

Williams Production Company
New Mexico
Rio Arriba County
Sec. 14-T31N-R06W
Rosa Unit #214-A - MWD Survey

Halliburton Sperry-Drilling Survey Report

26 May, 2005

Surface Coordinates: 2148522.48 N, 616384.68 E (36° 54' 14.0000" N, 107° 26' 07.0000" W)
Grid Coordinate System: NAD27 New Mexico State Planes, Western Zone

Surface Coordinates relative to Global Coordinates: 643531.36 N, 318703.92 E (Grid)
Surface Coordinates relative to Structure: 1090.00 S, 1540.00 E (True)
Kelly Bushing Elevation: 6388.00ft above Mean Sea Level
Kelly Bushing Elevation: 6388.00ft above Structure

Survey Ref: svy8513

30-039-29520

Sec 14 31N 06W

Surface 1050/N

1540/W

BHL 1543/N

1649/W

MD 3105

TVD 3044

HALLIBURTON

Sperry Drilling Services

Survey Report for Sec. 14-T31N-R06W - Rosa Unit #214-A - MWD Survey

Measure Depth (ft)	Incl. Angle (Deg)	Drift Direction (Deg)	True Vertical Depth	Vertical Section (ft)	Local Coordinates		Dogleg Severit (°/100ft)	Lease Calls		Global Coordinates	
					N-S (ft)	E-W (ft)		FNL-FSL (ft)	FEL-FWL (ft)	Grid Y (ft)	Grid X (ft)
0.00	0.000	0.000	0.00	0.00	0.00 N	0.00 E		1090.00 FNL	1540.00 FWL	2148522.48 N	616384.68 E
348.00	0.910	195.610	347.99	2.47	2.66 S	0.74 W	0.26	1092.67 FNL	1539.26 FWL	2148519.82 N	616383.95 E
379.00	1.200	194.910	378.98	2.98	3.21 S	0.89 W	0.94	1093.22 FNL	1539.11 FWL	2148519.27 N	616383.80 E
410.00	1.230	195.890	409.97	3.57	3.85 S	1.07 W	0.12	1093.85 FNL	1538.93 FWL	2148518.63 N	616383.63 E
441.00	2.370	183.920	440.96	4.48	4.81 S	1.20 W	3.85	1094.81 FNL	1538.80 FWL	2148517.67 N	616383.50 E
472.00	2.710	184.850	471.93	5.81	6.18 S	1.31 W	1.10	1096.18 FNL	1538.69 FWL	2148516.30 N	616383.40 E
502.00	3.480	180.230	501.88	7.38	7.79 S	1.37 W	2.70	1097.80 FNL	1538.63 FWL	2148514.69 N	616383.34 E
533.00	4.200	172.780	532.81	9.44	9.86 S	1.23 W	2.82	1099.86 FNL	1538.77 FWL	2148512.62 N	616383.49 E
564.00	4.750	172.270	563.72	11.85	12.26 S	0.92 W	1.78	1102.26 FNL	1539.08 FWL	2148510.22 N	616383.82 E
595.00	5.710	170.340	594.59	14.67	15.05 S	0.49 W	3.15	1105.05 FNL	1539.51 FWL	2148507.43 N	616384.26 E
626.00	6.420	172.440	625.42	17.95	18.29 S	0.00 E	2.40	1108.29 FNL	1540.00 FWL	2148504.20 N	616384.76 E
657.00	7.380	170.160	656.19	21.67	21.97 S	0.57 E	3.22	1111.97 FNL	1540.57 FWL	2148500.52 N	616385.34 E
688.00	8.170	168.580	686.91	25.86	26.09 S	1.35 E	2.64	1116.09 FNL	1541.34 FWL	2148496.40 N	616386.14 E
719.00	8.960	165.590	717.56	30.47	30.59 S	2.38 E	2.92	1120.59 FNL	1542.38 FWL	2148491.91 N	616387.19 E
750.00	9.580	168.930	748.16	35.46	35.46 S	3.48 E	2.65	1125.46 FNL	1543.48 FWL	2148487.04 N	616388.31 E
780.00	10.460	167.350	777.70	40.68	40.56 S	4.56 E	3.07	1130.57 FNL	1544.55 FWL	2148481.94 N	616389.41 E
811.00	10.990	164.710	808.16	46.44	46.16 S	5.95 E	2.33	1136.16 FNL	1545.95 FWL	2148476.35 N	616390.82 E
842.00	11.780	165.940	838.55	52.55	52.08 S	7.50 E	2.67	1142.08 FNL	1547.50 FWL	2148470.44 N	616392.40 E
873.00	12.740	166.470	868.84	59.12	58.47 S	9.07 E	3.12	1148.48 FNL	1549.07 FWL	2148464.05 N	616393.99 E
904.00	13.450	167.170	899.03	66.14	65.31 S	10.67 E	2.35	1155.32 FNL	1550.67 FWL	2148457.22 N	616395.62 E
966.00	13.890	167.350	959.28	80.79	79.60 S	13.90 E	0.71	1169.61 FNL	1553.90 FWL	2148442.94 N	616398.91 E
1028.00	14.060	165.940	1019.44	95.75	94.17 S	17.36 E	0.61	1184.17 FNL	1557.36 FWL	2148428.39 N	616402.43 E
1089.00	13.710	167.000	1078.66	110.37	108.40 S	20.79 E	0.71	1198.40 FNL	1560.79 FWL	2148414.17 N	616405.92 E
1151.00	13.800	167.170	1138.88	125.11	122.77 S	24.08 E	0.16	1212.77 FNL	1564.08 FWL	2148399.82 N	616409.27 E
1212.00	13.890	167.170	1198.11	139.70	137.00 S	27.33 E	0.15	1227.01 FNL	1567.32 FWL	2148385.60 N	616412.57 E

Measure Depth (ft)	Incl. Angle (Deg)	Drift Direction (Deg)	True Vertical Depth	Vertical Section (ft)	Local Coordinates N-S (ft)	E-W (ft)	Dogleg Severit (°/100ft)	Lease Calls FNL-FSL (ft)	FEL-FWL (ft)	Global Coordinates Grid Y (ft)	Grid X (ft)
1275.00	13.270	168.050	1259.35	154.49	151.45 S	30.50 E	1.04	1241.45 FNL	1570.50 FWL	2148371.16 N	616415.81 E
1338.00	12.920	170.860	1320.71	168.76	165.47 S	33.12 E	1.15	1255.48 FNL	1573.12 FWL	2148357.15 N	616418.48 E
1400.00	12.740	175.080	1381.16	182.48	179.13 S	34.81 E	1.54	1269.13 FNL	1574.81 FWL	2148343.50 N	616420.23 E
1463.00	13.620	175.080	1442.50	196.76	193.44 S	36.04 E	1.40	1283.45 FNL	1576.04 FWL	2148329.19 N	616421.52 E
1526.00	14.240	171.570	1503.65	211.88	208.50 S	37.81 E	1.66	1298.50 FNL	1577.81 FWL	2148314.15 N	616423.35 E
1589.00	14.680	171.740	1564.65	227.59	224.06 S	40.10 E	0.70	1314.07 FNL	1580.10 FWL	2148298.59 N	616425.70 E
1651.00	14.770	169.630	1624.62	243.34	239.61 S	42.65 E	0.88	1329.61 FNL	1582.65 FWL	2148283.05 N	616428.32 E
1713.00	14.500	165.410	1684.61	258.99	254.90 S	46.03 E	1.77	1344.90 FNL	1586.03 FWL	2148267.78 N	616431.76 E
1776.00	14.240	162.070	1745.64	274.55	269.90 S	50.40 E	1.38	1359.91 FNL	1590.40 FWL	2148252.79 N	616436.19 E
1839.00	13.890	162.950	1806.75	289.77	284.50 S	55.00 E	0.65	1374.51 FNL	1595.00 FWL	2148238.21 N	616440.86 E
1900.00	13.010	166.640	1866.08	303.91	298.18 S	58.74 E	2.01	1388.19 FNL	1598.74 FWL	2148224.55 N	616444.65 E
1964.00	12.830	165.760	1928.46	318.21	312.08 S	62.15 E	0.42	1402.08 FNL	1602.15 FWL	2148210.66 N	616448.12 E
2027.00	12.920	168.230	1989.87	332.23	325.75 S	65.31 E	0.89	1415.76 FNL	1605.31 FWL	2148197.00 N	616451.33 E
2089.00	13.360	168.230	2050.25	346.33	339.55 S	68.19 E	0.71	1429.56 FNL	1608.18 FWL	2148183.22 N	616454.27 E
2151.00	13.800	168.230	2110.52	360.88	353.80 S	71.16 E	0.71	1443.81 FNL	1611.16 FWL	2148168.98 N	616457.30 E
2214.00	14.300	168.520	2171.63	376.18	368.78 S	74.24 E	0.80	1458.79 FNL	1614.24 FWL	2148154.01 N	616460.44 E
2277.00	14.210	169.220	2232.69	391.69	384.00 S	77.23 E	0.31	1474.01 FNL	1617.23 FWL	2148138.80 N	616463.50 E
2340.00	13.960	169.260	2293.80	407.02	399.07 S	80.10 E	0.40	1489.07 FNL	1620.10 FWL	2148123.75 N	616466.42 E
2402.00	13.170	168.090	2354.07	421.56	413.33 S	82.95 E	1.35	1503.33 FNL	1622.95 FWL	2148109.50 N	616469.33 E
2465.00	13.340	168.390	2415.39	436.01	427.47 S	85.89 E	0.29	1517.47 FNL	1625.89 FWL	2148095.37 N	616472.34 E
2528.00	13.610	172.850	2476.66	450.67	441.94 S	88.28 E	1.70	1531.95 FNL	1628.28 FWL	2148080.91 N	616474.78 E
2591.00	13.840	173.440	2537.86	465.58	456.78 S	90.06 E	0.43	1546.79 FNL	1630.06 FWL	2148066.08 N	616476.63 E
2654.00	13.700	170.960	2599.05	480.54	471.64 S	92.10 E	0.96	1561.64 FNL	1632.10 FWL	2148051.23 N	616478.72 E
2686.00	14.050	170.440	2630.11	488.21	479.21 S	93.34 E	1.16	1569.21 FNL	1633.34 FWL	2148043.66 N	616479.99 E
2717.00	13.050	168.910	2660.25	495.47	486.35 S	94.64 E	3.43	1576.36 FNL	1634.64 FWL	2148036.53 N	616481.32 E
2749.00	12.090	165.550	2691.48	502.43	493.14 S	96.17 E	3.77	1583.15 FNL	1636.17 FWL	2148029.74 N	616482.88 E
2779.00	11.440	162.690	2720.85	508.53	499.03 S	97.84 E	2.91	1589.03 FNL	1637.84 FWL	2148023.86 N	616484.58 E
2810.00	10.630	162.100	2751.28	514.42	504.88 S	99.63 E	2.64	1594.69 FNL	1639.63 FWL	2148018.22 N	616486.39 E
2842.00	9.750	158.520	2782.78	520.02	510.01 S	101.53 E	3.39	1600.02 FNL	1641.53 FWL	2148012.89 N	616488.31 E
2873.00	9.590	159.060	2813.33	525.15	514.87 S	103.42 E	0.59	1604.87 FNL	1643.42 FWL	2148008.05 N	616490.22 E

Measure Depth (ft)	Incl. Angle (Deg)	Drift Direction (Deg)	True Vertical Depth	Vertical Section (ft)	Local Coordinates N-S (ft)	E-W (ft)	Dogleg Severit (°/100ft)	Lease Calls FNL-FSL (ft)	FEL-FWL (ft)	Global Coordinates Grid Y (ft)	Grid X (ft)
2905.00	9.150	160.670	2844.91	530.29	519.76 S	105.21 E	1.60	1609.76 FNL	1645.21 FWL	2148003.16 N	616492.03 E
2937.00	8.430	162.550	2876.53	535.14	524.40 S	106.76 E	2.42	1614.40 FNL	1646.76 FWL	2147998.53 N	616493.60 E
2968.00	7.520	166.470	2907.23	539.42	528.54 S	107.91 E	3.42	1618.54 FNL	1647.91 FWL	2147994.40 N	616494.77 E
3000.00	6.420	174.860	2939.00	543.30	532.35 S	108.56 E	4.68	1622.36 FNL	1648.56 FWL	2147990.58 N	616495.44 E
3031.00	5.600	181.680	2969.83	546.50	535.59 S	108.68 E	3.50	1625.60 FNL	1648.67 FWL	2147987.34 N	616495.56 E

last MWD survey

3054.00	5.360	180.350	2992.72	548.64	537.79 S	108.64 E	1.18	1627.79 FNL	1648.63 FWL	2147985.15 N	616495.53 E
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projection to end run

3105.00	5.360	180.350	3043.50	553.31	542.55 S	108.61 E	0.00	1632.56 FNL	1648.61 FWL	2147980.38 N	616495.52 E
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All data is in Feet (US) unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to RKB(6373' +15' KB). Northings and Eastings are relative to Wellhead.

Based upon Minimum Curvature type calculations, at a Measured Depth of 3105.00ft.,
The Bottom Hole Displacement is 553.32ft., in the Direction of 168.683° (True).

HALLIBURTON

Sperry Drilling Services

Williams Production Company
New Mexico
Rio Arriba County

Survey Report for Sec. 14-T31N-R06W - Rosa Unit #214-A - MWD Survey

Comments

Measured Depth (ft)	Station Coordinates		Comment
	TVD (ft)	Northings (ft)	
3054.00	2992.72	537.79 S	108.64 E last MWD survey
3105.00	3043.50	542.55 S	108.61 E projection to end run

North Reference Sheet for Sec. 14-T31N-R06W - Rosa Unit #214-A

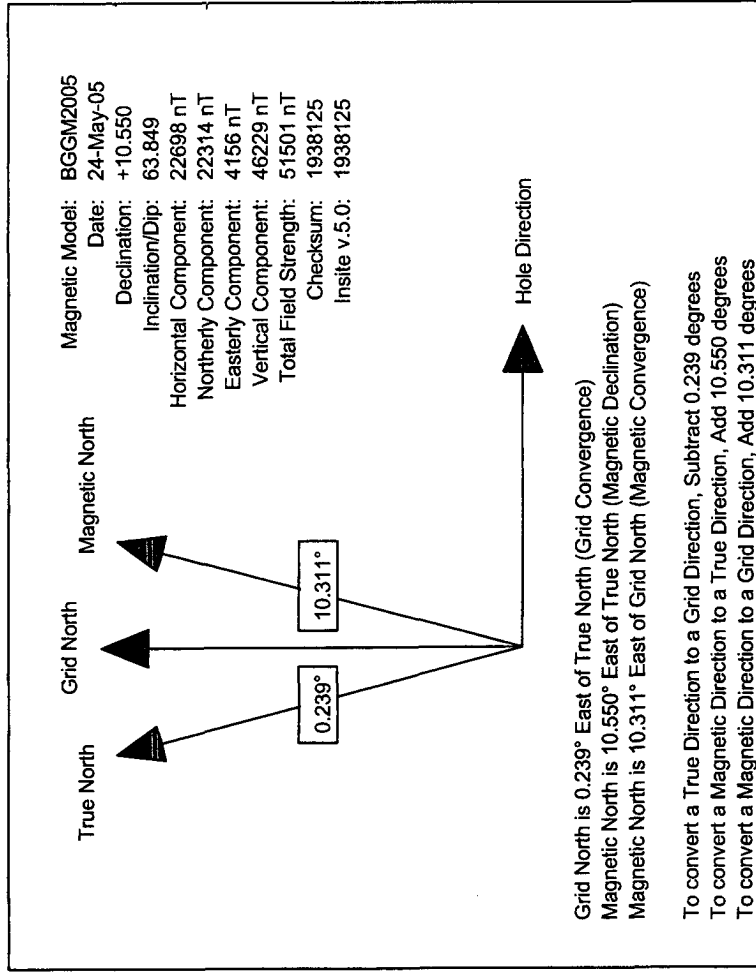
Coordinate System is NAD27 New Mexico State Planes, Western Zone, US Foot
Source: Snyder, J.P., 1987, Map Projections - A Working Manual

Datum is North American Datum of 1927 (US48, AK, HI, and Canada)

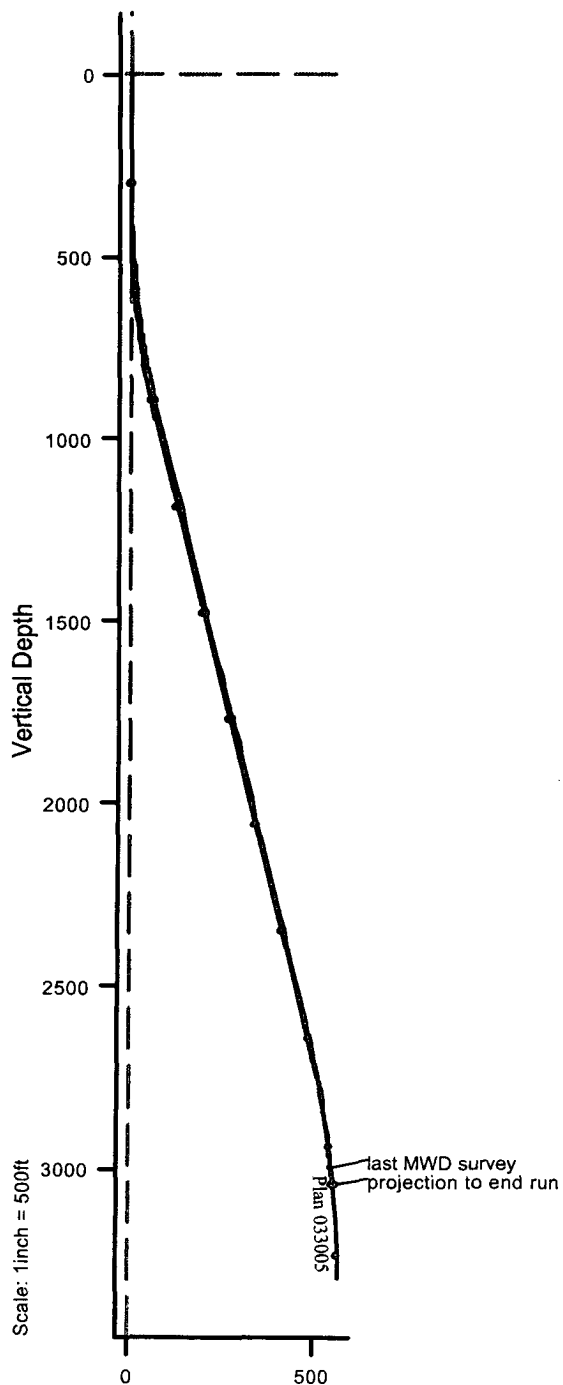
Spheroid is Clarke - 1866
Equatorial Radius: 6378206.400m.
Polar Radius: 6356583.800m.
Inverse Flattening: 294.978698213901

Projection method is Transverse Mercator or Gauss Kruger Projection
Central Meridian is -107.833°
Longitude Origin: 0.000°
Latitude Origin: 31.000°
False Easting: 152400.00m
False Northing: 0.00m
Scale Reduction: 0.99991667

Grid Coordinates of Well: 2148522.48 N, 616384.68 E
Geographical Coordinates of Well: 36° 54' 14.0000" N, 107° 26' 07.0000" W
Surface Elevation of Well: 6388.00ft
Grid Convergence at Surface is +0.239°
Magnetic Declination at Surface is +10.550° (24 May, 2005)

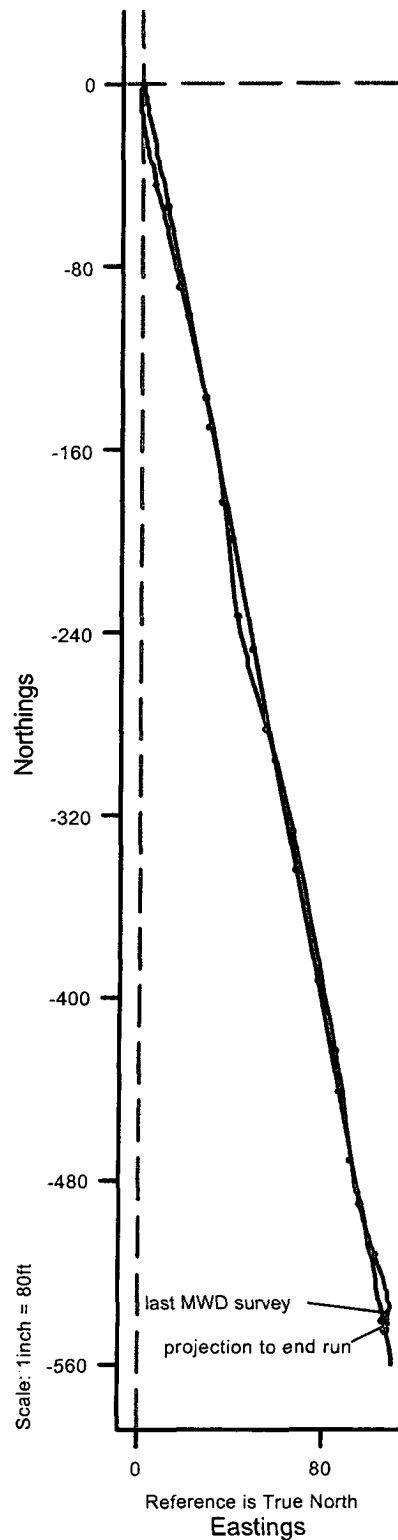


New Mexico
Rio Arriba County
Sec. 14-T31N-R06W
Rosa Unit #214-A



Section Azimuth: 168.887° (True North)

Vertical Section



Prepared by:
Dennis Cook

Date/Time:
26 May, 2005 - 7:09

Checked:

Approved:

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
PO Drawer 00, Artesia, NM 88211-0719

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-102
Revised February 21, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number	*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 17033	*Property Name ROSA UNIT	*Well Number 214A
*OGRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY	*Elevation 6373'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	14	31N	6W		1090	NORTH	1540	WEST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	14	31N	6W		1650	NORTH	1650	WEST	RIO ARriba

¹² Dedicated Acres 320.0 Acres - (W/2)	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

