



Williams Production Co. - San Juan Basin

**New Mexico
Rio Arriba County
Sec. 8-T31N-R5W
Rosa Unit #46A
Rosa Unit 46A MWD & Single-Shot Survey**

SURVEY REPORT

1 November, 2002

30-039-26986

Surface: 10/S 2470/E
BN L 1029/S 1686/E

sperry-sun
DRILLING SERVICES
A Halliburton Company

Survey Ref: svy7754

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)
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
321.00	0.300	95.000	321.00	0.07 S	0.84 E	0.39	0.093
411.00	1.800	29.800	410.98	1.13 N	1.77 E	1.91	1.885
501.00	4.600	23.000	500.83	5.68 N	3.89 E	6.88	3.134
591.00	7.600	33.500	590.32	13.97 N	8.58 E	16.39	3.543
682.00	8.800	37.700	680.38	24.50 N	16.16 E	29.35	1.473
772.00	10.400	37.700	769.12	36.37 N	25.34 E	44.30	1.778
862.00	12.700	31.400	857.30	51.25 N	35.46 E	62.29	2.911
954.00	15.000	31.800	946.62	70.00 N	47.01 E	84.31	2.502
1048.00	17.500	31.800	1036.85	92.35 N	60.87 E	110.80	2.660
1140.00	20.300	31.900	1123.88	117.66 N	76.59 E	140.39	3.044
1234.00	22.500	33.500	1211.40	146.51 N	95.14 E	174.69	2.421
1328.00	24.300	32.800	1297.66	177.77 N	115.55 E	212.02	1.938
1420.00	25.700	34.000	1381.04	210.22 N	136.96 E	250.89	1.618
1514.00	26.600	34.700	1465.42	244.42 N	160.34 E	292.31	1.012
1607.00	27.900	34.500	1548.10	279.47 N	184.51 E	334.87	1.401
1700.00	28.200	33.600	1630.17	315.70 N	209.00 E	378.59	0.558
1794.00	29.100	34.800	1712.67	352.97 N	234.33 E	423.65	1.136
1887.00	28.500	34.900	1794.16	389.74 N	259.94 E	468.42	0.647
1981.00	28.400	32.600	1876.81	426.97 N	284.81 E	513.19	1.170
2074.00	27.700	32.400	1958.89	463.85 N	308.31 E	556.92	0.759
2167.00	28.500	33.200	2040.93	500.67 N	332.04 E	600.72	0.951
2260.00	28.300	33.100	2122.73	537.70 N	356.23 E	644.96	0.221
2353.00	27.900	31.200	2204.77	574.78 N	379.54 E	688.75	1.054
2448.00	28.800	32.300	2288.38	613.14 N	403.28 E	733.85	1.095
2540.00	28.600	30.600	2369.08	650.82 N	426.33 E	778.02	0.914
2634.00	27.900	30.500	2451.88	689.14 N	448.95 E	822.47	0.746
2728.00	26.400	30.900	2535.52	726.02 N	470.84 E	865.33	1.608
2819.00	24.500	31.800	2617.69	759.42 N	491.18 E	904.42	2.131
2913.00	23.400	32.500	2703.59	791.73 N	511.48 E	942.57	1.209
3007.00	21.900	32.100	2790.34	822.32 N	530.83 E	978.77	1.604
3099.00	19.200	32.600	2876.48	849.61 N	548.10 E	1011.06	2.941
3194.00	17.100	33.000	2966.74	874.48 N	564.12 E	1040.65	2.214
3288.00	15.500	33.700	3056.96	896.52 N	578.62 E	1067.03	1.715
3382.00	13.300	33.400	3148.00	916.00 N	591.54 E	1090.40	2.342
3476.00	10.800	30.400	3239.93	932.63 N	601.95 E	1110.02	2.741
3569.00	9.800	32.500	3331.43	946.82 N	610.61 E	1126.64	1.148
3694.00	5.600	42.700	3455.28	960.28 N	620.47 E	1143.29	3.520
3992.00	5.500	48.800	3751.88	980.37 N	641.08 E	1171.35	0.201
4465.00	4.500	45.800	4223.08	1008.24 N	671.43 E	1211.24	0.218
4941.00	3.500	60.800	4697.93	1028.35 N	697.51 E	1242.28	0.302
5409.00	3.000	88.800	5165.20	1035.58 N	722.22 E	1261.77	0.351
5878.00	3.000	95.800	5633.56	1034.59 N	746.70 E	1274.23	0.078
6376.00	3.000	85.800	6130.88	1034.23 N	772.66 E	1288.02	0.105
6873.00	2.000	140.800	6627.47	1028.46 N	791.12 E	1293.19	0.498

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7312.00	2.500	217.800	7066.21	1014.96 N	790.09 E	1281.30	0.644
7783.00	1.250	358.800	7537.08	1011.97 N	783.69 E	1275.31	0.756
8110.00	1.250	358.800	7864.01	1019.11 N	783.54 E	1281.22	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 32.880° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 8110.00ft.,
The Bottom Hole Displacement is 1285.50ft., in the Direction of 37.555° (True).

Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
321.00	321.00	0.07 S	0.84 E	First MWD Survey
3694.00	3455.28	960.28 N	620.47 E	Final MWD Survey
3992.00	3751.88	980.37 N	641.08 E	Surveys from 3992' through 7783' are Single-Shot Surveys
8110.00	7864.01	1019.11 N	783.54 E	Survey Projection to TD