

# Noble Energy (Rockies)

Weld County, CO (NAD 83)

Sec. 6-T7N-R63W

Jones AC06-75HN

Plan A

Survey: Sperry MWD Surveys

## Sperry Drilling Services

### Standard Report

04 July, 2012

Well Coordinates: 1,461,715.65 N, 3,283,748.70 E (40° 35' 46.75" N, 104° 28' 41.56" W)

Ground Level: 4,891.00 ft

Local Coordinate Origin:

Centered on Well Jones AC06-75HN

Viewing Datum:

KB @ 4915.00ft (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**

## Survey Report for Jones AC06-75HN - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
840.00	0.00	0.00	840.00	0.00	0.00	0.00	0.00
923.00	0.98	305.80	923.00	0.42	-0.58	0.42	1.18
1,203.00	1.24	314.98	1,202.94	3.96	-4.66	4.02	0.11
1,480.00	1.13	333.06	1,479.89	8.51	-8.02	8.61	0.14
1,756.00	1.53	333.22	1,755.81	14.23	-10.91	14.36	0.14
1,941.00	0.94	302.42	1,940.77	17.25	-13.31	17.41	0.47
2,034.00	3.82	245.38	2,033.69	16.36	-16.77	16.58	3.66
2,126.00	6.00	248.07	2,125.34	13.29	-24.01	13.60	2.38
2,218.00	7.13	259.41	2,216.74	10.45	-34.09	10.88	1.86
2,310.00	8.90	254.05	2,307.84	7.44	-46.54	8.03	2.09
2,403.00	10.52	254.94	2,399.51	3.26	-61.66	4.04	1.75
2,498.00	11.63	248.86	2,492.74	-2.45	-78.97	-1.44	1.69
2,593.00	13.29	249.17	2,585.50	-9.79	-98.10	-8.53	1.75
2,688.00	14.31	248.94	2,677.75	-17.89	-119.27	-16.37	1.08
2,784.00	15.41	243.83	2,770.55	-27.78	-141.79	-25.97	1.78
2,879.00	15.40	242.21	2,862.13	-39.23	-164.28	-37.13	0.45
2,974.00	16.42	235.06	2,953.50	-52.80	-186.44	-50.41	2.32
3,069.00	16.20	233.83	3,044.68	-68.31	-208.15	-65.65	0.43
3,164.00	15.92	232.44	3,135.97	-84.07	-229.18	-81.14	0.50
3,259.00	16.53	232.14	3,227.19	-100.31	-250.17	-97.11	0.65
3,353.00	16.44	231.55	3,317.32	-116.79	-271.15	-113.32	0.20
3,448.00	16.43	229.51	3,408.44	-133.87	-291.89	-130.13	0.61
3,543.00	16.05	228.11	3,499.65	-151.36	-311.89	-147.37	0.57
3,638.00	12.71	224.19	3,591.67	-167.63	-328.95	-163.42	3.66
3,733.00	9.29	220.11	3,684.91	-180.99	-341.18	-176.62	3.69
3,828.00	9.16	217.84	3,778.68	-192.83	-350.76	-188.34	0.41
3,923.00	8.92	219.45	3,872.50	-204.49	-360.08	-199.88	0.37
4,018.00	7.30	222.32	3,966.55	-214.64	-368.82	-209.91	1.76
4,114.00	5.90	208.86	4,061.91	-223.47	-375.31	-218.66	2.16
4,209.00	3.16	182.19	4,156.62	-230.37	-377.77	-225.52	3.56
4,303.00	2.12	96.72	4,250.55	-233.16	-376.14	-228.34	3.90
4,399.00	1.54	297.29	4,346.53	-232.78	-375.53	-227.96	3.75
4,493.00	1.64	302.84	4,440.49	-231.47	-377.78	-226.63	0.20
4,588.00	0.39	189.24	4,535.48	-231.05	-378.97	-226.19	1.93
4,683.00	0.24	249.83	4,630.48	-231.44	-379.21	-226.58	0.36
4,968.00	1.85	327.83	4,915.43	-227.75	-382.22	-222.85	0.64
5,064.00	2.42	322.49	5,011.36	-224.83	-384.28	-219.90	0.63
5,159.00	0.84	192.01	5,106.33	-223.92	-385.65	-218.98	3.19
5,254.00	0.68	185.59	5,201.32	-225.16	-385.85	-220.22	0.19
5,539.00	1.18	161.01	5,486.29	-229.62	-385.06	-224.68	0.22
5,824.00	1.02	149.13	5,771.23	-234.57	-382.80	-229.66	0.10
6,109.00	1.00	156.23	6,056.19	-239.02	-380.50	-234.15	0.04
6,141.00	1.16	162.12	6,088.19	-239.59	-380.28	-234.71	0.61
6,203.00	0.50	81.76	6,150.18	-240.15	-379.82	-235.28	1.91
6,248.00	5.26	9.96	6,195.11	-238.09	-379.27	-233.22	11.39
6,298.00	10.67	13.63	6,244.61	-231.32	-377.78	-226.48	10.86
6,343.00	13.67	10.80	6,288.60	-222.05	-375.80	-217.23	6.80
6,393.00	18.39	8.01	6,336.64	-208.43	-373.60	-203.64	9.56
6,438.00	24.00	6.85	6,378.58	-192.30	-371.51	-187.54	12.50
6,488.00	27.77	6.11	6,423.56	-170.62	-369.06	-165.89	7.57

## Survey Report for Jones AC06-75HN - Sperry MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,533.00	31.26	8.60	6,462.71	-148.64	-366.20	-143.95	8.22
6,583.00	33.87	9.28	6,504.85	-122.06	-362.01	-117.43	5.27
6,628.00	38.90	9.08	6,541.06	-95.71	-357.76	-91.14	11.18
6,678.00	42.88	9.21	6,578.85	-63.41	-352.55	-58.90	7.96
6,723.00	45.16	10.80	6,611.21	-32.62	-347.11	-28.18	5.63
6,772.00	48.78	10.32	6,644.64	2.59	-340.55	6.94	7.42
6,817.00	51.45	9.54	6,673.50	36.60	-334.61	40.87	6.08
6,867.00	53.52	6.83	6,703.95	75.85	-328.97	80.04	5.97
6,912.00	54.69	6.64	6,730.33	112.05	-324.70	116.19	2.62
6,962.00	56.54	7.30	6,758.57	153.01	-319.69	157.08	3.86
7,007.00	61.42	7.74	6,781.75	191.23	-314.64	195.23	10.88
7,057.00	65.00	6.39	6,804.28	235.52	-309.16	239.44	7.55
7,102.00	67.28	6.52	6,822.48	276.41	-304.53	280.27	5.07

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Jones AC06-75HN_PlanA - Rev1_BHL Tgt	359.27	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
923.00	7,102.00	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
Jones AC06-75HN_Se - survey misses target center by 840.00ft at 840.00ft MD (840.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.00	0.00	1,461,715.65	3,283,748.70	40° 35' 46.752 N	104° 28' 41.556 W
Jones AC06-75HN_Plk - survey misses target center by 4193.96ft at 7102.00ft MD (6822.48 TVD, 276.41 N, -304.53 E) - Point	0.00	0.00	6,883.00	4,462.62	-56.98	1,466,178.16	3,283,691.72	40° 36' 30.852 N	104° 28' 41.628 W
Jones AC06-75HN_Se - survey misses target center by 840.00ft at 840.00ft MD (840.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.00	0.00	1,461,715.65	3,283,748.70	40° 35' 46.752 N	104° 28' 41.556 W

**North Reference Sheet for Sec. 6-T7N-R63W - Jones AC06-75HN - Plan A**

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

Vertical Depths are relative to KB @ 4915.00ft (H&P 322). Northing and Easting are relative to Jones AC06-75HN

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: 0.99997500

Grid Coordinates of Well: 1,461,715.65 ft N, 3,283,748.70 ft E

Geographical Coordinates of Well: 40° 35' 46.75" N, 104° 28' 41.56" W

Grid Convergence at Surface is: 0.66°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,102.00ft  
the Bottom Hole Displacement is 411.27ft in the Direction of 312.23° (Grid).

Magnetic Convergence at surface is: -7.91° (30 June 2012, , BGGM2011)

