



30-045-31633

Surface: 1450/N 1140/W

BHL: 677/N 994/W

Williams Production Company

New Mexico

San Juan County

Rosa Unit # 224A

**Rosa Unit 224A Single-Shot & MWD
Survey**

Sperry-Sun

Survey Report

10 October, 2003

Survey Ref: svy6311



HALLIBURTON

Survey Report for Rosa Unit # 224A - Rosa Unit 224A Single-Shot & MWD Survey

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
133.00	0.500	342.700	133.00	0.55 N	0.17 W	0.58	0.376
255.00	0.000	0.000	255.00	1.06 N	0.33 W	1.11	0.410
347.00	0.710	80.260	346.99	1.16 N	0.23 E	1.10	0.772
378.00	0.720	67.360	377.99	1.27 N	0.60 E	1.13	0.519
408.00	1.290	45.980	407.99	1.57 N	1.02 E	1.36	2.243
438.00	1.930	39.730	437.98	2.20 N	1.58 E	1.86	2.209
467.00	2.470	22.880	466.95	3.15 N	2.14 E	2.69	2.887
497.00	3.010	12.450	496.92	4.51 N	2.56 E	3.96	2.443
527.00	3.520	8.290	526.87	6.19 N	2.86 E	5.55	1.873
558.00	4.920	3.540	557.79	8.46 N	3.08 E	7.74	4.651
588.00	6.240	3.020	587.64	11.37 N	3.25 E	10.57	4.403
618.00	7.470	1.960	617.43	14.95 N	3.40 E	14.05	4.121
649.00	8.700	0.550	648.12	19.31 N	3.49 E	18.32	4.019
679.00	9.490	359.680	677.74	24.05 N	3.50 E	22.98	2.673
710.00	10.110	356.510	708.29	29.32 N	3.32 E	28.19	2.651
741.00	10.990	354.230	738.77	34.98 N	2.86 E	33.83	3.141
773.00	11.950	353.880	770.13	41.31 N	2.20 E	40.17	3.008
804.00	13.450	353.700	800.37	48.08 N	1.46 E	46.97	4.840
836.00	14.770	353.880	831.40	55.84 N	0.61 E	54.74	4.127
867.00	15.470	352.120	861.33	63.86 N	0.37 W	62.81	2.700
898.00	16.260	351.410	891.15	72.25 N	1.59 W	71.28	2.624
929.00	16.960	351.240	920.85	81.01 N	2.93 W	80.13	2.263
960.00	17.840	350.360	950.43	90.16 N	4.41 W	89.40	2.963
992.00	18.020	348.950	980.88	99.85 N	6.18 W	99.25	1.468
1053.00	18.370	348.340	1038.83	118.52 N	9.93 W	118.30	0.653
1116.00	18.110	347.900	1098.66	137.82 N	13.99 W	138.01	0.467
1146.00	17.840	347.200	1127.20	146.86 N	15.98 W	147.27	1.153
1178.00	18.720	346.840	1157.59	156.64 N	18.24 W	157.29	2.773
1208.00	19.690	346.840	1185.92	166.25 N	20.49 W	167.15	3.233
1240.00	20.650	348.430	1215.95	177.03 N	22.85 W	178.18	3.454
1301.00	21.640	351.180	1272.85	198.68 N	26.73 W	200.18	2.297
1364.00	22.270	350.880	1331.28	221.95 N	30.40 W	223.72	1.016
1425.00	22.500	349.270	1387.68	244.83 N	34.41 W	246.95	1.073
1486.00	22.820	348.700	1443.97	267.90 N	38.90 W	270.45	0.636
1548.00	23.110	346.910	1501.06	291.54 N	44.01 W	294.63	1.220
1610.00	23.600	346.340	1557.98	315.45 N	49.70 W	319.18	0.870
1673.00	22.580	346.360	1615.93	339.46 N	55.53 W	343.86	1.619
1735.00	21.240	345.660	1673.45	361.91 N	61.11 W	366.95	2.202
1797.00	20.310	345.700	1731.42	383.21 N	66.55 W	388.90	1.500
1860.00	19.900	345.130	1790.58	404.17 N	72.01 W	410.51	0.721
1922.00	21.610	346.100	1848.56	425.45 N	77.46 W	432.44	2.813
1984.00	21.800	347.130	1906.16	447.76 N	82.76 W	455.34	0.687
2045.00	21.510	349.270	1962.86	469.79 N	87.37 W	477.84	1.379
2107.00	21.280	349.360	2020.58	492.02 N	91.56 W	500.46	0.375

Survey Report for Rosa Unit # 224A - Rosa Unit 224A Single-Shot & MWD Survey

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2170.00	21.990	349.440	2079.14	514.85 N	95.84 W	523.69	1.128
2231.00	21.880	349.660	2135.73	537.26 N	99.97 W	546.47	0.225
2294.00	21.970	350.180	2194.17	560.42 N	104.09 W	570.00	0.340
2356.00	22.060	351.770	2251.65	583.37 N	107.73 W	593.22	0.972
2419.00	22.350	352.690	2309.98	606.96 N	110.95 W	617.00	0.719
2479.00	22.760	349.830	2365.39	629.70 N	114.45 W	639.99	1.952
2541.00	22.640	349.700	2422.59	653.24 N	118.70 W	663.92	0.210
2573.00	23.020	349.770	2452.08	665.46 N	120.91 W	676.33	1.191
2603.00	21.770	348.970	2479.82	676.69 N	123.02 W	687.76	4.289
2635.00	20.650	348.970	2509.65	688.06 N	125.23 W	699.34	3.500
2665.00	19.070	348.260	2537.87	698.05 N	127.24 W	709.53	5.328
2697.00	18.530	348.280	2568.16	708.14 N	129.34 W	719.84	1.688
2728.00	17.360	348.650	2597.65	717.50 N	131.25 W	729.39	3.792
2759.00	15.990	348.370	2627.35	726.22 N	133.02 W	738.29	4.427
2790.00	14.620	348.770	2657.25	734.24 N	134.64 W	746.47	4.432
2822.00	13.450	348.950	2688.29	741.85 N	136.14 W	754.23	3.659
2853.00	12.830	347.200	2718.48	748.75 N	137.60 W	761.27	2.376
2884.00	11.870	346.140	2748.76	755.20 N	139.12 W	767.90	3.182
2914.00	10.460	345.960	2778.19	760.84 N	140.52 W	773.70	4.701
2946.00	8.260	343.500	2809.76	765.86 N	141.88 W	778.88	6.986
2977.00	6.150	338.230	2840.52	769.54 N	143.13 W	782.73	7.126
3008.00	3.600	328.390	2871.40	771.91 N	144.26 W	785.27	8.627
3040.00	1.230	298.330	2903.37	772.93 N	145.08 W	786.43	8.154
3062.00	0.970	276.530	2925.37	773.06 N	145.48 W	786.63	2.219
3112.00	0.970	276.530	2975.36	773.16 N	146.32 W	786.88	0.000

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 Wellhead.

The Dogleg Severity is in Degrees per 100 feet (US Survey).
Vertical Section is from Wellhead and calculated along an Azimuth of 349.250° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 3112.00ft.,
The Bottom Hole Displacement is 786.88ft., in the Direction of 349.284° (True).

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Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
133.00	133.00	0.55 N	0.17 W	Surveys at 133' and 255' are Single-Shot Surveys
347.00	346.99	1.16 N	0.23 E	First MWD Survey
3062.00	2925.37	773.06 N	145.48 W	Final MWD Survey
3112.00	2975.36	773.16 N	146.32 W	Survey Projection to TD of Directional Work