



Weatherford™



Drilling Services

30-039-29776

SURF: 1840/B 1430/E

BNL: 1656/S 988/E

3340 MD 3296 TVD

Final Surveys



WILLIAMS PRODUCTION COMPANY

ROSA UNIT 63 A

Prepared by: Jose A Perez

Submitted: 09/19/06

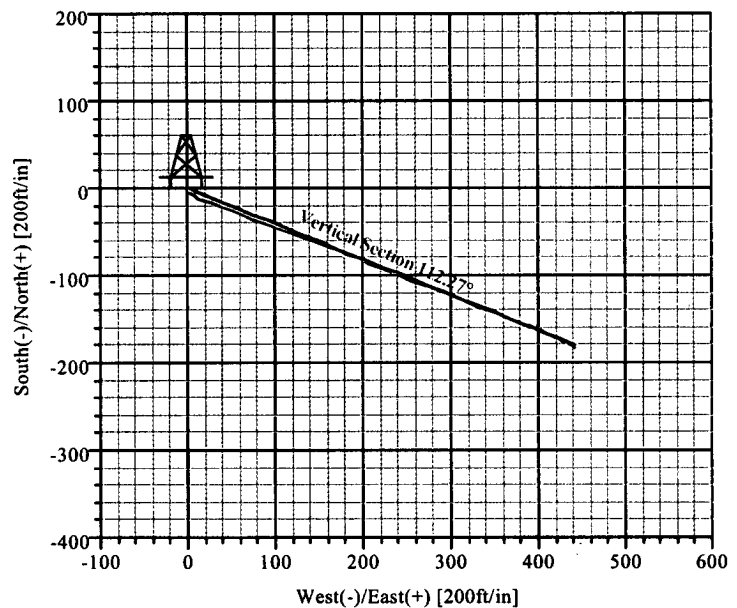
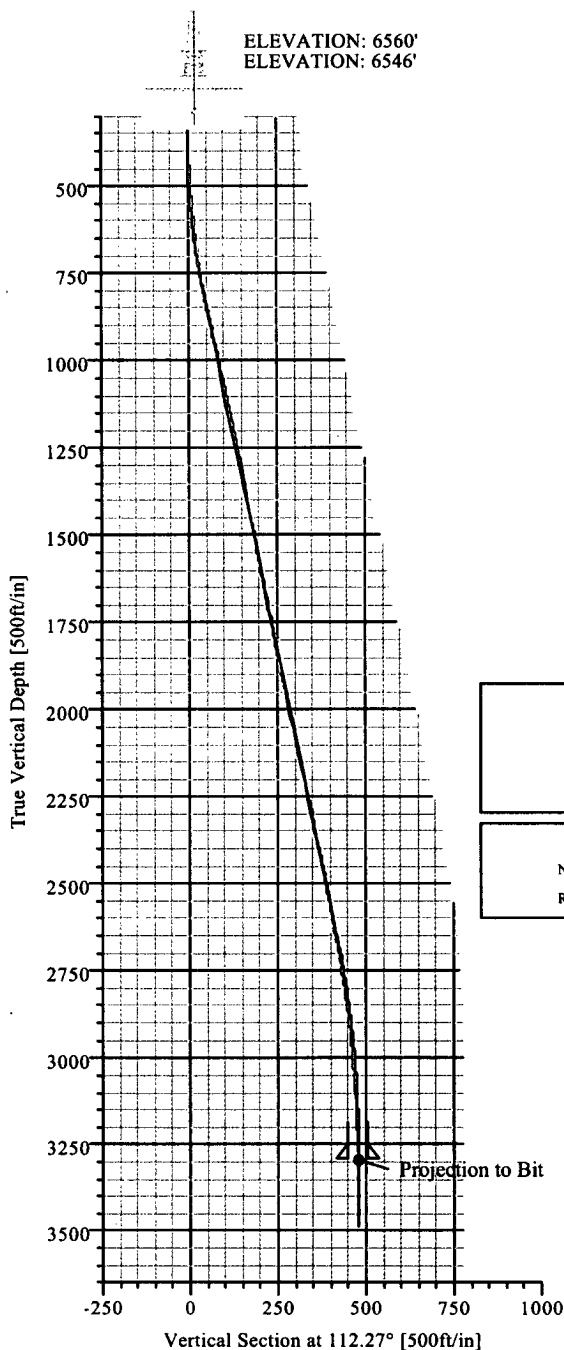
Weatherford Drilling Services

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10/19



ROSA UNIT #63A
Section 30 T31N R 4W
1840' FSL & 1430' FEL
RIO ARRIBA COUNTY, NM
Plan vs Actual



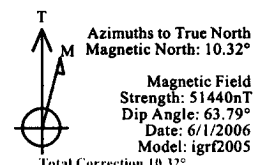
TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Int Cs. Pt.	3290.00	-181.15	442.35	36°52'04.209N	107°17'24.556W	Point
PBHL	3490.00	-181.15	442.35	36°52'04.209N	107°17'24.556W	Point

WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Rosa Unit 63-A	0.00	0.00	2135784.98	658447.89	36°52'06.000N	107°17'30.000W

FORMATION TOP DETAILS			
No.	TVDPath	MDPath	Formation
1	1520.00	1537.71	Nacimiento
2	2790.00	2833.09	Ojo Alamo
3	2900.00	2944.08	Kirtland
4	3155.00	3199.82	Fruitland
5	3310.00	3354.84	Top Coal Interval
6	3390.00	3434.84	Base Coal Interval
7	3395.00	3439.84	Pictured Cliffs

Plan ---

Actual ---



Total Correction 10.32°

Plan: Plan #1 (Rosa Unit 63A/I) p1

Created By: Jose Perez
Weatherford Drilling Services
3611 Plaza East Court
Granbury TX 76049
(817) 373 8500 MAIN
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Date: 09/19/2006



Weatherford Drilling Services

Survey Report



Weatherford

Company: WILLIAMS PRODUCTION Date: 9/19/2006 Time: 08:59:01 Page: 1
 Field: RIO ARRIBA COUNTY (NAD 27) Co-ordinate(NE) Reference: Site: Rosa Unit No. 63A, True North
 Site: Rosa Unit No. 63A Vertical (TVD) Reference: SITE 6560.0
 Well: Rosa Unit 63-A Section (VS) Reference: Well (0.00N,0.00E,112.27Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Field: RIO ARRIBA COUNTY (NAD 27)
 NEW MEXICO

Map System: US State Plane Coordinate System 1927
 Geo Datum: NAD27 (Clarke 1866)
 Sys Datum: Mean Sea Level

Map Zone: New Mexico, Western Zone
 Coordinate System: Site Centre
 Geomagnetic Model: igrf2005

Site: Rosa Unit No. 63A
 Well Pad 30
 Rio Arriba NM

Site Position: Northing: 2135784.98 ft Latitude: 36 52 6.000 N
 From: Geographic Easting: 658447.89 ft Longitude: 107 17 30.000 W
 Position Uncertainty: 0.00 ft North Reference: True
 Ground Level: 6546.00 ft Grid Convergence: 0.33 deg

Well: Rosa Unit 63-A
 S well

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 2135784.98 ft Latitude: 36 52 6.000 N
 +E/-W 0.00 ft Easting: 658447.89 ft Longitude: 107 17 30.000 W
 Position Uncertainty: 0.00 ft

Wellpath: 1

Current Datum: SITE Height: 6560.00 ft
 Magnetic Data: 6/1/2006
 Field Strength: 51440 nT
 Vertical Section: Depth From (TVD)
 ft +N/-S
 ft

Drilled From: Surface
 Tie-on Depth: 0.00 ft
 Above System Datum: Mean Sea Level
 Declination: 10.32 deg
 Mag Dip Angle: 63.79 deg
 +E/-W Direction
 ft deg

0.00 0.00 0.00 112.27

Survey: MWD Surveys

Start Date: 7/25/2006

Company: Weatherford Drilling Services
 Tool:

Engineer:
 Tied-to: From Surface

Survey: MWD Surveys

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Surface Casing
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
377.00	1.69	169.70	376.99	-1.12	0.20	0.61	2.19	2.19	0.00	
439.00	2.88	142.57	438.94	-3.25	1.31	2.45	2.54	1.92	-43.76	
500.00	4.13	129.45	499.83	-5.87	3.94	5.87	2.42	2.05	-21.51	
561.00	5.25	125.32	560.62	-8.88	7.91	10.69	1.92	1.84	-6.77	
622.00	6.00	112.95	621.33	-11.73	13.13	16.59	2.33	1.23	-20.28	
682.00	6.81	107.45	680.95	-14.02	19.41	23.28	1.69	1.35	-9.17	
743.00	9.75	111.32	741.31	-16.99	27.67	32.05	4.90	4.82	6.34	
803.00	11.00	108.45	800.33	-20.64	37.84	42.84	2.25	2.08	-4.78	
864.00	12.19	111.32	860.09	-24.83	49.36	55.08	2.17	1.95	4.70	
924.00	12.44	112.95	918.70	-29.65	61.21	67.88	0.71	0.42	2.72	
985.00	12.13	110.70	978.31	-34.48	73.25	80.86	0.93	-0.51	-3.69	
1046.00	11.88	109.20	1037.97	-38.81	85.18	93.53	0.66	-0.41	-2.46	
1106.00	12.25	111.20	1096.65	-43.14	96.95	106.06	0.93	0.62	3.33	
1167.00	11.50	107.70	1156.34	-47.33	108.77	118.60	1.70	-1.23	-5.74	
1231.00	11.25	109.95	1219.09	-51.40	120.72	131.19	0.80	-0.39	3.52	
1294.00	11.13	112.70	1280.89	-55.84	132.11	143.41	0.87	-0.19	4.37	
1356.00	11.06	113.57	1341.73	-60.53	143.08	155.34	0.29	-0.11	1.40	
1419.00	10.94	113.82	1403.57	-65.36	154.08	167.36	0.20	-0.19	0.40	
1481.00	10.88	107.07	1464.46	-69.46	165.06	179.07	2.06	-0.10	-10.89	
1544.00	10.50	108.95	1526.36	-73.06	176.17	190.72	0.82	-0.60	2.98	
1606.00	10.88	112.57	1587.29	-77.15	186.92	202.21	1.24	0.61	5.84	
1668.00	11.19	112.95	1648.14	-81.74	197.86	214.08	0.51	0.50	0.61	



Weatherford Drilling Services

Survey Report



Weatherford

Company: WILLIAMS PRODUCTION	Date: 9/19/2006	Time: 08:59:01	Page: 2
Field: RIO ARriba COUNTY (NAD 27)	Co-ordinate(NE) Reference: Site: Rosa Unit No. 63A, True North		
Site: Rosa Unit No. 63A	Vertical (TVD) Reference: SITE 6560.0		
Well: Rosa Unit 63-A	Section (VS) Reference: Well (0.00N,0.00E,112.27Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature		Db: Sybase

Survey: MWD Surveys

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1731.00	11.06	113.95	1709.96	-86.57	209.01	226.23	0.37	-0.21	1.59	
1793.00	10.81	113.07	1770.83	-91.27	219.80	237.99	0.48	-0.40	-1.42	
1856.00	11.13	112.20	1832.68	-95.88	230.86	249.98	0.57	0.51	-1.38	
1919.00	12.19	111.95	1894.38	-100.66	242.66	262.71	1.68	1.68	-0.40	
1982.00	11.94	109.82	1955.99	-105.36	254.96	275.87	0.81	-0.40	-3.38	
2045.00	12.06	109.95	2017.61	-109.81	267.28	288.96	0.20	0.19	0.21	
2108.00	11.88	110.32	2079.24	-114.31	279.55	302.02	0.31	-0.29	0.59	
2171.00	11.88	112.82	2140.89	-119.08	291.61	314.98	0.82	0.00	3.97	
2233.00	11.88	112.20	2201.56	-123.96	303.40	327.75	0.21	0.00	-1.00	
2294.00	11.88	112.20	2261.26	-128.71	315.02	340.30	0.00	0.00	0.00	
2356.00	11.31	111.45	2321.99	-133.34	326.59	352.76	0.95	-0.92	-1.21	
2417.00	11.50	110.57	2381.79	-137.67	337.85	364.82	0.42	0.31	-1.44	
2480.00	11.25	114.07	2443.55	-142.38	349.34	377.24	1.17	-0.40	5.56	
2541.00	11.13	111.45	2503.39	-146.96	360.26	389.08	0.86	-0.20	-4.30	
2602.00	10.56	111.20	2563.30	-151.13	370.95	400.55	0.94	-0.93	-0.41	
2665.00	10.13	112.32	2625.28	-155.33	381.45	411.87	0.75	-0.68	1.78	
2728.00	9.19	113.95	2687.38	-159.47	391.18	422.43	1.55	-1.49	2.59	
2790.00	9.38	112.32	2748.57	-163.40	400.38	432.44	0.52	0.31	-2.63	
2852.00	8.44	112.07	2809.82	-167.03	409.27	442.04	1.52	-1.52	-0.40	
2914.00	7.63	113.82	2871.21	-170.40	417.25	450.70	1.36	-1.31	2.82	
2976.00	5.69	120.70	2932.79	-173.63	423.66	457.86	3.38	-3.13	11.10	
3038.00	4.56	114.70	2994.54	-176.23	428.54	463.36	2.01	-1.82	-9.68	
3101.00	3.75	113.82	3057.38	-178.11	432.70	467.92	1.29	-1.29	-1.40	
3163.00	3.56	114.32	3119.25	-179.72	436.31	471.87	0.31	-0.31	0.81	
3229.00	2.81	121.45	3185.15	-181.41	439.56	475.52	1.28	-1.14	10.80	
3290.00	1.19	151.82	3246.11	-182.75	441.13	477.48	3.09	-2.66	49.79	Last MWD Survey
3340.00	1.19	151.82	3296.10	-183.67	441.62	478.28	0.00	0.00	0.00	Projection to Bit

Annotation

MD ft	TVD ft	
3290.00	3246.11	Last MWD Survey
3340.00	3296.10	Projection to Bit
300.00	300.00	Surface Casing