

RECEIVED

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OIL CONS. DIV.In Lieu of
Form 3160-4
(July 1992)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFarmington Field Office
Bureau of Land Management(See other instructions on reverse
side)FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 19955. LEASE DESIGNATION AND LEASE NO.
NMSF-078771

6. IF INDIAN, ALLOTTEE OR

7. UNIT AGREEMENT NAME

Rosa Unit

NMM-78407X

8. FARM OR LEASE NAME, WELL NO.

Rosa Unit #634A

9. API WELL NO.

30-039-30970-0151

10. FIELD AND POOL, OR WILDCAT
Basin Mancos11. SEC., T., R., M., OR BLOCK AND
SURVEY OR AREA
SEC 22, T31N, R6W12. COUNTY OR
Rio Arriba13. STATE
New Mexico

19. ELEVATION CASINGHEAD

ROTARY TOOLS

x

CABLE TOOLS

25. WAS DIRECTIONAL SURVEY MADE

Yes

27. WAS WELL CORED

NO

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: ☐ OIL WELL ☒ GAS WELL ☐ DRY ☐ OTHER

b. TYPE OF COMPLETION:

☒ NEW WELL ☐ WORKOVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ OTHER

2. NAME OF OPERATOR

WILLIAMS PRODUCTION COMPANY

3. ADDRESS AND TELEPHONE NO.

P.O. Box 640, Aztec, NM 87410 (505) 634-4208

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*

At Surface: 1480' FNL & 700' FEL, sec 22, T31N R6W

At top production interval reported below : 659' FNL & 57' FWL, sec 23, T31N, R6W

At total depth: 658' FNL & 23' FEL, sec 23, T31N, R6W

15. DATE
SPUDDED
8-9-1016. DATE T.D.
REACHED
9-30-1017. DATE COMPLETED (READY TO PRODUCE)
11-23-10

14. PERMIT NO.

DATE ISSUED

18. ELEVATIONS (DK, RKB, RT, GR, ETC.)*
6258' GR20. TOTAL DEPTH,
13,130' MD21. PLUG, BACK T.D., MD & TVD
13,080' MD22. IF MULTICOMP.,
HOW MANY23. INTERVALS
DRILLED BY

ROTARY TOOLS

x

CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)*

Basin Mancos 7,990' - 12,895'

26. TYPE ELECTRIC AND OTHER LOGS RUN

Array Induction (2), Spectral Density/Dual Spaced Neutral (2), GR (2), Borhole Compensated Sonic, CBL

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	68#	531'	17-1/2"	405 SX - SURFACE	
9-5/8", P-110	40#	6345'	12-1/4"	1735 SX - SURFACE	After squeeze
4 1/2", P-110	11.6#	13,125'	6-1/8"	1035 SX - 4836'	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
7"	4855'	7922'	420		2.375", 4.7#, N-80, EUE 8rd	7996'	none

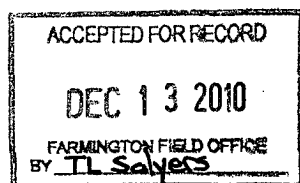
30. TUBING RECORD

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7,990'-8,344'	Frac w/ 6,282# 100 mesh sand followed w/330,956# 40/70 mesh Ottawa sand
8,430'-8,744'	Frac with 7,252# 100 mesh sand followed w/320,775# 40/70 mesh Ottawa sand
8,820'-9,144'	Frac w/6,131# 100 mesh sand followed w/343,522 # 40/70 mesh Ottawa sand
9,270'-9,564'	Frac w/6,367# 100 mesh sand followed w/330,193# 40/70 mesh Ottawa sand
9,690'-10,104'	Frac w/6,328# 100 mesh sand followed w/329,926# 40/70 mesh Ottawa sand
10,193'-10,524'	Frac w/6,250# 100 mesh sand followed w/337,234 40/70 mesh Ottawa sand
10,610'-10,884'	Frac w/6,250# 100 mesh sand followed w/369,439 40/70 mesh Ottawa sand
10,956'-11,250'	Frac w/6,250# 100 mesh sand followed w/353,180# 40/70 mesh Ottawa sand

Mancos 12th - 80, 0.42" holesMancos 11th - 80, 0.42" holesMancos 10th - 80, 0.42" holesMancos 9th - 80, 0.42" holesMancos 8th - 80, 0.42" holesMancos 7th - 80, 0.42" holesMancos 6th - 80, 0.42" holesMancos 5th - 80, 0.42" holes

CONFIDENTIAL



NMOCD

Mancos 4th – 76, 0.42" holes

11,356'-11694'

Frac w/4,756# 100 mesh sand followed w/319,498# 40/70 mesh Ottawa sand

Mancos 3rd – 80, 0.42" holes

11,830'-12,150'

Frac w/5,276# 100 mesh sand followed w/337,240# 40/70 mesh Ottawa sand

Mancos 2nd – 80, 0.42" holes

12,236'-12,544'

Frac w/5,532# 100 mesh sand followed w/294,426# 40/70 mesh Ottawa sand

Mancos 1st – 95, 0.42" holes

12,638'-12,895'

Frac w/6,366# 100 mesh sand followed w/332,487# 40/70 mesh Ottawa sand

33. PRODUCTION

DATE OF FIRST PRODUCTION		PRODUCTION METHOD (Flowing, gas lift, pumping-size and type of pump)				WELL STATUS (<i>PRODUCING OR SI</i>)	
						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

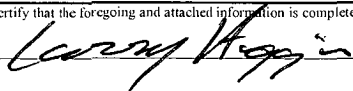
TEST WITNESSED BY:

35. LIST OF ATTACHMENTS:

SUMMARY OF POROUS ZONES, WELLBORE DIAGRAM

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

SIGNED



TITLE PERMIT SUPV

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		
					NAME	MEASURED DEPTH	TRUE VERTICAL DEPTH
					FRUITLAND	2947'	2947'
					PICTURED CLIFFS	3102'	3102'
					CLIFFHOUSE	5340'	5322'
					POINT LOOKOUT	5607'	5559'
					MANCOS	6180'	6082'

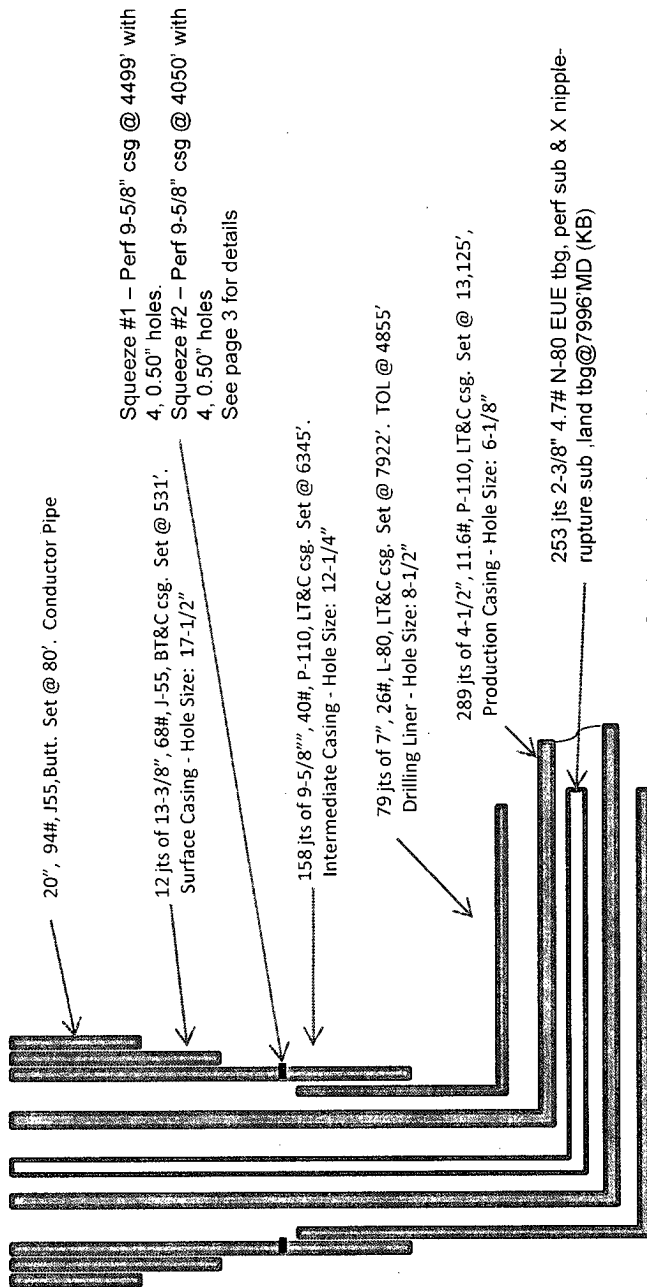
ROSA UNIT #634A **Basin Mancos Horizontal** (page 1)

Spud: 08/09/10
 Completed: 11/23/10

Surface Location: 1480' FNL & 700' FEL
 SE/4 NE/4 Section 22 (H), T31N, R6W

BHL: Entry - 659' FNL & 57' FWL
 End - 658' FNL & 23' FEL
 N/2 N/2 Section 23, T31N, R 6W

Rio Arriba Co., NM
Elevation: 6258' GR
API: 30-039-30970



See Lateral and completion details on page 2

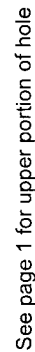
TD: 13,130' MD
 PBTD: 13,080' MD

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"	1735 sx	2481 cu.ft.	*Surface
8-1/2"	7"	420 sx	546 cu.ft.	Not Reported
6-1/8"	4-1/2"	1035 sx	1295 cu.ft.	4836' (CBL)

* After squeeze

Tops	MD	TVD
Ojo Alamo	2325'	2325'
Fruitland	2947'	2947'
Pictured Cliffs	3102'	3102'
Cliff House	5340'	5322'
Point Lookout	5607'	5559'
Mancos	6180'	6082'

(page 2 – lateral with completion)



ROSA UNIT #634A
Basin Mancos Horizontal
(page 3)

9-5/8" Casing Squeeze details

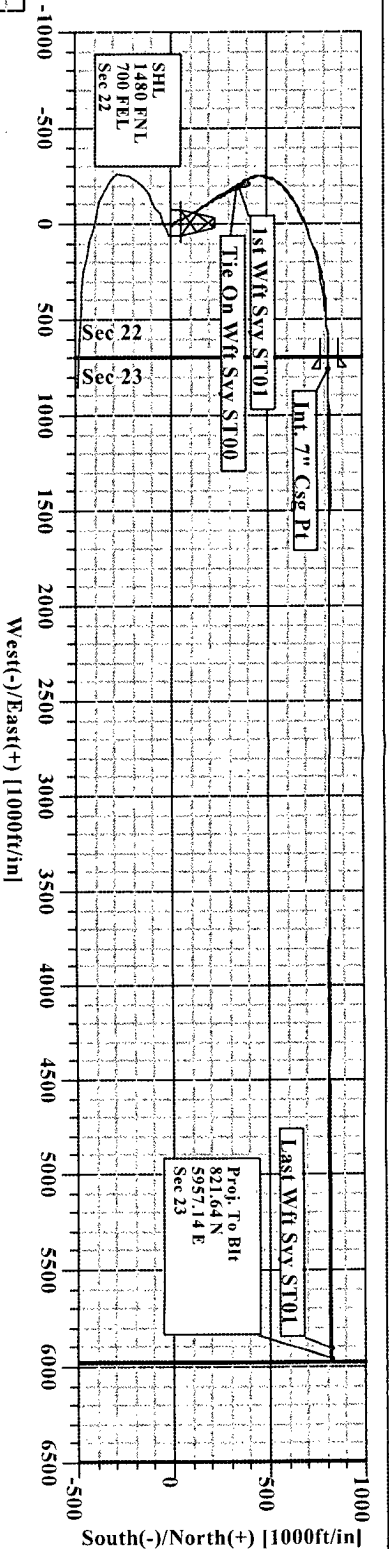
Squeeze #1 – Perf w/ 4, 0.50" holes. Set Cement Retainer @ 4330'
Pump 20 BBLs. Fresh Water/Pump 100 sks. Premium Class "C" Cement @ 15.6#/1.19 Yield/Mixed @ 5.14 Gal. Per Sk./Displace w/ 65 BBLs. Fresh Water. W.O.C.
Pump 100 BBLs. Extendacem System Cement @ 11.5#/Yield @ 2.67/with 15.34 Gal. per Sk/Displace w/67.3 BBLs. Fresh Water. Try to Break Circ./Pump 30
BBLs./Pressured Up/Approx. 30 BBLs./Flow Back/Used Halliburton Pumps/Fresh Water. Pump L.C.M. Pill Down Back Side/Circ. Down Annulis/ 8850 Skts Fresh
Water. Watch Pressure/Wait for Pump to Check if Wells Are communicating. Pump Diamond Seal Pill/10 pales] w/ Halliburton Pumps/Pump 180 BBLs.H2O. Try to
Circ.w/ Halliburton Pumps/N.C.T.C./Pump 70 BBLs. H2O. Pump 10 Pails Diamond Seal/21 BBLs. Cement/15.6#/Yield @ 1.19/Premium Class "C"/ Pump 67 BBLs.
Fresh H2O. Try to Break Circ. w/ Halliburton/No returns. Pump Cement/21 BBLs. Class "C" Premium Cement/15.6#/1.19 Yield/Fluid Mix @ 5.14 displace w/46.7 BBLs
FW. Sting Out of Retainer/Reverse Circ. Out. Drig. Cement Retainer/Drig. Cement f/4344'-4503'. Drig. Cement f/6136'-6264'.

Squeeze #2 – Perforate w/ Black Warrior@ 4050' with 4, 0.50" holes. Make Up Cement Retainer/T.I.H. w/43 Stds. D.P./Set Retainer@ 4016'.
Squeeze Cement/20Bbls. F.W. w/ N-Seal&Diamond Seal/364 Bbls. Lead Extendacem Cement@ 11.5#-Yield @ 2.67-Mix@ 15.34/Tail-59 Bbls. Premium Class "C"
Cement @ 15.6# -Yield @ 1.18-Mix@ 5.22/Displace w/56 Bbls. F.W./70 Bbls. Cement to Surface. Drig. retainer & Cement f/4032'-4250. Bond log, TD to surface, full
coverage.



Rosa Unit 634A
RIO ARRIBA CO. NM

KB ELEV: 6276.5 est.
GL ELEV: 6258



LEGEND

- Rosa Unit 634A (ST00)
- Wt Syv ST01

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DL eg	TFace	VSec Target
1	5166.00	16.70	335.65	5155.61	35.48	-12.09	0.00	0.00	-7.17
2	5220.00	16.70	335.65	5213.08	51.18	-19.20	0.00	0.00	-12.08
3	5369.90	25.25	327.66	5352.95	97.91	-45.23	6.00	-22.28	-31.53
4	6158.20	25.25	327.66	6065.94	381.99	-225.09	0.00	0.00	-171.18
5	7893.31	90.96	90.07	7153.00	821.89	719.95	6.00	119.49	824.81
6	13131.29	90.96	90.07	7065.00	815.83	5957.18	0.00	0.00	6012.78

WELL DETAILS					
Name	+N/-S	+E/-W	Northing	Eastng	Latitude Longitude
Rosa Unit 634A	0.00	0.00	2142906.76	2837072.21	36°53'17.910N 107°26'36.922W

Weatherford

SITE DETAILS

Rosa Unit 634A

Site Centre Northing: 2142906.76
Eastng: 2837072.21

Ground Level: 6258.00
Positional Uncertainty: 0.00
Convergence: 0.23

FORMATION TOP DETAILS			
No.	TVD/Path	MD/Path	Formation
1	2317.00	2317.20	Ojo Alamo Ss.
2	2423.00	2423.28	Kirtland Sh.
3	2481.00	2481.38	Pictured Cliffs Fm.
4	3006.00	3006.41	Pictured Cliffs Ss.
5	3364.00	3364.44	Lewis Sh.
6	5353.00	5353.43	Cliff House Ss.
7	5312.74	5312.94	Menefee Fm.
8	5240.96	5240.66	Point Lookout Ss.
9	6047.14	6047.37	Blm Black Zone
10	6673.52	6673.53	Blm Black Zone
11	6942.55	6942.53	Top Olive Zone
12	7010.53	7321.90	Top Olive Zone

TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
Pbhl	7065.00	815.83	5957.18	Point

Survey: Wt Syv ST01 (Rosa Unit 634A/ST01)						
No	MD	Inc	Az	TVD	+N/-S	+E/-W
145	13123.00	91.38	89.70	7059.14	821.64	5957.14

TARGET DETAILS

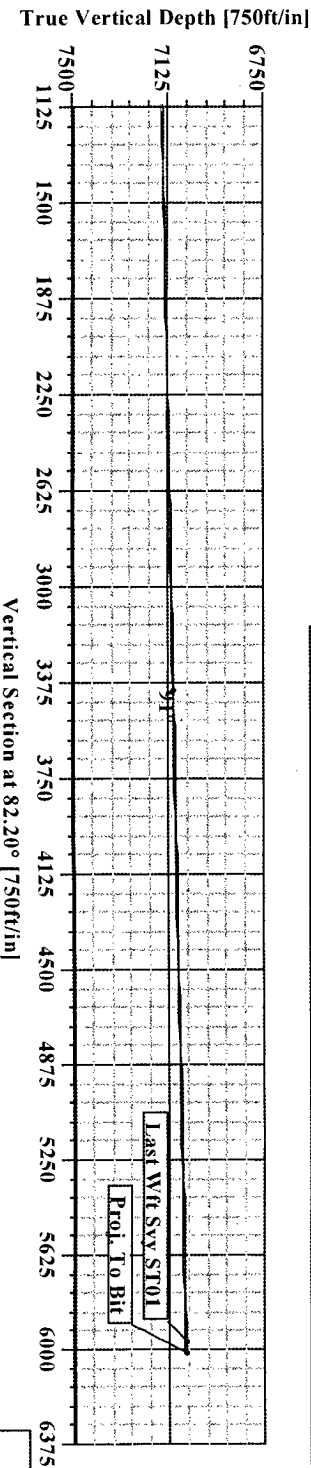
Name: Pbhl
TVD: 7065.00
+N/-S: 815.83
+E/-W: 5957.18
Shape: Point

SECTION DETAILS

Sec: 1
MD: 5166.00
Inc: 16.70
Azi: 335.65
TVD: 5155.61
+N/-S: 35.48
+E/-W: -12.09
DL eg: 0.00
TFace: 0.00
VSec: -7.17

WELL DETAILS

Name: Rosa Unit 634A
+N/-S: 0.00
+E/-W: 0.00
Northing: 2142906.76
Eastng: 2837072.21
Latitude: 36°53'17.910N
Longitude: 107°26'36.922W
Slot: N/A





Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 16:08:38	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634A, True North		
Site: Rosa Unit 634A	Vertical (TVD) Reference: SITE 6276.5		
Well: Rosa Unit 634A	Section (VS) Reference: Well (0.00N,0.00E,82.20Azi)		
Wellpath: ST00	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: Wft Svy	Start Date: 8/13/2010
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 634A		
Site Position:	Northing: 2142906.76 ft	Latitude: 36 53 17.910 N
From: Map	Easting: 2837072.21 ft	Longitude: 107 26 36.922 W
Position Uncertainty: 0.00 ft		North Reference: True
Ground Level: 6258.00 ft		Grid Convergence: 0.23 deg

Well: Rosa Unit 634A	Slot Name:
Well Position: +N/-S 0.00 ft	Northing: 2142906.76 ft
+E/-W 0.00 ft	Easting: 2837072.21 ft
Position Uncertainty: 0.00 ft	Latitude: 36 53 17.910 N
	Longitude: 107 26 36.922 W

Wellpath: ST00	Drilled From: Surface
Current Datum: SITE	Tie-on Depth: 0.00 ft
Magnetic Data: 8/11/2010	Above System Datum: Mean Sea Level
Field Strength: 50996 nT	Declination: 9.89 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 63.67 deg
ft	+N/-S ft
0.00	0.00
	+E/-W ft
	0.00
	Direction deg
	82.20

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	2142906.76	2837072.21	13 3/8" First Wft Svy
535.00	0.34	331.99	535.00	1.39	-0.74	0.06	-0.54	2142908.15	2837071.47	
573.00	0.36	331.99	573.00	1.59	-0.85	0.06	-0.62	2142908.35	2837071.36	
635.00	0.31	27.15	635.00	1.91	-0.86	0.51	-0.59	2142908.67	2837071.35	
698.00	0.31	33.99	697.99	2.20	-0.69	0.06	-0.38	2142908.96	2837071.52	
760.00	0.19	8.76	759.99	2.44	-0.58	0.26	-0.24	2142909.20	2837071.63	
822.00	0.19	239.14	821.99	2.49	-0.65	0.55	-0.31	2142909.25	2837071.55	
885.00	0.38	12.39	884.99	2.64	-0.70	0.84	-0.33	2142909.40	2837071.51	
947.00	0.08	142.11	946.99	2.81	-0.62	0.70	-0.24	2142909.57	2837071.58	
1009.00	0.38	60.27	1008.99	2.88	-0.42	0.61	-0.03	2142909.64	2837071.78	
1072.00	0.50	38.64	1071.99	3.20	-0.07	0.32	0.37	2142909.96	2837072.13	
1135.00	0.50	79.89	1134.99	3.46	0.38	0.56	0.84	2142910.22	2837072.58	
1197.00	0.50	33.02	1196.99	3.73	0.79	0.64	1.29	2142910.50	2837072.99	
1259.00	0.38	48.52	1258.98	4.10	1.09	0.27	1.64	2142910.86	2837073.29	
1321.00	1.00	68.51	1320.98	4.43	1.75	1.06	2.33	2142911.20	2837073.94	
1383.00	0.81	87.39	1382.97	4.65	2.69	0.57	3.30	2142911.42	2837074.88	
1445.00	1.07	72.27	1444.96	4.85	3.68	0.58	4.30	2142911.62	2837075.87	
1506.00	1.06	86.64	1505.95	5.05	4.78	0.44	5.43	2142911.83	2837076.98	
1568.00	1.13	70.27	1567.94	5.29	5.93	0.52	6.60	2142912.08	2837078.12	
1629.00	1.06	66.77	1628.93	5.72	7.02	0.16	7.73	2142912.51	2837079.21	
1692.00	1.06	67.77	1691.92	6.17	8.09	0.03	8.85	2142912.96	2837080.28	
1755.00	1.34	57.81	1754.91	6.78	9.26	0.55	10.09	2142913.58	2837081.44	
1818.00	1.19	59.89	1817.89	7.50	10.44	0.25	11.37	2142914.31	2837082.63	
1880.00	1.13	79.02	1879.88	7.94	11.60	0.63	12.57	2142914.75	2837083.78	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 16:08:38	Page: 2
Field: RIO ARRIBA CO. NM (NAD 83 NM.W Zone)	Co-ordinate(NE) Reference:	Well: Rosa Unit 634A, True North	
Site: Rosa Unit 634A	Vertical (TVD) Reference:	SITE 6276.5	
Well: Rosa Unit 634A	Section (VS) Reference:	Well (0.00N,0.00E,82.20Azi)	
Wellpath: ST00	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
1942.00	0.69	113.89	1941.87	7.91	12.54	1.11	13.50	2142914.72	2837084.72	
2004.00	0.59	207.28	2003.87	7.47	12.74	1.51	13.63	2142914.29	2837084.92	
2066.00	0.94	206.77	2065.86	6.73	12.36	0.56	13.16	2142913.55	2837084.55	
2128.00	1.06	237.64	2127.85	5.97	11.65	0.88	12.35	2142912.78	2837083.84	
2191.00	1.38	224.64	2190.84	5.12	10.62	0.67	11.22	2142911.93	2837082.82	
2252.00	1.44	241.27	2251.82	4.23	9.44	0.68	9.92	2142911.03	2837081.63	
2314.00	1.38	232.77	2313.80	3.40	8.16	0.35	8.54	2142910.20	2837080.36	
2317.20	1.39	232.74	2317.00	3.36	8.10	0.29	8.48	2142910.15	2837080.30	Ojo Alamo Ss.
2377.00	1.56	232.27	2376.78	2.42	6.88	0.29	7.14	2142909.21	2837079.08	
2423.24	1.65	237.50	2423.00	1.68	5.81	0.38	5.99	2142908.46	2837078.02	Kirtland Sh.
2439.00	1.69	239.14	2438.76	1.43	5.42	0.38	5.57	2142908.22	2837077.63	
2501.00	1.88	230.02	2500.73	0.31	3.86	0.55	3.87	2142907.09	2837076.07	
2563.00	1.70	221.77	2562.70	-1.03	2.47	0.51	2.31	2142905.75	2837074.69	
2626.00	1.44	181.52	2625.68	-2.52	1.82	1.76	1.47	2142904.25	2837074.05	
2687.00	1.50	183.02	2686.65	-4.08	1.76	0.12	1.19	2142902.69	2837073.99	
2749.00	1.19	168.77	2748.64	-5.52	1.84	0.73	1.08	2142901.25	2837074.08	
2812.00	0.92	144.01	2811.63	-6.57	2.27	0.83	1.36	2142900.20	2837074.51	
2873.00	0.69	158.02	2872.62	-7.31	2.69	0.49	1.68	2142899.47	2837074.94	
2935.00	0.81	156.39	2934.62	-8.06	3.01	0.20	1.89	2142898.72	2837075.26	
2941.38	0.87	157.04	2941.00	-8.14	3.05	0.93	1.91	2142898.63	2837075.29	Fruitland Fm.
2997.00	1.38	160.39	2996.60	-9.16	3.44	0.93	2.16	2142897.62	2837075.69	
3059.00	0.67	149.99	3058.59	-10.18	3.87	1.18	2.45	2142896.60	2837076.12	
3096.41	0.53	154.38	3096.00	-10.52	4.05	0.39	2.59	2142896.26	2837076.31	Pictured Cliffs S
3121.00	0.44	158.77	3120.59	-10.71	4.13	0.39	2.64	2142896.07	2837076.39	
3184.00	0.50	316.39	3183.59	-10.74	4.03	1.46	2.54	2142896.04	2837076.29	
3246.00	1.00	308.77	3245.59	-10.21	3.42	0.82	2.01	2142896.57	2837075.68	
3309.00	1.19	314.39	3308.57	-9.40	2.53	0.35	1.23	2142897.37	2837074.78	
3364.44	1.30	316.87	3364.00	-8.54	1.69	0.22	0.51	2142898.23	2837073.94	Lewis Sh.
3371.00	1.31	317.14	3370.56	-8.43	1.59	0.22	0.43	2142898.33	2837073.83	
3433.00	0.94	332.64	3432.55	-7.46	0.87	0.77	-0.15	2142899.30	2837073.11	
3494.00	1.22	326.02	3493.54	-6.48	0.28	0.50	-0.60	2142900.28	2837072.52	
3557.00	0.94	320.89	3556.52	-5.52	-0.42	0.47	-1.17	2142901.24	2837071.81	
3619.00	1.00	309.77	3618.52	-4.78	-1.16	0.32	-1.80	2142901.98	2837071.07	
3681.00	1.13	330.64	3680.51	-3.90	-1.88	0.66	-2.39	2142902.85	2837070.35	
3742.00	1.13	307.14	3741.49	-3.02	-2.65	0.75	-3.03	2142903.74	2837069.58	
3804.00	1.25	315.39	3803.48	-2.17	-3.61	0.34	-3.87	2142904.58	2837068.61	
3866.00	1.44	327.14	3865.46	-1.03	-4.51	0.54	-4.61	2142905.71	2837067.71	
3928.00	1.26	331.68	3927.45	0.22	-5.26	0.34	-5.18	2142906.97	2837066.96	
3990.00	1.50	335.89	3989.43	1.57	-5.91	0.42	-5.64	2142908.30	2837066.30	
4052.00	0.88	8.76	4051.42	2.78	-6.17	1.45	-5.74	2142909.51	2837066.03	
4114.00	0.75	4.26	4113.41	3.65	-6.07	0.23	-5.52	2142910.39	2837066.13	
4176.00	0.73	63.84	4175.40	4.23	-5.68	1.19	-5.06	2142910.97	2837066.51	
4238.00	1.19	68.77	4237.40	4.64	-4.73	0.75	-4.06	2142911.38	2837067.47	
4300.00	1.44	98.02	4299.38	4.76	-3.36	1.14	-2.68	2142911.51	2837068.84	
4362.00	1.94	97.27	4361.35	4.52	-1.54	0.81	-0.92	2142911.28	2837070.65	
4424.00	1.31	102.27	4423.33	4.24	0.19	1.04	0.76	2142911.00	2837072.39	
4487.00	1.04	123.21	4486.31	3.77	1.37	0.80	1.87	2142910.54	2837073.57	
4549.00	0.88	133.52	4548.31	3.14	2.19	0.38	2.59	2142909.91	2837074.39	
4611.00	1.06	121.64	4610.30	2.51	3.02	0.43	3.33	2142909.28	2837075.22	
4674.00	1.06	136.77	4673.29	1.78	3.92	0.44	4.12	2142908.56	2837076.12	
4736.00	0.75	138.27	4735.28	1.06	4.58	0.50	4.68	2142907.84	2837076.79	
4798.00	0.46	127.31	4797.28	0.60	5.05	0.50	5.08	2142907.39	2837077.26	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company:	Williams Production	Date:	10/1/2010	Time:	16:08:38	Page:	3
Field:	RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference:	Well: Rosa Unit 634A, True North				
Site:	Rosa Unit 634A	Vertical (TVD) Reference:	SITE 6276.5				
Well:	Rosa Unit 634A	Section (VS) Reference:	Well (0.00N,0.00E,82.20Azi)				
Wellpath:	ST00	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
4818.00	0.67	130.02	4817.27	0.48	5.20	1.06	5.22	2142907.26	2837077.41	
4849.00	0.38	111.14	4848.27	0.32	5.44	1.08	5.43	2142907.11	2837077.65	
4880.00	0.56	328.77	4879.27	0.42	5.45	2.88	5.46	2142907.20	2837077.66	
4911.00	2.29	316.77	4910.26	1.00	4.95	5.63	5.04	2142907.78	2837077.16	
4942.00	3.88	319.39	4941.22	2.25	3.84	5.15	4.11	2142909.02	2837076.05	
4973.00	5.19	324.27	4972.12	4.18	2.34	4.40	2.89	2142910.95	2837074.54	
5004.00	7.00	332.89	5002.94	7.00	0.66	6.53	1.61	2142913.77	2837072.85	
5035.00	8.94	334.77	5033.64	10.86	-1.23	6.31	0.26	2142917.62	2837070.94	
5066.00	10.42	335.97	5064.20	15.60	-3.39	4.82	-1.25	2142922.35	2837068.76	
5098.00	12.25	337.14	5095.57	21.37	-5.89	5.76	-2.94	2142928.11	2837066.23	
5129.00	14.31	336.27	5125.74	27.91	-8.71	6.68	-4.84	2142934.64	2837063.39	
5160.00	16.70	335.65	5155.61	35.48	-12.09	7.73	-7.17	2142942.19	2837059.98	
5190.00	18.81	335.39	5184.18	43.80	-15.88	7.04	-9.79	2142950.50	2837056.15	
5222.00	20.88	333.39	5214.28	53.59	-20.59	6.81	-13.12	2142960.27	2837051.41	
5253.00	22.69	333.27	5243.07	63.87	-25.75	5.84	-16.85	2142970.53	2837046.20	
5277.99	24.16	332.27	5266.00	72.70	-30.30	6.08	-20.15	2142979.34	2837041.62	Cliff House Ss. C
5284.00	24.51	332.05	5271.47	74.89	-31.45	6.08	-21.00	2142981.53	2837040.46	
5315.00	24.75	330.64	5299.65	86.23	-37.65	2.05	-25.60	2142992.84	2837034.21	
5333.02	25.05	330.46	5316.00	92.84	-41.38	1.70	-28.40	2142999.43	2837030.46	Menefee Fm.
5346.00	25.26	330.33	5327.75	97.63	-44.10	1.70	-30.45	2143004.21	2837027.71	
5377.00	26.69	329.39	5355.61	109.37	-50.92	4.80	-35.61	2143015.93	2837020.84	
5408.00	28.19	329.39	5383.13	121.67	-58.20	4.84	-41.15	2143028.19	2837013.52	
5439.00	28.44	328.27	5410.42	134.25	-65.81	1.89	-46.98	2143040.74	2837005.86	
5470.00	28.71	328.22	5437.64	146.85	-73.61	0.87	-53.01	2143053.32	2836998.00	
5501.00	28.31	328.02	5464.88	159.42	-81.43	1.33	-59.04	2143065.85	2836990.14	
5532.00	27.56	328.14	5492.27	171.74	-89.11	2.43	-64.98	2143078.14	2836982.41	
5563.00	26.81	328.89	5519.84	183.82	-96.50	2.66	-70.67	2143090.19	2836974.96	
5594.00	26.88	330.27	5547.50	195.89	-103.59	2.02	-76.05	2143102.23	2836967.82	
5595.68	26.89	330.29	5549.00	196.55	-103.97	0.91	-76.34	2143102.89	2836967.45	Point Lookout Ss.
5625.00	27.13	330.56	5575.12	208.13	-110.54	0.91	-81.28	2143114.44	2836960.83	
5655.00	27.31	330.52	5601.80	220.08	-117.29	0.60	-86.34	2143126.36	2836954.03	
5686.00	27.38	330.52	5629.34	232.48	-124.30	0.23	-91.60	2143138.73	2836946.97	
5718.00	25.81	331.02	5657.95	244.98	-131.29	4.96	-96.84	2143151.20	2836939.92	
5749.00	25.17	331.00	5685.93	256.65	-137.76	2.06	-101.66	2143162.85	2836933.41	
5780.00	24.50	331.27	5714.07	268.05	-144.04	2.19	-106.34	2143174.22	2836927.08	
5811.00	23.94	332.52	5742.34	279.27	-150.04	2.45	-110.76	2143185.41	2836921.04	
5843.00	23.81	331.77	5771.60	290.72	-156.09	1.03	-115.20	2143196.84	2836914.94	
5874.00	23.87	331.29	5799.95	301.73	-162.06	0.66	-119.62	2143207.83	2836908.92	
5905.00	23.69	330.27	5828.32	312.64	-168.16	1.45	-124.19	2143218.71	2836902.78	
5936.00	23.63	329.64	5856.72	323.41	-174.39	0.84	-128.90	2143229.46	2836896.50	
5967.00	23.44	329.02	5885.14	334.06	-180.70	1.01	-133.71	2143240.08	2836890.15	
5998.00	22.75	328.89	5913.65	344.48	-186.98	2.23	-138.51	2143250.47	2836883.83	
6029.00	22.75	329.75	5942.24	354.78	-193.09	1.07	-143.17	2143260.76	2836877.67	
6060.00	22.38	334.39	5970.87	365.29	-198.66	5.86	-147.26	2143271.23	2836872.06	
6091.00	21.73	340.11	5999.61	376.00	-203.17	7.24	-150.27	2143281.94	2836867.51	
6122.00	21.25	346.02	6028.45	386.85	-206.48	7.15	-152.08	2143292.77	2836864.16	
6148.32	21.07	351.53	6053.00	396.16	-208.33	7.59	-152.65	2143302.07	2836862.27	Mancos Sh.
6153.00	21.06	352.52	6057.37	397.83	-208.56	7.59	-152.65	2143303.74	2836862.03	
6184.00	21.00	358.52	6086.31	408.91	-209.43	6.95	-152.01	2143314.81	2836861.12	
6215.00	20.89	3.52	6115.26	419.98	-209.23	5.77	-150.31	2143325.88	2836861.27	
6231.00	20.77	5.31	6130.22	425.65	-208.79	4.05	-149.11	2143331.55	2836861.68	Last Wft Svy



Weatherford International Ltd.
WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 16:08:38	Page: 4
Field: RIO ARRIBA CO. NM (NAD 83 NM.W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634A; True North		
Site: Rosa Unit 634A	Vertical (TVD) Reference: SITE 6276.5		
Well: Rosa Unit 634A	Section (VS) Reference: Well (0.00N,0.00E,82.20Azi)		
Wellpath: ST00	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Annotation

MD	TVD	
ft	ft	
573.00	573.00	First Wft Svy
6231.00	6130.22	Last Wft Svy



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 14:17:06	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634A, True North		
Site: Rosa Unit 634A	Vertical (TVD) Reference: SITE 6276.5		
Well: Rosa Unit 634A	Section (VS) Reference: Well (0.00N,0.00E,82.20Azi)		
Wellpath: ST01	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: Wft Svy ST01	Start Date: 8/31/2010
Company: Weatherford International Ltd.	Engineer: Russell W. Joyner
Tool: MWD;MWD - Standard	Tied-to: User Defined

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 634A

Site Position:	Northing: 2142906.76 ft	Latitude: 36 53 17.910 N
From: Map	Easting: 2837072.21 ft	Longitude: 107 26 36.922 W
Position Uncertainty: 0.00 ft		North Reference: True
Ground Level: 6258.00 ft		Grid Convergence: 0.23 deg

Well: Rosa Unit 634A	Slot Name:
Well Position: +N/-S 0.00 ft	Latitude: 36 53 17.910 N
+E/-W 0.00 ft	Longitude: 107 26 36.922 W
Position Uncertainty: 0.00 ft	

Wellpath: ST01	Drilled From: ST00
Current Datum: SITE	Tie-on Depth: 5998.00 ft
Magnetic Data: 8/31/2010	Above System Datum: Mean Sea Level
Field Strength: 50991 nT	Declination: 9.88 deg
Vertical Section: Depth From (TVD)	Mag Dip Angle: 63.67 deg
ft	+N/-S ft
0.00	0.00
	+E/-W ft
	0.00
	Direction deg
	82.20

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
5998.00	22.75	328.89	5913.65	344.48	-186.98	0.00	-138.49	2143250.47	2836883.83	Tie On Wft Svy ST
6029.00	23.12	327.92	5942.20	354.76	-193.30	1.71	-143.37	2143260.73	2836877.46	1st Wft Svy ST01
6060.00	23.49	322.74	5970.68	364.84	-200.28	6.72	-148.91	2143270.78	2836870.45	
6091.00	24.25	319.07	5999.03	374.57	-208.19	5.38	-155.43	2143280.48	2836862.50	
6122.00	24.69	319.77	6027.24	384.32	-216.54	1.70	-162.38	2143290.19	2836854.10	
6143.89	24.54	322.14	6047.14	391.40	-222.29	4.55	-167.11	2143297.25	2836848.33	
6152.00	24.50	323.02	6054.52	394.07	-224.33	4.55	-168.77	2143299.92	2836846.28	Mancos Sh.
6184.00	23.99	329.42	6083.70	404.98	-231.63	8.36	-174.53	2143310.79	2836838.93	
6214.00	23.88	336.39	6111.13	415.79	-237.17	9.43	-178.55	2143321.58	2836833.35	
6245.00	24.06	343.14	6139.46	427.59	-241.52	8.86	-181.25	2143333.36	2836828.95	
6276.00	23.81	350.02	6167.80	439.80	-244.43	9.04	-182.48	2143345.57	2836825.99	
6293.00	23.76	354.01	6183.36	446.59	-245.39	9.47	-182.51	2143352.35	2836825.01	
6370.00	24.26	7.05	6253.75	477.74	-245.06	6.91	-177.96	2143383.50	2836825.20	
6401.00	24.39	13.19	6282.00	490.29	-242.82	8.17	-174.03	2143396.06	2836827.39	
6432.00	24.05	15.58	6310.27	502.61	-239.66	3.35	-169.23	2143408.39	2836830.50	
6463.00	23.03	17.71	6338.69	514.47	-236.12	4.28	-164.12	2143420.27	2836833.99	
6494.00	22.46	21.02	6367.28	525.78	-232.15	4.52	-158.65	2143431.59	2836837.92	
6526.00	22.99	26.29	6396.80	537.09	-227.19	6.57	-152.20	2143442.92	2836842.83	
6557.00	23.88	31.02	6425.25	547.89	-221.28	6.71	-144.87	2143453.75	2836848.70	
6589.00	24.88	34.39	6454.39	559.00	-214.14	5.35	-136.29	2143464.88	2836855.80	
6620.00	25.95	37.07	6482.39	569.79	-206.36	5.07	-127.12	2143475.71	2836863.53	
6652.00	26.88	40.27	6511.05	580.90	-197.47	5.31	-116.80	2143486.85	2836872.38	
6683.00	27.50	45.14	6538.63	591.30	-187.86	7.45	-105.88	2143497.29	2836881.94	
6714.00	28.36	49.94	6566.02	601.08	-177.15	7.76	-93.94	2143507.12	2836892.61	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 14:17:06	Page: 2
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference: Well: Rosa Unit 634A, True North		
Site: Rosa Unit 634A	Vertical (TVD) Reference: SITE 6276.5		
Well: Rosa Unit 634A	Section (VS) Reference: Well (0.00N,0.00E,82.20Azi)		
Wellpath: ST01	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
6745.00	29.81	53.64	6593.12	610.39	-165.31	7.45	-80.94	2143516.48	2836904.41	
6776.00	31.13	56.27	6619.84	619.41	-152.44	6.05	-66.97	2143525.55	2836917.25	
6807.00	32.13	58.27	6646.23	628.20	-138.76	4.67	-52.22	2143534.39	2836930.89	
6838.00	32.94	59.77	6672.37	636.78	-124.47	3.69	-36.90	2143543.03	2836945.15	
6839.37	32.99	59.84	6673.52	637.15	-123.82	4.34	-36.21	2143543.40	2836945.79	Top Black Zone
6869.00	34.00	61.27	6698.23	645.19	-109.59	4.34	-21.01	2143551.50	2836959.99	
6900.00	35.38	62.64	6723.71	653.48	-94.01	5.11	-4.46	2143559.85	2836975.53	
6931.00	37.40	62.68	6748.67	661.92	-77.68	6.52	12.87	2143568.36	2836991.83	
6962.00	38.88	62.52	6773.05	670.73	-60.68	4.78	30.91	2143577.24	2837008.79	
6993.00	40.43	63.19	6796.92	679.76	-43.08	5.19	49.58	2143586.34	2837026.36	
7024.00	41.80	64.96	6820.27	688.67	-24.74	5.80	68.95	2143595.32	2837044.66	
7055.00	43.25	67.02	6843.12	697.19	-5.60	6.48	89.07	2143603.92	2837063.76	
7087.00	45.38	67.52	6866.01	705.82	15.01	6.75	110.67	2143612.64	2837084.35	
7118.00	46.43	67.43	6887.58	714.35	35.58	3.39	132.20	2143621.25	2837104.88	
7149.00	47.94	66.89	6908.65	723.18	56.54	5.04	154.16	2143630.17	2837125.80	
7180.00	50.13	67.77	6928.97	732.20	78.13	7.38	176.78	2143639.27	2837147.36	
7201.53	51.69	68.73	6942.55	738.39	93.66	8.03	193.00	2143645.53	2837162.85	Btm Black Zone
7211.00	52.38	69.14	6948.38	741.07	100.62	8.03	200.27	2143648.24	2837169.81	
7242.00	54.56	70.27	6966.83	749.71	123.99	7.62	224.59	2143656.97	2837193.14	
7273.00	56.38	70.77	6984.40	758.22	148.06	6.02	249.59	2143665.58	2837217.18	
7305.00	58.08	72.31	7001.72	766.74	173.58	6.68	276.04	2143674.20	2837242.66	
7321.90	59.06	73.04	7010.53	771.03	187.35	6.87	290.26	2143678.55	2837256.41	Top Olive Zone
7336.00	59.88	73.64	7017.69	774.51	198.98	6.87	302.26	2143682.08	2837268.03	
7368.00	61.75	75.64	7033.30	781.91	225.92	7.99	329.95	2143689.59	2837294.94	
7399.00	63.69	78.14	7047.51	788.15	252.75	9.51	357.38	2143695.94	2837321.75	
7430.00	65.38	80.02	7060.84	793.45	280.23	7.73	385.32	2143701.35	2837349.20	
7461.00	67.09	82.08	7073.33	797.86	308.26	8.21	413.69	2143705.87	2837377.21	
7492.00	68.56	83.39	7085.03	801.49	336.73	6.15	442.39	2143709.62	2837405.67	
7523.00	70.00	84.27	7096.00	804.60	365.56	5.35	471.37	2143712.85	2837434.48	
7554.00	71.94	84.52	7106.11	807.46	394.72	6.30	500.66	2143715.83	2837463.64	
7585.00	74.40	85.43	7115.08	810.06	424.28	8.42	530.29	2143718.55	2837493.18	
7616.00	76.81	86.27	7122.79	812.23	454.22	8.21	560.25	2143720.84	2837523.12	
7648.00	79.21	87.04	7129.44	814.06	485.47	7.86	591.46	2143722.80	2837554.35	
7679.00	81.19	87.27	7134.71	815.57	515.98	6.43	621.89	2143724.44	2837584.86	
7710.00	83.26	87.70	7138.91	816.92	546.66	6.82	652.47	2143725.91	2837615.53	
7741.00	85.25	88.27	7142.01	818.01	577.48	6.67	683.16	2143727.12	2837646.35	
7772.00	86.19	88.89	7144.32	818.77	608.39	3.63	713.88	2143728.01	2837677.25	
7803.00	86.13	89.14	7146.40	819.30	639.31	0.83	744.59	2143728.67	2837708.18	
7834.00	85.94	89.27	7148.54	819.73	670.24	0.74	775.29	2143729.23	2837739.10	
7865.00	87.28	89.37	7150.38	820.10	701.18	4.33	805.99	2143729.72	2837770.04	
7921.00	88.71	88.79	7152.33	821.00	757.14	2.75	861.55	2143730.85	2837825.99	Int. 7" Csg Pt
7995.00	90.60	88.03	7152.78	823.05	831.10	2.75	935.11	2143733.20	2837899.95	
8025.00	89.93	86.90	7152.64	824.38	861.07	4.38	964.99	2143734.65	2837929.91	
8087.00	89.90	87.00	7152.73	827.67	922.98	0.17	1026.77	2143738.20	2837991.81	
8149.00	90.81	87.74	7152.35	830.52	984.92	1.89	1088.52	2143741.30	2838053.73	
8212.00	90.77	87.59	7151.48	833.09	1047.86	0.25	1151.23	2143744.12	2838116.66	
8269.00	90.88	87.80	7150.66	835.38	1104.81	0.42	1207.96	2143746.65	2838173.60	
8329.00	92.54	89.88	7148.87	836.59	1164.76	4.43	1267.52	2143748.11	2838233.55	
8392.00	92.56	91.64	7146.07	835.76	1227.69	2.79	1329.76	2143747.53	2838296.48	
8454.00	91.94	91.52	7143.63	834.05	1289.62	1.02	1390.88	2143746.07	2838358.42	
8517.00	91.84	91.84	7141.55	832.20	1352.56	0.53	1452.99	2143744.48	2838421.36	
8579.00	91.56	91.27	7139.71	830.52	1414.51	1.02	1514.14	2143743.05	2838483.32	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company: Williams Production	Date: 10/1/2010	Time: 14:17:06	Page: 3
Field: RIO ARRIBA CO. NM (NAD 83 NM W Zone)	Co-ordinate(NE) Reference:	Well: Rosa Unit 634A, True North	
Site: Rosa Unit 634A	Vertical (TVD) Reference:	SITE 6276.5	
Well: Rosa Unit 634A	Section (VS) Reference:	Well (0.00N,0.00E, 82.20Azi)	
Wellpath: ST01	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
8640.00	90.95	91.79	7138.38	828.89	1475.47	1.31	1574.31	2143741.68	2838544.29	
8702.00	90.13	91.14	7137.79	827.31	1537.45	1.69	1635.50	2143740.34	2838606.27	
8764.00	90.71	90.43	7137.34	826.46	1599.44	1.48	1696.80	2143739.75	2838668.27	
8827.00	90.69	90.14	7136.57	826.15	1662.43	0.46	1759.17	2143739.69	2838731.26	
8891.00	90.34	89.75	7135.99	826.21	1726.43	0.82	1822.59	2143740.01	2838795.26	
8953.00	91.19	90.27	7135.17	826.20	1788.42	1.61	1884.01	2143740.26	2838857.25	
9015.00	91.06	90.27	7133.95	825.90	1850.41	0.21	1945.38	2143740.22	2838919.24	
9077.00	91.13	90.27	7132.77	825.61	1912.40	0.11	2006.75	2143740.18	2838981.23	
9139.00	91.44	89.89	7131.37	825.53	1974.38	0.79	2068.15	2143740.34	2839043.21	
9201.00	91.59	90.33	7129.74	825.41	2036.36	0.75	2129.54	2143740.48	2839105.19	
9263.00	91.69	90.52	7127.96	824.95	2098.34	0.35	2190.88	2143740.27	2839167.16	
9326.00	91.94	90.52	7125.97	824.38	2161.30	0.40	2253.18	2143739.96	2839230.13	
9387.00	90.94	90.04	7124.43	824.08	2222.28	1.82	2313.56	2143739.91	2839291.11	
9449.00	90.31	89.64	7123.76	824.25	2284.28	1.20	2375.00	2143740.34	2839353.10	
9511.00	91.13	89.02	7122.98	824.98	2346.27	1.66	2436.52	2143741.31	2839415.09	
9573.00	91.20	89.17	7121.72	825.96	2408.24	0.27	2498.06	2143742.55	2839477.07	
9636.00	91.88	89.77	7120.02	826.54	2471.22	1.44	2560.53	2143743.38	2839540.04	
9698.00	91.44	90.39	7118.23	826.45	2533.19	1.23	2621.92	2143743.55	2839602.01	
9760.00	91.31	90.89	7116.74	825.76	2595.17	0.83	2683.23	2143743.11	2839663.99	
9822.00	90.63	91.14	7115.69	824.66	2657.15	1.17	2744.49	2143742.27	2839725.98	
9885.00	90.88	91.14	7114.86	823.41	2720.13	0.40	2806.72	2143741.27	2839788.96	
9947.00	90.69	91.89	7114.01	821.77	2782.11	1.25	2867.89	2143739.89	2839850.94	
10009.00	90.56	90.39	7113.33	820.53	2844.09	2.43	2929.13	2143738.90	2839912.93	
10071.00	90.44	89.27	7112.79	820.72	2906.08	1.82	2990.58	2143739.34	2839974.92	
10133.00	92.32	87.91	7111.30	822.24	2968.04	3.74	3052.17	2143741.12	2840036.87	
10195.00	92.75	88.52	7108.56	824.17	3029.95	1.20	3113.77	2143743.30	2840098.78	
10258.00	92.13	90.64	7105.88	824.63	3092.89	3.50	3176.19	2143744.02	2840161.71	
10320.00	90.51	90.86	7104.45	823.82	3154.87	2.64	3237.48	2143743.46	2840223.69	
10383.00	90.69	90.64	7103.79	823.00	3217.86	0.45	3299.78	2143742.89	2840286.68	
10445.00	90.94	89.64	7102.91	822.85	3279.85	1.66	3361.18	2143743.00	2840348.68	
10507.00	90.36	90.42	7102.20	822.81	3341.84	1.57	3422.59	2143743.22	2840410.67	
10569.00	90.50	90.27	7101.74	822.44	3403.84	0.33	3483.97	2143743.10	2840472.67	
10630.00	90.81	90.02	7101.04	822.29	3464.84	0.65	3544.38	2143743.19	2840534.66	
10693.00	90.94	89.89	7100.08	822.34	3527.83	0.29	3606.79	2143743.50	2840596.66	
10754.00	90.57	91.64	7099.27	821.52	3588.82	2.93	3667.11	2143742.93	2840657.65	
10817.00	90.50	91.39	7098.69	819.86	3651.79	0.41	3729.27	2143741.52	2840720.63	
10879.00	90.69	91.52	7098.04	818.28	3713.77	0.37	3790.46	2143740.20	2840782.61	
10941.00	90.92	91.08	7097.17	816.88	3775.75	0.80	3851.67	2143739.05	2840844.59	
11012.00	91.68	90.32	7095.56	816.01	3846.72	1.51	3921.88	2143738.47	2840915.57	
11075.00	90.44	90.14	7094.39	815.76	3909.71	1.99	3984.25	2143738.48	2840978.56	
11137.00	91.44	90.64	7093.38	815.33	3971.70	1.80	4045.60	2143738.31	2841040.55	
11200.00	91.63	90.64	7091.69	814.63	4034.67	0.30	4107.90	2143737.86	2841103.53	
11262.00	91.32	90.24	7090.09	814.15	4096.65	0.82	4169.24	2143737.64	2841165.50	
11324.00	89.88	89.52	7089.44	814.28	4158.64	2.60	4230.68	2143738.02	2841227.50	
11386.00	89.94	89.77	7089.54	814.67	4220.64	0.41	4292.16	2143738.66	2841289.49	
11448.00	90.43	89.57	7089.34	815.03	4282.64	0.85	4353.63	2143739.27	2841351.49	
11509.00	90.69	89.89	7088.75	815.31	4343.64	0.68	4414.10	2143739.81	2841412.49	
11571.00	90.67	89.27	7088.01	815.77	4405.63	1.00	4475.58	2143740.51	2841474.48	
11634.00	91.25	89.02	7086.95	816.71	4468.61	1.00	4538.11	2143741.71	2841537.46	
11695.00	91.25	88.02	7085.62	818.28	4529.58	1.64	4598.72	2143743.53	2841598.41	
11757.00	92.13	90.54	7083.79	819.06	4591.54	4.30	4660.22	2143744.57	2841660.37	
11820.00	91.69	90.14	7081.69	818.69	4654.50	0.94	4722.55	2143744.45	2841723.34	
11882.00	91.69	90.14	7079.87	818.54	4716.48	0.00	4783.93	2143744.55	2841785.31	



Weatherford International Ltd.

WFT Survey Report X & Y's



Weatherford

Company:	Williams Production	Date:	10/1/2010	Time:	14:17:06	Page:	4
Field:	RIO ARRIBA CO. NM (NAD 83 NM. W Zone)	Co-ordinate(NE) Reference:	Well: Rosa Unit 634A, True North				
Site:	Rosa Unit 634A	Vertical (TVD) Reference:	SITE 6276.5				
Well:	Rosa Unit 634A	Section (VS) Reference:	Well (0.00N,0.00E,82.20Azi)				
Wellpath:	ST01	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
11944.00	90.63	89.14	7078.61	818.93	4778.46	2.35	4845.39	2143745.19	2841847.29	
12006.00	90.50	88.52	7078.00	820.19	4840.45	1.02	4906.97	2143746.71	2841909.27	
12068.00	90.67	88.53	7077.37	821.79	4902.42	0.27	4968.59	2143748.56	2841971.24	
12131.00	90.50	89.89	7076.72	822.66	4965.41	2.18	5031.12	2143749.69	2842034.22	
12193.00	91.00	90.77	7075.91	822.30	5027.40	1.63	5092.49	2143749.58	2842096.22	
12254.00	91.08	91.73	7074.80	820.97	5088.38	1.58	5152.72	2143748.50	2842157.20	
12317.00	91.25	91.64	7073.52	819.12	5151.34	0.31	5214.84	2143746.91	2842220.16	
12379.00	91.06	90.39	7072.27	818.02	5213.31	2.04	5276.10	2143746.06	2842282.15	
12441.00	91.06	89.73	7071.13	817.95	5275.30	1.06	5337.51	2143746.25	2842344.13	
12503.00	91.06	89.39	7069.98	818.43	5337.29	0.55	5398.98	2143746.98	2842406.12	
12566.00	90.19	88.77	7069.29	819.44	5400.28	1.70	5461.53	2143748.25	2842469.10	
12628.00	90.26	89.55	7069.05	820.35	5462.27	1.26	5523.07	2143749.41	2842531.09	
12691.00	90.44	89.02	7068.66	821.14	5525.26	0.89	5585.58	2143750.45	2842594.08	
12753.00	91.50	90.52	7067.61	821.39	5587.25	2.96	5647.03	2143750.96	2842656.07	
12815.00	91.55	90.81	7065.96	820.67	5649.23	0.47	5708.34	2143750.49	2842718.04	
12877.00	91.31	89.89	7064.42	820.29	5711.21	1.53	5769.69	2143750.36	2842780.02	
12939.00	90.81	89.64	7063.27	820.54	5773.19	0.90	5831.14	2143750.87	2842842.01	
13000.00	91.38	89.56	7062.10	820.97	5834.18	0.94	5891.62	2143751.55	2842902.99	
13063.00	91.38	89.77	7060.59	821.34	5897.16	0.33	5954.07	2143752.17	2842965.97	
13075.00	91.38	89.70	7060.30	821.39	5909.16	0.58	5965.96	2143752.28	2842977.97	Last Wft Svy ST01
13123.00	91.38	89.70	7059.14	821.64	5957.14	0.00	6013.54	2143752.72	2843025.95	Proj. To Bit

Annotation

MD ft	TVD ft	
5998.00	5913.65	Tie On Wft Svy ST00
6029.00	5942.20	1st Wft Svy ST01
13075.00	7060.30	Last Wft Svy ST01
13123.00	7059.14	Proj. To Bit