



30-045-31634

Surface 2405/S 2450/W

BHL 2083/S 1272/E

Williams Production Company
New Mexico
San Juan County
Rosa Unit #273A
Rosa Unit 273A Horizontal SS & MWD
Survey

Sperry-Sun

Survey Report

10 October, 2003

Survey Ref: svy6303



HALLIBURTON

Survey Report for Rosa Unit #273A - Rosa Unit 273A Horizontal SS & 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	0.250	321.000	133.00	0.23 N	0.18 W	-0.22	0.188
253.00	1.000	225.000	252.99	0.31 S	1.09 W	-1.01	0.880
743.00	1.750	199.000	742.85	10.41 S	6.55 W	-4.43	0.195
1272.00	1.250	221.000	1271.67	22.40 S	12.96 W	-8.43	0.143
1766.00	0.750	241.000	1765.60	28.04 S	19.33 W	-13.59	0.122
2203.00	0.750	271.000	2202.56	29.37 S	24.69 W	-18.60	0.089
2350.00	0.700	291.840	2349.55	29.02 S	26.48 W	-20.43	0.182
2380.00	0.700	288.670	2379.55	28.89 S	26.83 W	-20.79	0.129
2412.00	0.530	312.050	2411.55	28.73 S	27.12 W	-21.11	0.937
2443.00	0.440	60.330	2442.55	28.58 S	27.12 W	-21.14	2.542
2474.00	2.020	92.850	2473.54	28.55 S	26.47 W	-20.51	5.374
2506.00	3.690	97.070	2505.50	28.70 S	24.89 W	-18.93	5.256
2537.00	5.980	99.710	2536.39	29.10 S	22.31 W	-16.32	7.420
2568.00	9.400	101.460	2567.10	29.87 S	18.23 W	-12.17	11.057
2598.00	14.350	101.250	2596.45	31.08 S	12.18 W	-6.00	16.501
2628.00	19.960	100.060	2625.11	32.71 S	3.49 W	2.85	18.736
2659.00	24.580	99.190	2653.79	34.66 S	8.09 E	14.59	14.941
2690.00	28.340	98.280	2681.53	36.75 S	21.74 E	28.38	12.199
2720.00	29.100	98.550	2707.84	38.86 S	36.00 E	42.79	2.570
2752.00	31.520	99.140	2735.47	41.35 S	51.96 E	58.92	7.619
2783.00	33.730	99.700	2761.57	44.08 S	68.45 E	75.63	7.195
2812.00	34.420	100.270	2785.59	46.90 S	84.45 E	91.87	2.622
2844.00	36.700	100.470	2811.62	50.25 S	102.75 E	110.48	7.134
2876.00	40.130	100.580	2836.69	53.89 S	122.30 E	130.36	10.721
2907.00	43.640	100.350	2859.77	57.64 S	142.65 E	151.05	11.333
2939.00	46.780	100.310	2882.31	61.71 S	164.99 E	173.76	9.813
2970.00	49.850	99.780	2902.92	65.75 S	187.78 E	196.90	9.985
3002.00	52.650	99.220	2922.95	69.87 S	212.39 E	221.85	8.856
3033.00	55.580	99.170	2941.12	73.88 S	237.18 E	246.95	9.453
3064.00	59.100	99.880	2957.85	78.20 S	262.92 E	273.03	11.517
3095.00	63.770	100.640	2972.67	83.05 S	289.70 E	300.25	15.217
3126.00	69.400	100.960	2984.98	88.38 S	317.63 E	328.68	18.186
3157.00	73.210	101.060	2994.92	93.99 S	346.45 E	358.04	12.294
3188.00	75.920	100.640	3003.17	99.61 S	375.80 E	387.92	8.839
3220.00	77.560	100.700	3010.50	105.38 S	406.40 E	419.07	5.128
3251.00	78.540	100.830	3016.92	111.04 S	436.20 E	449.39	3.188
3281.00	82.140	100.430	3021.96	116.50 S	465.26 E	478.96	12.072
3316.00	86.270	99.970	3025.49	122.66 S	499.52 E	513.77	11.872
3413.00	88.800	101.220	3029.66	140.48 S	594.77 E	610.67	2.909
3443.00	87.010	101.420	3030.76	146.36 S	624.17 E	640.65	6.004
3473.00	85.340	101.310	3032.76	152.26 S	653.51 E	670.58	5.579
3502.00	86.050	101.300	3034.94	157.93 S	681.87 E	699.50	2.449
3533.00	86.920	100.890	3036.84	163.89 S	712.23 E	730.44	3.101
3564.00	87.690	101.160	3038.29	169.81 S	742.63 E	761.40	2.632

**Survey Report for Rosa Unit #273A - Rosa Unit 273A Horizontal SS
& MWD Survey**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
3594.00	88.740	100.940	3039.23	175.55 S	772.05 E	791.39	3.576
3625.00	90.180	102.720	3039.52	181.91 S	802.39 E	822.38	7.385
3655.00	89.480	102.320	3039.61	188.41 S	831.68 E	852.37	2.687
3685.00	89.480	101.990	3039.88	194.73 S	861.01 E	882.37	1.100
3715.00	91.450	102.050	3039.64	200.98 S	890.34 E	912.36	6.570
3747.00	91.200	101.990	3038.90	207.64 S	921.63 E	944.35	0.803
3779.00	90.120	101.310	3038.53	214.10 S	952.97 E	976.34	3.988
3811.00	90.000	101.080	3038.50	220.31 S	984.36 E	1008.34	0.811
3842.00	90.000	100.680	3038.50	226.16 S	1014.81 E	1039.34	1.290
3874.00	90.370	100.080	3038.39	231.93 S	1046.28 E	1071.34	2.203
3907.00	89.910	99.510	3038.31	237.54 S	1078.80 E	1104.33	2.220
3938.00	89.780	99.120	3038.40	242.56 S	1109.39 E	1135.32	1.326
3970.00	90.030	99.580	3038.45	247.76 S	1140.97 E	1167.30	1.636
4002.00	90.400	99.540	3038.33	253.07 S	1172.52 E	1199.29	1.163
4034.00	90.400	99.620	3038.11	258.40 S	1204.08 E	1231.28	0.250
4066.00	91.020	100.120	3037.71	263.88 S	1235.60 E	1263.27	2.489
4098.00	90.430	100.200	3037.31	269.53 S	1267.09 E	1295.26	1.861
4129.00	89.630	100.310	3037.29	275.05 S	1297.60 E	1326.26	2.605
4161.00	88.610	100.390	3037.78	280.80 S	1329.07 E	1358.25	3.197
4193.00	88.830	100.430	3038.50	286.58 S	1360.54 E	1390.24	0.699
4224.00	89.820	100.420	3038.86	292.19 S	1391.03 E	1421.24	3.194
4256.00	90.000	100.440	3038.91	297.98 S	1422.50 E	1453.24	0.566
4288.00	88.980	100.270	3039.20	303.73 S	1453.97 E	1485.23	3.231
4390.00	86.680	100.270	3043.06	321.90 S	1554.26 E	1587.14	2.255

All data is in Feet (US Survey) unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet (US Survey).
Vertical Section is from Well and calculated along an Azimuth of 101.050° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 4390.00ft.,
The Bottom Hole Displacement is 1587.25ft., in the Direction of 101.701° (True).

**Survey Report for Rosa Unit #273A - Rosa Unit 273A Horizontal SS
& MWD Survey**

Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
133.00	133.00	0.23 N	0.18 W	Surveys from 133' through 2203' are Single-Shot Surveys
2350.00	2349.55	29.02 S	26.48 W	First MWD Survey
4288.00	3039.20	303.73 S	1453.97 E	Final MWD Survey
4390.00	3043.06	321.90 S	1554.26 E	Survey Projection to TD