

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

JUN 13 2011

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2.

1 Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2 Name of Operator

Williams Production Company, LLC

3a. Address

PO Box 640 Aztec, NM 87410

3b. Phone No (include area code)

505-634-4208

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sur 1165' FNL & 1045' FEL - BHL. 600' FNL & 1675' FEL, Sec 30, T34N, R5W

5. Lease Serial No.

QMSF1078764

6. If Indian, Allottee or Tribe Name

7. If Unit of CA/Agreement, Name and/or No
Rosa Unit

8. Well Name and No
Rosa Unit #166C

9. API Well No.

30-039-31068

10. Field and Pool or Exploratory Area
Blanco NM / Basin DK

11. Country or Parish, State
Rio Arriba

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

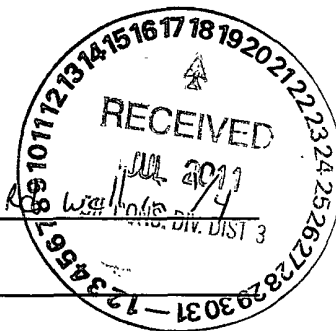
TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other New BHL _____
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operation. Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

Williams Production plans to change the bottom hole location of this well. Please see attached C-102, operation plan and directional plan. Surface location remains the same.

Hold C104

for Directional Survey
and "As Drilled" plat



Requires NSL, Hold C-104 for NSL 3160-5

14. I hereby certify that the foregoing is true and correct.

Name (Printed/Typed)

Larry Higgins

Title Permit Supervisor

Signature

Date 6/13/2011

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

AFM

Date

7/14/11</

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 30-039-31068	*Pool Code 72319 / 71599	*Pool Name BLANCO MESAVERDE / BASIN DAKOTA
*Property Code 17033	*Property Name ROSA UNIT	*Well Number 166C
*OGRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY	*Elevation 6362'

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
A	30	31N	5W		1165	NORTH	1045	EAST	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
B	30	31N	5W		600	NORTH	1675	EAST	RIO ARriba

¹² Dedicated Acres

232.69 Acres - (N/2)

¹³ Joint or Infill

¹⁴ Consolidation Code

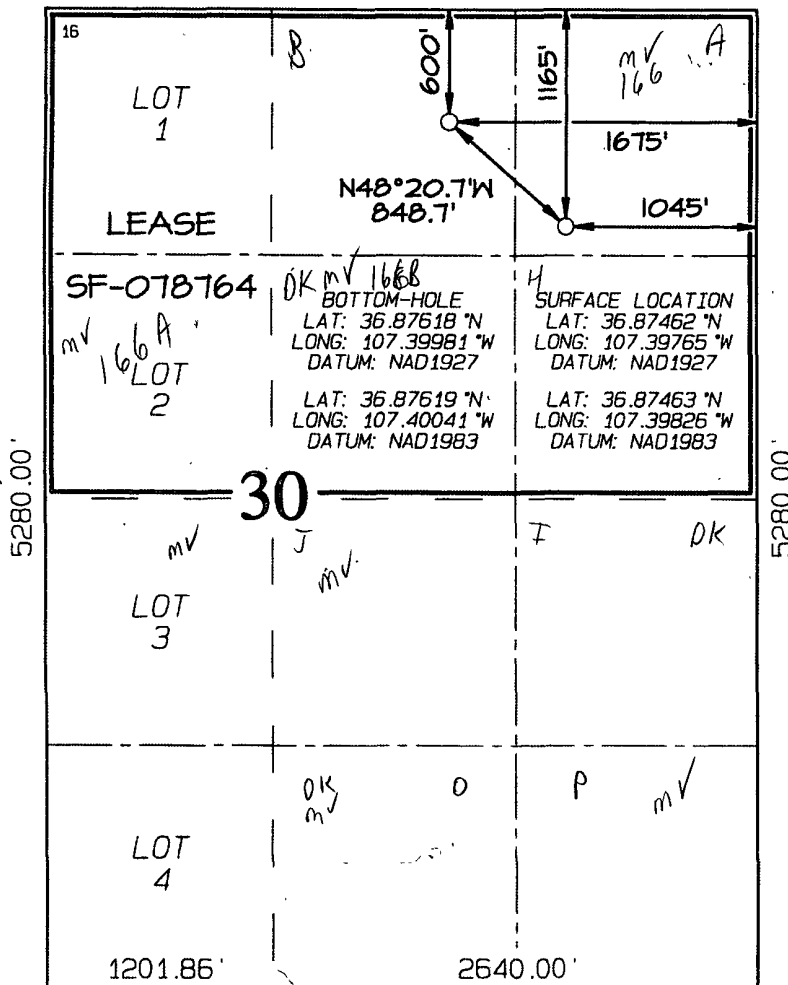
¹⁵ Order No.

MV-NSP 1821
DK-R20463

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

1198.56'

2640.00'





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 #166C **SURFACE:** BLM
BH LOCATION: NWNE Sec 30-31N-5W **MINERALS:** BLM
Rio Arriba, NM
ELEVATION: 6,362' GR **LEASE #** SF-078764
MEASURED DEPTH: 8,310'

I. GEOLOGY: Surface formation - San Jose

A. FORMATION TOPS: (KB)

Name	TVD	MD	Name	TVD	MD
Ojo Alamo	2,486	2,564	Point Lookout	5,671	5,785
Kirtland	2,601	2,684	Mancos	5,986	6,100
Fruitland	2,976	3,076	Gallup	7,006	7,120
Pictured Cliffs	3,221	3,328	Greenhorn	7,721	7,835
Lewis	3,516	3,628	Graneros	7,771	7,885
Cliff House	5,421	5,535	Dakota	7,896	8,010
Menefee	5,461	5,575	Morrison	8,146	8,260
			TD	8,196	8,310

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:

CASING TYPE	OH SIZE (IN)	DEPTH (MD) (FT)	CASING SIZE (IN)	WEIGHT(LB)	GRADE
Surface	12 1/4	300	9 5/8	36	K-55
Intermediate	8 3/4	3,809	7	23	K-55
Longstring	6 1/4	8,310	4 1/2	11.6	N-80

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 600psi. for 30 minutes.
2. **INTERMEDIATE:** Lead - 400 sx (1089.2 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 = 1207 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface. Test csg to 1500psi. for 30 minutes.
3. **PRODUCTION CASING:** 10 bbl Gelled Water spacer. Cement: 610 sx (853 ft³) of "FRACCEM" + 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.

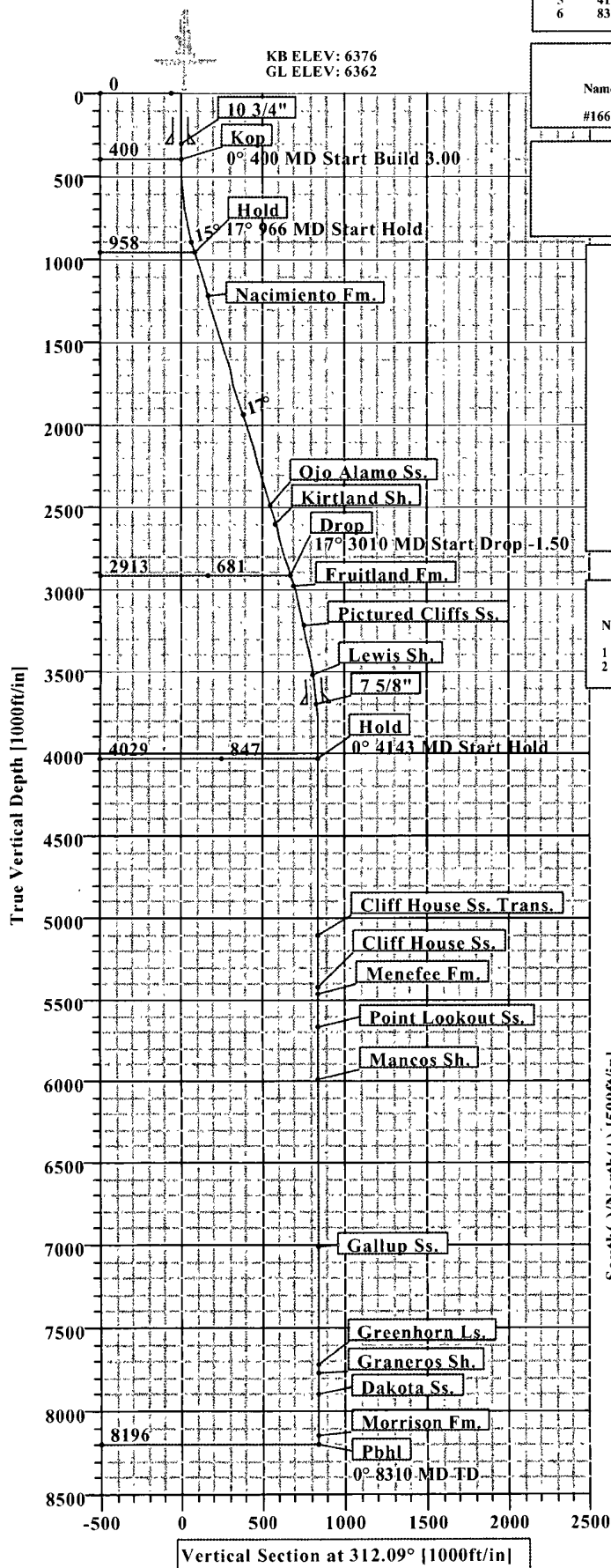
D. RUNNING TUBING

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 Dakota perforation


Gary Sizemore
Sr. Drilling Engineer



Rosa Unit #166C
RIO ARRIBA CO. NM



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	312.09	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	312.09	400.00	0.00	0.00	0.00	0.00	0.00	
3	966.46	16.99	312.09	958.19	55.89	-61.89	3.00	312.09	83.39	
4	3010.03	16.99	312.09	2912.53	456.22	-505.13	0.00	0.00	680.66	
5	4142.95	0.00	312.09	4028.91	568.01	-628.91	1.50	180.00	847.44	Pbhl
6	8310.04	0.00	312.09	8196.00	568.01	-628.91	0.00	0.00	847.44	Pbhl

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
#166C	0.00	0.00	2139678.31	1304567.58	36°52'28.668N	107°23'53.736W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Pbhl	8196.00	568.01	-628.91	36°52'34.284N	107°24'01.476W	Point

FORMATION TOP DETAILS			
No.	TVDPath	MDPath	Formation
1	1221.00	1241.27	Nacimiento Fm.
2	2486.00	2564.02	Ojo Alamo Ss.
3	2601.00	2684.27	Kirtland Sh.
4	2976.00	3076.22	Fruitland Fm.
5	3221.00	3328.89	Pictured Cliffs Ss.
6	3516.00	3628.48	Lewis Sh.
7	5106.00	5220.04	Cliff House Ss. Trans.
8	5421.00	5535.04	Cliff House Ss.
9	5461.00	5575.04	Menefee Fm.
10	5671.00	5785.04	Point Lookout Ss.
11	5986.00	6100.04	Mancos Sh.
12	7006.00	7120.04	Gallup Ss.
13	7721.00	7835.04	Greenhorn Ls.
14	7771.00	7885.04	Graneros Sh.
15	7896.00	8010.04	Dakota Ss.
16	8146.00	8260.04	Morrison Fm.

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Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 6/13/2011 Time: 13:10:56 Page: 1
 Field: RIO ARRIBA CO. NM (NAD 83) Co-ordinate(NE) Reference: Well: #166C; True North
 Site: Rosa Unit #166C Vertical (TVD) Reference: SITE 6376.0
 Well: #166C Section (VS) Reference: Well (0.00N 0.00E 312.09Azi)
 Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Plan: Plan #2 Date Composed: 6/13/2011
 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 #166C

Site Position: Northing: 2139678.31 ft Latitude: 36 52 28 668 N
 From: Geographic Easting: 1304567.58 ft Longitude: 107 23 53.736 W
 Position Uncertainty: 0.00 ft North Reference: True
 Ground Level: 6362.00 ft Grid Convergence: -0.69 deg

Well: #166C Slot Name:
 Well Position: +N/-S 0.00 ft Northing: 2139678.31 ft Latitude: 36 52 28.668 N
 +E/-W 0.00 ft Easting: 1304567.58 ft Longitude: 107 23 53.736 W
 Position Uncertainty: 0.00 ft

Wellpath: 1 Drilled From: Surface
 Current Datum: SITE Tie-on Depth: 0.00 ft
 Magnetic Data: 12/10/2011 Height 6376.00 ft Above System Datum: Mean Sea Level
 Field Strength: 50862 nT Declination: 9.70 deg
 Vertical Section: Depth From (TVD) +N/-S +E/-W Mag Dip Angle: 63.63 deg
 ft ft ft Direction deg
 0.00 0.00 0.00 312.09

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	312.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	312.09	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
966.46	16.99	312.09	958.19	55.89	-61.89	3.00	3.00	0.00	312.09	
3010.03	16.99	312.09	2912.53	456.22	-505.13	0.00	0.00	0.00	0.00	
4142.95	0.00	312.09	4028.91	568.01	-628.91	1.50	-1.50	0.00	180.00	
8310.04	0.00	312.09	8196.00	568.01	-628.91	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	312.09	300.00	0.00	0.00	0.00	0.00	36	52	28.668	107	23 53.736 10 3/4"
400.00	0.00	312.09	400.00	0.00	0.00	0.00	0.00	36	52	28.668	107	23 53.736 Kop
500.00	3.00	312.09	499									



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production
Field: RIO ARRIBA CO. NM (NAD 83)
Site: Rosa Unit #166C
Well: #166C
Wellpath: 1

Date: 6/13/2011 Time: 13:10:56 Page: 2
Co-ordinate(NE) Reference: Well: #166C, True North
Vertical (TVD) Reference: SITE 6376.0
Section (VS) Reference: Well (0.00N,0.00E,312.09Azi)
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	
1600.00	16.99	312.09	1564.07	180.00	-199.30	268.55	0.00	36	52	30.448	107	23 56.189	
1700.00	16.99	312.09	1659.70	199.59	-220.99	297.78	0.00	36	52	30.641	107	23 56.456	
1800.00	16.99	312.09	1755.34	219.18	-242.68	327.01	0.00	36	52	30.835	107	23 56.723	
1900.00	16.99	312.09	1850.97	238.77	-264.37	356.23	0.00	36	52	31.029	107	23 56.990	
2000.00	16.99	312.09	1946.60	258.36	-286.06	385.46	0.00	36	52	31.222	107	23 57.257	
2100.00	16.99	312.09	2042.24	277.95	-307.75	414.69	0.00	36	52	31.416	107	23 57.523	
2200.00	16.99	312.09	2137.87	297.54	-329.44	443.91	0.00	36	52	31.610	107	23 57.790	
2300.00	16.99	312.09	2233.50	317.13	-351.13	473.14	0.00	36	52	31.804	107	23 58.057	
2400.00	16.99	312.09	2329.14	336.72	-372.82	502.37	0.00	36	52	31.997	107	23 58.324	
2500.00	16.99	312.09	2424.77	356.31	-394.51	531.59	0.00	36	52	32.191	107	23 58.591	
2564.02	16.99	312.09	2486.00	368.85	-408.40	550.31	0.00	36	52	32.315	107	23 58.762	Ojo Alamo S
2600.00	16.99	312.09	2520.41	375.90	-416.20	560.82	0.00	36	52	32.385	107	23 58.858	
2684.27	16.99	312.09	2601.00	392.41	-434.48	585.45	0.00	36	52	32.548	107	23 59.083	Kirtland Sh
2700.00	16.99	312.09	2616.04	395.49	-437.89	590.05	0.00	36	52	32.578	107	23 59.125	
2800.00	16.99	312.09	2711.67	4									



Weatherford International Ltd.

WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 6/13/2011 Time: 13:10:56 Page: 3
 Field: RIO ARriba CO. NM (NAD 83) Co-ordinate(NE) Reference: Well: #166C, True North
 Site: Rosa Unit #166C Vertical (TVD) Reference: SITE 6376.0
 Well: #166C Section (VS) Reference: Well (0.00N,0.00E,312.09Azi)
 Wellpath: 1 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
5785.04	0.00	312.09	5671.00	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	Point Looko
5800.00	0.00	312.09	5685.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
5900.00	0.00	312.09	5785.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6000.00	0.00	312.09	5885.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6100.00	0.00	312.09	5985.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6100.04	0.00	312.09	5986.00	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	Mancos Sh.
6200.00	0.00	312.09	6085.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6300.00	0.00	312.09	6185.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6400.00	0.00	312.09	6285.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6500.00	0.00	312.09	6385.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6600.00	0.00	312.09	6485.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6700.00	0.00	312.09	6585.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6800.00	0.00	312.09	6685.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
6900.00	0.00	312.09	6785.96	568.01	-628.91	847.44	0.00	36	52	34.284	107	24	1.476	
7000.00	0.00	312.09	6885.96	568.01	-628.91	847.4								



Weatherford International Ltd.
WFT Plan Report Lat, Long



Weatherford

Company: Williams Production Date: 6/13/2011 Time: 13:10:56 Page: 4
Field: RIO ARRIBA CO. NM (NAD 83) Co-ordinate(NE) Reference: Well: #166C; True North
Site: Rosa Unit #166C Vertical (TVD) Reference: SITE 6376.0
Well: #166C Section (VS) Reference: Well (0:00N,0.00E,312.09Azi)
Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Formations

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
1241.27	1221.00	Nacimiento Fm.		0.00	0.00
2564.02	2486.00	Ojo Alamo Ss.		0.00	0.00
2684.27	2601.00	Kirtland Sh.		0.00	0.00
3076.22	2976.00	Fruitland Fm.		0.00	0.00
3328.89	3221.00	Pictured Cliffs Ss.		0.00	0.00
3628.48	3516.00	Lewis Sh.		0.00	0.00
5220.04	5106.00	Cliff House Ss. Trans.		0.00	0.00
5535.04	5421.00	Cliff House Ss.		0.00	0.00
5575.04	5461.00	Menefee Fm.		0.00	0.00
5785.04	5671.00	Point Lookout Ss.		0.00	0.00
6100.04	5986.00	Mancos Sh.		0.00	0.00
7120.04	7006.00	Gallup Ss.		0.00	0.00
7835.04	7721.00	Greenhorn Ls.		0.00	0.00
7885.04	7771.00	Graneros Sh.		0.00	0.00
8010.04	7896.00	Dakota Ss.		0.00	0.00
8260.04	8146.00	Morrison Fm.		0.00	0.00

Annotation

MD ft	TVD ft	
400.00	400.00	Kop
966.46	958.19	Hold
3010.03	2912.53	Drop
4142.95	4028.91	Hold
8310.03	8195.99	Pbhl



Weatherford International Ltd.

Anticollision Report



Weatherford

Company: Williams Production Date: 6/13/2011 Time: 13:09:39 Page: 1
 Field: RIO ARRIBA CO. NM (NAD 83)
 Reference Site: Rosa Unit #166C Co-ordinate(NE) Reference: Well: #166C True North:
 Reference Well: #166C Vertical (TVD) Reference: SITE 6376.0
 Reference Wellpath: 1 Db: Sybase

NO GLOBAL SCAN: Using user defined selection & scan criteria
 Interpolation Method: MD Interval: 100.00 ft
 Depth Range: 0.00 to 6188.00 ft
 Maximum Radius: 10000.00 ft

Reference: Plan: Plan #2
 Error Model: ISCWSA Ellipse
 Scan Method: Closest Approach 3D
 Error Surface: Ellipse

Plan: Plan #2

Date Composed: 6/13/2011

Principal: Yes

Version: 1

Tied-to: From Surface

Summary

Site	Offset Wellpath	Well	Wellpath	Reference MD ft	Offset MD ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
Rosa Unit #166C	Exist 166	1 V0		700.00	699.84	65.41	62.74	24.45	

Site: Rosa Unit #166C
 Well: Exist 166
 Wellpath: 1 V0

Inter-Site Error: 0.00 ft

Reference MD ft	TVD ft	Offset MD ft	TVD ft	Semi-Major Axis Ref ft	Offset ft	TFO-HS deg	Offset Location North ft	East ft	Ctr-Ctr Distance ft	Edge Distance ft	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	90.70	-0.64	52.20	52.20			No Data
100.00	100.00	100.14	100.14	0.10	0.11	90.65	-0.59	52.07	52.07	51.86	255.19	
200.00	200.00	200.28	200.28	0.32	0.22	90.49	-0.44	51.66	51.66	51.13	96.35	
300.00	300.00	300.42	300.41	0.55	0.32	90.22	-0.20	50.99	50.99	50.12	58.71	
400.00	400.00	400.50	400.49	0.77	0.54	89.85	0.13	50.09	50.09	48.78	38.15	
500.00	499.95	500.56	500.55	1.00	0.77	139.29	0.52	49.02	50.98	49.22	28.91	
600.00	599.63	600.42	600.40	1.23	1.00	144.02	0.97	47.78	55.88	53.66	25.20	
700.00	698.77	699.84	699.80	1.50	1.22	150.29	1.48	46.37	65.41	62.74	24.45	
800.00	797.08	798.52	798.47	1.83	1.44	156.42	2.05	44.82	80.11	76.98	25.56	
900.00	894.31	896.02	895.95	2.23	1.64	161.53	2.61	43.27	100.34	96.77	28.06	
1000.00	990											



Weatherford International Ltd.

Anticollision Report



Weatherford

Company: Williams Production Date: 6/13/2011 Time: 13:09:39 Page: 2
 Field: RIO ARRIBA CO NM (NAD 83)
 Reference Site: Rosa Unit #166C Co-ordinate(NE) Reference: Well: #166C, True North
 Reference Well: #166C Vertical (TVD) Reference: SITE 6376.0
 Reference Wellpath: 1 Db: Sybase

Site: Rosa Unit #166C
 Well: Exist 166
 Wellpath: 1 VO

Inter-Site Error: 0.00 ft

Reference		Offset		Semi-Major Axis			Offset Location		Ctr-Ctr		Edge	Separation	Warning
MD	TVD	MD	TVD	Ref	Offset	TFO-HS	North	East	Distance	Distance	Factor		
ft	ft	ft	ft	ft	ft	deg	ft	ft	ft	ft			
3600.00	3487.79	3497.11	3496.84	16.77	7.03	178.64	13.41	13.60	810.29	793.79	49.10		
3700.00	3586.96	3598.41	3598.13	17.03	7.25	178.70	13.87	12.34	821.93	805.04	48.67		
3800.00	3686.43	3700.03	3699.74	17.26	7.46	178.76	14.42	10.82	830.72	813.46	48.13		
3900.00	3786.13	3800.08	3799.77	17.45	7.68	178.81	15.02	9.19	836.76	819.14	47.50		
4000.00	3886.00	3900.01	3899.69	17.61	7.90	178.86	15.61	7.55	840.18	822.22	46.78		
4100.00	3985.97	4000.01	3999.67	17.73	8.11	178.91	16.21	5.91	840.98	822.70	45.99		
4200.00	4085.96	4099.99	4099.64	17.83	8.33	131.04	16.81	4.27	839.59	816.29	36.03		
4300.00	4185.96	4199.98	4199.61	17.93	8.55	131.08	17.40	2.63	837.96	814.33	35.45		
4400.00	4285.96	4299.96	4299.58	18.04	8.77	131.13	18.00	0.99	836.34	812.36	34.89		
4500.00	4385.96	4399.95	4399.55	18.15	8.99	131.17	18.60	-0.65	834.71	810.40	34.34		
4600.00	4485.96	4499.93	4499.52	18.26	9.20	131.21	19.19	-2.29	833.08	808.43	33.79		
4700.00	4585.96	4599.92	4599.49	18.37	9.42	131.26	19.79	-3.93	831.45	806.46	33.27		
4800.00	4685.96	4699.90	4699.46	18.49	9.64	131.30	20.39	-5.57	829.83	804.49	32.75		
4900.00	4785.96	4799.89	4799.43	18.61	9.86	1							