

Williams Production Co. - San Juan Basin

New Mexico
Rio Arriba County
Sec. 6-T31N-R5W
Rosa Unit #41-B

30-039-27014

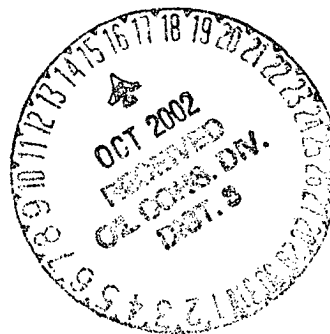
Rosa Unit 41-B MWD & Single-Shot Survey

Surface: 725/S 1210/E Sec 6 31N 5W
BHL 373/S 292/W Sec 5 31N 5W

NSL4746

SURVEY REPORT

8 October, 2002



sperry-sun
DRILLING SERVICES
A Halliburton Company

Survey Ref: svy7671

Sperry-Sun Drilling Services

Survey Report for Rosa Unit #41-B
Rosa Unit 41-B MWD & Single-Shot Survey



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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	
323.00	0.400	93.900	323.00	0.08 S	1.12 E	1.11	0.124
413.00	2.700	122.300	412.96	1.23 S	3.23 E	3.43	2.618
502.00	5.600	110.200	501.72	3.85 S	9.08 E	9.75	3.386
592.00	6.200	109.500	591.24	6.99 S	17.78 E	18.96	0.671
684.00	6.000	110.000	682.72	10.29 S	26.98 E	28.69	0.225
775.00	7.600	109.100	773.08	13.89 S	37.14 E	39.42	1.762
866.00	9.500	100.200	863.07	17.19 S	50.22 E	52.91	2.538
957.00	11.200	102.600	952.58	20.45 S	66.24 E	69.24	1.927
1051.00	12.800	102.100	1044.52	24.62 S	85.33 E	88.77	1.706
1145.00	14.500	100.500	1135.87	28.95 S	107.08 E	110.92	1.852
1238.00	15.900	103.700	1225.61	34.09 S	130.91 E	135.27	1.754
1332.00	17.900	102.800	1315.55	40.34 S	157.51 E	162.59	2.146
1427.00	19.200	104.400	1405.61	47.46 S	186.87 E	192.81	1.469
1522.00	21.900	105.600	1494.56	56.11 S	219.08 E	226.15	2.876
1614.00	23.400	104.100	1579.46	65.17 S	253.32 E	261.57	1.747
1707.00	24.600	103.600	1664.42	74.22 S	290.05 E	299.39	1.309
1799.00	26.400	104.200	1747.45	83.75 S	328.49 E	339.00	1.977
1894.00	28.300	104.900	1831.83	94.72 S	370.73 E	382.64	2.028
1987.00	29.600	104.600	1913.21	106.18 S	414.28 E	427.66	1.407
2081.00	30.500	105.600	1994.57	118.44 S	459.71 E	474.72	1.096
2174.00	31.300	102.600	2074.38	130.06 S	506.02 E	522.47	1.866
2268.00	32.200	102.100	2154.31	140.64 S	554.34 E	571.90	0.998
2362.00	31.300	102.100	2234.24	151.01 S	602.70 E	621.32	0.957
2455.00	30.600	102.100	2314.00	161.03 S	649.47 E	669.11	0.753
2545.00	29.500	99.600	2391.90	169.53 S	693.72 E	714.09	1.851
2638.00	29.500	101.600	2472.85	177.95 S	738.73 E	759.78	1.059
2732.00	29.900	101.000	2554.50	187.08 S	784.40 E	806.28	0.530
2826.00	30.700	101.400	2635.66	196.29 S	830.92 E	853.63	0.878
2918.00	30.800	103.800	2714.73	206.55 S	876.81 E	900.64	1.338
3012.00	31.200	103.700	2795.30	218.06 S	923.84 E	949.05	0.429
3107.00	32.500	101.600	2876.00	229.02 S	972.75 E	999.15	1.798
3200.00	32.800	101.000	2954.30	238.85 S	1021.95 E	1049.25	0.475
3295.00	32.700	102.300	3034.20	249.22 S	1072.28 E	1100.58	0.748
3389.00	32.500	102.300	3113.39	260.01 S	1121.77 E	1151.20	0.213
3483.00	32.100	104.000	3192.85	271.44 S	1170.67 E	1201.41	1.056
3574.00	30.200	104.200	3270.73	282.90 S	1216.33 E	1248.48	2.091
3667.00	27.900	104.000	3352.02	293.90 S	1260.12 E	1293.63	2.475
3760.00	24.800	102.300	3435.35	303.33 S	1300.30 E	1334.89	3.430
3853.00	23.300	101.900	3520.27	311.27 S	1337.36 E	1372.76	1.622
3944.00	20.700	104.400	3604.64	318.99 S	1370.55 E	1406.83	3.036
4038.00	17.000	105.900	3693.58	326.88 S	1399.87 E	1437.19	3.969
4130.00	12.600	100.500	3782.51	332.40 S	1422.68 E	1460.66	5.007
4222.00	8.500	97.900	3872.94	335.17 S	1439.29 E	1477.44	4.485
4295.00	6.200	99.100	3945.34	336.53 S	1448.53 E	1486.72	3.158

Sperry-Sun Drilling Services

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Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4696.00	2.250	143.000	4345.25	346.25 S	1474.66 E	1514.45	1.206
5660.00	1.000	340.000	5309.05	353.46 S	1483.18 E	1524.49	0.334
6548.00	1.000	205.800	6197.00	353.15 S	1477.15 E	1518.58	0.207
7061.00	0.750	180.800	6709.94	360.54 S	1475.16 E	1518.48	0.088
7527.00	1.000	55.800	7175.91	361.30 S	1478.48 E	1521.89	0.334
8058.00	1.750	70.800	7706.76	356.03 S	1489.97 E	1531.71	0.155
8484.00	1.750	70.800	8132.56	351.75 S	1502.25 E	1542.55	0.000

All data is in Feet (US) 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).
Vertical Section is from Well and calculated along an Azimuth of 104.380° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 8484.00ft.,
The Bottom Hole Displacement is 1542.89ft., in the Direction of 103.178° (True).

Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
323.00	323.00	0.08 S	1.12 E	First MWD Survey
4295.00	3945.34	336.53 S	1448.53 E	Final MWD Survey
4696.00	4345.25	346.25 S	1474.66 E	Surveys from 4696' through 8058' are Single-Shot Surveys
8484.00	8132.56	351.75 S	1502.25 E	Survey Projection to TD