



Weatherford

Drilling Services

30-039 29851

Surface 1460/S 1350/W
Last survey/BHL 1651/S 984/W at 3652' md

Final survey reports

INDUCTION FOR Bottom Hole survey dt TD



WILLIAMS PRODUCTION COMPANY

Rosa unit 100 C

OCT 21 1996

Prepared by: Jose A Perez

Submitted: 10/05/06

Weatherford Drilling Services

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ROSA UNIT 100C
Section 21 T 31N R 6W
1460' FSL & 1350' FWL
RIO ARriba COUNTY, NM
Plan vs. Actual



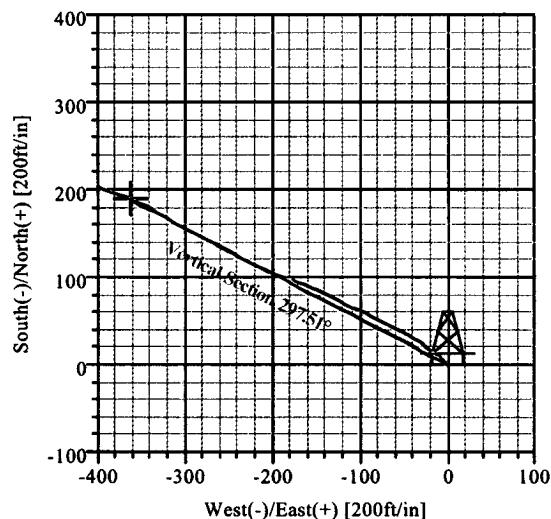
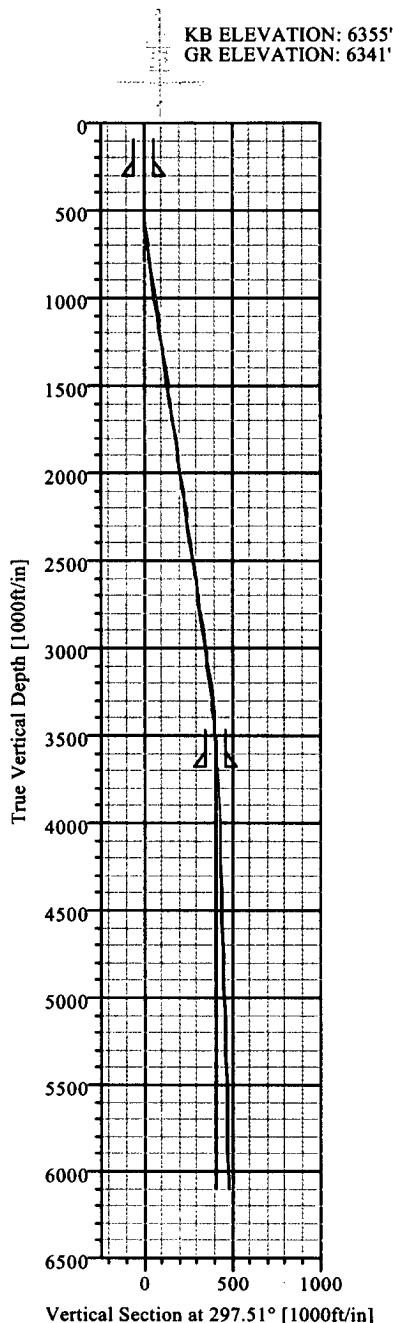
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	297.51	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	297.51	400.00	0.00	0.00	0.00	0.00	0.00	
3	730.00	8.25	297.51	728.86	10.96	-21.04	2.50	297.51	23.72	
4	3161.44	8.25	297.51	3135.14	172.11	-330.48	0.00	0.00	372.61	
5	3658.02	0.00	297.51	3630.00	188.60	-362.13	1.66	180.00	408.30	
6	3708.02	0.00	297.51	3680.00	188.60	-362.13	0.00	0.00	408.30	Int Cs. Pt
7	6128.02	0.00	297.51	6100.00	188.60	-362.13	0.00	297.51	408.30	PBHL

WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Rosa Unit 100C	0.00	0.00	2140389.69	605694.56	36°52'54.000N	107°28'19.000W

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Int Cs. Pt	3680.00	188.60	-362.13	36°52'55.865N	107°28'23.458W	Point
PBHL	6100.00	188.60	-362.13	36°52'55.865N	107°28'23.458W	Circle (Radius: 50)

FORMATION TOP DETAILS			
No.	TVDPath	MDPath	Formation
1	2343.00	2361.02	Ojo Alamo
2	2458.00	2477.22	Kirtland
3	2888.00	2911.72	Fruitland
4	3205.00	3231.93	Pictured Cliffs
5	3485.00	3512.97	Lewis
6	5000.00	5028.02	Cliff House Trans
7	5315.00	5343.02	Cliff House
8	5355.00	5383.02	Menefee
9	5625.00	5653.02	Point Lookout
10	5935.00	5963.02	Mancos

Plan ---
Actual ---



T
M
Azimuths to True North
Magnetic North: 10.39°
Magnetic Field
Strength: 51418nT
Dip Angle: 63.76°
Date: 6/20/2006
Model: igrf2005
Total Correction 10.39°

Plan: Plan #1 (Rosa Unit 100C/I) p1
Created By: Jose Perez Date: 06/20/2006
Weatherford Drilling Services
3611 Plaza East Court
Granbury TX 76049
(817) 573 8500 MAIN
(817) 573 8001 FAX



Weatherford Drilling Services

Survey Report



Weatherford

Company: WILLIAMS PRODUCTION Date: 10/5/2006 Time: 13:20:28 Page: 1
 Field: RIO ARriba COUNTY (NAD 27) Co-ordinate(NE) Reference: Site: Rosa Unit 100 C, True North
 Site: Rosa Unit 100 C Vertical (TVD) Reference: SITE 6355.0
 Well: Rosa Unit 100C Section (VS) Reference: Well (0.00N,0.00E,297.51Azi)
 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 100 C
 Rio Arriba County, NM
 1460' FSL & 1350' FWL

Site Position: Northing: 2140389.69 ft Latitude: 36 52 54.000 N
 From: Geographic Easting: 605694.56 ft Longitude: 107 28 19.000 W
 Position Uncertainty: 0.00 ft North Reference: True
 Ground Level: 6341.00 ft Grid Convergence: 0.22 deg

Well: Rosa Unit 100C
 S Well

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 2140389.69 ft Latitude: 36 52 54.000 N
 +E/-W 0.00 ft Easting: 605694.56 ft Longitude: 107 28 19.000 W
 Position Uncertainty: 0.00 ft

Wellpath: 1

Current Datum: SITE Height: 6355.00 ft
 Magnetic Data: 6/20/2006
 Field Strength: 51418 nT
 Vertical Section: Depth From (TVD) +N/-S
 ft ft

Drilled From: Surface
 Tie-on Depth: 0.00 ft
 Above System Datum: Mean Sea Level
 Declination: 10.39 deg
 Mag Dip Angle: 63.76 deg
 +E/-W Direction
 ft deg

0.00 0.00 0.00 297.51

Survey: Survey #1

Start Date: 7/31/2006

Company: Weatherford Drilling Services
 Tool:

Engineer:
 Tied-to: From Surface

Survey: Survey #1

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 First MWD Survey
335.00	0.00	0.00	335.00	0.00	0.00	0.00	0.00	0.00	0.00	
382.00	0.50	229.14	382.00	-0.13	-0.16	0.08	1.06	1.06	0.00	
444.00	1.69	320.14	443.99	0.39	-0.95	1.02	2.86	1.92	146.77	
506.00	3.50	314.52	505.92	2.42	-2.88	3.67	2.94	2.92	-9.06	
568.00	5.25	312.52	567.74	5.66	-6.32	8.22	2.83	2.82	-3.23	
631.00	6.31	306.27	630.42	9.66	-11.24	14.43	1.95	1.68	-9.92	
693.00	7.50	308.52	691.97	14.20	-17.15	21.77	1.97	1.92	3.63	
756.00	7.94	307.02	754.40	19.38	-23.84	30.10	0.77	0.70	-2.38	
818.00	8.19	302.77	815.79	24.35	-30.97	38.72	1.04	0.40	-6.85	
880.00	8.13	302.39	877.16	29.08	-38.39	47.48	0.13	-0.10	-0.61	
941.00	8.25	302.25	937.54	33.73	-45.73	56.14	0.20	0.20	-0.23	
1004.00	8.50	299.52	999.86	38.44	-53.61	65.30	0.75	0.40	-4.33	
1066.00	8.31	296.14	1061.20	42.67	-61.62	74.36	0.85	-0.31	-5.45	
1128.00	8.56	296.64	1122.53	46.71	-69.76	83.45	0.42	0.40	0.81	
1189.00	8.13	294.52	1182.88	50.54	-77.75	92.30	0.87	-0.70	-3.48	
1251.00	8.13	294.77	1244.26	54.19	-85.71	101.05	0.06	0.00	0.40	
1314.00	8.00	295.77	1306.64	57.96	-93.71	109.89	0.30	-0.21	1.59	
1376.00	8.06	295.64	1368.03	61.72	-101.51	118.54	0.10	0.10	-0.21	
1439.00	8.00	296.52	1430.41	65.59	-109.42	127.34	0.22	-0.10	1.40	
1501.00	8.00	297.89	1491.81	69.53	-117.09	135.97	0.31	0.00	2.21	
1562.00	8.13	297.64	1552.20	73.52	-124.66	144.53	0.22	0.21	-0.41	
1624.00	8.13	297.89	1613.58	77.61	-132.42	153.29	0.06	0.00	0.40	
1686.00	8.00	294.14	1674.97	81.42	-140.23	161.98	0.87	-0.21	-6.05	



Weatherford Drilling Services

Survey Report

**Weatherford**

Company: WILLIAMS PRODUCTION
Field: RIO ARriba COUNTY (NAD 27)
Site: Rosa Unit 100 C
Well: Rosa Unit 100C
Wellpath: 1

Date: 10/5/2006 Time: 13:20:28 Page: 2
Co-ordinate(NE) Reference: Site: Rosa Unit 100 C, True North
Vertical (TVD) Reference: SITE 6355.0
Section (VS) Reference: Well (0.00N,0.00E,297.51Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: Survey #1

MD ft	Incl deg	Azlm deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1749.00	8.00	292.77	1737.35	84.91	-148.28	170.73	0.30	0.00	-2.17	
1810.00	8.13	294.02	1797.75	88.31	-156.13	179.27	0.36	0.21	2.05	
1873.00	8.13	289.39	1860.12	91.60	-164.40	188.12	1.04	0.00	-7.35	
1935.00	8.25	290.14	1921.49	94.59	-172.71	196.87	0.26	0.19	1.21	
1998.00	8.19	289.89	1983.84	97.67	-181.18	205.80	0.11	-0.10	-0.40	
2061.00	7.94	289.39	2046.22	100.64	-189.50	214.56	0.41	-0.40	-0.79	
2126.00	8.00	290.52	2110.59	103.72	-197.97	223.49	0.26	0.09	1.74	
2187.00	8.13	291.52	2170.98	106.79	-205.96	232.00	0.31	0.21	1.64	
2250.00	8.00	295.14	2233.36	110.29	-214.07	240.81	0.83	-0.21	5.75	
2313.00	7.94	296.14	2295.75	114.06	-221.95	249.54	0.24	-0.10	1.59	
2376.00	8.06	299.64	2358.14	118.17	-229.69	258.30	0.80	0.19	5.56	
2440.00	8.19	299.39	2421.50	122.62	-237.56	267.34	0.21	0.20	-0.39	
2503.00	8.13	298.27	2483.86	126.93	-245.40	276.28	0.27	-0.10	-1.78	
2565.00	8.06	298.02	2545.24	131.05	-253.09	285.01	0.13	-0.11	-0.40	
2628.00	8.00	298.64	2607.63	135.23	-260.84	293.81	0.17	-0.10	0.98	
2690.00	8.00	298.89	2669.02	139.38	-268.40	302.44	0.06	0.00	0.40	
2753.00	8.25	296.77	2731.39	143.53	-276.28	311.34	0.62	0.40	-3.37	
2817.00	8.38	296.14	2794.72	147.66	-284.56	320.59	0.25	0.20	-0.98	
2881.00	8.19	297.14	2858.05	151.79	-292.81	329.81	0.37	-0.30	1.56	
2943.00	7.94	297.02	2919.44	155.75	-300.55	338.51	0.40	-0.40	-0.19	
3008.00	7.50	296.77	2983.85	159.70	-308.34	347.24	0.68	-0.68	-0.38	
3070.00	7.63	299.52	3045.31	163.55	-315.53	355.40	0.62	0.21	4.44	
3132.00	7.94	302.02	3106.74	167.85	-322.75	363.78	0.74	0.50	4.03	
3195.00	7.56	300.27	3169.16	172.25	-330.01	372.26	0.71	-0.60	-2.78	
3259.00	7.25	302.02	3232.63	176.51	-337.07	380.49	0.60	-0.48	2.73	
3321.00	6.88	298.77	3294.16	180.37	-343.65	388.11	0.88	-0.60	-5.24	
3384.00	6.06	296.27	3356.75	183.66	-349.94	395.20	1.38	-1.30	-3.97	
3446.00	4.94	297.77	3418.47	186.35	-355.23	401.14	1.82	-1.81	2.42	
3510.00	3.69	294.89	3482.29	188.50	-359.54	405.96	1.98	-1.95	-4.50	
3572.00	3.06	290.02	3544.18	189.91	-362.90	409.59	1.12	-1.02	-7.85	
3635.00	2.44	293.02	3607.10	191.01	-365.72	412.60	1.01	-0.98	4.76	
3652.00	2.25	289.89	3624.09	191.26	-366.37	413.29	1.35	-1.12	-18.41	Last MWD Survey
6100.00	1.00	290.00	6071.06	214.92	-431.63	482.10	0.05	-0.05	0.00	
6130.00	1.00	290.00	6101.05	215.10	-432.12	482.62	0.00	0.00	0.00	Projection to TD

Annotation

MD ft	TVD ft	
335.00	335.00	Surface Casing
382.00	382.00	First MWD Survey
3652.00	3624.09	Last MWD Survey
6130.00	6101.05	Projection to TD