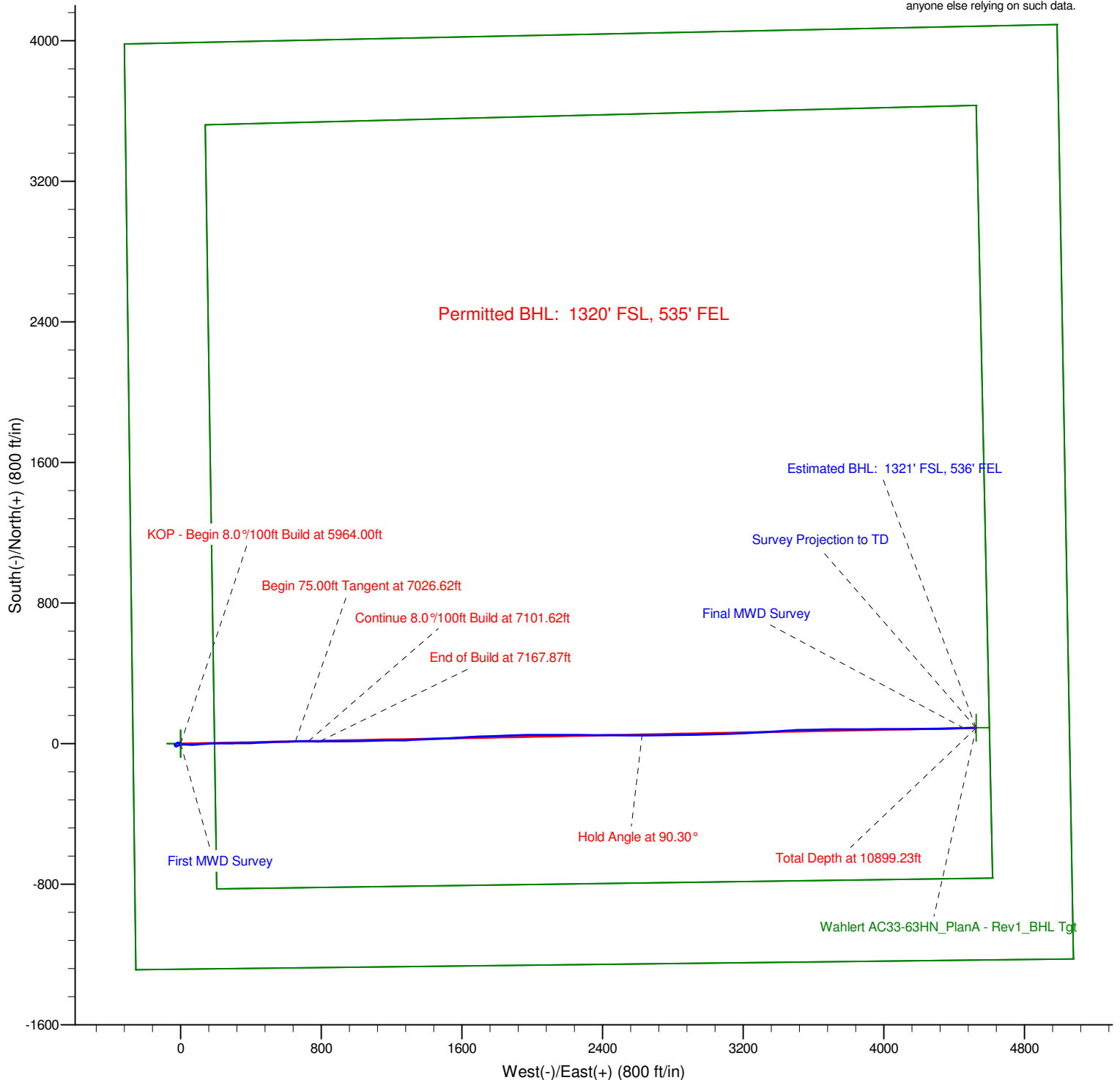




LEGEND

- Wahlert AC33-63HN, Plan A, Plan A - Rev 1 Proposal V0
- MWD Survey

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Wahlert AC33-63HN 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.

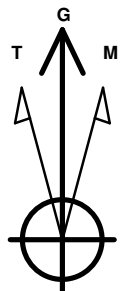


Project: Weld County, CO (NAD 83)
Site: Sec. 33-T7N-R63W (Wahlert 33 South PAD)
Well: Wahlert AC33-63HN

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
True North: -0.68°
Magnetic North: 7.93°

Magnetic Field
Strength: 53134.7snT
Dip Angle: 67.17°
Date: 12/25/2011
Model: BGGM2011

LEGEND

- Wahlert AC33-63HN, Plan A, Plan A - Rev 1 Proposal V0
- MWD Survey

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("Halliburton") recently completed directional
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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.

