

045-30103

Customer : Williams Production Company

Well : Rosa #185A

Rig : Aztec Well Service #124

Field : Mesa Verde

Legal : I Sec. 17-T31N-R06W

County : San Juan

State : New Mexico

Calculation Method :

Minimum Curvature

Magnetic Declination Applied :

11.3° East

Vertical Section Direction :

129.452° Azimuth

BHL 1148' S, 748' W, Sec. 16 T31N, R6W

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.

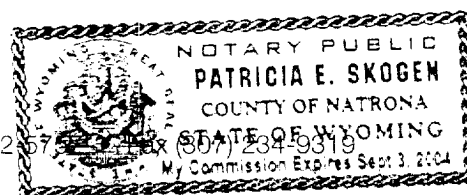
Craig Davis James R. Davidson P. E.

Directional Drilling Coordinator

On this 2<sup>ND</sup> day of October, 2000, before me personally appeared JAMES R. DAVIDSON 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, 2004  
My Commission Expires





**For the attention of :**

Dear Sir,

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

**Customer : Williams Production Company**

**Well : Rosa #185A**

**Rig : Aztec Well Service #124**

**Field : Mesa Verde**

**Legal : Sec. 17-T31N-R06W**

**County : San Juan**

**State : New Mexico**

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

Sincerely,

A handwritten signature in black ink that reads "Craig Davis / James R. Davidson P. E.".

**Craig Davis**  
**Directional Drilling Coordinator**

# Sperry-Sun Drilling Services

Survey Report for Rosa Unit # 185A - MWD Survey

Williams Production Company  
Mesa Verde Field

San Juan Co., NM  
Sec. 17-T31N-R06W

| Measured<br>Depth<br>(ft) | Incl.  | Azim.   | Vertical<br>Depth<br>(ft) | Northings<br>(ft) | Eastings<br>(ft) | Vertical<br>Section<br>(ft) | Dogleg<br>Rate<br>(*100ft) |
|---------------------------|--------|---------|---------------------------|-------------------|------------------|-----------------------------|----------------------------|
| 0.00                      | 0.000  | 0.000   | 0.00                      | 0.00 N            | 0.00 E           | 0.00                        |                            |
| 589.00                    | 1.200  | 279.700 | 588.96                    | 1.04 N            | 6.08 W           | -5.35                       | 0.20                       |
| 621.00                    | 1.400  | 279.600 | 620.95                    | 1.16 N            | 6.80 W           | -5.98                       | 0.63                       |
| 651.00                    | 0.800  | 257.200 | 650.94                    | 1.18 N            | 7.36 W           | -6.43                       | 2.42                       |
| 681.00                    | 0.600  | 146.700 | 680.94                    | 1.00 N            | 7.48 W           | -6.41                       | 3.85                       |
| 711.00                    | 1.500  | 142.800 | 710.94                    | 0.55 N            | 7.16 W           | -5.88                       | 3.01                       |
| 741.00                    | 2.700  | 138.400 | 740.92                    | 0.29 S            | 6.45 W           | -4.80                       | 4.03                       |
| 772.00                    | 3.700  | 137.100 | 771.87                    | 1.57 S            | 5.28 W           | -3.08                       | 3.23                       |
| 802.00                    | 4.500  | 133.500 | 801.79                    | 3.09 S            | 3.77 W           | -0.95                       | 2.80                       |
| 832.00                    | 5.200  | 123.100 | 831.68                    | 4.64 S            | 1.78 W           | 1.57                        | 3.74                       |
| 862.00                    | 6.100  | 129.100 | 861.54                    | 6.39 S            | 0.60 E           | 4.52                        | 3.58                       |
| 892.00                    | 6.800  | 129.300 | 891.35                    | 8.52 S            | 3.21 E           | 7.89                        | 2.33                       |
| 922.00                    | 7.600  | 130.700 | 921.11                    | 10.93 S           | 6.09 E           | 11.65                       | 2.73                       |
| 954.00                    | 8.500  | 132.500 | 952.79                    | 13.91 S           | 9.44 E           | 16.13                       | 2.92                       |
| 985.00                    | 9.100  | 133.300 | 983.43                    | 17.14 S           | 12.91 E          | 20.86                       | 1.98                       |
| 1016.00                   | 9.900  | 132.600 | 1014.00                   | 20.63 S           | 16.66 E          | 25.97                       | 2.61                       |
| 1048.00                   | 10.300 | 133.000 | 1045.51                   | 24.44 S           | 20.77 E          | 31.57                       | 1.27                       |
| 1080.00                   | 11.300 | 132.300 | 1076.94                   | 28.50 S           | 25.18 E          | 37.56                       | 3.15                       |
| 1110.00                   | 11.700 | 132.100 | 1106.34                   | 32.52 S           | 29.61 E          | 43.53                       | 1.34                       |
| 1142.00                   | 12.600 | 130.500 | 1137.62                   | 36.96 S           | 34.68 E          | 50.26                       | 3.00                       |
| 1174.00                   | 13.300 | 130.900 | 1168.81                   | 41.64 S           | 40.11 E          | 57.43                       | 2.21                       |
| 1205.00                   | 14.200 | 129.500 | 1198.92                   | 46.39 S           | 45.74 E          | 64.80                       | 3.10                       |
| 1235.00                   | 14.800 | 129.000 | 1227.96                   | 51.14 S           | 51.56 E          | 72.31                       | 2.04                       |
| 1267.00                   | 15.700 | 128.800 | 1258.84                   | 56.43 S           | 58.11 E          | 80.73                       | 2.82                       |
| 1299.00                   | 16.500 | 129.500 | 1289.58                   | 62.03 S           | 64.99 E          | 89.60                       | 2.57                       |
| 1330.00                   | 17.200 | 128.800 | 1319.25                   | 67.70 S           | 71.96 E          | 98.58                       | 2.35                       |
| 1361.00                   | 17.400 | 128.600 | 1348.85                   | 73.47 S           | 79.15 E          | 107.80                      | 0.67                       |
| 1391.00                   | 18.300 | 129.300 | 1377.40                   | 79.25 S           | 86.30 E          | 117.00                      | 3.08                       |
| 1423.00                   | 19.200 | 129.000 | 1407.70                   | 85.74 S           | 94.28 E          | 127.28                      | 2.83                       |
| 1455.00                   | 20.000 | 128.100 | 1437.85                   | 92.43 S           | 102.68 E         | 138.02                      | 2.67                       |
| 1486.00                   | 20.600 | 128.400 | 1466.92                   | 99.09 S           | 111.12 E         | 148.77                      | 1.96                       |
| 1516.00                   | 21.200 | 129.000 | 1494.95                   | 105.78 S          | 119.47 E         | 159.47                      | 2.12                       |
| 1547.00                   | 22.000 | 128.400 | 1523.77                   | 112.92 S          | 128.38 E         | 170.88                      | 2.68                       |
| 1610.00                   | 23.200 | 127.700 | 1581.94                   | 127.83 S          | 147.45 E         | 195.08                      | 1.95                       |
| 1671.00                   | 23.800 | 125.800 | 1637.88                   | 142.38 S          | 166.94 E         | 219.38                      | 1.58                       |
| 1730.00                   | 24.500 | 126.500 | 1691.71                   | 156.62 S          | 186.43 E         | 243.47                      | 1.28                       |
| 1791.00                   | 24.000 | 130.900 | 1747.33                   | 172.27 S          | 205.97 E         | 268.51                      | 3.07                       |
| 1851.00                   | 23.200 | 132.300 | 1802.32                   | 188.21 S          | 223.94 E         | 292.51                      | 1.63                       |
| 1912.00                   | 20.100 | 133.200 | 1859.01                   | 203.48 S          | 240.47 E         | 314.98                      | 5.11                       |
| 1974.00                   | 19.500 | 127.900 | 1917.34                   | 217.13 S          | 256.40 E         | 335.95                      | 3.05                       |

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# Sperry-Sun Drilling Services

Survey Report for Rosa Unit # 185A - MWD Survey

Williams Production Company  
Mesa Verde Field

San Juan Co., NM  
Sec. 17-T31N-R06W

| Measured<br>Depth<br>(ft) | Incl.  | Azim.   | Vertical<br>Depth<br>(ft) | Northings<br>(ft) | Eastings<br>(ft) | Vertical<br>Section<br>(ft) | Dogleg<br>Rate<br>(* /100ft) |
|---------------------------|--------|---------|---------------------------|-------------------|------------------|-----------------------------|------------------------------|
| 2035.00                   | 19.900 | 127.700 | 1974.77                   | 229.73 S          | 272.65 E         | 356.51                      | 0.66                         |
| 2097.00                   | 22.000 | 129.200 | 2032.67                   | 243.53 S          | 290.00 E         | 378.67                      | 3.50                         |
| 2160.00                   | 22.900 | 125.100 | 2090.90                   | 258.03 S          | 309.17 E         | 402.69                      | 2.87                         |
| 2223.00                   | 23.700 | 126.500 | 2148.76                   | 272.61 S          | 329.38 E         | 427.56                      | 1.54                         |
| 2284.00                   | 24.200 | 128.100 | 2204.51                   | 287.62 S          | 349.08 E         | 452.30                      | 1.34                         |
| 2347.00                   | 24.400 | 132.100 | 2261.93                   | 304.31 S          | 368.89 E         | 478.21                      | 2.63                         |
| 2410.00                   | 25.100 | 132.100 | 2319.15                   | 322.00 S          | 388.46 E         | 504.56                      | 1.11                         |
| 2472.00                   | 25.000 | 131.600 | 2375.32                   | 339.51 S          | 408.02 E         | 530.79                      | 0.38                         |
| 2535.00                   | 23.000 | 130.000 | 2432.87                   | 356.26 S          | 427.40 E         | 556.40                      | 3.34                         |
| 2597.00                   | 23.400 | 131.100 | 2489.85                   | 372.14 S          | 445.96 E         | 580.82                      | 0.95                         |
| 2659.00                   | 23.100 | 130.500 | 2546.82                   | 388.13 S          | 464.49 E         | 605.29                      | 0.62                         |
| 2721.00                   | 21.800 | 132.100 | 2604.12                   | 403.75 S          | 482.28 E         | 628.95                      | 2.32                         |
| 2783.00                   | 21.500 | 132.600 | 2661.74                   | 419.16 S          | 499.18 E         | 651.79                      | 0.57                         |
| 2846.00                   | 22.000 | 134.600 | 2720.26                   | 435.26 S          | 516.08 E         | 675.07                      | 1.42                         |
| 2909.00                   | 22.400 | 133.900 | 2778.59                   | 451.87 S          | 533.13 E         | 698.80                      | 0.76                         |
| 2971.00                   | 22.800 | 132.300 | 2835.83                   | 468.15 S          | 550.53 E         | 722.57                      | 1.18                         |
| 3033.00                   | 23.400 | 132.100 | 2892.86                   | 484.48 S          | 568.55 E         | 746.87                      | 0.98                         |
| 3094.00                   | 23.300 | 130.400 | 2948.86                   | 500.42 S          | 586.73 E         | 771.03                      | 1.12                         |
| 3157.00                   | 23.600 | 130.500 | 3006.66                   | 516.69 S          | 605.80 E         | 796.10                      | 0.48                         |
| 3218.00                   | 23.900 | 129.400 | 3062.49                   | 532.46 S          | 624.64 E         | 820.66                      | 0.88                         |
| 3281.00                   | 22.800 | 131.200 | 3120.33                   | 548.61 S          | 643.69 E         | 845.63                      | 2.08                         |
| 3344.00                   | 21.300 | 133.300 | 3178.73                   | 564.49 S          | 661.20 E         | 869.25                      | 2.69                         |
| 3405.00                   | 21.100 | 131.900 | 3235.60                   | 579.43 S          | 677.43 E         | 891.27                      | 0.89                         |
| 3467.00                   | 21.600 | 131.500 | 3293.34                   | 594.44 S          | 694.29 E         | 913.83                      | 0.84                         |
| 3530.00                   | 22.900 | 129.500 | 3351.65                   | 609.92 S          | 712.43 E         | 937.67                      | 2.39                         |
| 3592.00                   | 22.800 | 128.800 | 3408.79                   | 625.12 S          | 731.10 E         | 961.75                      | 0.47                         |
| 3655.00                   | 23.000 | 129.000 | 3466.82                   | 640.52 S          | 750.18 E         | 986.26                      | 0.34                         |
| 3717.00                   | 23.600 | 128.600 | 3523.76                   | 655.88 S          | 769.29 E         | 1010.78                     | 1.00                         |
| 3780.00                   | 24.000 | 129.000 | 3581.41                   | 671.81 S          | 789.11 E         | 1036.20                     | 0.68                         |
| 3843.00                   | 22.500 | 130.500 | 3639.29                   | 687.71 S          | 808.23 E         | 1061.07                     | 2.56                         |
| 3905.00                   | 21.600 | 132.800 | 3696.75                   | 703.16 S          | 825.63 E         | 1084.33                     | 2.01                         |
| 3966.00                   | 21.300 | 131.100 | 3753.53                   | 718.08 S          | 842.21 E         | 1106.61                     | 1.13                         |
| 4030.00                   | 20.700 | 133.000 | 3813.28                   | 733.43 S          | 859.24 E         | 1129.52                     | 1.42                         |
| 4093.00                   | 20.800 | 133.300 | 3872.19                   | 748.70 S          | 875.53 E         | 1151.79                     | 0.23                         |
| 4154.00                   | 21.400 | 132.000 | 3929.10                   | 763.57 S          | 891.68 E         | 1173.72                     | 1.25                         |
| 4216.00                   | 22.100 | 131.900 | 3986.69                   | 778.93 S          | 908.77 E         | 1196.67                     | 1.13                         |
| 4279.00                   | 22.800 | 133.300 | 4044.91                   | 795.22 S          | 926.47 E         | 1220.69                     | 1.40                         |
| 4341.00                   | 22.900 | 133.900 | 4102.05                   | 811.82 S          | 943.91 E         | 1244.70                     | 0.41                         |
| 4403.00                   | 22.700 | 133.300 | 4159.20                   | 828.39 S          | 961.31 E         | 1268.66                     | 0.49                         |
| 4465.00                   | 22.400 | 133.100 | 4216.46                   | 844.66 S          | 978.64 E         | 1292.39                     | 0.50                         |

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# Sperry-Sun Drilling Services

Survey Report for Rosa Unit # 185A - MWD Survey

Williams Production Company  
Mesa Verde Field

San Juan Co., NM  
Sec. 17-T31N-R06W

| Measured<br>Depth<br>(ft) | Incl.  | Azim.   | Vertical<br>Depth<br>(ft) | Northings<br>(ft) | Eastings<br>(ft) | Vertical<br>Section<br>(ft) | Dogleg<br>Rate<br>(°/100ft) |
|---------------------------|--------|---------|---------------------------|-------------------|------------------|-----------------------------|-----------------------------|
| 4527.00                   | 20.800 | 135.300 | 4274.11                   | 860.56 S          | 995.01 E         | 1315.13                     | 2.89                        |
| 4589.00                   | 19.700 | 135.300 | 4332.28                   | 875.82 S          | 1010.10 E        | 1336.48                     | 1.77                        |
| 4651.00                   | 19.400 | 133.700 | 4390.70                   | 890.36 S          | 1024.90 E        | 1357.14                     | 0.99                        |
| 4714.00                   | 18.600 | 131.900 | 4450.27                   | 904.30 S          | 1039.94 E        | 1377.62                     | 1.57                        |
| 4777.00                   | 17.400 | 129.800 | 4510.19                   | 917.04 S          | 1054.66 E        | 1397.07                     | 2.17                        |
| 4838.00                   | 16.700 | 127.400 | 4568.51                   | 928.20 S          | 1068.63 E        | 1414.95                     | 1.63                        |
| 4900.00                   | 16.200 | 127.200 | 4627.97                   | 938.84 S          | 1082.59 E        | 1432.50                     | 0.81                        |
| 4962.00                   | 14.200 | 128.900 | 4687.80                   | 948.84 S          | 1095.40 E        | 1448.75                     | 3.30                        |
| 5024.00                   | 13.200 | 130.400 | 4748.03                   | 958.21 S          | 1106.71 E        | 1463.43                     | 1.71                        |
| 5087.00                   | 12.800 | 132.100 | 4809.42                   | 967.55 S          | 1117.37 E        | 1477.59                     | 0.88                        |
| 5150.00                   | 12.900 | 130.900 | 4870.84                   | 976.83 S          | 1127.86 E        | 1491.59                     | 0.45                        |
| 5212.00                   | 12.300 | 131.400 | 4931.35                   | 985.73 S          | 1138.05 E        | 1505.11                     | 0.98                        |
| 5424.00                   | 6.000  | 126.000 | 5140.55                   | 1007.20 S         | 1163.97 E        | 1538.78                     | 3.00                        |
| 5616.00                   | 1.750  | 121.000 | 5332.06                   | 1014.61 S         | 1174.61 E        | 1551.70                     | 2.22                        |
| 6123.00                   | 1.000  | 344.000 | 5838.99                   | 1014.34 S         | 1180.03 E        | 1555.71                     | 0.51                        |
| 8190.00                   | 0.500  | 279.000 | 7905.84                   | 995.59 S          | 1166.15 E        | 1533.08                     | 0.04                        |

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.  
Vertical depths are relative to RKB. Northings and Eastings are relative to Wellhead.

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Wellhead and calculated along an Azimuth of 129.452° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 8190.00ft.,  
The Bottom Hole Displacement is 1533.33ft., in the Direction of 130.489° (True).