



30-045-31906

BP AMERICA PRODUCTION COMPANY
New Mexico
San Juan County
SEC 3-T29N-R9W
Lobato GC 1M - survey

Sperry-Sun

Survey Report

10 March, 2004

Survey Ref: sy6821

HALLIBURTON

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BP AMERICA PRODUCTION COMPANY
New Mexico
San Juan County

Survey Report for SEC 3-T29N-R9W - Lobato GC 1M - survey

Measured Depth (ft)	Incl.	True Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (%/100ft)	Built Rate (%/100ft)	Turn Rate (%/100ft)	Toolface Azimuth	Comment
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	0.000	0.000	0.000	0.226	
136.00	0.000	0.000	136.00	0.00 N	0.00 E	0.00	0.000	0.000	0.000	0.226	
186.00	1.200	339.700	186.00	0.49 N	0.18 W	-0.52	2.400	2.400	0.000	339.700	
310.00	1.300	338.200	309.97	3.01 N	1.15 W	-3.21	0.085	0.081	-1.210	-18.870	
436.00	1.500	332.200	435.93	5.80 N	2.45 W	-8.24	0.197	0.169	-4.762	-39.284	
564.00	1.700	334.900	563.88	9.00 N	4.04 W	-9.74	0.167	0.158	2.109	22.007	
892.00	1.800	348.300	891.83	12.47 N	5.21 W	-13.40	0.311	-0.078	10.469	111.164	
819.00	1.700	344.700	818.77	16.02 N	6.07 W	-17.05	0.113	0.079	-2.836	-47.838	
946.00	2.000	344.600	945.71	19.98 N	7.16 W	-21.15	0.236	0.236	-0.079	-0.667	
1073.00	1.600	339.400	1072.64	23.77 N	8.36 W	-25.13	0.340	-0.315	-4.094	-180.373	
1201.00	1.100	336.300	1200.61	28.57 N	8.49 W	-28.13	0.395	-0.391	-2.422	-173.237	
1343.00	0.700	356.200	1342.59	28.69 N	10.09 W	-30.32	0.363	-0.282	14.014	151.662	
1370.00	0.400	9.400	1369.59	28.94 N	10.09 W	-30.57	1.199	-1.111	48.889	163.611	
1402.00	0.700	166.000	1401.59	28.86 N	10.02 W	-30.48	3.371	0.938	489.375	165.067	
1434.00	1.500	171.400	1433.58	28.26 N	9.81 W	-28.87	2.618	2.500	16.875	10.088	
1466.00	2.300	173.000	1465.57	27.21 N	9.77 W	-28.82	2.505	2.500	5.000	4.594	
1530.00	4.200	168.300	1529.46	23.84 N	9.14 W	-25.20	2.985	2.969	-7.344	-10.334	
1594.00	6.500	166.800	1593.18	17.82 N	7.84 W	-19.24	3.600	3.594	-2.344	-4.227	
1625.00	7.700	166.200	1623.94	14.09 N	6.94 W	-15.41	3.878	3.871	-1.935	-3.834	
1657.00	8.700	165.500	1655.61	9.67 N	6.82 W	-10.85	3.140	3.125	-2.188	-6.048	
1689.00	9.700	164.800	1687.20	4.72 N	4.51 W	-5.73	3.139	3.125	-1.875	-5.776	
1721.00	10.800	164.200	1718.69	0.77 S	3.00 W	-0.04	3.459	3.438	-2.188	-6.805	
1753.00	11.800	164.400	1750.07	6.80 S	1.30 W	6.23	3.127	3.125	0.825	2.342	
1784.00	12.900	164.700	1780.35	13.20 S	0.47 E	12.86	3.554	3.548	0.868	3.485	
1816.00	14.000	164.400	1811.47	20.37 S	2.45 E	20.30	3.444	3.438	-0.938	-3.776	
1848.00	15.100	164.100	1842.44	28.11 S	4.63 E	28.34	3.446	3.438	-0.938	-4.085	
1880.00	16.000	164.100	1873.27	36.36 S	6.98 E	36.92	2.813	2.813	0.000	0.000	
1912.00	16.800	164.600	1903.97	45.06 S	9.42 E	45.86	2.539	2.500	1.563	10.248	
1942.00	17.800	164.400	1932.63	53.60 S	11.79 E	54.82	2.674	2.567	-0.667	-4.324	
1973.00	18.600	164.400	1962.09	62.88 S	14.38 E	64.45	3.226	3.226	0.000	0.000	

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Measured Depth (ft)	Incl.	True Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Bull Rate (°/100ft)	Turn Rate (°/100ft)	Tooface Azimuth	Comment
2005.00	18.800	163.800	1882.40	72.77 S	17.20 E	74.74	1.116	0.938	-1.875	-33.020	
2037.00	19.900	163.500	2022.56	82.97 S	20.19 E	85.37	3.140	3.125	-0.938	-5.832	
2069.00	20.600	163.600	2052.60	93.58 S	23.33 E	96.44	2.190	2.188	0.313	2.878	
2101.00	21.600	163.800	2082.45	104.65 S	28.56 E	107.96	3.133	3.125	0.625	4.212	
2132.00	21.700	164.700	2111.27	115.66 S	29.66 E	118.39	1.119	0.323	2.903	73.658	
2164.00	21.500	164.800	2141.02	127.02 S	32.76 E	131.17	0.635	-0.625	0.313	168.617	
2228.00	20.700	166.500	2200.73	149.34 S	38.46 E	154.21	1.574	-1.260	2.656	143.375	
2292.00	21.400	164.000	2260.46	171.56 S	44.34 E	177.19	1.779	1.094	-3.906	-53.233	
2355.00	21.100	164.200	2319.18	193.52 S	50.59 E	200.02	0.490	-0.476	0.317	168.508	
2419.00	21.300	163.600	2378.85	215.76 S	57.01 E	223.16	0.481	0.313	-0.938	-47.611	
2483.00	22.400	162.300	2438.25	238.63 S	64.00 E	248.97	1.878	1.719	-2.031	-24.347	
2647.00	20.900	163.200	2497.73	261.08 S	71.01 E	270.56	2.400	-2.344	1.406	167.936	
2679.00	19.800	163.800	2527.72	271.77 S	74.18 E	281.71	3.193	-3.125	1.875	168.488	
2675.00	18.300	164.800	2618.44	302.01 S	82.69 E	313.12	1.701	-1.667	1.042	168.914	
2739.00	18.300	165.400	2679.20	321.43 S	87.86 E	333.21	0.294	0.000	0.938	90.285	last mwd survey
2775.00	18.300	165.400	2713.38	332.36 S	90.70 E	344.52	0.000	0.000	0.000	0.000	7in Casing
2777.00	18.300	165.400	2715.26	332.97 S	90.86 E	345.15	0.000	0.000	0.000	0.000	assumed 3 degree drop
2800.00	17.610	165.400	2737.16	339.83 S	92.85 E	352.24	3.000	-3.000	0.000	180.000	
2800.00	14.610	165.400	2833.22	366.68 S	99.64 E	379.98	3.000	-3.000	0.000	180.000	
3000.00	11.610	165.400	2930.60	388.63 S	105.38 E	402.66	3.000	-3.000	0.000	180.000	
3100.00	8.610	165.400	3029.04	405.61 S	109.79 E	420.21	3.000	-3.000	0.000	180.000	
3200.00	5.610	165.400	3128.26	417.59 S	112.90 E	432.58	3.000	-3.000	0.000	180.000	
3300.00	2.610	165.400	3227.99	424.53 S	114.71 E	439.75	3.000	-3.000	0.000	180.000	
3387.00	0.000	0.000	3314.98	426.44 S	115.21 E	441.73	3.000	-3.000	0.000	180.000	
7011.00	0.000	0.000	6838.96	426.44 S	115.21 E	441.73	0.000	0.000	0.000	0.226	TD of the hole

All data is in Feet (US Survey) unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to RKB. Northings and Eastings are relative to 1130° FSL, 580° FWL.

The Dogleg Severity and Build and Turn rates are in Degrees per 100 feet (US Survey).
Vertical Section is from 1130° FSL, 580° FWL and calculated along an Azimuth of 164.882° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7011.00ft.,
The Bottom Hole Displacement is 441.73ft. in the Direction of 164.882° (True).

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Comments

Measured Depth (ft)	TVL (ft)	Station Coordinates			Comment
		Northings (ft)	Eastings (ft)		
2739.00	2679.20	321.43 S	87.86 E		last rwyd survey
2777.00	2715.28	332.97 S	90.86 E		released sperry-sun
2777.00	2715.28	332.97 S	90.86 E		assumed 3 degree drop
7011.00	6938.96	426.44 S	115.21 E		TD of the hole

Casing details

From		To		Casing Detail
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	
<Surface>	<Surface>	2776.00	2713.36	7in Casing

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North Reference Sheet for SEC 3-T29N-R9W - Lobato GC 1M

Coordinate System is NAD27 New Mexico State Planes, Western Zone, US Foot
Source: Snyder, J.P., 1987, Map Projections - A Working Manual

Datum is North American Datum of 1927 (US48, AK, HI, and Canada)

Spheroid is Clarke - 1886
Equatorial Radius: 6378206.400m.
Polar Radius: 6356583.800m.
Inverse Flattening: 294.978698213901

Projection method is Transverse Mercator or Gauss Kruger Projection
Central Meridian is -107.833°
Longitude Origin: 0.000°
Latitude Origin: 31.000°
False Easting: 152400.00m
False Northing: 0.00m
Scale Reduction: 0.99991667

Grid Coordinates of Well: 212434.93 N, 610074.58 E
Geographical Coordinates of Well: 36° 50' 15.1741" N, 107° 27' 25.8549" W
Surface Elevation of Well: 5779.00ft
Grid Convergence at Surface is +0.226°
Magnetic Declination at Surface is +10.666° (1 March, 2004)

