

30-039-29608

Weatherford Drilling Services

Definitive Survey Report



Weatherford

Company: WILLIAMS PRODUCTION Field: RIO ARRIBA COUNTY (NAD 27) Site: Rosa Unit 239-A Well: Rosa Unit No. 239A Wellpath: Definitive Survey Wellpath				Date: 7/12/2006 Co-ordinate(NE) Reference: Site: Rosa Unit 239-A, True North Vertical (TVD) Reference: SITE 6248.0 Section (VS) Reference: Well (0.00N,0.00E,3.85Azi) Survey Calculation Method: Minimum Curvature				Time: 10:06:01 Page: 1	
Survey: Wft EM-MWD Survey Company: Weatherford Drilling Services Tool:				Start Date: 7/1/2006 Engineer: Lee Hoffpaur Tied-to: From Surface					
Well: Rosa Unit No. 239A Section 2 T 31N Range 6W Well Position: +N/-S 0.00 ft Northing: 2155107.05 ft +E/-W 0.00 ft Easting: 619036.81 ft Position Uncertainty: 0.00 ft				Slot Name: Latitude: 36 55 19.000 N Longitude: 107 25 34.000 W					
Targets									
Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude → Deg Min Sec	← Longitude → Deg Min Sec
Plan 1_EOB_39.0°			1301.44	318.50	21.42	2155425.64	619056.87	36 55 22.149 N	107 25 33.736 W
Plan 1_Start Drop			1719.07	855.82	44.12	2155763.16	619078.13	36 55 25.486 N	107 25 33.457 W
Int. Cs. Pt.			2913.00	1077.76	72.49	2156185.12	619104.70	36 55 29.857 N	107 25 33.107 W
-Circle (Radius: 50)									
PBHL			3153.00	1077.76	72.49	2156185.12	619104.70	36 55 29.857 N	107 25 33.107 W
Annotation									
MD ft	TVD ft								
337.00	337.00	Assume Vertical at 9-5/8" Casing Shoe							
378.00	378.00	378' SMD_Start Wft EM-MWD Survey on 07-01-06.							
3161.00	2865.66	3161' SMD_Final Wft EM-MWD Survey on 07-11-06.							
3205.00	2909.62	3205' MD_Projection to Bit at well TD on 07-11-06.							
Survey									
MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.00	0.00	0.00	337.00	0.00	0.00	0.00	0.00	0.00	0.00
378.00	1.00	172.75	378.00	-0.35	-0.35	0.05	2.44	0.36	172.75
439.00	1.19	43.62	438.99	-0.39	-0.42	0.55	3.24	0.69	127.69
500.00	3.63	26.25	499.93	1.89	1.77	1.84	4.13	2.55	46.18
561.00	7.00	17.87	560.66	7.28	7.04	3.84	5.65	8.02	28.59
623.00	10.13	16.37	621.97	16.27	15.87	6.53	5.06	17.16	22.38
684.00	13.00	15.62	681.72	28.23	27.62	9.89	4.71	29.34	19.70
743.00	16.56	6.87	738.77	43.13	42.37	12.69	7.11	44.23	16.67
804.00	17.06	0.12	797.17	60.74	59.95	13.75	3.30	61.50	12.91
865.00	16.75	0.50	855.53	78.44	77.69	13.84	0.54	78.91	10.10
925.00	19.31	2.50	912.58	96.99	96.25	14.35	4.39	97.31	8.48
985.00	21.75	6.00	968.77	118.02	117.22	15.94	4.55	118.30	7.75
1045.00	24.13	7.37	1024.02	141.38	140.44	18.68	4.07	141.68	7.58
1106.00	26.31	7.87	1079.20	167.31	166.20	22.13	3.59	167.67	7.58
1168.00	29.56	8.25	1133.97	196.27	194.95	26.21	5.25	196.71	7.66
1230.00	33.19	6.00	1186.90	228.49	226.98	30.18	6.15	228.97	7.57
1293.00	36.25	5.37	1238.67	264.35	262.68	33.72	4.89	264.84	7.32
1354.00	38.31	4.87	1287.21	301.29	299.48	37.02	3.41	301.76	7.05
1372.20	38.78	3.93	1301.44	312.63	310.78	37.89	4.12	313.09	6.95
1416.00	39.94	1.75	1335.31	340.40	338.53	39.26	4.12	340.79	6.61
1479.00	41.13	0.00	1383.19	381.28	379.46	39.87	2.61	381.55	6.00
1541.00	41.38	0.25	1429.80	422.08	420.34	39.96	0.48	422.24	5.43
1604.00	40.31	358.25	1477.46	463.14	461.54	39.43	2.68	463.22	4.88
1697.00	39.81	357.62	1548.64	522.68	521.35	37.28	0.69	522.68	4.09
1759.00	39.94	357.75	1596.22	562.20	561.07	35.67	0.25	562.20	3.64
1822.00	39.13	357.87	1644.81	602.08	601.14	34.14	1.29	602.11	3.25
1884.00	38.19	358.12	1693.22	640.61	639.85	32.78	1.54	640.69	2.93

Weatherford Drilling Services

Definitive Survey Report



Company: WILLIAMS PRODUCTION
Field: RIO ARRIBA COUNTY (NAD 27)
Site: Rosa Unit 239-A
Well: Rosa Unit No. 239A
Wellpath: Definitive Survey Wellpath

Date: 7/12/2006 **Time:** 10:06:01 **Page:** 2
Co-ordinate(NE) Reference: Site: Rosa Unit 239-A, True North
Vertical (TVD) Reference: SITE 6248.0
Section (VS) Reference: Well (0.00N,0.00E,3.85Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Survey

MD ft	Incl deg	Azlm deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
1916.67	37.20	359.15	1719.07	660.50	659.82	32.31	3.61	660.61	2.80
1946.00	36.31	0.12	1742.57	678.00	677.37	32.19	3.61	678.13	2.72
2008.00	34.44	1.87	1793.12	713.84	713.25	32.80	3.43	714.00	2.63
2072.00	32.56	4.75	1846.49	749.15	748.51	34.82	3.85	749.32	2.66
2134.00	31.38	5.87	1899.09	781.97	781.19	37.85	2.13	782.11	2.77
2198.00	29.38	6.62	1954.30	814.31	813.36	41.37	3.18	814.42	2.91
2259.00	28.00	5.25	2007.81	843.57	842.49	44.40	2.51	843.66	3.02
2321.00	27.19	5.25	2062.76	872.28	871.09	47.03	1.31	872.36	3.09
2382.00	26.13	5.12	2117.27	899.64	898.35	49.50	1.74	899.71	3.15
2445.00	24.44	6.25	2174.23	926.53	925.12	52.16	2.79	926.59	3.23
2508.00	22.19	5.25	2232.09	951.45	949.93	54.67	3.63	951.50	3.29
2570.00	20.44	5.25	2289.84	973.98	972.37	56.73	2.82	974.02	3.34
2634.00	19.38	5.00	2350.02	995.77	994.07	58.68	1.66	995.80	3.38
2694.00	17.19	3.00	2406.98	1014.59	1012.85	60.01	3.80	1014.62	3.39
2757.00	16.00	5.75	2467.36	1032.58	1030.78	61.37	2.26	1032.61	3.41
2788.00	15.00	6.62	2497.23	1040.86	1039.02	62.26	3.31	1040.86	3.43
2819.00	13.94	7.37	2527.25	1048.59	1046.71	63.20	3.47	1048.62	3.46
2881.00	11.56	10.50	2587.72	1062.22	1060.23	65.29	4.00	1062.23	3.52
2944.00	9.13	17.50	2649.69	1073.35	1071.20	67.94	4.34	1073.35	3.63
3006.00	6.69	30.50	2711.10	1081.36	1079.01	71.26	4.86	1081.36	3.78
3069.00	4.31	44.00	2773.81	1086.45	1083.87	74.76	4.27	1086.45	3.95
3131.00	2.75	64.25	2835.69	1088.96	1086.19	77.72	3.18	1088.97	4.09
3161.00	2.33	85.28	2865.66	1089.41	1086.56	78.98	3.38	1089.42	4.16
3205.00	2.33	85.28	2909.62	1089.67	1086.70	80.76	0.00	1089.70	4.25



ROSA UNIT 239-A
Section 21 31N R 6W
220' FSL & 1070' FEL
RIO ARriba COUNTY, NM



Azimuth to True North
 Magnetic North: 10.37°
 Magnetic Field
 Strength: 51445nT
 Dip Angle: 63.81°
 Date: 7/1/2006
 Model: Igrf2005

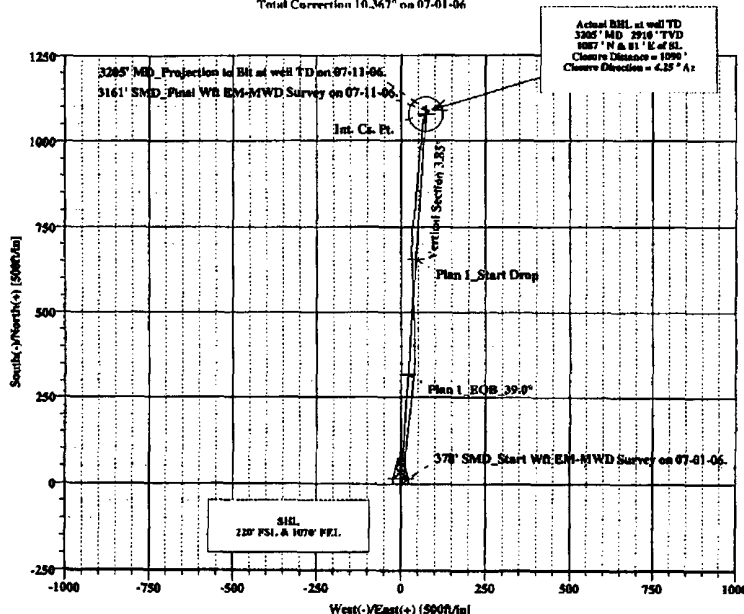
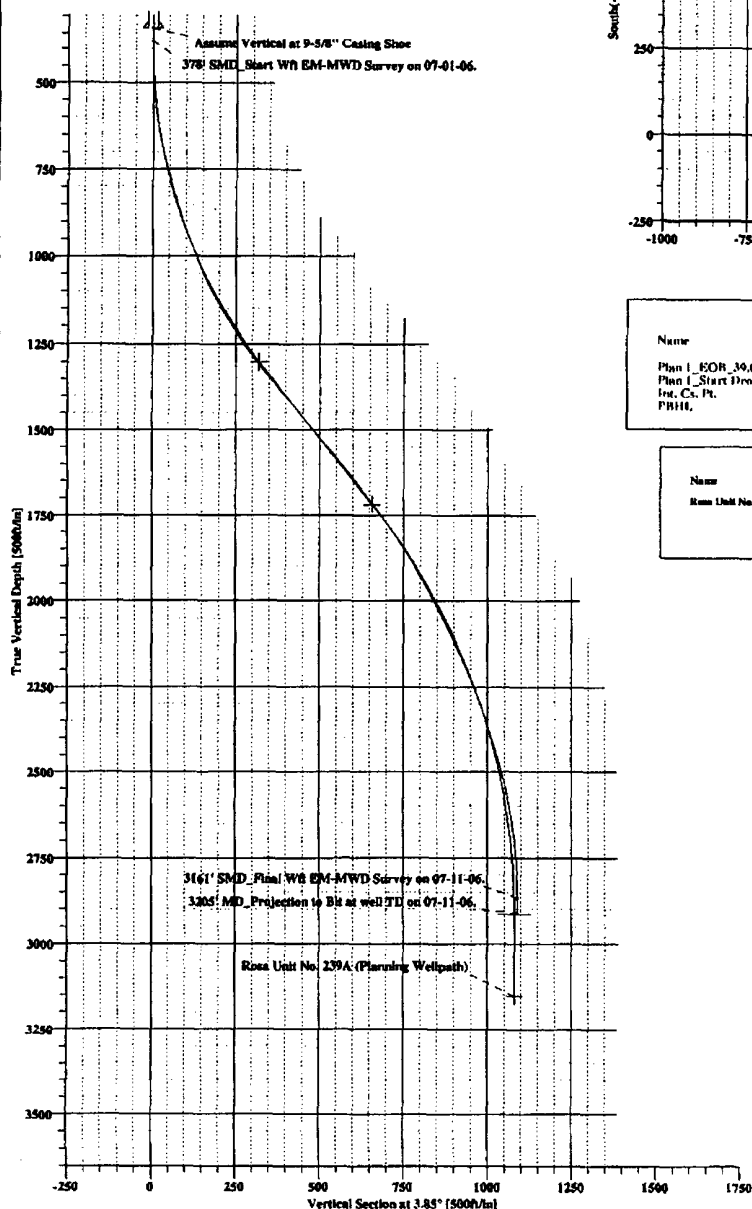


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Total Correction 10.367" on 07-01-06



Aztec Rig # 56
 KB ELEVATION: 6248'
 GR ELEVATION: 6236'



TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Plan 1_EOB_39.0°	1301.44	318.50	21.42	36°55'22.149N	107°25'33.736W	Point
Plan 1_Start Drop	1719.07	655.92	44.12	36°55'25.486N	107°25'33.457W	Point
Int. Co. Pt.	2913.00	1077.76	72.49	36°55'29.657N	107°25'33.107W	Circle (Radius: 50)
PRH1	3153.00	1077.76	72.49	36°55'29.657N	107°25'33.107W	Point

WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Rosa Unit No. 239A	0.00	0.00	2135107.05	619036.81	36°55'19.000N	107°25'34.000W

CASING DETAILS				
No.	TVD	MD	Name	Size
1	337.00	337.00	9 5/8"	9.625

LEGEND
 — Rosa Unit No. 239A (Planning Wellpath)
 — Definitive Survey Wellpath
 — WB EM-MWD Survey

Plan: Plan 01 (Rosa Unit 239A/1) .pl
 PVA (Plan Vs Actual) Plot
 Created By: Lee Hoffmann Date: 07/12/2006
 Weatherford Drilling Services
 Midland, TX (432) 561-4892