



Weatherford International, Inc.
Survey Report



Weatherford

Company: WILLIAMS PRODUCTION
Field: Rio Arriba County (NAD 83)
Site: Rosa Unit 182C
Well: Rosa Unit 182C
Wellpath: 1

Date: 11/12/2007 Time: 12:10:41 Page: 4
Co-ordinate(NE) Reference: Site: Rosa Unit 182C, True North
Vertical (TVD) Reference: SITE 6445.0
Section (VS) Reference: Well (0.00N, 0.00E, 336.48Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Annotation

MD ft	TVD ft	
400.00	400.00	FIRST WFT SVY
4084.00	3765.50	LAST WFT SVY
6516.00	6196.71	LAST RIG SVY

30.039.30180

'Amended' to include deviation @ TA

RCVD NOV 13 '07

OIL CONS. DIV.

DIST. 3

8



Weatherford International, Inc.

Survey Report

**Weatherford**

Company: WILLIAMS PRODUCTION Date: 11/12/2007 Time: 12:10:41 Page: 3
Field: Rio Arriba County (NAD 83) Co-ordinate(NE) Reference: Site: Rosa Unit 182C, True North
Site: Rosa Unit 182C Vertical (TVD) Reference: SITE 6445 0
Well: Rosa Unit 182C Section (VS) Reference: Well (0.00N,0.00E,336.48Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: WFT 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
2760.00	26.50	337.16	2493.73	916.39	-411.93	1004.65	0.42	0.37	0.41	
2792.00	25.94	337.16	2522.43	929.42	-417.42	1018.78	1.75	-1.75	0.00	
2823.00	24.81	336.28	2550.44	941.62	-422.67	1032.07	3.84	-3.65	-2.84	
2854.00	24.56	335.78	2578.61	953.45	-427.93	1045.01	1.05	-0.81	-1.61	
2885.00	24.88	335.78	2606.77	965.27	-433.25	1057.98	1.03	1.03	0.00	
2917.00	24.38	335.16	2635.86	977.41	-438.78	1071.31	1.76	-1.56	-1.94	
2949.00	23.94	335.41	2665.05	989.30	-444.26	1084.40	1.41	-1.37	0.78	
2981.00	23.06	336.41	2694.40	1000.95	-449.47	1097.16	3.02	-2.75	3.12	
3012.00	22.38	337.28	2722.99	1011.96	-454.18	1109.14	2.45	-2.19	2.81	
3044.00	22.06	337.53	2752.62	1023.13	-458.83	1121.23	1.04	-1.00	0.78	
3076.00	22.06	337.78	2782.28	1034.25	-463.40	1133.25	0.29	0.00	0.78	
3107.00	21.25	337.28	2811.09	1044.82	-467.77	1144.69	2.68	-2.61	-1.61	
3139.00	20.25	337.78	2841.01	1055.29	-472.10	1156.02	3.17	-3.12	1.56	
3171.00	19.56	338.28	2871.10	1065.40	-476.18	1166.91	2.22	-2.16	1.56	
3201.00	19.19	337.66	2899.40	1074.62	-479.91	1176.86	1.41	-1.23	-2.07	
3233.00	18.75	336.16	2929.66	1084.19	-483.99	1187.26	2.05	-1.37	-4.69	
3265.00	17.69	336.28	2960.06	1093.35	-488.02	1197.27	3.31	-3.31	0.37	
3297.00	16.88	337.16	2990.61	1102.08	-491.78	1206.78	2.66	-2.53	2.75	
3328.00	16.13	338.78	3020.33	1110.24	-495.09	1215.58	2.84	-2.42	5.23	
3360.00	15.31	338.03	3051.14	1118.30	-498.28	1224.24	2.64	-2.56	-2.34	
3392.00	14.63	337.78	3082.05	1125.96	-501.39	1232.51	2.13	-2.12	-0.78	
3423.00	13.94	336.91	3112.09	1133.02	-504.33	1240.16	2.33	-2.23	-2.81	
3455.00	13.00	336.03	3143.21	1139.86	-507.31	1247.61	3.01	-2.94	-2.75	
3487.00	12.19	338.53	3174.44	1146.29	-510.01	1254.59	3.05	-2.53	7.81	
3519.00	12.00	337.66	3205.73	1152.51	-512.51	1261.29	0.82	-0.59	-2.72	
3550.00	11.25	338.53	3236.10	1158.31	-514.84	1267.53	2.48	-2.42	2.81	
3581.00	10.56	337.78	3266.54	1163.75	-517.02	1273.39	2.27	-2.23	-2.42	
3612.00	10.31	336.53	3297.02	1168.92	-519.20	1279.01	1.09	-0.81	-4.03	
3644.00	10.31	336.66	3328.51	1174.18	-521.47	1284.73	0.07	0.00	0.41	
3674.00	10.13	336.53	3358.03	1179.06	-523.59	1290.06	0.60	-0.60	-0.43	
3706.00	9.38	337.28	3389.57	1184.05	-525.72	1295.48	2.38	-2.34	2.34	
3738.00	9.00	338.28	3421.16	1188.78	-527.65	1300.59	1.29	-1.19	3.12	
3769.00	8.31	339.66	3451.80	1193.14	-529.32	1305.25	2.32	-2.23	4.45	
3801.00	7.63	339.78	3483.49	1197.30	-530.86	1309.68	2.13	-2.12	0.37	
3833.00	6.94	336.91	3515.24	1201.07	-532.36	1313.73	2.44	-2.16	-8.97	
3864.00	6.69	336.66	3546.02	1204.45	-533.81	1317.41	0.81	-0.81	-0.81	
3894.00	5.75	340.41	3575.84	1207.47	-535.00	1320.66	3.41	-3.13	12.50	
3926.00	4.75	342.53	3607.71	1210.24	-535.94	1323.57	3.18	-3.12	6.62	
3941.00	4.31	344.03	3622.66	1211.38	-536.28	1324.75	3.04	-2.93	10.00	
3958.00	4.13	345.41	3639.61	1212.59	-536.61	1325.99	1.22	-1.06	8.12	
3989.00	2.69	350.28	3670.56	1214.38	-537.01	1327.80	4.73	-4.65	15.71	
4021.00	1.94	358.28	3702.53	1215.66	-537.16	1329.03	2.55	-2.34	25.00	
4053.00	1.69	354.03	3734.51	1216.67	-537.22	1329.98	0.89	-0.78	-13.28	
4084.00	1.44	349.78	3765.50	1217.51	-537.34	1330.80	0.89	-0.81	-13.71	LAST WFT SVY
4113.00	1.44	349.61	3794.49	1218.23	-537.47	1331.51	0.01	0.00	-0.58	7"
6516.00	1.50	336.00	6196.71	1276.67	-555.71	1392.37	0.01	0.00	-0.57	LAST RIG SVY

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
300.00	300.00	9.625	12.250	9 5/8"
4113.00	3794.49	7.000	8.500	7"



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 Well: Rosa Unit 182C Section (VS) Reference: Well (0.00N,0.00E,336 48Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: WFT 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
1083.00	22 31	335 16	1065 22	126.15	-51 41	136 19	4 43	4.28	-3 12	
1115 00	22.69	334.16	1094.78	137.22	-56 65	148 42	1 69	1 19	-3 12	
1146 00	23.56	334 66	1123 29	148.20	-61.91	160 59	2 88	2 81	1 61	
1178 00	24.38	334 03	1152 53	159.92	-67 54	173 58	2.68	2 56	-1 97	
1210.00	24.81	334 41	1181 62	171.91	-73 33	186 89	1.43	1 34	1 19	
1242.00	25.13	333 78	1210.63	184 06	-79 23	200.39	1.30	1 00	-1 97	
1273.00	25.94	333 91	1238.61	196.06	-85 12	213.74	2.62	2 61	0 42	
1305.00	26 44	333 03	1267.32	208.69	-91.43	227.84	1.98	1.56	-2 75	
1337 00	27.13	333 53	1295 89	221.57	-97.91	242 24	2 27	2.16	1 56	
1369 00	27.44	332.91	1324.33	234.67	-104.52	256 88	1 31	0.97	-1.94	
1401 00	28.06	332.78	1352 65	247.92	-111.32	271 75	1 95	1 94	-0 41	
1432.00	28.38	332 91	1379 96	260.97	-118 01	286 38	1.05	1 03	0 42	
1463.00	27.75	333 28	1407.32	273.97	-124.61	300 94	2.11	-2 03	1.19	
1495 00	28 44	333.53	1435.55	287 45	-131 36	315.99	2.19	2 16	0 78	
1527.00	28.50	332.91	1463.68	301 07	-138 23	331.22	0 94	0 19	-1.94	
1558.00	29.31	332.78	1490.81	314 40	-145.07	346 17	2 62	2.61	-0 42	
1589.00	30 06	333.78	1517 74	328.11	-151.97	361 50	2 90	2.42	3 23	
1621 00	30 63	334.16	1545 36	342.64	-159.07	377.65	1 88	1.78	1.19	
1652.00	31 31	334.66	1571 94	357.03	-165.96	393 59	2.35	2.19	1.61	
1682 00	31 50	335.03	1597 55	371 18	-172 60	409.22	0.90	0 63	1.23	
1714 00	32.00	335 91	1624 76	386.49	-179 59	426.05	2.13	1.56	2.75	
1746 00	32.81	336 16	1651.77	402 11	-186.55	443 20	2 57	2.53	0 78	
1777 00	33.50	336 41	1677 73	417.69	-193.37	460.16	2.27	2.23	0 81	
1809.00	34.13	335.91	1704.31	433.98	-200.57	477 96	2 15	1.97	-1 56	
1841 00	34 75	336.53	1730 70	450.54	-207.87	496 06	2 23	1.94	1.94	
1872 00	35.00	335 78	1756 14	466.75	-215.03	513 79	1.60	0.81	-2 42	
1904 00	35.38	336.28	1782.29	483.60	-222 53	532.23	1.49	1.19	1.56	
1936.00	35.94	335 53	1808.29	500 63	-230.14	550.88	2.22	1 75	-2 34	
1968.00	36.75	335 66	1834.06	517 90	-237.98	569.84	2.54	2.53	0 41	
1998.00	37.13	335.78	1858.04	534.33	-245 39	587.87	1.29	1.27	0 40	
2030.00	37.56	335.53	1883 48	552.02	-253.39	607.28	1.42	1.34	-0 78	
2062 00	38 13	335.41	1908 75	569.88	-261.54	626 91	1.80	1.78	-0 37	
2094.00	37.56	335 53	1934 02	587.74	-269 70	646.54	1 80	-1.78	0 37	
2124.00	37.19	335 53	1957.86	604 32	-277.24	664.75	1.23	-1.23	0 00	
2156.00	37.94	335.53	1983.23	622.07	-285 32	684.25	2.34	2 34	0 00	
2187.00	38 25	335.53	2007.62	639 48	-293.24	703.38	1.00	1 00	0 00	
2219 00	37 31	335 78	2032 91	657.34	-301.32	722.98	2.98	-2 94	0 78	
2251.00	36 50	336 41	2058 50	674.91	-309 11	742.19	2 79	-2 53	1 97	
2283.00	36.19	337 41	2084 28	692 35	-316 55	761 16	2 09	-0 97	3 12	
2315 00	35 44	337.78	2110.23	709 66	-323.69	779.88	2.44	-2 34	1 16	
2347.00	34 00	338 28	2136.53	726 57	-330 51	798.10	4.59	-4.50	1.56	
2378 00	33 75	337 91	2162.27	742.60	-336.95	815 37	1.05	-0 81	-1 19	
2410.00	33.38	337 41	2188 93	758.96	-343.68	833 06	1.44	-1 16	-1 56	
2442 00	31 94	336.53	2215 87	774 85	-350.43	850 33	4 74	-4 50	-2 75	
2474 00	31.25	335.78	2243 13	790 19	-357 21	867.09	2.48	-2 16	-2 34	
2505.00	31.19	335.66	2269.64	804.83	-363 81	883.16	0 28	-0 19	-0 39	
2538.00	30.31	335 78	2298.00	820.21	-370.75	900 03	2.67	-2 67	0 36	
2569.00	29.88	335 66	2324 82	834.38	-377.14	915 57	1 40	-1 39	-0 39	
2601.00	29 38	336.53	2352 63	848 85	-383.56	931 39	2 06	-1 56	2 72	
2633 00	28.31	336 66	2380 66	863 01	-389.69	946 83	3 35	-3 34	0 41	
2665.00	27.69	337.66	2408 92	876 86	-395 52	961.85	2 43	-1 94	3 12	
2696.00	26 88	337 91	2436 47	890.01	-400.89	976.06	2 64	-2 61	0 81	
2728 00	26 38	337.03	2465.07	903 26	-406 39	990 40	1 99	-1 56	-2 75	



Weatherford International, Inc.

Survey Report



Company: WILLIAMS PRODUCTION Date: 11/12/2007 Time: 12.10 41 Page: 1
Field: Rio Arriba County (NAD 83) Co-ordinate(NE) Reference: Site Rosa Unit 182C, True North
Site: Rosa Unit 182C Vertical (TVD) Reference: SITE 6445 0
Well: Rosa Unit 182C Section (VS) Reference: Well (0 00N, 0 00E, 336.48Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Field: Rio Arriba County (NAD 83)

Map System: US State Plane Coordinate System 1983
Geo Datum: GRS 1980
Sys Datum: Mean Sea Level

Map Zone: New Mexico, Western Zone
Coordinate System: Site Centre
Geomagnetic Model: bggm2006

Site: Rosa Unit 182C
Sect 18 T31N R5W
Rio Arriba County, NM

Site Position: Northing: 2145516.41 ft Latitude: 36 53 43 152 N
From: Geographic Easting: 2850240.58 ft Longitude: 107 23 54 672 W
Position Uncertainty: 0 00 ft North Reference: True
Ground Level: 6431.00 ft Grid Convergence: 0.26 deg

Well: Rosa Unit 182C
1095' FSL & 1115' FEL

Slot Name:

Well Position: +N/-S 0 00 ft Northing: 2145516.41 ft Latitude: 36 53 43.152 N
+E/-W 0 00 ft Easting: 2850240.58 ft Longitude: 107 23 54.672 W
Position Uncertainty: 0 00 ft

Wellpath: 1

Current Datum: SITE Height 6445.00 ft
Magnetic Data: 8/23/2007
Field Strength: 51323 nT
Vertical Section: Depth From (TVD) +N/-S
ft ft
0.00 0.00

Drilled From: Surface
Tie-on Depth: 0.00 ft
Above System Datum: Mean Sea Level
Declination: 10.28 deg
Mag Dip Angle: 63.80 deg
+E/-W Direction
ft deg
0 00 336 48

Survey: WFT SURVEYS

Start Date: 9/5/2007

Company: Weatherford International, Ltd
Tool:

Engineer: Mano Lainez
Tied-to: User Defined

Survey: WFT 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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	9 5/8"
437.00	1.75	304.91	436.99	0.32	-0.46	0.48	4.73	4.73	0.00	FIRST WFT SVY
468.00	2.94	317.78	467.97	1.18	-1.39	1.64	4.17	3.84	41.52	
499.00	4.25	325.53	498.91	2.72	-2.57	3.52	4.50	4.23	25.00	
529.00	5.44	328.53	528.80	4.85	-3.94	6.02	4.05	3.97	10.00	
560.00	6.31	332.16	559.64	7.61	-5.50	9.17	3.05	2.81	11.71	
588.00	6.94	335.28	587.45	10.51	-6.93	12.40	2.59	2.25	11.14	
618.00	7.75	338.91	617.20	14.04	-8.42	16.23	3.11	2.70	12.10	
648.00	8.69	341.53	646.89	18.08	-9.86	20.51	3.37	3.13	8.73	
679.00	9.75	344.53	677.49	22.83	-11.30	25.44	3.75	3.42	9.68	
709.00	11.00	344.28	707.00	28.03	-12.76	30.79	4.17	4.17	-0.83	
740.00	11.69	342.91	737.40	33.88	-14.48	36.84	2.39	2.23	-4.42	
770.00	13.00	341.78	766.70	39.99	-16.43	43.22	4.44	4.37	-3.77	
801.00	13.69	341.28	796.86	46.78	-18.70	50.35	2.26	2.23	-1.61	
831.00	14.56	340.03	825.96	53.68	-21.12	57.65	3.07	2.90	-4.17	
863.00	15.50	338.53	856.86	61.44	-24.06	65.94	3.18	2.94	-4.69	
895.00	16.19	337.66	887.65	69.55	-27.32	74.67	2.28	2.16	-2.72	
927.00	17.50	338.03	918.27	78.14	-30.82	83.94	4.11	4.09	1.16	
959.00	18.13	337.28	948.74	87.19	-34.54	93.73	2.10	1.97	-2.34	
991.00	19.00	337.41	979.07	96.59	-38.47	103.92	2.72	2.72	0.41	
1021.00	19.94	336.78	1007.36	105.80	-42.36	113.92	3.21	3.13	-2.10	
1051.00	20.94	336.16	1035.47	115.41	-46.54	124.39	3.41	3.33	-2.07	

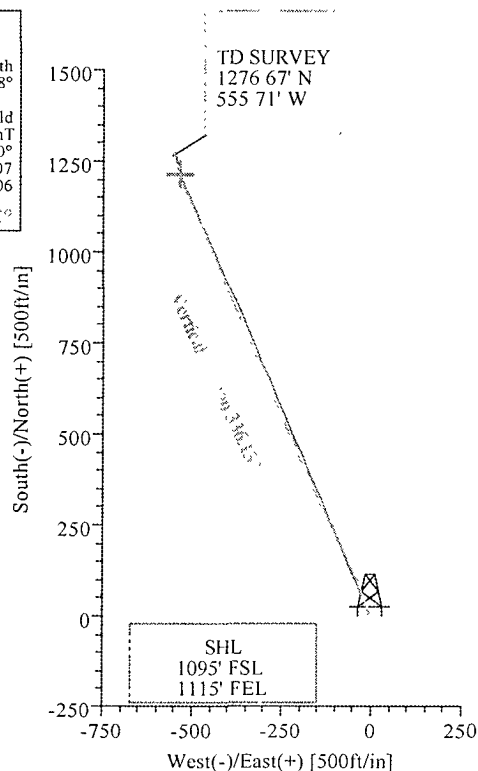
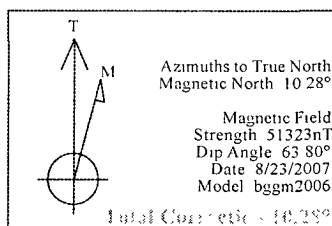
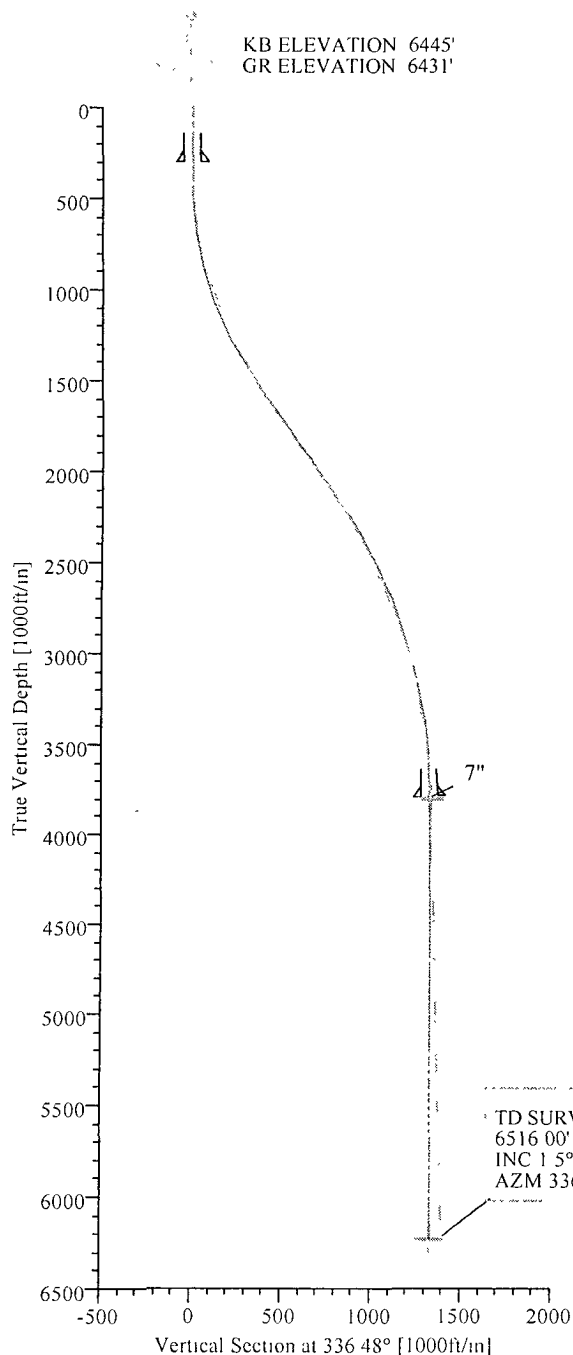


Rosa Unit 182C
Sect. 18 T31N R5W
1115' FEL & 1095' FSL
Rio Arriba County, NM
PVA

LEGEND	
	Rosa Unit 182C 1 Plan #1
	WFT SURVEYS

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Rosa Unit 182C	0.00	0.00	2145516.41	2850240.58	36°53'43.152N	107°23'54.672W	N/A

TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape	
Cs Pt	3800.00	1216.00	-538.02	2146729.95	2849697.03	Point	
PBHL	6230.00	1216.00	-538.02	2146729.95	2849697.03	Circle (Radius 50)	



FORMATION TOP DETAILS			
No	TVDPath	MDPath	Formation
1	2550.00	2832.54	Ojo Alamo
2	2670.00	2964.48	Kirtland
3	3060.00	3377.56	Fruitland
4	3330.00	3653.91	Pictured Cliffs
5	3590.00	3915.85	Lewis
6	5175.00	5501.04	Cliff House Trans
7	5485.00	5811.04	Cliff House
8	5535.00	5861.04	Menefee
9	5755.00	6081.04	Point Lookout
10	6075.00	6401.04	Mancos

Plan Plan #1 (Rosa Unit 182C)	
Created By	Jose Perez
Date	08/23/07
Weatherford Drilling Services	
11913 J M 529	
Houston TX USA 77041	
(713) 896 8194 MAIN	
(713) 896 0198 FAX	