

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

FORM APPROVED
OMB No 1004-0136
Expires January 31, 2004

APPLICATION FOR PERMIT TO DRILL OR REENTER

FEB 01 2012

1a. Type of Work ☒ DRILL ☐ REENTER		Farmington Field Office Bureau of Land Management		5. Lease Serial No NMSF-078894
1b. Type of Well ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone				6. If Indian, Allottee or Tribe Name
2. Name of Operator WPX Energy Production, LLC (FKA) Williams Production Company, LLC				7. If Unit or CA Agreement, Name and No.
3a. Address P.O. Box 640 Aztec, NM 87410		3b. Phone No. (include area code) (505) 333-1808		8. Lease Name and Well No. Rosa Unit #312B
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 1540' FSL & 170' FWL At proposed prod. zone 250' FNL & 350' FWL				9. API Well No. 30-039-31110
14. Distance in miles and direction from nearest town or post office* approximately 31 miles northeast of Blanco, New Mexico				10. Field and Pool, or Exploratory Basin Fruitland Coal
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest dng unit line, if any) 250'				11. Sec, T, R., M., or Blk and Survey or Area Section 28, 31N, 4W
16. No. of Acres in lease 2284.16		17. Spacing Unit dedicated to this well 320.0 - (W/2)		12. County or Parish Rio Arriba
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 50'		19. Proposed Depth 6800'		13. State NM
20. BLM/BIA Bond No. on file UTB000178		21. Estimated duration 1 month		
22. Approximate date work will start* April 1, 2012		23. Estimated duration 1 month		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form.

1. Well plat certified by a registered surveyor.
2. A Drilling Plan
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on Item 20 above)
5. Operator certification
6. Such other site specific information and/or plans as may be required by authorized officer.

Hold C104
for Directional Survey
and "As Drilled" plat

25. Signature <i>Larry Higgins</i>	Name (Printed/Typed) LARRY HIGGINS	Date 2/1-12
Title PERMIT SUPRV		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed)	Date 8/21/12
Title AEM		
Office FEO		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

*(Instructions on reverse) *X NO WINDROW IN OJO ALAMO OR CLOSER THAN 75' TO RIFLAND TO P*

WPX Energy Production, LLC proposes to develop the Basin Fruitland Coal formation at the above described location in accordance with the attached drilling and surface use plans.

The surface is under Jurisdiction of the Carson National Forest, Jicarilla Ranger District

Hold C104
for Directional Survey
and "As Drilled" plat

This location has been archaeologically surveyed by La Plata Archaeological Consultants. Copies of their report have been submitted directly to the CNF

No new access road will be required for this proposed well.

This APD is also serving as an application to obtain a pipeline right-of-way. An associated pipeline tie of 124.6 feet would be required for this well

A COMPLETE C-144 MUST BE SUBMITTED TO AND APPROVED BY THE NMOCD FOR: A PIT, CLOSED LOOP SYSTEM, BELOW GRADE TANK, OR PROPOSED ALTERNATIVE METHOD, PURSUANT TO NMOCD PART 19.15 17, PRIOR TO THE USE OR CONSTRUCTION OF THE ABOVE APPLICATIONS.

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

NMOCD

NOTIFY AZTEC OCD 24 HRS.

PRIOR TO CASING & CFM EN

SEP 07 2012

This action is subject to technical and procedural review pursuant to 43 CFR 3169.9 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS".

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31110	² Pool Code 71629	³ Pool Name BASIN FRUITLAND COAL
⁴ Property Code 17033	⁵ Property Name ROSA UNIT	⁶ Well Number 312B
⁷ OGRID No. 120782	⁸ Operator Name WILLIAMS PRODUCTION COMPANY	⁹ Elevation 6693'

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
L	28	31N	4W		1540	SOUTH	170	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
D	28	31N	4W		250	NORTH	350	WEST	RIO ARriba

¹² Dedicated Acres 320.0 Acres - (W/2)	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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

¹⁶

250'

350'

5280.00'

END-OF-LATERAL
LAT: 36.87715°N
LONG: 107.26750°W
DATUM: NAD1927

LAT: 36.87716°N
LONG: 107.26810°W
DATUM: NAD1983

LEASE
SF-078894

LOT 1

HES
#277

LOT 2

5280.00'

NO2°31.5'E 3084.1'

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POINT-OF-ENTRY
LAT: 36.86869°N
LONG: 107.26803°W
DATUM: NAD1927

LAT: 36.86870°N
LONG: 107.26863°W
DATUM: NAD1983

NO2°31.5'E 400.0'

170'

184'

1540'

1938'

SURFACE LOCATION
LAT: 36.86759°N
LONG: 107.26809°W
DATUM: NAD1927

LAT: 36.86760°N
LONG: 107.26869°W
DATUM: NAD1983

5281.98'

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
Signature: Heather Riley Date: 11/31/12
Printed Name: Heather Riley
E-mail Address: heather.riley@wpxenergy.com

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 Revised: DECEMBER 5, 2011
Survey Date: SEPTEMBER 19, 2011
Signature and Seal of Professional Surveyor

JASON C. EDWARDS
Certificate Number 15269



WPX Energy Production, LLC.

Operations Plan

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

DATE: 12/8/2011

WELLNAME: Rosa Unit #312-B **FIELD:** Basin Fruitland Coal

BH LOCATION: NWSW Sec. 28-T31N-4W **SURFACE:** USFS
Rio Arriba, NM

ELEVATION: 6,693' GR **MINERALS:** FED

TOTAL DEPTH: 6,800' **LEASE #** SF-078894

I. **GEOLOGY:** Surface formation - San Jose

A. **FORMATION TOPS:** (KB)

NAME	TVD	MD	NAME	TVD	MD
San Jose	Surface	Surface	Top Target Coal	3,507	3,758
Nacimiento	1,864	1,864	Bottom Target Coal	3,521	
Ojo Alamo	2,919	2,919	Base Coal	3,539	
Kirtland	3,023	3,023	Picture Cliffs	3,538	
Fruitland	3,305	3,315	TD	3,509	6,800

- **NOTE:** Well will be vertically drilled to 100' into Pictured Cliffs, logged through the PC, 7" csg will be run with shoe 100' into Pictured Cliffs. Cased hole whipstock will be set at KOP (+/-441') above top of target coal). Well will be geosteered in lateral. *no window in Ojo Alamo or closer than 75' to Kirtland top*

B. **LOGGING PROGRAM:** HRI/SDL/DSN from pilot hole TD to surface csg. MWD Gamma Ray in curve and lateral.

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

D. **MUD LOGGING PRORAM:** Mud logger will be on location from 500' to TD of intermediate casing. Then from mill out of intermediate casing to TD.

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.

B. **DRILLING FLUID:** Horizontal section will be drilled with produced water.

- C. **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>HOLE SIZE</u>	<u>DEPTH (MD)</u>	<u>CASING SIZE</u>	<u>WT. & GRADE</u>
Surface	12-1/4"	+ 300'	9-5/8"	36# K-55
Intermediate	8-3/4"	+/- 3,638'	7"	23# K-55
Prod. Liner	6-1/4"	+/- 3,068' - 6,800'	4-1/2"	11.6# K-55

Note: Intermediate casing is set 100' into Pictured Cliffs in the pilot hole. Production liner is 4-1/2" 11.6# Pre-perforated K-55 and the liner will be set with liner hanger 5-10' outside of the window.

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:** No centralization

C. **CEMENTING:**

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

1. **SURFACE:** Slurry: 150sx (269.4 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.
2. **INTERMEDIATE:** Lead - 340 sx (928.2 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 = 1046 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface. WOC 12 hours. Test csg to 1500psi.
3. **PRODUCTION LINER:** Open hole completion. No cement.

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IV. COMPLETION

A. PRESSURE TEST

1. Pressure test 7" casing to 1500# for ³⁰~~15~~ minutes.

B. STIMULATION

1. No stimulation

C. RUNNING TUBING

1. Fruitland Coal: Run 2-7/8", 6.5#, J-55, EUE tubing with a SN on top of bottom joint. Land tubing approximately 50' above PBTD of 7" casing.



Larry Higgins
Permit Supervisor



Rosa Unit #312B
Sec 28 T31N R04W - 312B
Rio Arriba Co., NM
GE: 6693' / KB: 14'

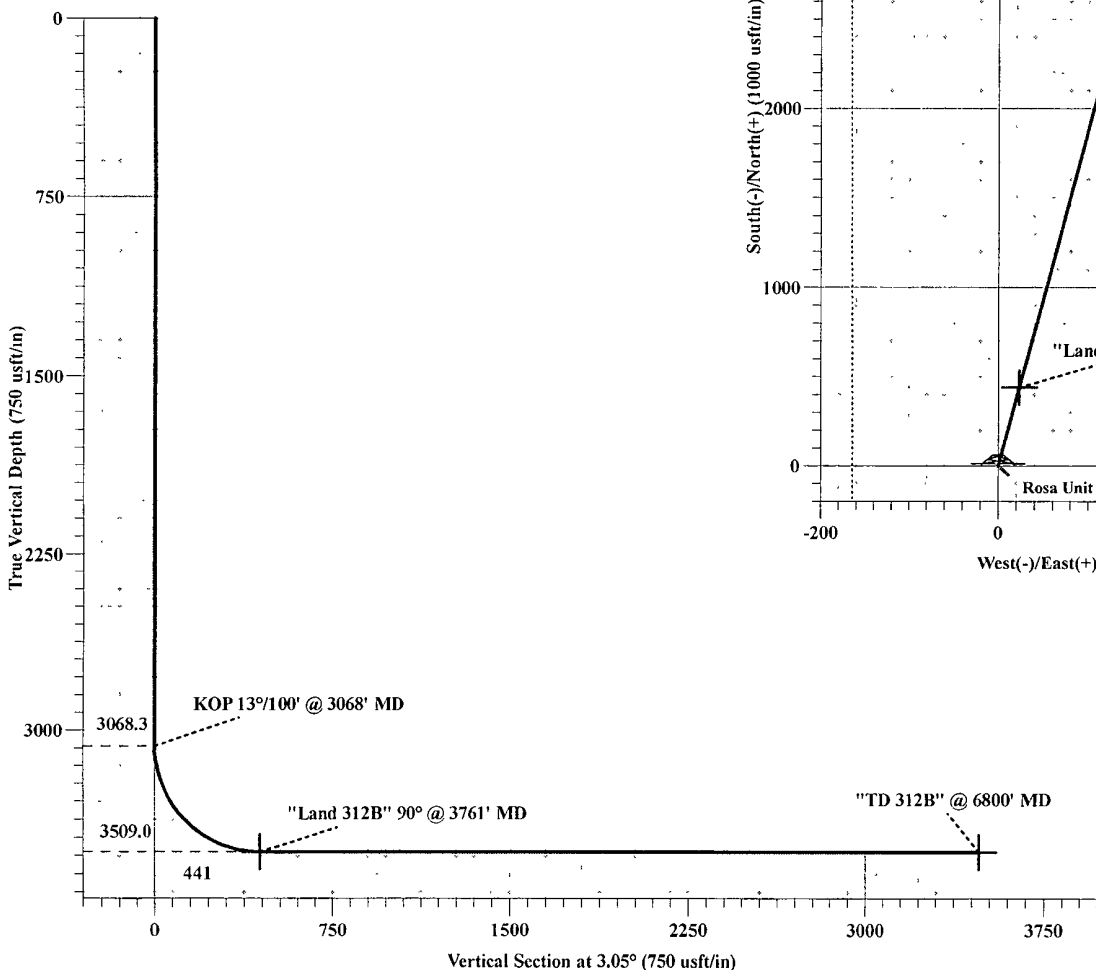
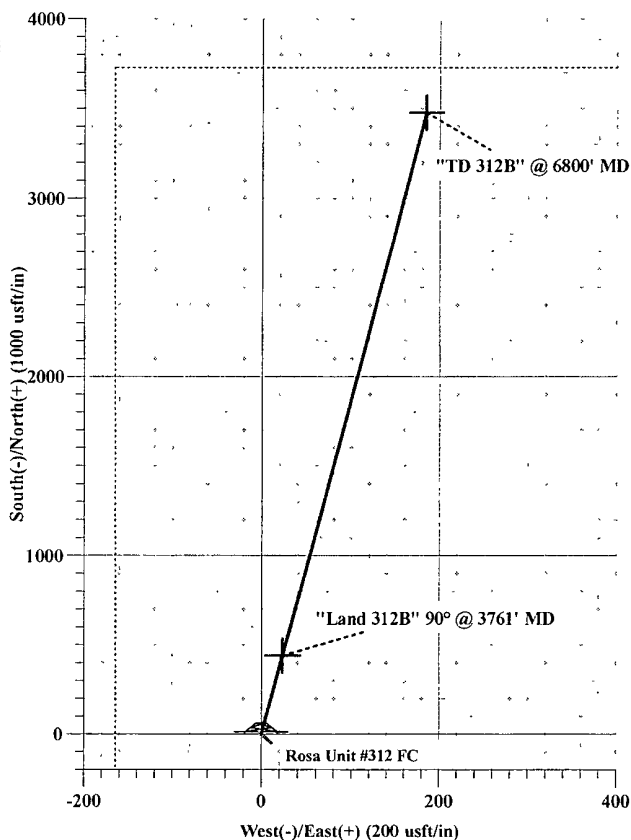
PATHFINDER
A Schlumberger Company

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
BHL 312B	3509 0	3475 2	184 9	2140089 97	202409 95	Point
Land 312B	3509 0	440 1	23 4	2137056 79	202216 13	Point

WELL DETAILS: Rosa Unit #312B

	Ground Level	6693 0		
Northing	Easting	Latitude	Longitude	
2136616.97	202188.04	36° 52' 3 324 N	107° 16' 5.124 W	



SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0 0	0 00	0.00	0 0	0 0	0 0	0.00	0.00	0.0	
3068 3	0 00	0.00	3068 3	0 0	0 0	0.00	0.00	0.0	
3760 6	90 00	3 05	3509 0	440 1	23.4	13 00	3.05	440 7	
6799.9	90 00	3 05	3509 0	3475 2	184 9	0.00	0 00	3480 1	BHL 312B

Plan: Design #4 (Rosa Unit #312B/ST01)

Created By: Breck Enoch

Date: 07-Dec-2011

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Sec 28 T31N R04W - 312B
Company:	Williams Production Co.	TVD Reference:	WELL @ 6707 0usft (Original Well Elev)
Project:	Rio Arriba Co , NM	MD Reference:	WELL @ 6707 0usft (Original Well Elev)
Site:	Sec 28 T31N R04W - 312B	North Reference:	True
Well:	Rosa Unit #312B	Survey Calculation Method:	Minimum Curvature
Wellbore:	ST01		
Design:	Design #4		

Project	Rio Arriba Co , NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico Central 3002		

Site	Sec 28 T31N R04W - 312B		
Site Position:	From:	Lat/Long	
From:	Lat/Long		
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "
		Northings:	2,136,616 96 usft
		Easting:	202,188 05 usft
		Latitude:	36° 52' 3 324 N
		Longitude:	107° 16' 5 124 W
		Grid Convergence:	-0 61 °

Well	Rosa Unit #312B		
Well Position	+N/-S	0 0 usft	Northings:
	+E/-W	0 0 usft	Easting:
Position Uncertainty	0 0 usft	Wellhead Elevation:	
		Latitude:	36° 52' 3 324 N
		Longitude:	107° 16' 5 124 W
		Ground Level:	6,693 0 usft

Wellbore	ST01		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	11/30/2011	9 64
			Dip Angle
			63 65
			Field Strength
			50,826

Design	Design #4		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth:
			0 0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 0	0 0	0 0
			Direction
			3 05

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (%)	Target
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 00	0 00	0 00	
3,068 3	0 00	0 00	3,068 3	0 0	0 0	0 00	0 00	0 00	0 00	
3,760 6	90 00	3 05	3,509 0	440 1	23 4	13 00	13 00	0 00	3 05	
6,799 9	90 00	3 05	3,509 0	3,475 2	184 9	0 00	0 00	0 00	0 00	BHL 312B

Planning Report

Database: EDM 5000.1 Single-User Db
 Company: Williams Production Co.
 Project: Rio Arriba Co., NM
 Site: Sec 28 T31N R04W - 312B
 Well: Rosa Unit #312B
 Wellbore: ST01
 Design: Design #4

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Site Sec 28 T31N R04W - 312B
 WELL @ 6707.0usft (Original Well Elev)
 WELL @ 6707.0usft (Original Well Elev)
 True
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 0	0 00	0 00	0.0	0 0	0 0	0 0	0 00	0 00	0 00
100 0	0 00	0 00	100 0	0 0	0 0	0 0	0 00	0 00	0 00
200 0	0 00	0 00	200 0	0 0	0 0	0 0	0 00	0 00	0 00
300 0	0 00	0 00	300 0	0 0	0 0	0 0	0 00	0 00	0 00
400 0	0 00	0 00	400 0	0 0	0 0	0 0	0 00	0 00	0 00
500 0	0 00	0 00	500 0	0 0	0 0	0 0	0 00	0 00	0 00
600 0	0 00	0 00	600 0	0 0	0 0	0 0	0 00	0 00	0 00
700 0	0 00	0 00	700 0	0 0	0 0	0 0	0 00	0 00	0 00
800 0	0 00	0 00	800 0	0 0	0 0	0 0	0 00	0 00	0 00
900 0	0 00	0 00	900 0	0 0	0 0	0 0	0 00	0 00	0 00
1,000 0	0 00	0 00	1,000 0	0 0	0 0	0 0	0 00	0 00	0 00
1,100 0	0 00	0 00	1,100 0	0 0	0 0	0 0	0 00	0 00	0 00
1,200 0	0 00	0 00	1,200 0	0 0	0 0	0 0	0 00	0 00	0 00
1,300 0	0 00	0 00	1,300 0	0 0	0 0	0 0	0 00	0 00	0 00
1,400 0	0 00	0 00	1,400 0	0 0	0 0	0 0	0 00	0 00	0 00
1,500 0	0 00	0 00	1,500 0	0 0	0 0	0 0	0 00	0 00	0 00
1,600 0	0 00	0 00	1,600 0	0 0	0 0	0 0	0 00	0 00	0 00
1,700 0	0 00	0 00	1,700 0	0 0	0 0	0 0	0 00	0 00	0 00
1,800 0	0 00	0 00	1,800 0	0 0	0 0	0 0	0 00	0 00	0 00
1,900 0	0 00	0 00	1,900 0	0 0	0 0	0 0	0 00	0 00	0 00
2,000 0	0 00	0 00	2,000 0	0 0	0 0	0 0	0 00	0 00	0 00
2,100 0	0 00	0 00	2,100 0	0 0	0 0	0 0	0 00	0 00	0 00
2,200 0	0 00	0 00	2,200 0	0 0	0 0	0 0	0 00	0 00	0 00
2,300 0	0 00	0 00	2,300 0	0 0	0 0	0 0	0 00	0 00	0 00
2,400 0	0 00	0 00	2,400 0	0 0	0 0	0 0	0 00	0 00	0 00
2,500 0	0 00	0 00	2,500 0	0 0	0 0	0 0	0 00	0 00	0 00
2,600 0	0 00	0 00	2,600 0	0 0	0 0	0 0	0 00	0 00	0 00
2,700 0	0 00	0 00	2,700 0	0 0	0 0	0 0	0 00	0 00	0 00
2,800 0	0 00	0 00	2,800 0	0 0	0 0	0 0	0 00	0 00	0 00
2,900 0	0 00	0 00	2,900 0	0 0	0 0	0 0	0 00	0 00	0 00
3,000 0	0 00	0 00	3,000 0	0 0	0 0	0 0	0 00	0 00	0 00
3,068.3	0 00	0 00	3,068.3	0 0	0 0	0 0	0 00	0 00	0 00
3,100 0	4 13	3 05	3,100 0	1 1	0 1	1 1	13 00	13 00	0 00
3,200 0	17 13	3 05	3,198 0	19.5	1 0	19 5	13 00	13 00	0 00
3,300 0	30 13	3 05	3,289.5	59.4	3 2	59 5	13 00	13 00	0 00
3,400 0	43 13	3 05	3,369.6	118.9	6 3	119 1	13 00	13 00	0 00
3,500 0	56 13	3 05	3,434.2	194.8	10 4	195 1	13 00	13 00	0 00
3,600 0	69 13	3 05	3,480.1	283.3	15 1	283 7	13 00	13 00	0 00
3,700 0	82 13	3 05	3,504.8	379.8	20 2	380 4	13 00	13 00	0 00
3,760.6	90 00	3 05	3,509.0	440.1	23 4	440 7	13 00	13 00	0 00
3,800 0	90 00	3 05	3,509.0	479.5	25 5	480 2	0 00	0 00	0 00
3,900 0	90 00	3 05	3,509.0	579.3	30 8	580 2	0 00	0 00	0 00
4,000 0	90 00	3 05	3,509.0	679.2	36 1	680 2	0 00	0 00	0 00
4,100 0	90 00	3 05	3,509.0	779.1	41.4	780 2	0 00	0 00	0 00
4,200 0	90 00	3 05	3,509.0	878.9	46.8	880 2	0 00	0 00	0 00
4,300 0	90 00	3 05	3,509.0	978.8	52 1	980 2	0 00	0 00	0 00
4,400 0	90 00	3 05	3,509.0	1,078.6	57 4	1,080 2	0 00	0 00	0 00
4,500 0	90 00	3 05	3,509.0	1,178.5	62 7	1,180 2	0 00	0 00	0 00
4,600 0	90 00	3 05	3,509.0	1,278.4	68 0	1,280 2	0 00	0 00	0 00
4,700 0	90 00	3 05	3,509.0	1,378.2	73 3	1,380 2	0 00	0 00	0 00
4,800 0	90 00	3 05	3,509.0	1,478.1	78 6	1,480 2	0 00	0 00	0 00
4,900 0	90 00	3 05	3,509.0	1,577.9	83 9	1,580 2	0 00	0 00	0 00
5,000 0	90 00	3 05	3,509.0	1,677.8	89 3	1,680.2	0 00	0 00	0 00
5,100 0	90 00	3 05	3,509.0	1,777.7	94 6	1,780.2	0 00	0 00	0 00

Planning Report

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Sec 28 T31N R04W - 312B
Company:	Williams Production Co	TVD Reference:	WELL: @ 6707 0usft (Original Well Elev)
Project:	Rio Arriba Co, NM	MD Reference:	WELL: @ 6707 0usft (Original Well Elev)
Site:	Sec 28 T31N R04W - 312B	North Reference:	True
Well:	Rosa Unit #312B	Survey Calculation Method:	Minimum Curvature
Wellbore:	ST01-		
Design:	Design #4		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.0	90.00	3.05	3,509.0	1,877.5	99.9	1,880.2	0.00	0.00	0.00
5,300.0	90.00	3.05	3,509.0	1,977.4	105.2	1,980.2	0.00	0.00	0.00
5,400.0	90.00	3.05	3,509.0	2,077.2	110.5	2,080.2	0.00	0.00	0.00
5,500.0	90.00	3.05	3,509.0	2,177.1	115.8	2,180.2	0.00	0.00	0.00
5,600.0	90.00	3.05	3,509.0	2,276.9	121.1	2,280.2	0.00	0.00	0.00
5,700.0	90.00	3.05	3,509.0	2,376.8	126.4	2,380.2	0.00	0.00	0.00
5,800.0	90.00	3.05	3,509.0	2,476.7	131.8	2,480.2	0.00	0.00	0.00
5,900.0	90.00	3.05	3,509.0	2,576.5	137.1	2,580.2	0.00	0.00	0.00
6,000.0	90.00	3.05	3,509.0	2,676.4	142.4	2,680.2	0.00	0.00	0.00
6,100.0	90.00	3.05	3,509.0	2,776.2	147.7	2,780.2	0.00	0.00	0.00
6,200.0	90.00	3.05	3,509.0	2,876.1	153.0	2,880.2	0.00	0.00	0.00
6,300.0	90.00	3.05	3,509.0	2,976.0	158.3	2,980.2	0.00	0.00	0.00
6,400.0	90.00	3.05	3,509.0	3,075.8	163.6	3,080.2	0.00	0.00	0.00
6,500.0	90.00	3.05	3,509.0	3,175.7	168.9	3,180.2	0.00	0.00	0.00
6,600.0	90.00	3.05	3,509.0	3,275.5	174.2	3,280.2	0.00	0.00	0.00
6,700.0	90.00	3.05	3,509.0	3,375.4	179.6	3,380.2	0.00	0.00	0.00
6,799.9	90.00	3.05	3,509.0	3,475.2	184.9	3,480.1	0.00	0.00	0.00

Design Targets

Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Land 312B	- plan hits target center - Point	0.00	0.00	3,509.0	440.1	23.4	2,137,056.79	202,216.14	36° 52' 7.676 N	107° 16' 4.836 W
BHL 312B	- plan hits target center - Point	0.00	0.00	3,509.0	3,475.2	184.9	2,140,089.97	202,409.96	36° 52' 37.686 N	107° 16' 2.849 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
3,068.3	3,068.3	0.0	0.0	KOP 13°/100' @ 3068' MD
3,760.6	3,509.0	440.1	23.4	"Land 312B" 90° @ 3761' MD
6,799.9	3,509.0	3,475.2	184.9	"TD 312B" @ 6800' MD

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 20, 2001

By: John Thompson (Walsh E&P)

