



Hughes LS 1M Final Surveys

30-045-32418

Report Date: December 20, 2004
Client: BP America, Inc.
Field: NM, San Juan County (NAD 83 WZ) 2004
Structure / Slot: BP 19-29N-8W (Hughes LS 1M) (No Plat) / Hughes LS 1M
Well: Hughes LS 1M
Borehole: Original Hole
UWI/API#:
Survey Name / Date: EOW10H / December 20, 2004
Tort / AHD / DDI / ERD ratio: 33.280° / 480.26 ft / 4.206 / 0.063
Grid Coordinate System: NAD83 New Mexico State Planes, Western Zone, US Feet
Location Lat/Long: N 36 42 30.000, W 107 43 6.000
Location Grid N/E Y/X: N 2077168.969 ftUS, E 2756800.436 ftUS
Grid Convergence Angle: +0.06874036°
Grid Scale Factor: 0.99991797

Survey / DLS Computation Method: Minimum Curvature / Lubinski
Vertical Section Azimuth: 354.760°
Vertical Section Origin: N 0.000 ft, E 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 6469.0 ft relative to MSL
Sea Bed / Ground Level Elevation: 6455.000 ft relative to MSL
Magnetic Declination: 10.699°
Total Field Strength: 51387.900 nT
Magnetic Dip: 63.621°
Declination Date: December 07, 2004
Magnetic Declination Model: BGGM 2004
North Reference: Grid North
Total Corr Mag North -> Grid North: +10.630°
Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	DLS (deg/100 ft)	Northing (ftUS)	Easting (ftUS)	Latitude	Longitude
Surface	0.00	0.00	51.59	0.00	0.00	0.00	0.00	0.00	2077168.97	2756800.44	N 36 42 30.000	W 107 43 6.000
9 5/8" Casing Point	146.00	0.49	51.59	146.00	0.34	0.39	0.49	0.34	2077169.36	2756800.93	N 36 42 30.004	W 107 43 5.994
Begin SLB MWD Surveys	175.00	0.59	51.59	175.00	0.49	0.56	0.71	0.34	2077169.53	2756801.14	N 36 42 30.006	W 107 43 5.991
	211.00	1.04	56.19	210.99	0.75	0.86	1.12	1.26	2077169.83	2756801.56	N 36 42 30.008	W 107 43 5.986
	241.00	1.58	31.35	240.99	1.21	1.36	1.56	2.57	2077170.33	2756802.00	N 36 42 30.013	W 107 43 5.981
STB-1855/S 1250/W	274.00	1.94	12.64	273.97	2.11	2.30	1.92	2.04	2077171.26	2756802.36	N 36 42 30.023	W 107 43 5.976
BHL-236/S 1145/W	304.00	2.42	4.43	303.95	3.22	3.42	2.08	1.90	2077172.39	2756802.52	N 36 42 30.034	W 107 43 5.974
	334.00	3.21	355.40	333.91	4.68	4.89	2.06	3.01	2077173.86	2756802.50	N 36 42 30.048	W 107 43 5.975
	363.00	3.91	356.85	362.86	6.48	6.69	1.95	2.43	2077175.66	2756802.38	N 36 42 30.066	W 107 43 5.976
	393.00	4.52	349.80	392.77	8.68	8.87	1.68	2.66	2077177.84	2756802.12	N 36 42 30.088	W 107 43 5.979
	428.00	5.07	350.73	427.65	11.60	11.76	1.19	1.59	2077180.72	2756801.62	N 36 42 30.116	W 107 43 5.985
	459.00	5.78	352.30	458.51	14.52	14.65	0.76	2.34	2077183.62	2756801.19	N 36 42 30.145	W 107 43 5.990
	491.00	6.32	352.56	490.33	17.89	18.00	0.31	1.69	2077186.97	2756800.75	N 36 42 30.178	W 107 43 5.996
	523.00	7.15	350.41	522.11	21.64	21.71	-0.25	2.71	2077190.68	2756800.19	N 36 42 30.215	W 107 43 6.003
	554.00	7.44	349.64	552.86	25.56	25.58	-0.93	0.99	2077194.55	2756799.51	N 36 42 30.253	W 107 43 6.011
	585.00	8.22	348.54	583.57	29.76	29.73	-1.73	2.56	2077198.70	2756798.71	N 36 42 30.294	W 107 43 6.021
	617.00	9.26	346.55	615.20	34.59	34.48	-2.78	3.38	2077203.44	2756797.65	N 36 42 30.341	W 107 43 6.034
	648.00	9.41	347.48	645.79	39.57	39.38	-3.91	0.69	2077208.34	2756796.52	N 36 42 30.389	W 107 43 6.047
	712.00	10.83	351.47	708.79	50.76	50.43	-5.94	2.47	2077219.40	2756794.50	N 36 42 30.499	W 107 43 6.072
	776.00	10.40	355.41	771.70	62.54	62.14	-7.29	1.32	2077231.10	2756793.14	N 36 42 30.614	W 107 43 6.089
	839.00	10.19	353.74	833.69	73.80	73.34	-8.36	0.58	2077242.31	2756792.08	N 36 42 30.725	W 107 43 6.102
	902.00	10.43	352.79	895.67	85.07	84.54	-9.68	0.47	2077253.50	2756790.76	N 36 42 30.836	W 107 43 6.118
	964.00	10.65	350.51	956.62	96.39	95.76	-11.33	0.76	2077264.72	2756789.11	N 36 42 30.947	W 107 43 6.138
	1027.00	10.87	351.42	1018.52	108.13	107.37	-13.18	0.44	2077276.33	2756787.26	N 36 42 31.062	W 107 43 6.160
	1091.00	10.77	351.22	1081.38	120.12	119.25	-14.99	0.17	2077288.21	2756785.45	N 36 42 31.179	W 107 43 6.182
	1155.00	10.92	350.54	1144.23	132.14	131.14	-16.90	0.31	2077300.10	2756783.54	N 36 42 31.297	W 107 43 6.206
	1218.00	10.76	354.60	1206.11	143.97	142.88	-18.43	1.24	2077311.84	2756782.01	N 36 42 31.413	W 107 43 6.224
	1282.00	10.61	355.56	1269.00	155.83	154.70	-19.45	0.36	2077323.66	2756780.99	N 36 42 31.530	W 107 43 6.237
	1344.00	10.48	354.66	1329.95	167.18	166.01	-20.42	0.34	2077334.96	2756780.02	N 36 42 31.642	W 107 43 6.248
	1408.00	10.74	353.56	1392.86	178.96	177.73	-21.63	0.51	2077346.68	2756778.81	N 36 42 31.758	W 107 43 6.263
	1471.00	10.86	354.36	1454.74	190.77	189.47	-22.87	0.30	2077358.42	2756777.57	N 36 42 31.874	W 107 43 6.278
	1535.00	10.91	354.97	1517.59	202.85	201.50	-23.99	0.20	2077370.45	2756776.45	N 36 42 31.993	W 107 43 6.292
	1598.00	10.65	355.28	1579.48	214.63	213.24	-24.99	0.42	2077382.19	2756775.44	N 36 42 32.109	W 107 43 6.304
	1663.00	10.72	352.30	1643.35	226.68	225.22	-26.30	0.86	2077394.17	2756774.14	N 36 42 32.227	W 107 43 6.320
	1726.00	10.55	351.69	1705.27	238.29	236.73	-27.92	0.32	2077405.68	2756772.52	N 36 42 32.341	W 107 43 6.339
	1789.00	10.72	353.21	1767.19	249.91	248.26	-29.44	0.52	2077417.21	2756771.00	N 36 42 32.455	W 107 43 6.358
	1852.00	10.71	353.40	1829.09	261.62	259.89	-30.81	0.06	2077428.84	2756769.63	N 36 42 32.570	W 107 43 6.375
	1916.00	11.12	357.60	1891.93	273.73	271.97	-31.75	1.40	2077440.91	2756768.69	N 36 42 32.690	W 107 43 6.386
	1980.00	11.08	357.12	1954.74	286.04	284.27	-32.32	0.16	2077453.22	2756768.12	N 36 42 32.811	W 107 43 6.393
	2042.00	11.04	356.53	2015.59	297.92	296.15	-32.98	0.19	2077465.09	2756767.46	N 36 42 32.929	W 107 43 6.401
	2104.00	11.36	356.58	2076.41	309.96	308.17	-33.70	0.52	2077477.11	2756766.74	N 36 42 33.048	W 107 43 6.409
	2166.00	10.88	354.63	2137.24	321.91	320.09	-34.61	0.98	2077489.03	2756765.83	N 36 42 33.165	W 107 43 6.420
	2227.00	11.06	355.69	2197.13	333.52	331.66	-35.59	0.44	2077500.60	2756764.85	N 36 42 33.280	W 107 43 6.432
	2289.00	11.32	352.07	2257.95	345.55	343.61	-36.88	1.21	2077512.55	2756763.56	N 36 42 33.398	W 107 43 6.448
Last SLB MWD Survey	2353.00	11.79	352.12	2320.65	358.35	356.31	-38.64	0.73	2077525.25	2756761.80	N 36 42 33.524	W 107 43 6.469
Begin Natural 1.0"/100' Drop	2353.01	11.79	352.12	2320.66	358.35	356.31	-38.64	0.00	2077525.25	2756761.80	N 36 42 33.524	W 107 43 6.469
	3424.99	1.10	354.76	3384.32	478.39	475.39	-54.64	1.00	2077644.32	2756745.80	N 36 42 34.701	W 107 43 6.664
7" Casing Point	3425.00	1.10	354.76	3384.33	478.39	475.39	-54.64	3.00	2077644.32	2756745.80	N 36 42 34.701	W 107 43 6.664
	3461.60	0.00	354.76	3420.93	478.74	475.74	-54.67	3.00	2077644.67	2756745.77	N 36 42 34.705	W 107 43 6.664
Client TD	7626.00	0.00	354.76	7585.33	478.74	475.74	-54.67	0.00	2077644.67	2756745.77	N 36 42 34.705	W 107 43 6.664

Survey Type: Raw Proposal

Survey Error Model: SLB ISCWSA version 21 *** 3-D 95.00% Confidence 2.7955 sigma

Surveying Prog:

<u>MD From (ft)</u>	<u>MD To (ft)</u>	<u>EOU Freq</u>	<u>Survey Tool Type</u>
0.00	2353.00	1/100.00 ft	SLB_MWD-STD
2353.00	7626.00	1/100.00 ft	SLB_BLIND