

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-039-30196
1. Type of Well: Oil Well ☐ Gas Well ☒ Other ☐		5. Indicate Type of Lease STATE ☒ FEE ☐
2. Name of Operator WILLIAMS PRODUCTION COMPANY, LLC		6. State Oil & Gas Lease No. E-289
3. Address of Operator P.O. Box 640, Aztec, NM 87410		7. Lease Name or Unit Agreement Name Rosa Unit COM
4. Well Location SURF: 840' FSL & 1465' FWL BHL: 2100' FSL & 500' FWL Section 2 Township 31N Range 06W NMPM County RIO ARRIBA		8. Well Number 148C
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6250		9. OGRID Number 120782
Pit or Below-grade Tank Application ☐ or Closure ☐		10. Pool name or Wildcat Blanco Mesaverde/Basin Dakota
Pit type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____		
Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____		

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: _____

OTHER: ☐

Williams Production plans to drill this well to the Dakota and produce both Mesaverde and Dakota formations as per attached plat, operation plan and directional plan.

Order # R-13123 permits one additional MV well in s2 T31N R6W

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Larry Higgins TITLE Permit Supv DATE 6/2/2011

Type or print name Larry Higgins

E-mail address: larry.higgins@williams.com

Telephone No. 505-634-4208

For State Use Only

APPROVED BY: [Signature] TITLE _____ DATE _____

Conditions of Approval (if any): _____



District I
1625 N. French Dr., Hobbs, NM 88240

District II
1301 W. Grand Avenue, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 12, 2005
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number		*Pool Code	*Pool Name
		72319 / 71599	BLANCO MESAVERDE / BASIN DAKOTA
*Property Code	*Property Name		*Well Number
17033	ROSA UNIT COM		148C
*GRID No.	*Operator Name		*Elevation
120782	WILLIAMS PRODUCTION COMPANY		6250'

¹⁰ Surface Location

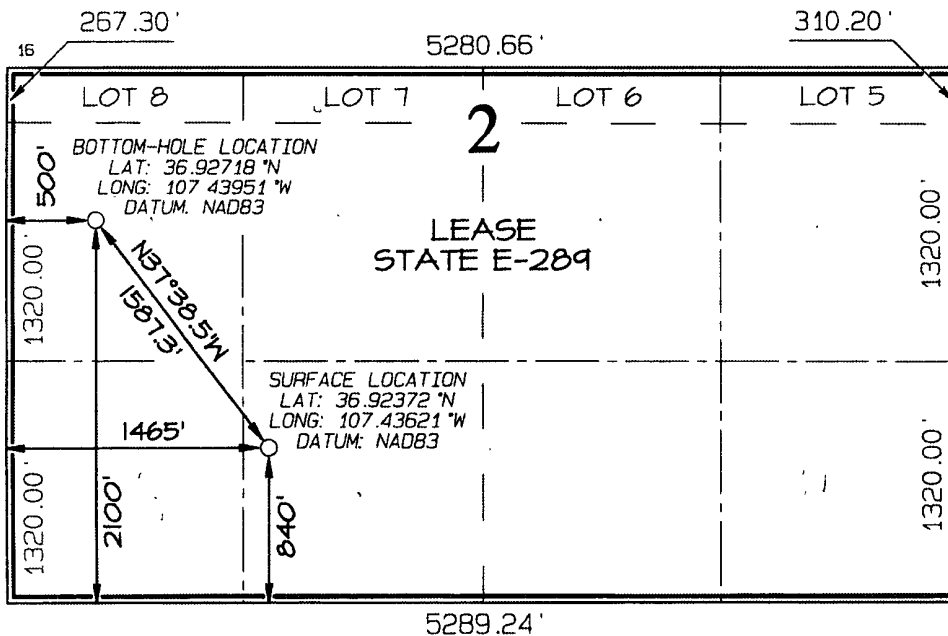
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	2	31N	6W		840	SOUTH	1465	WEST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	2	31N	6W		2100	SOUTH	500	WEST	RIO ARriba

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No
356.26 Acres - Entire Section			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Larry Higgins 6-2-11
Signature Date
Larry Higgins
Printed Name

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief

Date of Survey: APRIL 26, 2006

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



WILLIAMS PRODUCTION COMPANY

Operations Plan

(Note: This procedure will be adjusted on site based upon actual conditions)

DATE: 6/1/2011 **FIELD:** Basin DK/ BlancoMV
WELL NAME: Rosa COM #148C **SURFACE:** State
BH LOCATION: NESW Sec 2-31N-6W **MINERALS:** State
Rio Arriba, NM
ELEVATION: 6,250' GR **LEASE #** E-289
MEASURED DEPTH: 8,583'

I. GEOLOGY: Surface formation - San Jose

A. FORMATION TOPS: (KB)

Name	TVD	MD	Name	TVD	MD
Ojo Alamo	2,284	2,638	Point Lookout	5,529	6,003
Kirtland	2,389	2,771	Mancos	5,889	6,363
Fruitland	2,809	3,256	Gallup	6,889	7,363
Pictured Cliffs	3,059	3,523	Greenhorn	7,614	8,088
Lewis	3,374	3,847	Graneros	7,674	8,148
Cliff House	5,294	5,768	Dakota	7,809	8,283
Menefee	5,344	5,818	Morrison	8,059	8,533
			TD	8,109	8,583

B. MUD LOGGING PROGRAM: Mudlogger on location from intermediate csg to TD. Mud logger to pick TD.

C. LOGGING PROGRAM: HRI/Temp/SDL/DSN from intermediate casing to TD

D. NATURAL GAUGES: Gauge any noticeable increases in gas flow. Record all gauges in Tour book and on morning reports.

II. DRILLING

A. MUD PROGRAM: Clear water with benex to 7" casing point. Convert to a LSND mud to log and run pipe. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses. Use air w/Air Hammer from 7" csg.to TD.

B. BOP TESTING: While drill pipe is in use, the pipe rams and the blind rams will be function tested once each trip. The anticipated reservoir is expected to be less than 1300 psi, so the BOPE will be tested to **250 psi (Low) for 5 minutes and 1500 psi (High) for 10 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. **All tests and inspections will be recorded in the tour book as to time and results.**

III. MATERIALS

A. CASING PROGRAM:

<u>CASING TYPE</u>	<u>OH SIZE (IN)</u>	<u>DEPTH (MD) (FT)</u>	<u>CASING SIZE (IN)</u>	<u>WEIGHT(LB)</u>	<u>GRADE</u>
Surface	12 1/4	300	9 5/8	36	K-55
Intermediate	8 3/4	4,008	7	23	K-55
Longstring	6 1/4	8,583	4 1/2	11.6	P-110

B. FLOAT EQUIPMENT:

1. SURFACE CASING: 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (4) joints of Surface Casing.
2. INTERMEDIATE CASING: 7" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) Turbulent centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) Turbulent centralizer at 2,700 ft., 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. (NTL-FRA 90-1).
3. PRODUCTION LINER / CASING: 4-1/2" whirler type cement nose guide shoe with a latch collar on top of 20' bottom joint. Place marker joint above 5,400'. Place centralizers as needed across selected production intervals.

C. CEMENTING:

(Note: Volumes may be adjusted onsite due to actual conditions)

1. SURFACE: Slurry: 200sx (359.2 cu.ft.) of "Type III" + 2% Cal-Seal 60 + ¼ # of poly-e-flake/sk + 0.3% Versaset + 2% Econolite + 6% Salt (Yield = 1.796 cu.ft./sk, Weight = 13.5 #/gal.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 1500psi.
2. INTERMEDIATE: Lead - 420 sx (1143.7 cu.ft.) of "EXTENDACEM" + 5 #/sk pheno-seal + 5% Cal-Seal 60 (Yield = 2.723 cu.ft./sk, Weight = 11.5 #/gal.). Tail - 100 sx (117.8cu.ft.) of Premium cement + 0.125 #/sk Poly-E-Flake, (Yield = 1.178 cu.ft./sk, Weight = 15.6#/gal.). Total volume = 1261.5 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface
3. PRODUCTION CASING: 10 bbl Gelled Water spacer. Cement: 610 sx (853 ft³) of "FRACCCEM" + 0.8% Halad-9 + 0.1% CFR-3 + 5 #/sk Gilsonite + 0.125 #/sk Poly-E-Flake + 0.15% HR-800. (Yield = 1.398 ft³/sk, Weight = 13.1 #/gal.). Displace cement at a minimum of 8 BPM. Total volume (853) ft³. WOC 12 hours.

IV. IV COMPLETION**A. CBL**

1. Run Cement Bond Log across all intervals to be perforated and find Top of Cement behind all casing strings if cement not circulated to surface..

B. PRESSURE TEST

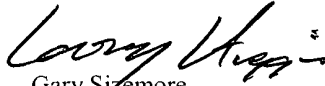
1. Pressure test 4-1/2" casing to 6000 psi max, hold at 1500 psi for 30-minutes.

C. STIMULATION

1. Stimulate Dakota with approximately 5000# 100 mesh sand and 120,000# Ottawa Sand in slick water.
2. Isolate Dakota with a RBP.
3. Stimulate Point Lookout with approximately 40,000# 20/40 Ottawa sand in slick water.
4. Isolate Point Lookout with a RBP.
5. Perforate the Menefee/Cliff House as determined from the open hole logs.
6. Stimulate with approximately 40,000# 20/40 Ottawa sand in slick water.
7. Test each zone before removing bridge plugs.

D. RUNNING TUBING

1. Production Tubing: Run 2-3/8", 4.7#, J-55, EUE tubing with a SN (1.91" ID) on top of bottom joint. Land tubing approximately 25' above the bottom Point Lookout perforation


Gary Sizemore
Sr. Drilling Engineer



Weatherford[®]

Drilling Services

Proposal



ROSA UNIT COM #148C

RIO ARRIBA COUNTY, NM

WELL FILE: **PLAN1**

JUNE 1, 2011

Weatherford International, Ltd.

P.O. Box 61028

Midland, TX 79711 USA

+1.432.561.8892 Main

+1.432.561.8895 Fax

www.weatherford.com



Rosa Unit Com #148C
RIO ARRIBA CO. NM

SECTION DETAILS									
Sec	MD	Inc	Azi	IVD	+N/-S	+E/-W	DLeg	TFace	VSec Target
1	0.00	0.00	322.56	0.00	0.00	0.00	0.00	0.00	0.00
2	400.00	0.00	322.56	400.00	0.00	0.00	0.00	0.00	0.00
3	1883.09	44.49	322.56	1738.46	434.68	-332.84	3.00	322.56	547.48
4	2428.58	44.49	322.56	2127.58	738.21	-565.26	0.00	0.00	929.77
5	4208.29	0.00	322.56	3733.74	1259.83	-964.66	2.50	180.00	1586.74
6	8583.55	0.00	322.56	8109.00	1259.83	-964.66	0.00	0.00	1586.74 Pbh

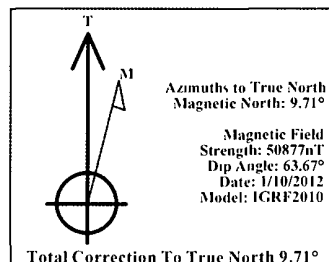
WELL DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
#148C	0.00	0.00	2157686.67	1293689.41	36°55'25.392N	107°26'10.356W

TARGET DETAILS						
Name	IVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Pbh	8109.00	1259.83	-964.66	36°55'37.848N	107°26'22.236W	Point

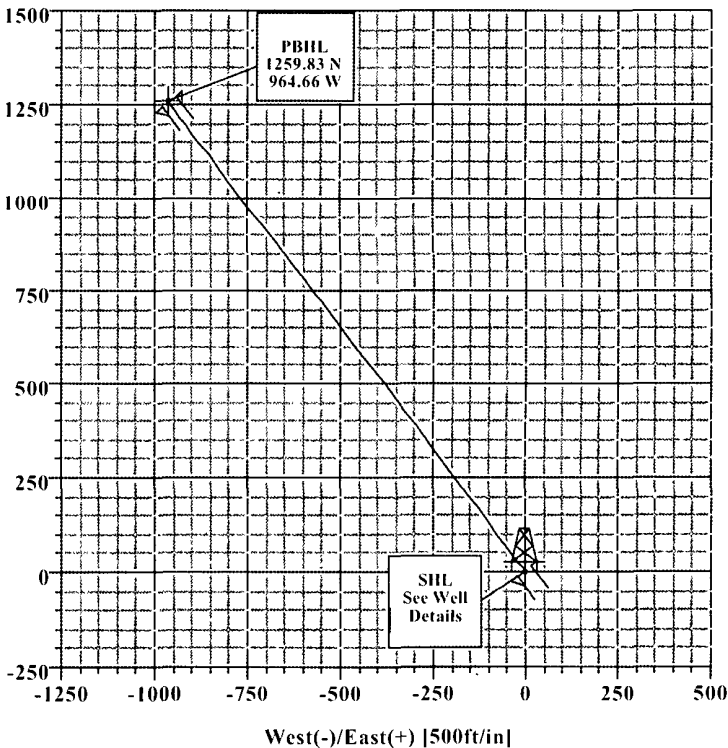
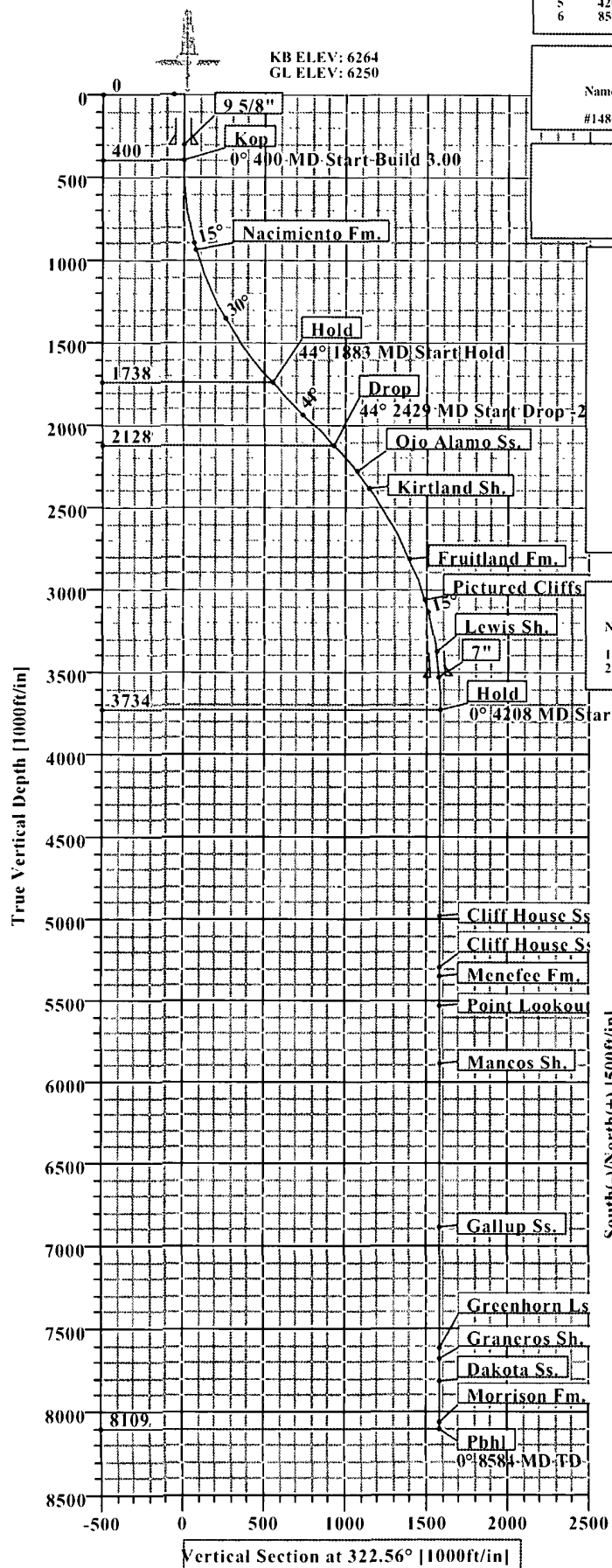
FORMATION TOP DETAILS		
No.	TVDPath	MIDPath
1	939.00	946.42
2	2284.00	2638.69
3	2389.00	2771.21
4	2809.00	3256.41
5	3059.00	3523.40
6	3374.00	3847.05
7	4974.00	5448.55
8	5294.00	5768.55
9	5344.00	5818.55
10	5529.00	6003.55
11	5889.00	6363.55
12	6889.00	7363.55
13	7614.00	8088.55
14	7674.00	8148.55
15	7809.00	8283.55
16	8059.00	8533.55

CASING DETAILS			
No.	TVD	MD	Name
1	300.00	300.00	9 5/8"
2	3534.00	4008.29	7"

SITE DETAILS
Rosa Unit Com #148C
Site Centre Latitude: 36°55'25.392N
Longitude: 107°26'10.356W
Ground Level: 6250.00
Positional Uncertainty: 0.00
Convergence: -0.71



LEGEND
1 Plan #1





Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production	Date: 6/1/2011	Time: 10:38:28	Page: 1
Field: RIO ARRIBA CO. NM (NAD 83)	Co-ordinate(NE) Reference: Well. #148C, True North		
Site: Rosa Unit Com #148C	Vertical (TVD) Reference: SITE 6264.0		
Well: #148C	Section (VS) Reference: Well (0.00N,0.00E,322 56Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Plan: Plan #1	Date Composed: 6/1/2011
Principal: Yes	Version: 1
	Tied-to: From Surface

Field: RIO ARRIBA CO. NM (NAD 83)	
Map System: US State Plane Coordinate System 1983	Map Zone: New Mexico, Central Zone
Geo Datum: GRS 1980	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site:	Rosa Unit Com #148C					
Site Position:	Northing:	2157686.67	ft	Latitude:	36 55	25.392 N
From: Geographic	Easting:	1293689.41	ft	Longitude:	107 26	10.356 W
Position Uncertainty:	0.00	ft		North Reference:		True
Ground Level:	6250.00	ft		Grid Convergence:		-0.71 deg

Well: #148C				Slot Name:			
Well Position:	+N/-S	0.00 ft	Northing:	2157686.67 ft	Latitude:	36 55	25.392 N
	+E/-W	0.00 ft	Easting :	1293689.41 ft	Longitude:	107 26	10.356 W
Position Uncertainty:		0.00 ft					

Wellpath: 1			Drilled From:	Surface
Current Datum:	SITE	Height 6264.00 ft	Tie-on Depth:	0.00 ft
Magnetic Data:	1/10/2012		Above System Datum:	Mean Sea Level
Field Strength:	50877 nT		Declination:	9.71 deg
Vertical Section:	Depth From (TVD)	+N/-S	Mag Dip Angle:	63 67 deg
	ft	ft	+E/-W	Direction
		ft	ft	deg
	8109.00	0.00	0.00	322.56

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
0.00	0.00	322.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	322.56	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1883.09	44.49	322.56	1738.46	434.68	-332.84	3.00	3.00	0.00	322.56	
2428.58	44.49	322.56	2127.58	738.21	-565.26	0.00	0.00	0.00	0.00	
4208.29	0.00	322.56	3733.74	1259.83	-964.66	2.50	-2.50	0.00	180.00	
8583.55	0.00	322.56	8109.00	1259.83	-964.66	0.00	0.00	0.00	0.00	Pbhl

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
300.00	0.00	322.56	300.00	0.00	0.00	0.00	0.00	36	55	25.392	107	26	10.356	9 5/8"
400.00	0.00	322.56	400.00	0.00	0.00	0.00	0.00	36	55	25.392	107	26	10.356	Kop
500.00	3.00	322.56	499.95	2.08	-1.59	2.62	3.00	36	55	25.413	107	26	10.376	
600.00	6.00	322.56	599.63	8.31	-6.36	10.46	3.00	36	55	25.474	107	26	10.434	
700.00	9.00	322.56	698.77	18.67	-14.30	23.51	3.00	36	55	25.577	107	26	10.532	
800.00	12.00	322.56	797.08	33.14	-25.37	41.74	3.00	36	55	25.720	107	26	10.668	
900.00	15.00	322.56	894.31	51.67	-39.56	65.08	3.00	36	55	25.903	107	26	10.843	
946.42	16.39	322.56	939.00	61.64	-47.20	77.64	3.00	36	55	26.001	107	26	10.937	Nacimiento
1000.00	18.00	322.56	990.18	74.22	-56.83	93.48	3.00	36	55	26.126	107	26	11.056	
1100.00	21.00	322.56	1084.43	100.72	-77.12	126.85	3.00	36	55	26.388	107	26	11.306	
1200.00	24.00	322.56	1176.81	131.10	-100.38	165.12	3.00	36	55	26.688	107	26	11.592	
1300.00	27.00	322.56	1267.06	165.28	-126.55	208.16	3.00	36	55	27.026	107	26	11.914	
1400.00	30.00	322.56	1354.93	203.16	-155.56	255.87	3.00	36	55	27.401	107	26	12.272	
1500.00	33.00	322.56	1440.18	244.64	-187.32	308.12	3.00	36	55	27.811	107	26	12.663	
1600.00	36.00	322.56	1522.59	289.60	-221.75	364.75	3.00	36	55	28.255	107	26	13.087	



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production
Field: RIO ARRIBA CO. NM (NAD 83)
Site: Rosa Unit Com #148C
Well: #148C
Wellpath: 1

Date: 6/1/2011 Time: 10:38:28 Page: 2
Co-ordinate(NE) Reference: Well: #148C, True North
Vertical (TVD) Reference: SITE 6264.0
Section (VS) Reference: Well (0.00N,0.00E,322.56Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
1700.00	39.00	322.56	1601.91	337.93	-258.76	425.62	3.00	36	55	28.733	107	26	13.543	
1800.00	42.00	322.56	1677.95	389.49	-298.24	490.56	3.00	36	55	29.243	107	26	14.029	
1883.09	44.49	322.56	1738.46	434.68	-332.84	547.48	3.00	36	55	29.690	107	26	14.455	Hold
1900.00	44.49	322.56	1750.53	444.09	-340.05	559.33	0.00	36	55	29.783	107	26	14.544	
2000.00	44.49	322.56	1821.86	499.74	-382.65	629.41	0.00	36	55	30.333	107	26	15.068	
2100.00	44.49	322.56	1893.20	555.38	-425.26	699.50	0.00	36	55	30.883	107	26	15.593	
2200.00	44.49	322.56	1964.53	611.02	-467.87	769.58	0.00	36	55	31.433	107	26	16.118	
2300.00	44.49	322.56	2035.86	666.67	-510.47	839.66	0.00	36	55	31.983	107	26	16.642	
2400.00	44.49	322.56	2107.20	722.31	-553.08	909.74	0.00	36	55	32.534	107	26	17.167	
2428.58	44.49	322.56	2127.58	738.21	-565.26	929.77	0.00	36	55	32.691	107	26	17.317	Drop
2500.00	42.71	322.56	2179.30	777.32	-595.20	979.02	2.50	36	55	33.077	107	26	17.686	
2600.00	40.21	322.56	2254.24	829.88	-635.44	1045.22	2.50	36	55	33.597	107	26	18.181	
2638.69	39.24	322.56	2284.00	849.51	-650.48	1069.95	2.50	36	55	33.791	107	26	18.367	Ojo Alamos
2700.00	37.71	322.56	2332.00	879.79	-673.67	1108.09	2.50	36	55	34.091	107	26	18.652	
2771.21	35.93	322.56	2389.00	913.67	-699.61	1150.76	2.50	36	55	34.426	107	26	18.972	Kirtland Sh
2800.00	35.21	322.56	2412.42	926.97	-709.79	1167.51	2.50	36	55	34.557	107	26	19.097	
2900.00	32.71	322.56	2495.36	971.32	-743.74	1223.36	2.50	36	55	34.995	107	26	19.515	
3000.00	30.21	322.56	2580.66	1012.75	-775.47	1275.54	2.50	36	55	35.405	107	26	19.906	
3100.00	27.71	322.56	2668.15	1051.18	-804.90	1323.95	2.50	36	55	35.785	107	26	20.268	
3200.00	25.21	322.56	2757.67	1086.56	-831.98	1368.50	2.50	36	55	36.135	107	26	20.602	
3256.41	23.80	322.56	2809.00	1105.13	-846.21	1391.90	2.50	36	55	36.318	107	26	20.777	Fruitland F
3300.00	22.71	322.56	2849.05	1118.79	-856.67	1409.10	2.50	36	55	36.454	107	26	20.906	
3400.00	20.21	322.56	2942.11	1147.83	-878.91	1445.68	2.50	36	55	36.741	107	26	21.180	
3500.00	17.71	322.56	3036.68	1173.63	-898.65	1478.17	2.50	36	55	36.996	107	26	21.423	
3523.40	17.12	322.56	3059.00	1179.18	-902.91	1485.17	2.50	36	55	37.051	107	26	21.475	Pictured C
3600.00	15.21	322.56	3132.57	1196.12	-915.88	1506.49	2.50	36	55	37.218	107	26	21.635	
3700.00	12.71	322.56	3229.61	1215.27	-930.54	1530.61	2.50	36	55	37.407	107	26	21.816	
3800.00	10.21	322.56	3327.61	1231.04	-942.61	1550.47	2.50	36	55	37.563	107	26	21.964	
3847.05	9.03	322.56	3374.00	1237.28	-947.39	1558.34	2.50	36	55	37.625	107	26	22.023	Lewis Sh.
3900.00	7.71	322.56	3426.38	1243.40	-952.08	1566.04	2.50	36	55	37.685	107	26	22.081	
4000.00	5.21	322.56	3525.74	1252.32	-958.91	1577.29	2.50	36	55	37.774	107	26	22.165	
4008.29	5.00	322.56	3534.00	1252.91	-959.36	1578.02	2.50	36	55	37.780	107	26	22.171	7"
4100.00	2.71	322.56	3625.50	1257.80	-963.11	1584.19	2.50	36	55	37.828	107	26	22.217	
4200.00	0.21	322.56	3725.45	1259.82	-964.66	1586.73	2.50	36	55	37.848	107	26	22.236	
4208.29	0.00	322.56	3733.74	1259.83	-964.66	1586.74	2.50	36	55	37.848	107	26	22.236	Hold
4300.00	0.00	322.56	3825.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4400.00	0.00	322.56	3925.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4500.00	0.00	322.56	4025.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4600.00	0.00	322.56	4125.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4700.00	0.00	322.56	4225.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4800.00	0.00	322.56	4325.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
4900.00	0.00	322.56	4425.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5000.00	0.00	322.56	4525.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5100.00	0.00	322.56	4625.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5200.00	0.00	322.56	4725.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5300.00	0.00	322.56	4825.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5400.00	0.00	322.56	4925.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5448.55	0.00	322.56	4974.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Cliff House
5500.00	0.00	322.56	5025.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5600.00	0.00	322.56	5125.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5700.00	0.00	322.56	5225.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
5768.55	0.00	322.56	5294.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Cliff House
5800.00	0.00	322.56	5325.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production
Field: RIO ARRIBA CO. NM (NAD 83)
Site: Rosa Unit Com #148C
Well: #148C
Wellpath: 1

Date: 6/1/2011 Time: 10:38:28 Page: 3
Co-ordinate(NE) Reference: Well #148C, True North
Vertical (TVD) Reference: SITE 6264.0
Section (VS) Reference: Well (0.00N,0.00E,322.56Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Lat	Min	Sec	Long	Min	Sec	Comment
5818.55	0 00	322.56	5344.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Menefee Fm.
5900.00	0.00	322.56	5425.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6000.00	0 00	322.56	5525.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Point Lookout
6003.55	0.00	322.56	5529.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6100.00	0.00	322.56	5625.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6200.00	0.00	322.56	5725.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6300.00	0.00	322.56	5825.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6363.55	0 00	322.56	5889.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Mancos Sh
6400.00	0 00	322.56	5925.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6500.00	0 00	322.56	6025.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6600.00	0.00	322.56	6125.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6700.00	0.00	322.56	6225.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6800.00	0.00	322.56	6325.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
6900.00	0.00	322.56	6425.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7000.00	0.00	322.56	6525.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7100.00	0 00	322.56	6625.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7200.00	0 00	322.56	6725.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7300.00	0.00	322.56	6825.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Gallup Ss.
7363.55	0.00	322.56	6889.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7400.00	0 00	322.56	6925.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7500.00	0.00	322.56	7025.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7600.00	0.00	322.56	7125.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7700.00	0.00	322.56	7225.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7800.00	0.00	322.56	7325.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
7900.00	0.00	322.56	7425.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8000.00	0.00	322.56	7525.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8088.55	0.00	322.56	7614.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8100.00	0.00	322.56	7625.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Greenhorn L
8148.55	0 00	322.56	7674.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8200.00	0.00	322.56	7725.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8283.55	0.00	322.56	7809.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8300.00	0.00	322.56	7825.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8400.00	0.00	322.56	7925.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	Graneros Sh
8500.00	0.00	322.56	8025.45	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8533.55	0 00	322.56	8059.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
8583.55	0.00	322.56	8109.00	1259.83	-964.66	1586.74	0.00	36	55	37.848	107	26	22.236	
														Morrison Fm
														Pbhl

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<--- Latitude ---> Deg Min Sec			<--- Longitude ---> Deg Min Sec		
Pbhl			8109.00	1259.83	-964.66	2158958.41	1292740.49	36	55	37.848 N	107	26	22.236 W
-Plan hit target													

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
300.00	300.00	9.625	12.250	9 5/8"
4008.29	3534.00	7.000	8.500	7"



Weatherford International Ltd.
WFT Plan Report Lat, Long



Weatherford

Company: Williams Production
Field: RIO ARRIBA CO. NM (NAD 83)
Site: Rosa Unit Com #148C
Well: #148C
Wellpath: 1

Date: 6/1/2011 Time: 10:38.28 Page: 4
Co-ordinate(NE) Reference: Well: #148C, True North
Vertical (TVD) Reference: SITE 6264 0
Section (VS) Reference: Well (0.00N,0.00E,322.56Az)
Survey Calculation Method: Minimum Curvature Db: Sybase

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
946.42	939.00	Nacimiento Fm		0.00	0.00
2638.69	2284.00	Ojo Alamo Ss.		0.00	0.00
2771.21	2389.00	Kirtland Sh.		0.00	0.00
3256.41	2809.00	Fruitland Fm.		0.00	0.00
3523.40	3059.00	Pictured Cliffs Ss.		0.00	0.00
3847.05	3374.00	Lewis Sh.		0.00	0.00
5448.55	4974.00	Cliff House Ss. Trans.		0.00	0.00
5768.55	5294.00	Cliff House Ss.		0.00	0.00
5818.55	5344.00	Menefee Fm.		0.00	0.00
6003.55	5529.00	Point Lookout Ss.		0.00	0.00
6363.55	5889.00	Mancos Sh.		0.00	0.00
7363.55	6889.00	Gallup Ss		0.00	0.00
8088.55	7614.00	Greenhorn Ls.		0.00	0.00
8148.55	7674.00	Graneros Sh.		0.00	0.00
8283.55	7809.00	Dakota Ss.		0.00	0.00
8533.55	8059.00	Morrison Fm.		0.00	0.00

Annotation

MD ft	TVD ft	
400.00	400.00	Kop
1883.09	1738.46	Hold
2428.58	2127.58	Drop
4208.29	3733.74	Hold
8583.54	8108.99	Pbhl

**Weatherford®****Weatherford Drilling Services**

GeoDec v5.03

Report Date: June 01, 2011
Job Number: _____
Customer: Williams
Well Name: Rosa Unit Com #148C
API Number: _____
Rig Name: _____
Location: Rio Arriba Co, NM (Nad 83)
Block: _____
Engineer: RWJ

Geodetic Latitude / Longitude	Geodetic Latitude / Longitude
System: Latitude / Longitude	System: Latitude / Longitude
Projection: Geodetic Latitude and Longitude	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
Latitude 36.9237200 DEG	Latitude 36 55 25.3920000 DMS
Longitude -107.4362100 DEG	Longitude -107 26 10.3560000 DMS

Geodetic Location WGS84 Elevation = 0.0 Meters
Latitude = 36.92372° N 36° 55 min 25.392 sec
Longitude = 107.43621° W 107° 26 min 10.356 sec

Magnetic Declination = 9.71° [True North Offset]
Local Gravity = .9992 g CheckSum = 6728
Local Field Strength = 50872 nT Magnetic Vector X = 22243 nT
Magnetic Dip = 63.67° Magnetic Vector Y = 3807 nT
Magnetic Model = IGRF-2010g11 Magnetic Vector Z = 45593 nT
Spud Date = Jan 10, 2012 Magnetic Vector H = 22566 nT

Signed: _____

Date: _____