

Customer : Williams Production Company

Well : Rosa Unit #75

Rig : Aztec #124

Field : Mesa Verde

Legal : Sec. ⁴~~10~~ T31N - R06W

County : Rio Arriba

State : New Mexico

Calculation Method :

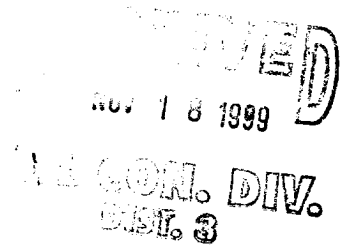
Magnetic Declination Applied :

Vertical Section Direction :

Minimum Curvature

11.3° East

111.801° Azimuth



Note : See attached SSDS Certified Survey Worksheet for all survey information as recorded in the field.

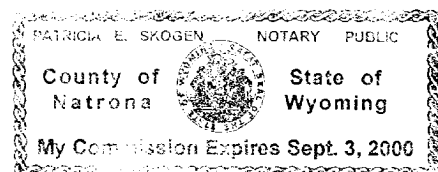
I, Craig Davis, having personal knowledge of all the facts, hereby certify that the above listed Directional Survey is true and correct as determined from all available Sperry-Sun Drilling Services records.

Craig Davis
Directional Drilling Coordinator

On this 17th day of November, 1999, before me personally appeared Craig Davis to me known as the person described in and who executed the same as his/her free act and deed.

Patricia E. Skogen
Notary Public in and for the County of
Natrona, State of Wyoming

SEPT. 3, 2000
My Commission Expires



November 17, 1999

**NEW MEXICO OIL CONSERVATION
Oil & Gas Division
1000 Rio Brazos Road
Aztec, New Mexico
87410**

RECEIVED
NOV 18 1999
OIL CON. DIV.
DIST. 3

For the attention of : Frank Chavez

Dear Sir,

Please find enclosed one (1) original of our certified survey results on the well described below.

Customer : Williams Production Company
Well : Rosa Unit #75
Rig : Aztec #124
Field : Mesa Verde
Legal : Sec. 10- T31N - R06W
County : Rio Arriba
State : New Mexico

Please feel free to call upon me at any time should you have any questions regarding the enclosed information.

Sincerely,

Craig Davis

**Craig Davis
Directional Drilling Coordinator
7197 W. Derrick Drive
Casper, Wyoming 82604
(307) 472-5757**

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Williams Prod. Co.
WELL:	Rosa #75
FIELD:	Mesa Verde
RIG:	Aztec Well Service
LEGALS:	Sec. 10 - T31N - R6W
COUNTY:	San Juan
STATE:	New Mexico
CAL. METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	11.3°
VERTICAL SEC. DIR. :	111.801°

SSDS Job Number :	CA-MJ-90103
Start Date of Job :	10/03/99
End Date of Job :	10/19/99
Lead Directional Driller:	J. Groom
Other SSDS DD's :	L. Berard, R. Merin
SSDS MWD Engineers :	R. Blajszczak

	Main Hole	1st Side Track	2nd Side Track	3rd Side Track	4th Side Track	
	Tie On	Tie On	Tie On	Tie On	Tie On	Tie On
Well Head	0.00					
Surface Csg. Shoe	516.00	TOTCO				
First Survey Depth	543.51	MWD				
Last Survey Depth	4281.69	MWD				
First Survey Depth	4357.34	SS				
Last Survey Depth	4807.95	SS	KOP-ST1	KOP-ST2	KOP-ST3	KOP-ST4
First Survey Depth	4865.46	steer.tool				
Last Survey Depth	5691.26	steer.tool				
First Survey Depth	5778.98	SS	MWD	MWD	MWD	MWD
Last Survey Depth	7039.69	SS	MWD	MWD	MWD	MWD
Bit Extrapolation to TD	7097.85	T.D.	T.D.	T.D.	T.D.	T.D.

The following Sperry Sun Drilling Services personnel listed below, do certify the above survey information to be accurate :

Print Name :	<i>William Lee Groom</i>	Print Name :	
Sign Name :	<i>William Lee Groom</i>	Sign Name :	
Print Name :		Print Name :	
Sign Name :		Sign Name :	

Tie On	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
MWD	Sperry Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's
ESS	Sperry Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's
Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry Sun Drilling Services (SSDS)
SS	Single Shot (SS) Survey's ; Provided by Sperry Sun Drilling Services (SSDS) or third party vendor.

Examples of
Survey Types:

Williams Production Company

**Mesa Verde Field
San Juan Co., NM
Sec. 10 - T31N - R6W
Rosa #75 - MWD/SS Survey
Job No. CA-MJ-90103,**

RECEIVED
NOV 18 1999
OIL CON. DIV.
DIST. 3

SURVEY REPORT

19 October, 1999

Your Ref: 90103

sperry-sun
DRILLING SERVICES
A HALLIBURTON COMPANY

Survey Ref: svy1504

Sperry-Sun Drilling Services

Survey Report for Rosa #75 - MWD/SS Survey

Your Ref: 90103

Job No. CA-MJ-90103,



Williams Production Company
Mesa Verde Field

San Juan Co., NM
Sec. 10 - T31N - R6W

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	
543.51	4.100	348.400	543.05	19.04 N	3.91 W	-10.70	0.754
574.17	4.200	354.600	573.63	21.23 N	4.23 W	-11.82	1.499
605.21	4.500	4.000	604.58	23.58 N	4.26 W	-12.71	2.488
636.20	5.100	17.300	635.46	26.11 N	3.76 W	-13.19	4.067
667.20	5.900	27.900	666.32	28.83 N	2.61 W	-13.13	4.161
698.22	6.400	38.700	697.16	31.59 N	0.78 W	-12.46	4.055
728.77	7.000	46.700	727.50	34.19 N	1.64 E	-11.18	3.627
759.59	7.600	56.900	758.07	36.60 N	4.71 E	-9.21	4.626
788.45	8.500	64.800	786.65	38.55 N	8.24 E	-6.66	4.935
820.04	8.900	74.400	817.88	40.20 N	12.71 E	-3.13	4.762
851.31	9.100	83.900	848.76	41.11 N	17.50 E	0.98	4.790
882.91	9.000	92.800	879.97	41.26 N	22.45 E	5.52	4.437
913.98	8.700	101.900	910.67	40.65 N	27.18 E	10.14	4.603
943.38	8.700	106.100	939.74	39.58 N	31.49 E	14.54	2.160
974.39	9.500	109.100	970.36	38.09 N	36.16 E	19.43	2.999
1005.81	10.600	112.600	1001.29	36.13 N	41.28 E	24.91	4.003
1036.79	11.600	113.600	1031.69	33.79 N	46.77 E	30.87	3.287
1067.11	12.500	114.800	1061.34	31.19 N	52.54 E	37.20	3.081
1097.44	13.800	113.300	1090.88	28.38 N	58.84 E	44.09	4.431
1128.32	14.600	112.000	1120.81	25.47 N	65.83 E	51.66	2.789
1158.94	15.500	112.100	1150.38	22.48 N	73.20 E	59.61	2.940
1189.12	16.400	113.900	1179.40	19.24 N	80.83 E	67.91	3.402
1220.62	16.800	114.900	1209.59	15.52 N	89.03 E	76.89	1.560
1251.30	17.400	113.900	1238.91	11.80 N	97.24 E	85.91	2.178
1282.64	18.000	112.500	1268.77	8.05 N	106.00 E	95.43	2.347
1314.04	19.000	111.900	1298.55	4.28 N	115.23 E	105.39	3.242
1344.49	19.500	112.700	1327.29	0.47 N	124.51 E	115.43	1.856
1375.89	20.000	113.900	1356.85	3.73 S	134.26 E	126.04	2.050
1406.94	20.300	112.700	1386.00	7.96 S	144.08 E	136.73	1.645
1438.34	21.300	111.200	1415.35	12.12 S	154.42 E	147.88	3.608
1469.52	21.900	111.800	1444.34	16.33 S	165.10 E	159.36	2.051
1501.31	22.100	111.900	1473.82	20.76 S	176.16 E	171.27	0.640
1532.47	22.000	110.100	1502.70	24.95 S	187.08 E	182.96	2.192
1563.89	22.500	111.100	1531.78	29.14 S	198.21 E	194.86	1.996
1595.22	23.500	110.700	1560.62	33.50 S	209.65 E	207.10	3.231
1625.84	24.400	110.900	1588.60	37.92 S	221.27 E	219.52	2.951
1655.65	25.700	110.400	1615.61	42.37 S	233.08 E	232.14	4.418
1687.41	27.300	109.800	1644.03	47.24 S	246.39 E	246.31	5.108
1719.01	28.600	109.200	1671.94	52.18 S	260.35 E	261.11	4.209

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa #75 - MWD/SS Survey

Your Ref: 90103

Job No. CA-MJ-90103,



Williams Production Company
Mesa Verde Field

San Juan Co., NM
Sec. 10 - T31N - R6W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1750.12	28.600	109.100	1699.25	57.06 S	274.42 E	275.98	0.154
1781.09	29.300	109.200	1726.35	61.98 S	288.58 E	290.96	2.266
1812.29	30.200	109.600	1753.44	67.13 S	303.18 E	306.42	2.954
1843.19	31.500	109.400	1779.97	72.41 S	318.12 E	322.26	4.220
1874.94	31.900	110.500	1806.98	78.11 S	333.80 E	338.93	2.214
1906.85	32.800	111.800	1833.94	84.27 S	349.72 E	356.00	3.565
1936.68	33.600	112.300	1858.90	90.40 S	364.86 E	372.34	2.835
1966.35	34.500	113.200	1883.48	96.83 S	380.18 E	388.95	3.476
1997.77	35.100	113.500	1909.28	103.94 S	396.64 E	406.87	1.986
2029.12	35.900	112.500	1934.81	111.05 S	413.40 E	425.07	3.153
2059.09	36.600	112.100	1958.98	117.77 S	429.79 E	442.79	2.465
2089.33	37.600	110.700	1983.10	124.42 S	446.78 E	461.03	4.328
2121.16	39.100	110.200	2008.06	131.32 S	465.28 E	480.78	4.812
2152.52	39.400	110.700	2032.34	138.26 S	483.87 E	500.61	1.390
2184.40	38.900	112.100	2057.07	145.60 S	502.61 E	520.74	3.185
2215.54	38.500	113.000	2081.37	153.06 S	520.59 E	540.21	2.217
2245.47	38.500	113.900	2104.79	160.48 S	537.69 E	558.83	1.872
2277.37	38.900	113.900	2129.69	168.56 S	555.92 E	578.76	1.254
2308.37	38.700	114.100	2153.85	176.46 S	573.67 E	598.17	0.761
2338.95	38.900	113.500	2177.68	184.19 S	591.20 E	617.32	1.393
2370.32	38.800	111.200	2202.11	191.67 S	609.40 E	637.00	4.610
2400.92	38.900	110.700	2225.94	198.54 S	627.32 E	656.19	1.076
2432.00	38.800	111.100	2250.15	205.49 S	645.53 E	675.68	0.869
2463.14	38.600	111.600	2274.45	212.58 S	663.67 E	695.15	1.192
2494.14	38.400	111.900	2298.71	219.73 S	681.59 E	714.45	0.883
2525.77	38.300	112.300	2323.52	227.11 S	699.78 E	734.07	0.846
2557.47	38.200	113.200	2348.41	234.70 S	717.87 E	753.70	1.786
2587.07	38.000	114.000	2371.70	242.01 S	734.61 E	771.95	1.799
2618.71	37.700	113.600	2396.69	249.85 S	752.37 E	791.35	1.225
2649.28	37.500	113.100	2420.91	257.24 S	769.50 E	810.00	1.193
2679.48	38.100	111.600	2444.77	264.28 S	786.62 E	828.51	3.635
2710.66	39.300	109.600	2469.11	271.13 S	804.86 E	847.99	5.558
2741.67	39.300	109.700	2493.10	277.74 S	823.36 E	867.62	0.204
2772.50	39.700	109.500	2516.89	284.32 S	841.84 E	887.22	1.361
2803.32	39.400	109.900	2540.66	290.93 S	860.31 E	906.83	1.277
2834.80	39.500	110.800	2564.96	297.89 S	879.06 E	926.82	1.844
2866.12	39.700	112.000	2589.10	305.17 S	897.65 E	946.79	2.524
2896.47	39.600	111.200	2612.46	312.30 S	915.66 E	966.15	1.714
2927.60	39.500	110.700	2636.47	319.39 S	934.17 E	985.97	1.072
2959.50	39.000	110.600	2661.17	326.51 S	953.06 E	1006.15	1.580

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa #75 - MWD/SS Survey

Your Ref: 90103

Job No. CA-MJ-90103,



Williams Production Company
Mesa Verde Field

San Juan Co., NM
Sec. 10 - T31N - R6W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2990.46	38.600	110.800	2685.30	333.36 S	971.20 E	1025.55	1.354
3022.36	38.400	110.300	2710.27	340.33 S	989.80 E	1045.40	1.160
3053.76	38.200	110.600	2734.91	347.13 S	1008.03 E	1064.86	0.870
3083.56	38.900	110.500	2758.21	353.65 S	1025.42 E	1083.42	2.358
3113.56	38.900	110.400	2781.56	360.23 S	1043.07 E	1102.26	0.209
3144.46	39.000	111.200	2805.59	367.13 S	1061.23 E	1121.68	1.659
3175.74	39.000	111.600	2829.90	374.31 S	1079.56 E	1141.36	0.805
3206.39	39.100	111.200	2853.70	381.36 S	1097.54 E	1160.67	0.885
3235.82	39.200	111.400	2876.53	388.11 S	1114.85 E	1179.25	0.547
3267.19	38.400	111.100	2900.97	395.23 S	1133.17 E	1198.91	2.620
3298.78	37.600	111.100	2925.87	402.24 S	1151.31 E	1218.35	2.532
3330.13	36.900	111.100	2950.82	409.07 S	1169.02 E	1237.33	2.233
3361.73	37.400	110.900	2976.01	415.91 S	1186.83 E	1256.41	1.628
3392.00	38.400	111.600	2999.89	422.65 S	1204.16 E	1275.00	3.596
3423.30	39.000	112.500	3024.32	429.99 S	1222.30 E	1294.57	2.628
3453.97	38.200	113.200	3048.29	437.42 S	1239.93 E	1313.70	2.972
3483.50	38.000	113.300	3071.53	444.62 S	1256.67 E	1331.92	0.709
3514.03	38.200	113.000	3095.55	452.02 S	1273.99 E	1350.75	0.893
3544.65	38.000	112.800	3119.65	459.37 S	1291.40 E	1369.64	0.768
3573.65	37.100	114.400	3142.64	466.45 S	1307.59 E	1387.31	4.576
3605.38	36.700	114.100	3168.01	474.27 S	1324.97 E	1406.34	1.383
3636.63	35.900	113.900	3193.20	481.80 S	1341.87 E	1424.83	2.588
3669.06	38.100	111.600	3243.06	496.30 S	1376.51 E	1462.38	4.163
3761.31	40.300	109.000	3291.30	509.93 S	1413.41 E	1501.70	4.411
3825.40	39.700	109.000	3340.39	523.34 S	1452.36 E	1542.85	0.936
3887.28	39.400	108.300	3388.11	535.94 S	1489.70 E	1582.19	0.868
3948.70	38.000	108.100	3436.04	547.94 S	1526.18 E	1620.52	2.288
4010.96	39.000	107.000	3484.77	559.62 S	1563.13 E	1659.17	1.947
4073.76	40.500	106.300	3533.05	571.12 S	1601.60 E	1699.16	2.493
4136.32	38.800	107.700	3581.22	582.78 S	1639.78 E	1738.94	3.070
4199.69	39.700	108.600	3630.29	595.28 S	1677.87 E	1778.95	1.681
4261.69	38.900	107.400	3678.27	607.41 S	1715.22 E	1818.13	1.780
4357.34	39.500	107.300	3752.39	625.44 S	1772.92 E	1878.40	0.631
4421.54	38.000	105.300	3802.46	636.73 S	1811.48 E	1918.39	3.043
4484.17	36.000	104.300	3852.48	646.36 S	1847.92 E	1955.80	3.335
4547.86	33.750	103.300	3904.72	655.06 S	1883.28 E	1991.86	3.645
4620.93	32.750	102.300	3965.83	663.94 S	1922.34 E	2031.43	1.561
4682.44	32.750	109.800	4017.59	673.12 S	1954.27 E	2064.48	6.593
4746.05	30.500	116.300	4071.76	686.11 S	1984.94 E	2097.79	6.416
4807.95	29.500	121.300	4125.38	700.99 S	2012.05 E	2128.48	4.349

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa #75 - MWD/SS Survey

Your Ref: 90103

Job No. CA-MJ-90103,



Williams Production Company
Mesa Verde Field

San Juan Co., NM
Sec. 10 - T31N - R6W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4865.46	29.900	123.900	4175.33	716.34 S	2036.05 E	2156.47	2.345
4928.00	30.500	119.800	4229.39	732.92 S	2062.76 E	2187.43	3.434
5023.46	31.600	120.200	4311.17	757.54 S	2105.40 E	2236.16	1.172
5087.52	31.400	121.800	4365.79	774.78 S	2134.09 E	2269.20	1.342
5150.02	31.200	115.500	4419.21	790.33 S	2162.54 E	2301.39	5.245
5214.42	31.000	117.200	4474.36	805.10 S	2192.35 E	2334.55	1.398
5258.72	29.000	112.000	4512.73	814.34 S	2212.46 E	2356.65	7.401
5341.81	29.000	107.400	4585.41	827.91 S	2250.36 E	2396.88	2.683
5396.06	30.900	108.400	4632.41	836.24 S	2276.13 E	2423.90	3.621
5500.75	33.300	109.400	4721.09	854.27 S	2328.75 E	2479.46	2.348
5564.21	31.400	110.000	4774.70	865.71 S	2360.72 E	2513.39	3.036
5619.05	32.200	111.200	4821.31	875.88 S	2387.77 E	2542.28	1.859
5691.26	31.900	107.300	4882.52	888.51 S	2423.92 E	2580.54	2.896
5778.98	31.800	98.300	4957.07	898.75 S	2468.95 E	2626.15	5.411
6069.34	22.250	106.300	5215.51	925.29 S	2597.75 E	2755.60	3.512
6319.20	14.250	105.300	5452.61	946.72 S	2672.94 E	2833.37	3.204
6571.98	13.750	106.300	5697.88	963.36 S	2731.78 E	2894.18	0.220
6821.47	9.500	103.300	5942.20	976.42 S	2780.30 E	2944.08	1.720
7039.69	5.250	105.300	6158.57	983.20 S	2807.47 E	2971.82	1.951
7097.85	5.250	105.300	6216.48	984.61 S	2812.60 E	2977.11	0.000

All data is in feet 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 100ft.
Vertical Section is from Well and calculated along an Azimuth of 111.801° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7097.85ft.,
The Bottom Hole Displacement is 2979.96ft., in the Direction of 109.294° (True).

11.3° declination has been applied to all survey azimuth.
Station at 7097.85' is an extrapolation to the bit.

Continued...