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OIL CONS. DIV.

In Lieu of
Form 3160-4
(July 1992)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DEC 02 2010
SUBMIT IN
DUPLICATE
Farmington Field Office
Bureau of Land Management

FORM APPROVED
OMB NO. 1004-0132
Expires: February 28, 1995

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: ☐ OIL WELL ☒ GAS WELL ☐ DRY ☐ OTHER				7. UNIT AGREEMENT NAME Rosa Unit	
b. TYPE OF COMPLETION: ☒ NEW WELL ☐ WORKOVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ OTHER				8. FARM OR LEASE NAME, WELL NO. Rosa Unit #634B	
2. NAME OF OPERATOR WILLIAMS PRODUCTION COMPANY				9. API WELL NO. 30-039-30937-0001	
3. ADDRESS AND TELEPHONE NO. P.O. Box 640, Aztec, NM 87410 (505) 634-4208				10. FIELD AND POOL, OR WILDCAT Basin Mancos	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At Surface: 1485' FNL & 645' FEL, sec 22, T31N R6W At top production interval reported below: 1970' FNL & 20' FWL, sec 23, T31N, R6W At total depth: 1985' FNL & 26' FEL, sec 23, T31N, R6W				11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA SEC 22, T31N, R6W	
15. DATE SPUDDED 6-2-10		16. DATE T.D. REACHED 7-20-10		17. DATE COMPLETED (READY TO PRODUCE) 11/21/10	
20. TOTAL DEPTH, 12,913' MD		21. PLUG BACK T.D., MD & TVD 12,834' MD		18. ELEVATIONS (DK, RKB, RT, GR, ETC.)* 6260' GR	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)* Basin Mancos 7770' - 12644'				19. ELEVATION CASINGHEAD	
26. TYPE ELECTRIC AND OTHER LOGS RUN Array Induction (3), Spectral Density/Dual Spaced Neutral (3), GR (3), Borehole Compensated Sonic (2), CBL				25. WAS DIRECTIONAL SURVEY MADE Yes	
				27. WAS WELL CORED NO	

28. CASING REPORT (Report all strings set in well)					
CASING SIZE/GRADE	WEIGHT, LB/FT	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13-3/8", J-55	54.5# & 68#	493'	17-1/2"	405 SX - SURFACE	
9-5/8", P-110	40#	6104'	12-1/4"	1395 SX - SURFACE	
4 1/2", P-110	11.6#	12,881	6-1/8"	750 SX - 4900'	

29. LINER RECORD				30. TUBING RECORD			
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
7"	4863'	7346'	535		2.375", 4.7#, N-80, EUE 8rd	7566'	none

Mancos 12th - 80, 0.42" holes

Mancos 11th - 80, 0.42" holes

Mancos 10th - 80, 0.42" holes

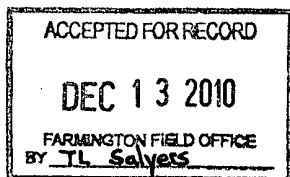
Mancos 9th - 80, 0.42" holes

Mancos 8th - 80, 0.42" holes

Mancos 7th - 80, 0.42" holes

Mancos 6th - 80, 0.42" holes

Mancos 5th - 80, 0.42" holes



CONFIDENTIAL

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7,770'-7,984'	Frac w/ 6,255# 100 mesh sand followed w/337,807# 40/70 mesh Ottawa sand
8,066'-8,262'	Frac with 5,926# 100 mesh sand followed w/329,249# 40/70 mesh Ottawa sand
8,346'-8,552'	Frac w/6,260# 100 mesh sand followed w/326,846 # 40/70 mesh Ottawa sand
8,656'-8,884'	Frac w/6,308# 100 mesh sand followed w/332,076# 40/70 mesh Ottawa sand
9,091'-9,426'	Frac w/6,250# 100 mesh sand followed w/305,566# 40/70 mesh Ottawa sand
9,516'-9,930'	Frac w/6,200# 100 mesh sand followed w/317,971 40/70 mesh Ottawa sand
10,076'-10,400'	Frac w/6,250# 100 mesh sand followed w/306,088 40/70 mesh Ottawa sand
10,650'-10,984'	Frac w/6,406# 100 mesh sand followed w/303,976# 40/70 mesh Ottawa sand

NMOCD

Mancos 4th – 80, 0.42" holes

11,066'-11,350'

Frac w/6,328# 100 mesh sand followed w/317,117# 40/70 mesh Ottawa sand

Mancos 3rd – 80, 0.42" holes

11,446'-11,750'

Frac w/7,309# 100 mesh sand followed w/311,608# 40/70 mesh Ottawa sand

Mancos 2nd – 80, 0.42" holes

11,886'-12,180'

Frac w/5,964# 100 mesh sand followed w/321,330# 40/70 mesh Ottawa sand

Mancos 1st – 100, 0.42" holes

12,268'-12,644'

Frac w/8,409# 100 mesh sand followed w/316,285# 40/70 mesh Ottawa sand

33. PRODUCTION

DATE OF FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping-size and type of pump)				WELL STATUS (PRODUCING OR SI)	
						flowing	
DATE OF TEST	TESTED	CHOKE SIZE	PROD'N FOR TEST PERIOD	OIL - BBL.	GAS - MCF	WATER - BBL.	GAS-OIL RATIO
FLOW TBG PRESS	CASING PRESSURE	CALCULATED 24-HOUR RATE		OIL - BBL.	GAS - MCF	WATER - BBL.	OIL GRAVITY-API (CORR.)

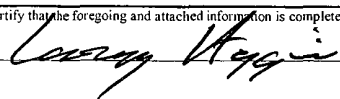
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.): TO BE SOLD

TEST WITNESSED BY:

35. LIST OF ATTACHMENTS: SUMMARY OF POROUS ZONES, WELLBORE DIAGRAM, EOW REPORT

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED



TITLE Permit Supervisor

DATE 12/1/10

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals, and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):					38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP		TRUE VERTICAL DEPTH
					NAME	MEASURED DEPTH	
					FRUITLAND	2947'	2946'
					PICTURED CLIFFS	3102'	3101'
					CLIFFHOUSE	5340'	5327'
					POINT LOOKOUT	5607'	5556'
					MANCOS	6180'	6078'

ROSA UNIT #634B
Basin Mancos Horizontal

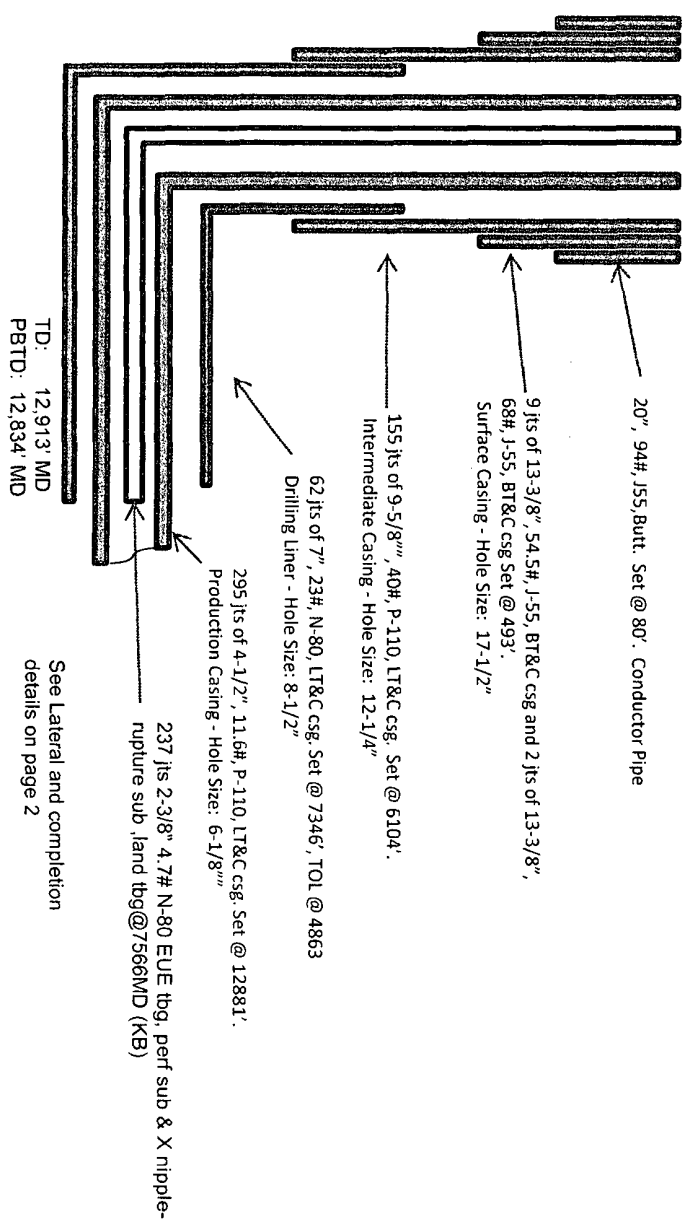
Spud: 06/02/10
Completed: 11/21/10

Surface Location: 1485' FNL & 645' FEL
 SE/4 NE/4 Section 22 (H), T31N, R6W

BHL: Entry - 1970' FNL & 20' FWL
 End - 1985' FNL & 26' FEL
 S/2 N/2 Section 23, T31N, R 6W

Rio Arriba Co, NM
 Elevation: 6260' GR
 API: 30-039-30937

Tops	MD	TVD
Ojo Alamo	2325'	2324'
Fruitland	2947'	2946'
Pictured Cliffs	3102'	3101'
Cliff House	5340'	5327'
Point Lookout	5607'	5556'
Mancos	6180'	6078'



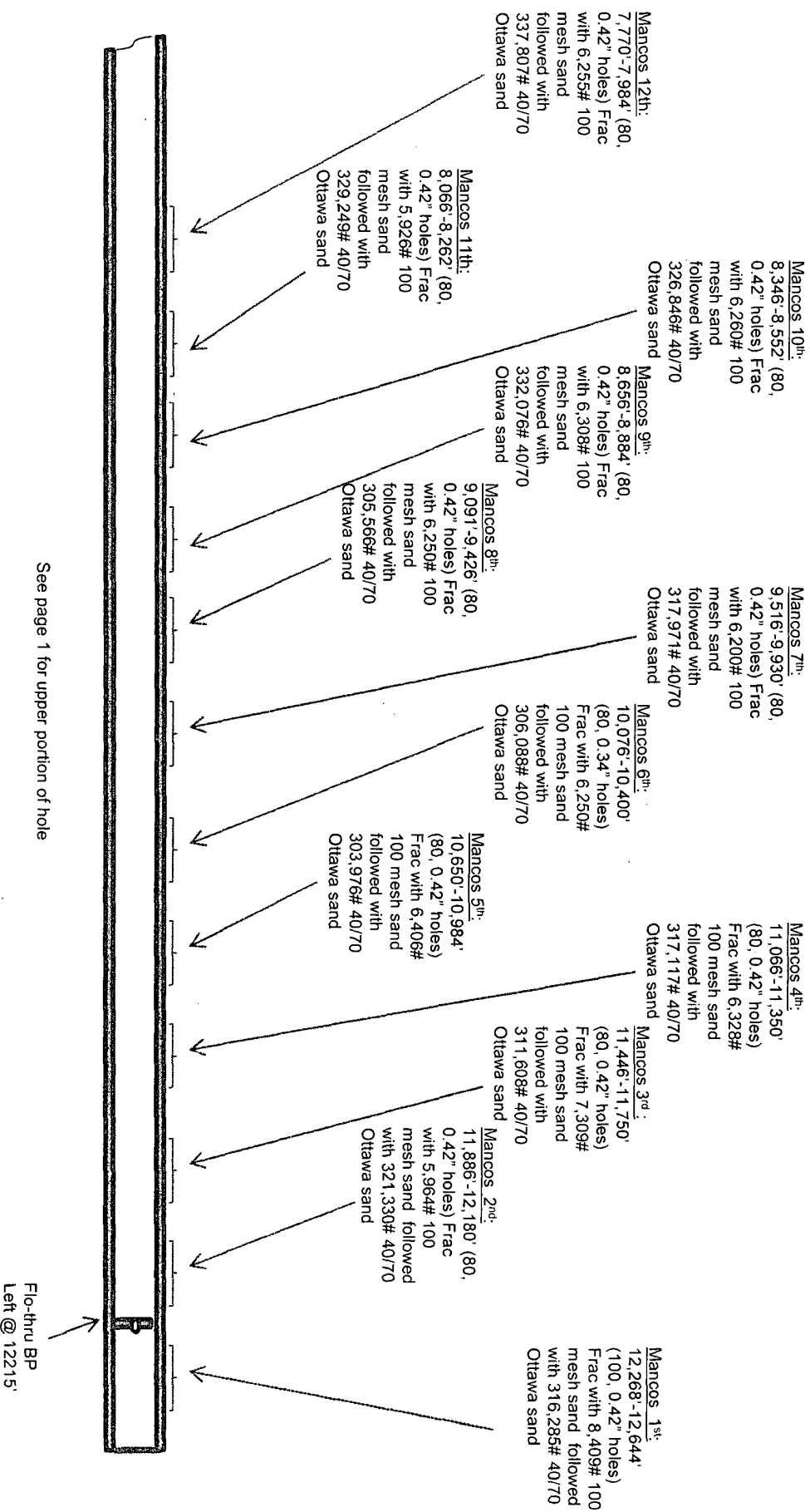
LH 11/24/10

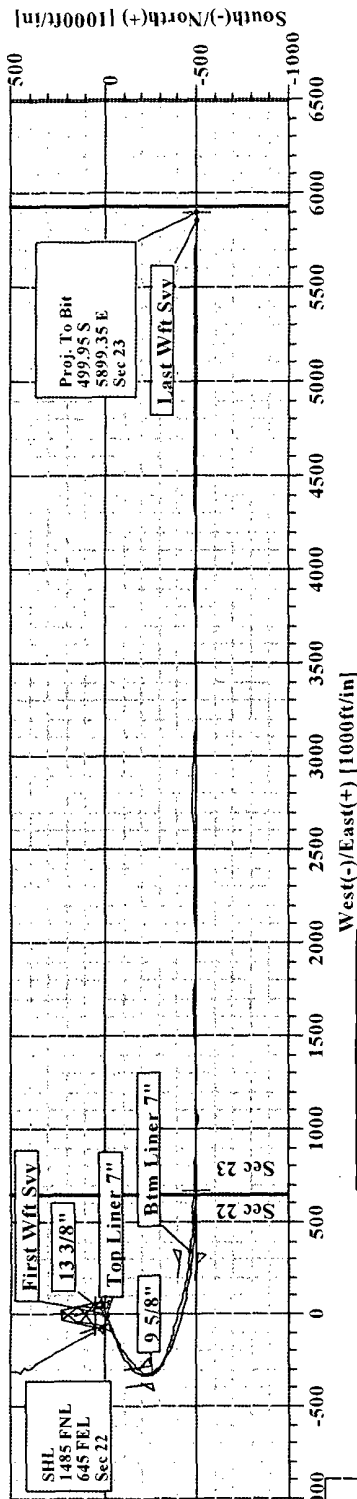
HOLE SIZE	CASING	CEMENT	VOLUME	CMT TOP
26"	20"		Pre Set	Surface
17-1/2"	13-3/8"	405 sx	721 cu.ft.	Surface
12-1/4"	9-5/8"	1395 sx	1995 cu.ft.	350' (CBL)
8-1/2"	7"	535 sx	696 cu.ft.	Not Reported
6-1/8"	4-1/2"	750 sx	1073 cu.ft.	4900' (CBL)

ROSA UNIT #634B

Basin Mancos Horizontal

(page 2 - lateral with completion)





LEGEND

 Rosa Unit 634

 Wft Svy

Weatherford

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Rosa Unit 634B	0.00	0.00	2142903.98	2837130.56	36°53'17.880N	107°36'36.204W	N/A

SECTION DETAILS

	Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DIleg	TFace	VFace	Target
1	1	5157.00	11.90	246.57	5153.84	-15.18	-31.14	0.00	0.00	-29.74	
2	2	5555.14	35.79	247.01	5515.37	-77.88	-178.11	6.00	0.64	-170.86	Lp
3	3	7654.32	91.52	90.06	6947.00	-496.58	663.64	5.91	-151.82	-703.36	Pbhd
		12891.24	91.52	90.06	6608.00	-502.01	5898.71	0.00	-158.42	5920.03	Pbhd

SITE DETAILS

Rosa Unit 634B
Site Centre Latitude: 36°53'17.880N
Longitude: 107°26'36.204W

Ground Level: 6260.0
Positional Uncertainty: 0.00
Convergence: 0.23

FORMATION TOP DETAILS

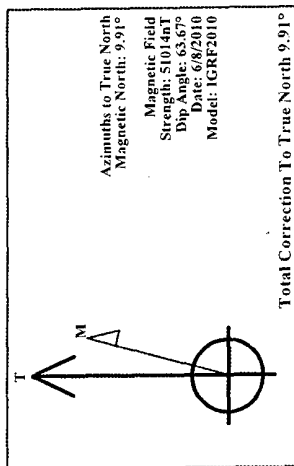
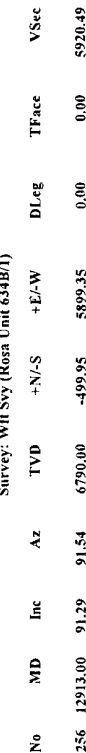
No.	TVPdPath	MDPPath	Formation
1	2345.00	2345.76	Ojo Alamo Ss.
2	2345.00	2345.77	Kirlandale Sh.
3	2345.00	2345.98	Frutland Fm.
4	3120.00	3121.01	Pictured Cliffs Ss.
5	3401.00	3402.05	Lewis Sh.
6	5295.00	5304.65	Cliff House Ss.
7	5350.00	5364.53	Menefee Fm.
8	5585.00	5637.30	Point Lookout Ss.
9	5680.00	5673.60	Manos Sh.

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Pbhl	6808.00	-502.01	5898.71	Point
Lp	6947.00	-496.58	663.64	Point

CASING DETAILS

No.	TVD	MD	Name	Size
1	491.89	492.00	13 3/8"	13.375
2	6004.41	6104.00	9 5/8"	9.625
3	4863.37	4865.00	Top Liner 7"	7.000
4	6902.27	7346.00	Btm Liner 7"	7.000



Total Correction To True North 9.91°

Survey: Wft Svy (Rosa Unit 634B/I)

Created By: Russell W. Joyner

Date: 7/20/2010



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: WILLIAMS PRODUCTION	Date: 7/20/2010	Time: 15:27:16	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634B, True North		
Site: Rosa Unit 634B	Vertical (TVD) Reference: SITE 6278.5		
Well: Rosa Unit 634B	Section (VS) Reference: Well (0.00N,0.00E,94.86Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: Wft Svy	Start Date: 6/7/2010
Company: Weatherford International Ltd.	Engineer: Russell W Joyner
Tool: MWD:MWD - Standard	Tied-to: From Surface

Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)

Map System: US State Plane Coordinate System 1983	Map Zone: New Mexico, Western Zone
Geo Datum: GRS 1980	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: Rosa Unit 634B

Site Position:	Northing: 2142903.98 ft	Latitude: 36 53 17.880 N
From: Geographic	Easting: 2837130.56 ft	Longitude: 107 26 36.204 W
Position Uncertainty: 0.00 ft	North Reference: True	
Ground Level: 6260.00 ft	Grid Convergence: 0.23 deg	

Well: Rosa Unit 634B	Slot Name:
Well Position: +N/-S 0.00 ft	Northing: 2142903.98 ft
+E/-W 0.00 ft	Easting: 2837130.56 ft
Position Uncertainty: 0.00 ft	Latitude: 36 53 17.880 N
	Longitude: 107 26 36.204 W

Wellpath: 1	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 6/8/2010	Above System Datum: Mean Sea Level
Field Strength: 51014 nT	Declination: 9.91 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 63.67 deg
ft	+N/-S
	+E/-W
	Direction
	deg
0.00	0.00
0.00	0.00
0.00	94.86

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2142903.98	2837130.56	
492.00	2.08	159.85	491.89	-8.39	3.08	0.42	3.78	2142895.61	2837133.67	
546.00	2.31	159.85	545.85	-10.33	3.79	0.42	4.65	2142893.67	2837134.39	
606.00	1.92	160.68	605.81	-12.42	4.54	0.65	5.58	2142891.59	2837135.15	
667.00	1.16	156.64	666.79	-13.95	5.12	1.26	6.29	2142890.06	2837135.74	
729.00	0.56	146.03	728.78	-14.77	5.54	1.00	6.77	2142889.23	2837136.16	
791.00	0.79	354.94	790.78	-14.60	5.67	2.11	6.89	2142889.41	2837136.29	
854.00	1.09	348.81	853.77	-13.58	5.52	0.50	6.65	2142890.43	2837136.13	
915.00	1.18	358.85	914.76	-12.38	5.39	0.36	6.42	2142891.62	2837136.00	
978.00	1.43	352.79	977.74	-10.95	5.28	0.45	6.19	2142893.05	2837135.88	
1040.00	1.56	354.29	1039.72	-9.35	5.10	0.22	5.87	2142894.66	2837135.69	
1101.00	1.68	1.38	1100.70	-7.63	5.04	0.38	5.67	2142896.38	2837135.63	
1163.00	1.91	2.37	1162.67	-5.68	5.10	0.37	5.57	2142898.32	2837135.68	
1225.00	2.26	1.83	1224.63	-3.43	5.19	0.57	5.46	2142900.57	2837135.76	
1288.00	2.92	1.01	1287.56	-0.58	5.25	1.05	5.28	2142903.42	2837135.81	
1350.00	2.14	1.72	1349.50	2.15	5.32	1.26	5.11	2142906.15	2837135.86	
1412.00	1.35	7.57	1411.47	4.03	5.45	1.30	5.09	2142908.04	2837135.99	
1473.00	0.73	10.54	1472.46	5.13	5.61	1.02	5.16	2142909.13	2837136.15	
1535.00	0.36	351.42	1534.46	5.71	5.66	0.66	5.15	2142909.71	2837136.19	
1597.00	0.16	83.15	1596.46	5.91	5.71	0.64	5.19	2142909.92	2837136.24	
1659.00	0.44	241.37	1658.46	5.81	5.59	0.95	5.08	2142909.81	2837136.12	
1721.00	1.06	242.26	1720.45	5.43	4.87	1.00	4.40	2142909.43	2837135.41	
1783.00	1.53	239.78	1782.44	4.74	3.65	0.76	3.24	2142908.74	2837134.19	
1846.00	1.63	239.45	1845.41	3.86	2.15	0.16	1.82	2142907.85	2837132.69	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: WILLIAMS PRODUCTION
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)
Site: Rosa Unit 634B
Well: Rosa Unit 634B
Wellpath: 1

Date: 7/20/2010
Co-ordinate(NE) Reference: Well: Rosa Unit 634B, True North
Vertical (TVD) Reference: SITE 6278.5
Section (VS) Reference: Well (0.00N,0.00E,94.86Azi)
Survey Calculation Method: Minimum Curvature
Db: Sybase

Page: 2

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
1907.00	2.00	244.79	1906.38	2.97	0.44	0.67	0.19	2142906.95	2837130.99	
1972.00	2.06	243.04	1971.34	1.96	-1.63	0.13	-1.79	2142905.93	2837128.92	
2034.00	1.38	247.41	2033.31	1.16	-3.31	1.12	-3.39	2142905.13	2837127.24	
2096.00	1.13	256.29	2095.30	0.73	-4.59	0.51	-4.64	2142904.70	2837125.96	
2159.00	1.25	260.91	2158.28	0.48	-5.87	0.24	-5.89	2142904.43	2837124.68	
2221.00	1.13	261.29	2220.27	0.28	-7.15	0.19	-7.14	2142904.23	2837123.41	
2283.00	1.25	248.66	2282.26	-0.06	-8.38	0.46	-8.34	2142903.89	2837122.18	
2345.00	1.06	247.91	2344.24	-0.52	-9.54	0.31	-9.46	2142903.42	2837121.02	
2408.00	0.69	213.16	2407.24	-1.06	-10.29	1.00	-10.16	2142902.88	2837120.27	
2470.00	0.84	196.92	2469.23	-1.81	-10.62	0.42	-10.43	2142902.13	2837119.94	
2533.00	1.06	171.79	2532.22	-2.83	-10.68	0.74	-10.40	2142901.11	2837119.89	
2595.00	1.63	135.91	2594.21	-4.03	-9.98	1.60	-9.60	2142899.91	2837120.59	
2657.00	1.88	127.54	2656.18	-5.28	-8.56	0.58	-8.08	2142898.67	2837122.02	
2721.00	1.95	115.76	2720.14	-6.39	-6.75	0.62	-6.18	2142897.56	2837123.83	
2785.00	1.69	108.54	2784.11	-7.17	-4.87	0.54	-4.25	2142896.80	2837125.71	
2848.00	1.75	94.04	2847.08	-7.53	-3.03	0.70	-2.38	2142896.44	2837127.56	
2910.00	2.19	86.29	2909.04	-7.52	-0.91	0.83	-0.26	2142896.46	2837129.68	
2972.00	1.38	85.16	2971.01	-7.38	1.02	1.31	1.64	2142896.61	2837131.61	
3034.00	1.06	101.41	3033.00	-7.43	2.33	0.76	2.95	2142896.56	2837132.91	
3095.00	0.83	88.20	3093.99	-7.53	3.32	0.52	3.95	2142896.47	2837133.91	
3157.00	0.88	81.91	3155.99	-7.45	4.24	0.17	4.86	2142896.55	2837134.83	
3219.00	1.00	83.04	3217.98	-7.31	5.25	0.20	5.85	2142896.69	2837135.84	
3281.00	1.00	71.79	3279.97	-7.08	6.30	0.32	6.88	2142896.93	2837136.89	
3343.00	0.88	32.04	3341.96	-6.51	7.07	1.05	7.59	2142897.50	2837137.65	
3406.00	0.69	29.91	3404.95	-5.77	7.51	0.31	7.98	2142898.25	2837138.09	
3467.00	0.86	17.99	3465.95	-5.01	7.84	0.38	8.23	2142899.00	2837138.41	
3530.00	1.19	351.66	3528.94	-3.92	7.89	0.90	8.19	2142900.10	2837138.46	
3592.00	1.75	339.54	3590.92	-2.39	7.46	1.03	7.64	2142901.62	2837138.03	
3654.00	1.75	343.66	3652.89	-0.60	6.87	0.20	6.89	2142903.41	2837137.43	
3716.00	1.94	341.04	3714.86	1.30	6.26	0.34	6.13	2142905.31	2837136.81	
3778.00	1.71	346.24	3776.83	3.19	5.70	0.46	5.41	2142907.20	2837136.24	
3840.00	1.50	359.41	3838.80	4.90	5.47	0.68	5.04	2142908.91	2837136.01	
3902.00	1.44	3.41	3900.78	6.49	5.51	0.19	4.94	2142910.50	2837136.04	
3964.00	1.19	338.79	3962.77	7.87	5.32	0.99	4.64	2142911.88	2837135.85	
4026.00	1.10	322.48	4024.75	8.94	4.73	0.54	3.95	2142912.94	2837135.25	
4088.00	1.38	287.29	4086.74	9.64	3.65	1.28	2.82	2142913.63	2837134.17	
4150.00	1.31	266.54	4148.72	9.82	2.23	0.79	1.39	2142913.81	2837132.75	
4212.00	1.44	260.79	4210.70	9.65	0.75	0.31	-0.07	2142913.63	2837131.27	
4275.00	1.69	245.41	4273.68	9.14	-0.87	0.77	-1.64	2142913.11	2837129.65	
4337.00	2.25	242.79	4335.64	8.20	-2.78	0.91	-3.47	2142912.17	2837127.74	
4399.00	2.08	229.43	4397.60	6.91	-4.72	0.86	-5.29	2142910.87	2837125.81	
4461.00	1.94	222.29	4459.56	5.40	-6.28	0.46	-6.72	2142909.36	2837124.25	
4523.00	2.13	208.29	4521.52	3.61	-7.54	0.86	-7.81	2142907.56	2837123.01	
4585.00	2.00	204.04	4583.48	1.61	-8.52	0.32	-8.63	2142905.56	2837122.03	
4648.00	1.75	185.04	4646.45	-0.35	-9.05	1.06	-8.99	2142903.59	2837121.50	
4711.00	1.75	164.91	4709.42	-2.24	-8.89	0.97	-8.67	2142901.71	2837121.68	
4773.00	1.56	164.54	4771.40	-3.97	-8.42	0.31	-8.05	2142899.98	2837122.16	
4832.00	1.38	174.29	4830.38	-5.45	-8.13	0.52	-7.64	2142898.50	2837122.45	
4863.00	1.17	184.63	4861.37	-6.14	-8.12	1.00	-7.57	2142897.81	2837122.46	
4865.00	1.14	186.76	4863.37	-6.18	-8.12	2.49	-7.57	2142897.77	2837122.46	Top Liner 7"
4885.00	1.00	212.54	4883.36	-6.52	-8.24	2.49	-7.66	2142897.43	2837122.34	
4916.00	1.29	244.41	4914.36	-6.90	-8.70	2.22	-8.09	2142897.05	2837121.88	



Weatherford International Ltd.

WFT Survey Report X & Y's

**Weatherford**

Company: WILLIAMS PRODUCTION
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)
Site: Rosa Unit 634B
Well: Rosa Unit 634B
Wellpath: 1

Date: 7/20/2010 Time: 15:27:16 Page: 3
Co-ordinate(NE) Reference: Well: Rosa Unit 634B, True North
Vertical (TVD) Reference: SITE 6278.5
Section (VS) Reference: Well (0.00N,0.00E,94.86Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
4947.00	1.88	251.91	4945.35	-7.21	-9.50	2.01	-8.85	2142896.73	2837121.09	
4978.00	3.25	254.91	4976.32	-7.60	-10.83	4.44	-10.15	2142896.34	2837119.76	
5009.00	4.69	250.41	5007.24	-8.25	-12.87	4.75	-12.13	2142895.68	2837117.72	
5040.00	5.50	252.16	5038.12	-9.13	-15.48	2.66	-14.65	2142894.79	2837115.11	
5071.00	6.68	250.62	5068.94	-10.18	-18.60	3.84	-17.67	2142893.72	2837112.00	
5102.00	8.06	249.16	5099.69	-11.55	-22.33	4.49	-21.27	2142892.34	2837108.27	
5133.00	9.63	251.62	5130.32	-13.15	-26.82	5.21	-25.61	2142890.73	2837103.79	
5164.00	11.88	250.41	5160.77	-15.03	-32.29	7.29	-30.90	2142888.82	2837098.33	
5195.00	14.13	249.04	5190.97	-17.46	-38.83	7.33	-37.21	2142886.37	2837091.80	
5226.00	16.75	249.04	5220.85	-20.41	-46.54	8.45	-44.64	2142883.38	2837084.10	
5257.00	19.12	250.94	5250.34	-23.66	-55.51	7.87	-53.30	2142880.09	2837075.15	
5288.00	20.88	248.66	5279.47	-27.33	-65.45	6.21	-62.90	2142876.38	2837065.22	
5319.00	22.31	246.16	5308.30	-31.72	-75.98	5.48	-73.02	2142871.95	2837054.70	
5350.00	24.09	244.39	5336.79	-36.84	-87.07	6.17	-83.63	2142866.79	2837043.64	
5381.00	26.39	243.31	5364.83	-42.67	-98.93	7.57	-94.96	2142860.91	2837031.80	
5412.00	28.81	242.91	5392.30	-49.16	-111.74	7.83	-107.17	2142854.36	2837019.02	
5443.00	30.69	243.29	5419.21	-56.12	-125.46	6.09	-120.25	2142847.35	2837005.33	
5474.00	31.81	242.54	5445.71	-63.44	-139.77	3.82	-133.89	2142839.97	2836991.04	
5505.00	32.91	242.79	5471.90	-71.06	-154.51	3.57	-147.93	2142832.29	2836976.33	
5536.00	31.81	240.16	5498.08	-78.98	-169.09	5.76	-161.79	2142824.31	2836961.79	
5567.00	30.38	237.04	5524.63	-87.31	-182.76	6.95	-174.70	2142815.93	2836948.16	
5598.00	30.39	233.42	5551.38	-96.25	-195.63	5.91	-186.77	2142806.93	2836935.32	
5629.00	31.63	232.66	5577.94	-105.85	-208.39	4.19	-198.67	2142797.28	2836922.60	
5660.00	32.94	233.91	5604.15	-115.75	-221.67	4.74	-211.05	2142787.33	2836909.36	
5691.00	33.13	235.41	5630.14	-125.52	-235.45	2.71	-223.96	2142777.50	2836895.62	
5722.00	33.56	236.41	5656.04	-135.07	-249.56	2.25	-237.21	2142767.89	2836881.55	
5753.00	32.19	232.91	5682.07	-144.79	-263.29	7.55	-250.06	2142758.11	2836867.86	
5784.00	30.55	229.12	5708.54	-154.93	-275.84	8.27	-261.70	2142747.92	2836855.36	
5816.00	29.00	226.11	5736.32	-165.63	-287.58	6.73	-272.50	2142737.18	2836843.66	
5847.00	26.88	220.54	5763.71	-176.17	-297.55	10.84	-281.54	2142726.60	2836833.73	
5878.00	24.75	216.04	5791.62	-186.75	-305.92	9.33	-288.99	2142715.99	2836825.40	
5909.00	23.00	210.04	5819.97	-197.24	-312.78	9.65	-294.92	2142705.47	2836818.59	
5940.00	21.75	204.66	5848.64	-207.70	-318.20	7.74	-299.45	2142694.98	2836813.20	
5971.00	20.44	199.70	5877.56	-218.02	-322.43	7.14	-302.78	2142684.65	2836809.02	
6002.00	18.69	193.66	5906.77	-227.94	-325.42	8.62	-304.92	2142674.71	2836806.07	
6034.00	17.63	186.04	5937.18	-237.75	-327.15	8.12	-305.81	2142664.90	2836804.38	
6057.00	16.52	182.79	5959.17	-244.48	-327.67	6.36	-305.76	2142658.17	2836803.89	
6096.00	15.27	174.16	5996.68	-255.13	-327.42	6.85	-304.61	2142647.52	2836804.18	
6104.00	14.96	172.96	6004.41	-257.20	-327.18	5.47	-304.20	2142645.45	2836804.42	9 5/8"
6127.00	14.12	169.24	6026.67	-262.90	-326.30	5.47	-302.83	2142639.75	2836805.34	
6159.00	14.03	155.95	6057.72	-270.28	-323.99	10.08	-299.90	2142632.38	2836807.68	
6189.00	14.07	144.97	6086.83	-276.59	-320.41	8.87	-295.80	2142626.09	2836811.28	
6221.00	14.75	138.41	6117.82	-282.82	-315.47	5.52	-290.36	2142619.87	2836816.24	
6252.00	15.00	139.29	6147.78	-288.81	-310.24	1.09	-284.63	2142613.90	2836821.50	
6283.00	14.69	135.79	6177.75	-294.67	-304.88	3.06	-278.79	2142608.07	2836826.88	
6314.00	14.44	130.54	6207.75	-300.00	-299.20	4.33	-272.68	2142602.76	2836832.58	
6346.00	14.88	123.16	6238.71	-304.84	-292.73	5.99	-265.83	2142597.94	2836839.07	
6377.00	15.25	122.79	6268.65	-309.23	-285.97	1.23	-258.72	2142593.59	2836845.85	
6408.00	16.56	119.79	6298.46	-313.63	-278.71	4.99	-251.11	2142589.21	2836853.13	
6439.00	17.83	118.06	6328.08	-318.06	-270.69	4.42	-242.74	2142584.82	2836861.17	
6470.00	18.50	115.04	6357.53	-322.37	-262.04	3.73	-233.76	2142580.54	2836869.83	
6501.00	20.00	113.91	6386.80	-326.61	-252.74	4.99	-224.13	2142576.35	2836879.15	
6532.00	21.69	112.29	6415.77	-330.93	-242.59	5.76	-213.66	2142572.07	2836889.32	



Weatherford International Ltd.

WFT Survey Report X & Y's

**Weatherford**

Company: WILLIAMS PRODUCTION
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)
Site: Rosa Unit 634B
Well: Rosa Unit 634B
Wellpath: 1

Date: 7/20/2010
Co-ordinate(NE) Reference: Well: Rosa Unit 634B, True North
Vertical (TVD) Reference: SITE 6278.5
Section (VS) Reference: Well (0.00N,0.00E,94.86Azi)
Survey Calculation Method: Minimum Curvature
Db: Sybase

Page: 4

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
6563.00	23.94	109.66	6444.34	-335.22	-231.37	7.97	-202.11	2142567.82	2836900.56	
6594.00	25.44	109.54	6472.51	-339.56	-219.17	4.84	-189.58	2142563.53	2836912.78	
6625.00	27.00	109.04	6500.31	-344.08	-206.24	5.08	-176.32	2142559.06	2836925.72	
6656.00	29.22	107.29	6527.66	-348.63	-192.36	7.64	-162.11	2142554.57	2836939.62	
6687.00	31.63	106.66	6554.39	-353.21	-177.35	7.84	-146.76	2142550.05	2836954.65	
6718.00	31.94	105.66	6580.74	-357.75	-161.66	1.97	-130.74	2142545.57	2836970.36	
6749.00	32.94	104.29	6606.90	-362.05	-145.60	4.00	-114.37	2142541.34	2836986.44	
6780.00	34.49	102.39	6632.69	-366.01	-128.86	6.05	-97.36	2142537.45	2837003.19	
6811.00	37.75	101.79	6657.72	-369.83	-110.99	10.58	-79.23	2142533.70	2837021.08	
6842.00	42.06	103.66	6681.50	-374.23	-91.60	14.43	-59.54	2142529.38	2837040.48	
6873.00	46.38	104.04	6703.71	-379.40	-70.62	13.96	-38.19	2142524.29	2837061.49	
6904.00	51.26	105.45	6724.12	-385.35	-48.06	16.11	-15.21	2142518.44	2837084.07	
6936.00	55.92	106.20	6743.11	-392.38	-23.30	14.68	10.06	2142511.51	2837108.86	
6967.00	59.31	107.04	6759.71	-399.87	1.78	11.17	35.69	2142504.13	2837133.97	
6997.00	61.19	106.54	6774.59	-407.39	26.72	6.43	61.17	2142496.71	2837158.94	
7028.00	62.88	105.91	6789.13	-415.04	53.01	5.74	88.01	2142489.17	2837185.26	
7060.00	64.15	104.45	6803.40	-422.53	80.65	5.69	116.19	2142481.78	2837212.93	
7091.00	65.44	103.16	6816.60	-429.22	107.89	5.61	143.90	2142475.20	2837240.20	
7122.00	66.38	101.79	6829.26	-435.34	135.52	5.05	171.94	2142469.20	2837267.85	
7153.00	67.31	100.54	6841.45	-440.85	163.48	4.77	200.27	2142463.80	2837295.84	
7184.00	68.44	99.41	6853.12	-445.83	191.76	4.97	228.88	2142458.94	2837324.14	
7215.00	70.25	98.29	6864.06	-450.29	220.42	6.75	257.81	2142454.60	2837352.82	
7246.00	71.63	97.13	6874.18	-454.22	249.46	5.69	287.08	2142450.79	2837381.87	
7277.00	73.00	96.54	6883.60	-457.73	278.78	4.78	316.59	2142447.39	2837411.21	
7346.00	75.60	97.41	6902.27	-465.80	344.71	3.96	382.97	2142439.59	2837477.17	Btm Liner 7"
7374.00	76.66	97.76	6908.98	-469.39	371.65	3.96	410.12	2142436.11	2837504.13	
7405.00	76.48	95.96	6916.18	-472.99	401.59	5.68	440.25	2142432.63	2837534.07	
7436.00	77.28	94.81	6923.21	-475.83	431.65	4.44	470.44	2142429.92	2837564.14	
7467.00	78.00	94.29	6929.85	-478.23	461.83	2.84	500.72	2142427.65	2837594.34	
7498.00	79.13	93.41	6936.00	-480.27	492.15	4.59	531.10	2142425.73	2837624.66	
7529.00	80.25	92.41	6941.54	-481.81	522.61	4.81	561.58	2142424.31	2837655.13	
7560.00	81.97	91.82	6946.33	-482.94	553.21	5.86	592.17	2142423.30	2837685.74	
7591.00	86.44	90.91	6949.46	-483.68	584.04	14.71	622.95	2142422.69	2837716.56	
7647.00	95.11	91.37	6948.71	-484.79	639.97	15.50	678.77	2142421.81	2837772.50	
7679.00	95.44	91.54	6945.77	-485.60	671.82	1.16	710.58	2142421.13	2837804.36	
7710.00	95.44	91.91	6942.83	-486.53	702.67	1.19	741.39	2142420.33	2837835.21	
7742.00	95.13	92.79	6939.88	-487.84	734.50	2.90	773.23	2142419.15	2837867.05	
7773.00	95.00	93.04	6937.14	-489.41	765.34	0.91	804.09	2142417.71	2837897.89	
7804.00	94.23	93.68	6934.65	-491.22	796.19	3.23	834.98	2142416.02	2837928.75	
7835.00	93.06	93.79	6932.68	-493.23	827.06	3.79	865.91	2142414.13	2837959.62	
7866.00	92.19	94.04	6931.26	-495.35	857.96	2.92	896.87	2142412.14	2837990.53	
7897.00	91.13	93.66	6930.36	-497.43	888.87	3.63	927.85	2142410.19	2838021.45	
7928.00	89.75	93.41	6930.12	-499.34	919.81	4.52	958.84	2142408.41	2838052.40	
7959.00	89.54	93.32	6930.31	-501.16	950.76	0.74	989.83	2142406.71	2838083.35	
7990.00	89.31	93.16	6930.62	-502.91	981.71	0.90	1020.82	2142405.09	2838114.31	
8017.00	89.24	94.10	6930.97	-504.62	1008.65	3.49	1047.81	2142403.49	2838141.26	
8048.00	89.94	91.04	6931.19	-506.01	1039.61	10.13	1078.78	2142402.22	2838172.23	
8079.00	89.13	87.16	6931.44	-505.52	1070.60	12.79	1109.61	2142402.84	2838203.22	
8111.00	89.00	86.54	6931.96	-503.76	1102.55	1.98	1141.30	2142404.73	2838235.15	
8142.00	91.88	87.79	6931.72	-502.23	1133.51	10.13	1172.01	2142406.39	2838266.11	
8173.00	93.44	88.04	6930.29	-501.10	1164.45	5.10	1202.75	2142407.64	2838297.05	
8204.00	93.41	87.98	6928.43	-500.03	1195.38	0.22	1233.47	2142408.84	2838327.97	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: WILLIAMS PRODUCTION	Date: 7/20/2010	Time: 15:27:16	Page: 5
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634B, True North		
Site: Rosa Unit 634B	Vertical (TVD) Reference: SITE 6278.5		
Well: Rosa Unit 634B	Section (VS) Reference: Well (0.00N,0.00E,94.86Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
8236.00	93.31	88.04	6926.56	-498.92	1227.30	0.36	1265.19	2142410.08	2838359.89	
8267.00	92.63	89.54	6924.95	-498.27	1258.25	5.31	1295.97	2142410.86	2838390.84	
8298.00	92.69	89.79	6923.51	-498.09	1289.22	0.83	1326.81	2142411.17	2838421.80	
8329.00	90.31	89.79	6922.70	-497.97	1320.21	7.68	1357.68	2142411.41	2838452.79	
8392.00	91.50	89.18	6921.71	-497.41	1383.20	2.12	1420.39	2142412.23	2838515.77	
8454.00	91.00	88.66	6920.35	-496.24	1445.17	1.16	1482.04	2142413.65	2838577.74	
8516.00	91.94	88.41	6918.76	-494.65	1507.13	1.57	1543.64	2142415.49	2838639.69	
8578.00	91.51	88.09	6916.90	-492.76	1569.07	0.86	1605.20	2142417.64	2838701.63	
8640.00	93.06	88.91	6914.42	-491.14	1631.00	2.83	1666.77	2142419.51	2838763.55	
8702.00	93.06	92.66	6911.11	-491.99	1692.89	6.04	1728.51	2142418.92	2838825.44	
8764.00	91.69	92.41	6908.54	-494.73	1754.78	2.25	1790.41	2142416.43	2838887.34	
8826.00	90.48	91.17	6907.37	-496.66	1816.73	2.79	1852.31	2142414.75	2838949.30	
8888.00	91.88	89.79	6906.09	-497.18	1878.71	3.17	1914.11	2142414.48	2839011.29	
8950.00	91.31	89.41	6904.37	-496.75	1940.69	1.10	1975.82	2142415.17	2839073.26	
9012.00	90.16	89.27	6903.57	-496.04	2002.68	1.87	2037.53	2142416.13	2839135.24	
9074.00	90.50	89.54	6903.22	-495.39	2064.67	0.70	2099.25	2142417.03	2839197.24	
9136.00	90.47	88.73	6902.69	-494.46	2126.66	1.31	2160.93	2142418.22	2839259.22	
9199.00	90.50	88.91	6902.16	-493.16	2189.65	0.29	2223.58	2142419.77	2839322.20	
9261.00	91.06	88.79	6901.31	-491.91	2251.63	0.92	2285.23	2142421.27	2839384.18	
9322.00	91.44	89.29	6899.98	-490.89	2312.61	1.03	2345.90	2142422.54	2839445.15	
9384.00	91.44	89.12	6898.43	-490.03	2374.58	0.27	2407.58	2142423.66	2839507.12	
9446.00	92.00	89.54	6896.56	-489.31	2436.55	1.13	2469.26	2142424.63	2839569.08	
9508.00	90.56	89.41	6895.18	-488.74	2498.53	2.33	2530.97	2142425.45	2839631.06	
9570.00	90.63	87.66	6894.54	-487.15	2560.50	2.82	2592.59	2142427.29	2839693.03	
9633.00	92.95	87.28	6892.57	-484.38	2623.41	3.73	2655.03	2142430.33	2839755.92	
9695.00	93.25	87.66	6889.21	-481.64	2685.26	0.78	2716.43	2142433.31	2839817.76	
9758.00	93.56	89.16	6885.47	-479.90	2748.12	2.43	2778.91	2142435.32	2839880.61	
9821.00	93.50	89.29	6881.59	-479.05	2810.99	0.23	2841.49	2142436.42	2839943.48	
9883.00	94.38	91.79	6877.33	-479.63	2872.84	4.27	2903.16	2142436.09	2840005.33	
9945.00	93.82	93.42	6872.90	-482.44	2934.61	2.77	2964.95	2142433.54	2840067.12	
9990.00	93.51	92.46	6870.02	-484.74	2979.46	2.24	3009.83	2142431.42	2840111.97	
10052.00	92.50	93.54	6866.77	-487.98	3041.29	2.38	3071.71	2142428.43	2840173.81	
10114.00	91.50	93.41	6864.61	-491.74	3103.14	1.63	3133.66	2142424.92	2840235.68	
10176.00	91.34	93.45	6863.07	-495.45	3165.01	0.27	3195.62	2142421.47	2840297.56	
10238.00	89.25	91.29	6862.75	-498.01	3226.95	4.85	3257.55	2142419.16	2840359.51	
10300.00	89.31	90.04	6863.53	-498.73	3288.94	2.02	3319.38	2142418.69	2840421.50	
10362.00	91.18	90.43	6863.27	-498.99	3350.93	3.08	3381.17	2142418.69	2840483.50	
10423.00	90.19	89.41	6862.54	-498.90	3411.93	2.33	3441.94	2142419.03	2840544.49	
10485.00	90.75	87.54	6862.03	-497.25	3473.90	3.15	3503.55	2142420.93	2840606.46	
10547.00	91.06	90.04	6861.05	-495.94	3535.87	4.06	3565.19	2142422.49	2840668.42	
10609.00	90.65	89.65	6860.13	-495.77	3597.86	0.91	3626.95	2142422.91	2840730.42	
10671.00	90.25	90.29	6859.64	-495.74	3659.86	1.22	3688.72	2142423.20	2840792.41	
10734.00	91.56	89.79	6858.64	-495.78	3722.85	2.23	3751.48	2142423.41	2840855.40	
10796.00	91.06	88.91	6857.23	-495.08	3784.83	1.63	3813.18	2142424.37	2840917.38	
10859.00	91.47	88.78	6855.83	-493.81	3847.80	0.68	3875.82	2142425.89	2840980.34	
10921.00	90.00	88.91	6855.04	-492.56	3909.78	2.38	3937.47	2142427.40	2841042.32	
10983.00	90.63	92.66	6854.70	-493.41	3971.77	6.13	3999.30	2142426.80	2841104.30	
11045.00	90.97	91.64	6853.83	-495.74	4033.72	1.73	4061.22	2142424.73	2841166.26	
11107.00	91.56	91.41	6852.46	-497.39	4095.68	1.02	4123.10	2142423.33	2841228.23	
11169.00	90.95	90.25	6851.11	-498.28	4157.65	2.11	4184.93	2142422.69	2841290.21	
11231.00	90.31	88.91	6850.42	-497.83	4219.65	2.40	4246.66	2142423.40	2841352.20	
11293.00	91.88	87.91	6849.24	-496.11	4281.61	3.00	4308.26	2142425.37	2841414.16	
11355.00	92.88	88.91	6846.66	-494.39	4343.53	2.28	4369.81	2142427.34	2841476.07	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: WILLIAMS PRODUCTION	Date: 7/20/2010	Time: 15:27:16	Page: 6
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference:	Well: Rosa Unit 634B, True North	
Site: Rosa Unit 634B	Vertical (TVD) Reference:	SITE 6278.5	
Well: Rosa Unit 634B	Section (VS) Reference:	Well (0.00N,0.00E,94.86Azi)	
Wellpath: 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
11417.00	92.58	88.67	6843.71	-493.08	4405.45	0.62	4431.39	2142428.90	2841537.98	
11479.00	95.13	87.91	6839.54	-491.24	4467.27	4.29	4492.84	2142431.00	2841599.80	
11534.00	95.56	87.79	6834.42	-489.18	4522.00	0.81	4547.19	2142433.28	2841654.51	
11596.00	95.56	87.79	6828.41	-486.80	4583.66	0.00	4608.43	2142435.91	2841716.16	
11658.00	94.13	90.18	6823.18	-485.71	4645.42	4.48	4669.88	2142437.25	2841777.92	
11720.00	94.00	91.04	6818.78	-486.37	4707.26	1.40	4731.55	2142436.85	2841839.76	
11782.00	90.50	91.29	6816.35	-487.63	4769.19	5.66	4793.36	2142435.84	2841901.70	
11844.00	89.76	91.19	6816.21	-488.97	4831.18	1.20	4855.24	2142434.75	2841963.69	
11906.00	89.44	90.16	6816.64	-489.70	4893.17	1.74	4917.07	2142434.28	2842025.68	
11968.00	89.00	89.04	6817.48	-489.27	4955.16	1.94	4978.80	2142434.96	2842087.67	
12031.00	89.20	89.66	6818.47	-488.55	5018.15	1.03	5041.50	2142435.93	2842150.66	
12093.00	90.50	88.79	6818.64	-487.72	5080.14	2.52	5103.20	2142437.03	2842212.65	
12155.00	92.44	87.54	6817.04	-485.73	5142.08	3.72	5164.75	2142439.26	2842274.58	
12217.00	92.70	90.02	6814.26	-484.41	5204.00	4.02	5226.34	2142440.83	2842336.49	
12280.00	91.94	90.16	6811.71	-484.51	5266.95	1.23	5289.07	2142440.99	2842399.44	
12342.00	93.13	91.54	6808.97	-485.43	5328.88	2.94	5350.85	2142440.33	2842461.38	
12404.00	92.84	91.30	6805.74	-486.96	5390.78	0.61	5412.65	2142439.05	2842523.28	
12466.00	92.13	91.16	6803.05	-488.29	5452.70	1.17	5474.47	2142437.97	2842585.21	
12528.00	92.06	91.16	6800.79	-489.55	5514.65	0.11	5536.30	2142436.97	2842647.16	
12590.00	91.96	91.29	6798.61	-490.87	5576.60	0.26	5598.14	2142435.90	2842709.11	
12653.00	91.94	91.04	6796.47	-492.15	5639.55	0.40	5660.97	2142434.87	2842772.07	
12715.00	91.50	91.91	6794.61	-493.75	5701.50	1.57	5722.83	2142433.53	2842834.02	
12776.00	91.31	91.91	6793.11	-495.78	5762.45	0.31	5783.73	2142431.75	2842894.98	
12838.00	91.31	91.91	6791.70	-497.85	5824.40	0.00	5845.63	2142429.94	2842956.94	
12865.00	91.29	91.54	6791.08	-498.66	5851.38	1.37	5872.59	2142429.23	2842983.92	Last Wft Svy
12913.00	91.29	91.54	6790.00	-499.95	5899.35	0.00	5920.49	2142428.14	2843031.90	Proj. To Bit

Annotation

MD ft	TVD ft	
546.00	545.85	First Wft Svy
12865.00	6791.08	Last Wft Svy
12913.00	6790.00	Proj. To Bit