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Surface 1475/S 1275/E
BHL 1100/S 997/E

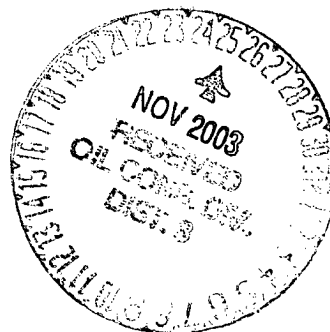
Williams Production Company
New Mexico
Rio Arriba County
Rosa Unit 269A Single-Shot & MWD
Survey

Sperry-Sun

Survey Report

10 October, 2003

Survey Ref: svy6300



HALLIBURTON

Survey Report for Rosa Unit 269A 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	
71.00	0.750	333.700	71.00	0.42 N	0.21 W	-0.46	1.056
260.00	0.750	293.700	259.98	2.02 N	1.89 W	-2.70	0.271
321.00	0.500	269.450	320.98	2.18 N	2.52 W	-3.16	0.588
351.00	0.460	268.060	350.98	2.18 N	2.77 W	-3.28	0.139
381.00	0.510	234.570	380.98	2.09 N	3.00 W	-3.32	0.945
411.00	0.880	205.470	410.98	1.81 N	3.21 W	-3.18	1.667
441.00	1.230	186.490	440.97	1.28 N	3.34 W	-2.80	1.634
472.00	1.850	183.320	471.96	0.45 N	3.41 W	-2.12	2.018
502.00	2.110	171.370	501.94	0.58 S	3.35 W	-1.20	1.622
531.00	2.720	167.580	530.92	1.78 S	3.13 W	-0.05	2.173
562.00	3.300	164.070	561.87	3.36 S	2.72 W	1.51	1.962
592.00	3.890	161.890	591.81	5.15 S	2.17 W	3.34	2.018
620.00	4.200	160.000	619.74	7.02 S	1.52 W	5.28	1.205
651.00	4.730	156.860	650.65	9.26 S	0.63 W	7.66	1.882
681.00	5.390	157.140	680.53	11.70 S	0.40 E	10.29	2.202
713.00	5.920	153.640	712.38	14.56 S	1.72 E	13.42	1.975
744.00	6.830	151.950	743.18	17.62 S	3.29 E	16.86	2.997
775.00	7.100	151.490	773.96	20.93 S	5.08 E	20.62	0.889
806.00	7.710	150.430	804.70	24.42 S	7.02 E	24.61	2.016
836.00	8.670	149.030	834.39	28.11 S	9.17 E	28.88	3.268
867.00	9.230	147.640	865.01	32.21 S	11.71 E	33.70	1.936
898.00	9.580	147.810	895.60	36.50 S	14.41 E	38.77	1.133
930.00	10.280	147.640	927.12	41.16 S	17.36 E	44.28	2.189
961.00	10.810	148.520	957.59	45.98 S	20.36 E	49.95	1.787
993.00	11.600	148.170	988.98	51.27 S	23.62 E	56.17	2.478
1024.00	12.130	150.450	1019.32	56.75 S	26.87 E	62.54	2.282
1056.00	12.660	149.750	1050.57	62.71 S	30.29 E	69.41	1.721
1118.00	13.890	150.100	1110.92	75.03 S	37.43 E	83.65	1.988
1178.00	14.330	147.290	1169.11	87.52 S	45.03 E	98.27	1.357
1241.00	14.590	147.810	1230.11	100.79 S	53.47 E	113.99	0.461
1303.00	15.200	147.110	1290.03	114.23 S	62.04 E	129.92	1.026
1367.00	15.200	147.110	1351.79	128.32 S	71.16 E	146.68	0.000
1428.00	16.000	147.640	1410.54	142.14 S	80.00 E	163.07	1.332
1491.00	16.260	148.170	1471.06	156.96 S	89.30 E	180.57	0.474
1553.00	16.520	149.220	1530.54	171.91 S	98.39 E	198.06	0.636
1615.00	16.170	150.630	1590.04	187.01 S	107.13 E	215.51	0.853
1677.00	15.910	147.990	1649.62	201.74 S	115.87 E	232.63	1.249
1739.00	15.380	147.810	1709.33	215.90 S	124.75 E	249.35	0.858
1802.00	14.850	147.990	1770.15	229.82 S	133.48 E	265.77	0.845
1864.00	14.770	150.100	1830.09	243.41 S	141.64 E	281.61	0.879
1927.00	15.120	153.790	1890.96	257.74 S	149.27 E	297.84	1.609
1988.00	14.680	156.600	1949.91	271.97 S	155.85 E	313.44	1.387
2020.00	14.770	155.370	1980.86	279.40 S	159.16 E	321.52	1.017
2050.00	14.500	152.740	2009.88	286.21 S	162.48 E	329.08	2.391

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Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2114.00	13.800	148.870	2071.94	299.87 S	170.09 E	344.71	1.838
2177.00	13.890	148.520	2133.11	312.75 S	177.92 E	359.79	0.195
2238.00	14.330	150.280	2192.27	325.55 S	185.49 E	374.65	1.007
2300.00	14.150	151.330	2252.37	338.87 S	192.93 E	389.90	0.508
2362.00	14.500	153.970	2312.44	352.49 S	199.97 E	405.22	1.195
2393.00	14.150	153.260	2342.48	359.36 S	203.38 E	412.87	1.263
2425.00	13.970	152.740	2373.52	366.29 S	206.91 E	420.63	0.687
2456.00	13.540	152.210	2403.63	372.82 S	210.32 E	427.99	1.445
2487.00	13.180	151.510	2433.79	379.14 S	213.69 E	435.14	1.273
2516.00	13.010	149.570	2462.03	384.86 S	216.92 E	441.71	1.625
2547.00	13.010	148.870	2492.24	390.86 S	220.49 E	448.69	0.508
2578.00	13.010	149.040	2522.44	396.84 S	224.09 E	455.67	0.123
2608.00	12.660	148.340	2551.69	402.53 S	227.56 E	462.33	1.277
2640.00	12.480	147.810	2582.93	408.44 S	231.24 E	469.29	0.668
2672.00	12.040	145.880	2614.20	414.13 S	234.95 E	476.08	1.879
2703.00	12.040	144.120	2644.52	419.43 S	238.66 E	482.53	1.184
2735.00	11.340	142.720	2675.85	424.63 S	242.52 E	488.97	2.360
2766.00	10.550	140.780	2706.29	429.26 S	246.16 E	494.80	2.811
2798.00	9.930	137.790	2737.78	433.57 S	249.87 E	500.40	2.551
2829.00	9.320	137.790	2768.34	437.41 S	253.35 E	505.47	1.968
2861.00	8.790	135.690	2799.94	441.08 S	256.80 E	510.39	1.952
2892.00	8.170	136.040	2830.60	444.36 S	259.99 E	514.83	2.007
2923.00	7.910	139.380	2861.30	447.56 S	262.90 E	519.07	1.724
2955.00	7.560	142.190	2893.01	450.90 S	265.63 E	523.32	1.610
2985.00	7.120	144.650	2922.76	453.97 S	267.91 E	527.13	1.802
3017.00	6.500	150.280	2954.54	457.16 S	269.96 E	530.92	2.845
3047.00	6.240	152.380	2984.35	460.08 S	271.56 E	534.25	1.164
3078.00	5.890	153.090	3015.18	462.99 S	273.06 E	537.52	1.155
3109.00	5.100	155.200	3046.03	465.66 S	274.35 E	540.47	2.630
3141.00	3.960	152.910	3077.93	467.94 S	275.45 E	542.99	3.606
3172.00	3.060	149.400	3108.88	469.60 S	276.36 E	544.89	2.983
3203.00	2.290	152.210	3139.84	470.86 S	277.07 E	546.34	2.519
3234.00	1.580	161.880	3170.82	471.82 S	277.49 E	547.37	2.513
3266.00	1.490	161.880	3202.81	472.63 S	277.76 E	548.21	0.281
3298.00	1.050	176.290	3234.80	473.32 S	277.91 E	548.88	1.689
3319.00	1.050	182.440	3255.80	473.71 S	277.91 E	549.21	0.536
3374.00	1.050	182.440	3310.79	474.71 S	277.87 E	550.06	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 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 149.560° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 3374.00ft.,
The Bottom Hole Displacement is 550.06ft., in the Direction of 149.658° (True).

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Comments

Measured Depth (ft)	Station Coordinates			Comment
	TVD (ft)	Northings (ft)	Eastings (ft)	
71.00	71.00	0.42 N	0.21 W	Surveys at 71' and 260' are Single-Shot Surveys
321.00	320.98	2.18 N	2.52 W	First MWD Survey
3319.00	3255.80	473.71 S	277.91 E	Final MWD Survey
3374.00	3310.79	474.71 S	277.87 E	Survey Projection to TD of Directional Work