

June 16, 1999

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

RECEIVED
JUN 21 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 #169A

Rig : Aztec #124

Field : Mesa Verde

Legal : Sec. 3 - T31N - R06W

County : Rio Arriba

State : New Mexico

PI # 30-089-26149

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**

Customer : Williams Production Company

Well : Rosa Unit #169A

Rig : Aztec #124

Field : Mesa Verde

Legal : Sec. 3 - T31N - R06W

County : Rio Arriba

State : New Mexico

Calculation Method :

Minimum Curvature

Magnetic Declination Applied :

11.3° East

Vertical Section Direction :

245.71° Azimuth

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

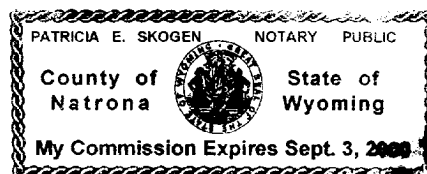
I, Craig Davis, having personal knowledge of all the facts, hereby certify that the above listed Directional Survey is true and correct as determined from all available Sperry-Sun Drilling Services records.

Craig Davis
Directional Drilling Coordinator

On this 16th day of June, 19 99, 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



SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Williams Production Co.
WELL:	Rosa Unit #169A
FIELD:	Mesa Verde
RIG:	Aztec #124
LEGALS:	Sec. 3 - T31N - R06W
COUNTY:	Rio Arriba
STATE:	New Mexico
CAL METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	11.3° East
VERTICAL SEC. DIR. :	245.71° Azimuth

SSDS Job Number :	CA-MJ-90037
Start Date of Job :	03/28/99
End Date of Job :	06/06/99
Lead Directional Driller:	J. Groom
Other SSDS DD's :	V. Swanson
SSDS MWD Engineers :	R. Scott

Main Hole =====>	1st Side Track =====>	2nd Side Track =====>	3rd Side Track =====>	4th Side Track =====>
Well Head	Tie On	Tie On	Tie On	Tie On
First Survey Depth	MWD			
Last Survey Depth	MWD			
KOP Depth/Sidetrack MD	KOP	KOP-ST1	KOP-ST2	KOP-ST3
First Survey Depth	SS	MWD	MWD	MWD
Last Survey Depth	SS	MWD	MWD	MWD
Bit Extrapolation to TD	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 :	Print Name :
Sign Name :	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
Rio Arriba Co., NM
Sec. 3 - T31N - R06W
Rosa Unit #169A - MWD/SS Survey***

SURVEY REPORT

6 June, 1999

Your Ref: 90037

sperry-sun
DRILLING SERVICES
A DIVISION OF HESSCOR INDUSTRIES, INC.

Survey Ref: svy1459

Sperry-Sun Drilling Services

Survey Report for Rosa Unit #169A - MWD/SS Survey

Your Ref: 90037



Williams Production Company
Mesa Verde Field

Rio Arriba Co., NM
Sec. 3 - T31N - R06W

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	
511.00	0.000	0.000	511.00	0.00 N	0.00 E	0.00	0.000
544.34	2.400	237.300	544.33	0.38 S	0.59 W	0.69	7.199
575.34	3.600	226.600	575.29	1.40 S	1.84 W	2.25	4.255
606.30	4.000	223.300	606.18	2.85 S	3.29 W	4.17	1.472
637.33	4.200	232.000	637.13	4.34 S	4.93 W	6.27	2.103
668.33	4.200	231.900	668.05	5.74 S	6.71 W	8.48	0.024
699.34	4.600	230.800	699.97	7.22 S	8.57 W	10.78	1.318
729.89	5.200	239.100	729.40	8.71 S	10.71 W	13.34	3.035
760.94	5.800	230.500	760.31	10.43 S	13.13 W	16.25	3.278
792.34	7.700	238.000	791.49	12.55 S	16.13 W	19.87	6.658
823.27	8.700	237.700	822.11	14.90 S	19.87 W	24.24	3.236
854.67	8.700	234.000	853.15	17.57 S	23.80 W	28.92	1.782
885.77	8.800	235.700	883.88	20.29 S	27.67 W	33.56	0.892
917.22	10.000	235.000	914.91	23.21 S	31.89 W	38.62	3.833
948.38	11.100	237.100	945.54	26.39 S	36.62 W	44.24	3.739
980.12	11.400	239.600	976.67	29.64 S	41.90 W	50.38	1.804
1011.79	11.900	244.700	1007.69	32.62 S	47.55 W	56.76	3.613
1042.39	11.800	244.400	1037.64	35.32 S	53.22 W	63.04	0.384
1073.59	12.800	248.600	1068.12	37.96 S	59.32 W	69.68	4.299
1104.59	13.400	247.000	1098.32	40.62 S	65.82 W	76.70	2.261
1135.44	14.300	244.900	1128.27	43.63 S	72.56 W	84.08	3.341
1166.05	15.100	243.600	1157.88	47.00 S	79.56 W	91.85	2.827
1197.88	16.500	243.500	1188.50	50.87 S	87.32 W	100.51	4.399
1228.90	17.200	244.200	1218.19	54.83 S	95.39 W	109.50	2.349
1260.15	17.800	245.200	1248.00	58.84 S	103.88 W	118.89	2.148
1291.15	18.400	245.600	1277.46	62.85 S	112.64 W	128.52	1.977
1322.40	19.100	245.200	1307.05	67.03 S	121.77 W	138.57	2.277
1353.32	19.600	245.200	1336.23	71.33 S	131.07 W	148.81	1.617
1383.95	20.700	244.500	1364.98	75.82 S	140.62 W	159.36	3.676
1412.65	21.200	245.800	1391.78	80.13 S	149.93 W	169.62	2.379
1442.00	22.200	244.700	1419.05	84.67 S	159.79 W	180.47	3.678
1473.34	23.000	246.100	1447.99	89.68 S	170.74 W	192.52	3.076
1502.84	24.100	244.700	1475.03	94.59 S	181.45 W	204.30	4.183
1533.33	24.700	245.400	1502.80	99.90 S	192.87 W	216.90	2.184
1564.11	24.800	244.700	1530.75	105.34 S	204.56 W	229.78	1.006
1595.44	25.600	245.000	1559.10	111.01 S	216.63 W	243.12	2.586
1626.81	26.500	244.200	1587.28	116.92 S	229.08 W	256.89	3.080
1657.45	27.100	244.900	1614.63	122.85 S	241.55 W	270.70	2.213
1687.74	27.900	244.500	1641.50	128.83 S	254.19 W	284.69	2.711

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa Unit #169A - MWD/SS Survey

Your Ref: 90037



Williams Production Company
Mesa Verde Field

Rio Arriba Co., NM
Sec. 3 - T31N - R06W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
1719.40	28.400	245.800	1669.41	135.11 S	267.75 W	299.62	2.499
1750.00	29.300	246.300	1696.21	141.10 S	281.24 W	314.39	3.045
1781.32	30.100	246.100	1723.42	147.36 S	295.44 W	329.90	2.574
1812.60	30.800	245.600	1750.39	153.85 S	309.90 W	345.76	2.380
1843.90	31.800	245.600	1777.13	160.57 S	324.71 W	362.02	3.195
1874.81	32.400	243.800	1803.31	167.59 S	339.56 W	378.44	3.653
1906.36	33.500	243.600	1829.79	175.19 S	354.94 W	395.59	3.504
1937.66	34.300	243.300	1855.77	182.99 S	370.56 W	413.03	2.611
1968.84	34.800	242.600	1881.45	191.04 S	386.31 W	430.69	2.048
1998.52	35.800	242.100	1905.67	199.00 S	401.50 W	447.81	3.507
2029.84	36.600	242.900	1930.95	207.54 S	417.91 W	466.28	2.966
2060.96	37.100	242.800	1955.85	216.05 S	434.51 W	484.92	1.618
2091.96	37.200	243.100	1980.56	224.57 S	451.19 W	503.62	0.668
2123.56	36.800	243.500	2005.79	233.11 S	468.18 W	522.62	1.477
2154.75	35.800	241.200	2030.93	241.67 S	484.53 W	541.05	5.416
2185.90	35.800	242.400	2056.20	250.28 S	500.59 W	559.23	2.253
2215.75	35.800	242.100	2080.41	258.41 S	516.04 W	576.66	0.588
2247.42	35.300	241.700	2106.17	267.09 S	532.29 W	595.03	1.741
2278.45	35.400	241.700	2131.48	275.60 S	548.09 W	612.94	0.322
2309.00	34.400	241.200	2156.54	283.95 S	563.45 W	630.37	3.405
2338.38	35.000	243.500	2180.69	291.71 S	578.26 W	647.07	4.902
2369.33	35.400	243.600	2205.98	299.66 S	594.23 W	664.89	1.306
2401.18	35.300	243.500	2231.96	307.86 S	610.73 W	683.31	0.363
2429.81	35.400	246.600	2255.32	314.85 S	625.75 W	699.87	6.274
2461.12	35.600	246.100	2280.81	322.14 S	642.40 W	718.05	1.126
2490.07	35.500	246.100	2304.36	328.96 S	657.79 W	734.88	0.345
2520.26	34.400	246.500	2329.10	335.91 S	673.63 W	752.17	3.722
2550.06	34.800	248.000	2353.63	342.46 S	689.23 W	769.09	3.158
2580.96	34.400	247.300	2379.07	349.13 S	705.46 W	786.62	1.825
2612.73	34.100	247.900	2405.33	355.94 S	721.99 W	804.49	1.422
2644.16	34.400	246.800	2431.31	362.75 S	738.31 W	822.17	2.189
2675.81	34.400	246.600	2457.42	369.83 S	754.74 W	840.05	0.357
2707.77	34.500	246.500	2483.78	377.02 S	771.32 W	858.13	0.359
2739.67	34.600	246.600	2510.05	384.22 S	787.92 W	876.22	0.360
2770.98	34.400	245.400	2535.86	391.43 S	804.12 W	893.95	2.263
2801.51	35.000	246.300	2560.96	398.54 S	819.98 W	911.33	2.584
2833.29	34.800	246.300	2587.02	405.85 S	836.63 W	929.51	0.629
2864.11	34.100	245.600	2612.44	412.96 S	852.55 W	946.95	2.609
2895.97	33.600	245.400	2638.90	420.31 S	868.70 W	964.69	1.608
2926.64	33.600	245.800	2664.44	427.33 S	884.15 W	981.67	0.722

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa Unit #169A - MWD/SS Survey

Your Ref: 90037



Williams Production Company
Mesa Verde Field

Rio Arriba Co., NM
Sec. 3 - T31N - R06W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2957.53	34.300	245.900	2690.07	434.38 S	899.90 W	996.92	2.273
2987.71	34.400	246.600	2714.98	441.24 S	915.48 W	1015.95	1.350
3019.32	34.000	247.300	2741.13	448.20 S	931.83 W	1033.71	1.775
3050.75	33.000	246.300	2767.34	455.03 S	947.78 W	1051.05	3.634
3082.37	33.600	245.000	2793.76	462.19 S	963.59 W	1068.41	2.949
3113.74	34.500	245.400	2819.76	469.56 S	979.53 W	1085.98	2.956
3145.61	35.100	244.500	2845.93	477.26 S	996.01 W	1104.16	2.478
3175.57	36.100	244.900	2870.29	484.71 S	1011.78 W	1121.60	3.427
3207.40	36.900	245.000	2895.87	492.73 S	1028.93 W	1140.53	2.520
3237.94	36.600	245.600	2920.34	500.36 S	1045.53 W	1158.80	1.532
3269.84	35.200	245.900	2946.18	508.05 S	1062.59 W	1177.51	4.423
3300.97	34.800	244.700	2971.68	515.51 S	1078.81 W	1195.36	2.557
3332.22	34.700	244.400	2997.36	523.16 S	1094.89 W	1213.17	0.634
3363.49	34.600	244.500	3023.08	530.83 S	1110.93 W	1230.95	0.368
3393.85	34.300	246.300	3048.12	537.98 S	1126.54 W	1248.12	3.496
3425.52	35.200	248.000	3074.14	544.98 S	1143.18 W	1266.16	4.176
3455.35	35.400	248.600	3098.49	551.36 S	1159.20 W	1283.38	1.342
3486.50	35.800	248.200	3123.81	558.03 S	1176.05 W	1301.49	1.486
3517.00	37.100	245.800	3148.35	565.12 S	1192.73 W	1319.61	6.326
3548.01	37.900	244.700	3172.95	573.02 S	1209.87 W	1338.48	3.364
3579.90	37.600	246.800	3198.17	581.04 S	1227.67 W	1358.00	4.140
3611.25	37.400	246.300	3223.04	588.64 S	1245.18 W	1377.09	1.162
3641.60	37.100	247.500	3247.20	595.84 S	1262.08 W	1395.45	2.589
3673.21	36.600	246.300	3272.49	603.28 S	1279.51 W	1414.41	2.772
3703.55	36.000	245.600	3296.94	610.60 S	1295.91 W	1432.37	2.403
3733.55	36.500	245.200	3321.14	617.98 S	1312.04 W	1450.11	1.844
3766.97	35.800	243.600	3348.12	626.50 S	1329.82 W	1469.81	3.516
3797.58	35.300	240.100	3373.03	634.89 S	1345.51 W	1487.56	6.845
3827.51	35.800	240.300	3397.38	643.54 S	1360.61 W	1504.88	1.715
3858.51	36.600	238.700	3422.40	652.83 S	1376.38 W	1523.08	3.994
4060.00	28.500	243.300	3592.12	705.73 S	1470.83 W	1630.93	4.201
4141.00	24.500	246.300	3664.60	721.17 S	1503.48 W	1667.05	5.206
4205.00	21.500	248.300	3723.51	730.85 S	1526.54 W	1692.04	4.843
4301.00	19.500	252.300	3813.43	742.22 S	1558.15 W	1725.53	2.542
4396.00	19.000	258.300	3903.13	750.18 S	1588.40 W	1756.38	2.147
4492.00	18.500	263.300	3994.04	755.13 S	1618.83 W	1786.15	1.753
4587.00	19.000	271.300	4084.01	756.54 S	1649.27 W	1814.47	2.755
4681.00	19.000	279.300	4172.90	753.71 S	1679.67 W	1841.02	2.769
4774.00	19.000	287.300	4260.85	746.76 S	1709.07 W	1864.96	2.799
4869.00	18.500	295.300	4350.83	735.72 S	1737.47 W	1886.30	2.755

Continued...

Sperry-Sun Drilling Services

Survey Report for Rosa Unit #169A - MWD/SS Survey

Your Ref: 90037



Williams Production Company
Mesa Verde Field

Rio Arriba Co., NM
Sec. 3 - T31N - R06W

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4964.00	15.500	299.300	4441.67	723.07 S	1762.17 W	1903.61	3.388
5091.00	14.250	305.300	4564.42	705.73 S	1789.73 W	1921.60	1.561
5220.00	11.000	313.300	4690.29	688.11 S	1811.65 W	1934.33	2.855
5347.00	8.250	316.300	4815.49	673.21 S	1826.77 W	1941.98	2.200
5474.00	7.000	320.300	4941.37	660.66 S	1838.01 W	1947.06	1.069
5726.00	6.250	321.300	5191.68	638.14 S	1856.39 W	1954.56	0.301
5981.00	4.250	320.300	5445.60	620.04 S	1871.11 W	1960.52	0.785
6235.00	4.000	328.300	5698.94	605.26 S	1881.77 W	1964.17	0.247
6486.00	3.250	316.300	5949.44	592.67 S	1891.29 W	1967.66	0.423
6552.00	3.500	326.300	6015.33	589.64 S	1893.70 W	1968.61	0.967
6607.09	3.500	326.300	6070.32	586.84 S	1895.57 W	1969.16	0.000

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Mean Sea Level. Northings and Eastings are relative to Global Coordinates.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 245.710° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 6607.09ft.,
The Bottom Hole Displacement is 1984.33ft., in the Direction of 252.798° (True).

After talking with David Spitz and Perry Cates about lengthing survey stations on the drop section of the well. Perry suggested surveying every 8 joints roughly every 250'. The New Mexico Oil & Gas Division was contacted and talked to Frank Chavez at home (505-334-2709) this call took place at 10:00 am on 6-5-99. He was told that Williams Prod. was drilling a deviated S- well and that tools were in the drop section of the well and were not aware of survey station requirements. Frank said go ahead and go to 250' stations and to document his permission on final survey reports.

Continued...