

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Farmington Field Office
Bureau of Land Management

APR 26 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		5. Lease Serial No. SF-078777
2. Name of Operator Williams Production Company, LLC		6. If Indian, Allottee or Tribe Name
3a. Address PO Box 640 Aztec, NM 87410	3b. Phone No. (include area code) 505-634-4206	7. If Unit of CA/Agreement, Name and/or No. Rosa
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 1035' FSL & 1025' FEL, section 31, T31N, R4W		8. Well Name and No. Rosa 399A
		9. API Well No. 30-039-30503
		10. Field and Pool or Exploratory Area Basin Fruitland Coal
		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 Temp Pit Notification
	☒ 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 recompleate 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 recompleation 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 wishes to change this well from a vertical cavitated completion to a horizontal completion. A revised C-102, directional plan and operation plan are attached.

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

CONDITIONS OF APPROVAL
Adhere to previously issued stipulations.

RCVD MAY 9 '11

OIL CONS. DIV.
DIST. 3

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed) Larry Higgins	Title Permit Supervisor
Signature <i>Larry Higgins</i>	Date 4-26-11

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by <i>Troy L. Salvers</i>	Title <i>Petroleum Eng.</i>	Date <i>4/29/2011</i>
Conditions of approval, if any, are attached. Approval of this notice 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.	Office <i>FFO</i>	

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 page 2)

NMOCD AV

601 m H

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 30-039-30503		*Pool Code 71629	*Pool Name BASIN FRUITLAND COAL
*Property Code 17033	*Property Name ROSA UNIT		*Well Number 399A
*OGRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY		*Elevation 6678'

¹⁰ Surface Location

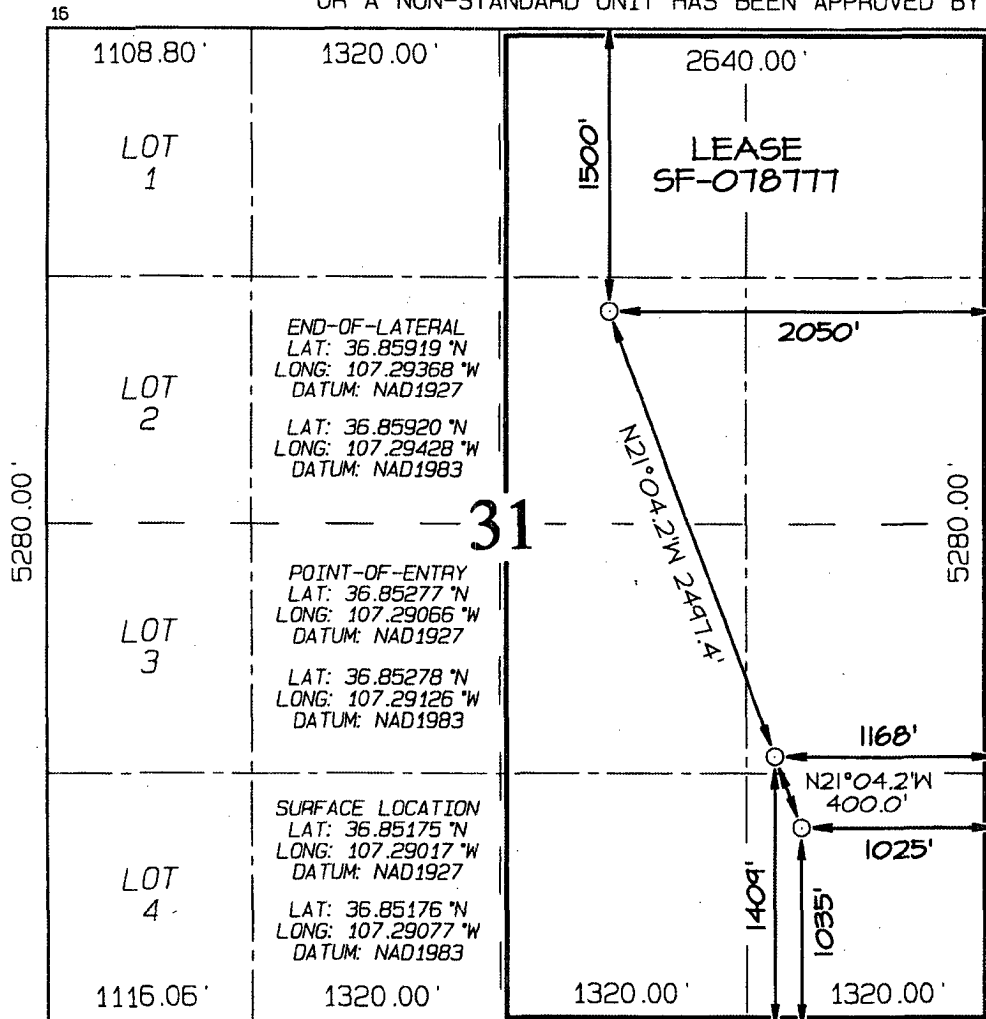
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	31	31N	4W		1035	SOUTH	1025	EAST	RIO ARriba

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
G	31	31N	4W		1500	NORTH	2050	EAST	RIO ARriba

¹² Dedicated Acres 320.0 Acres - (E/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



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.

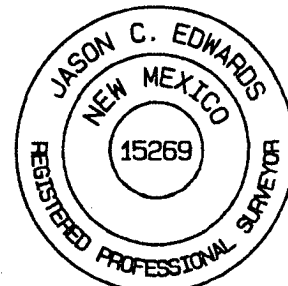
Larry Higgins 4-26-11
Signature Date
LARRY HIGGINS
Printed Name

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 13, 2011

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: 4/26/2011

WELLNAME: Rosa Unit #399A **FIELD:** Basin Fruitland Coal

BH LOCATION: SWNE Sec. 31-T31N-4W **SURFACE:** USFS
Rio Arriba, NM

ELEVATION: 6,678' GR **MINERALS:** BLM

TOTAL DEPTH: 6,248' **LEASE #** SF-078777

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

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

NAME		TVD	MD		NAME		TVD	MD
San Jose		Surface	Surface		Top Target Coal		3,466	3,640
Nacimiento		1,501	1,501		Bottom Target Coal		3,478	
Ojo Alamo		2,836	2,836		Base Coal		3,496	
Kirtland		2,996	2,996		Picture Cliffs		3,501	
Fruitland		3,326	3,330		TD		3,466	6,269

- **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 (300' above top of target coal). Well will be geosteered in lateral.
- 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 PROGRAM:** 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"	+/- 3,601'	7"	23# K-55
Prod. Liner	6-1/4"	+/- 3,230' - 6,269'	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 + 1/4 # 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, **For 30 min.**
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
3. PRODUCTION LINER: Open hole completion. No cement.

IV. COMPLETION

A. PRESSURE TEST

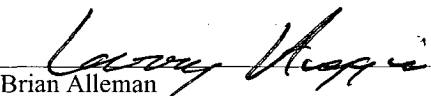
1. Pressure test 7" casing to 3300# for 15 minutes. **1500psi / 30 min**

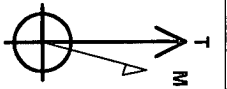
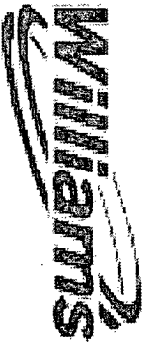
B. STIMULATION

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.

for 
Brian Alleman
Drilling Engineer II



Azinuths to True North
Magnetic North: 9.71°
Magnetic Field
Strength: 50913.35nT
Dip Angle: 63.67°
Date: 04/07/2011
Model: IGRF200510

PROJECT DETAILS: Rio Arriba County
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico Central 3002
System Datum: Mean Sea Level
Local North: True

PATHFINDER
A Schlumberger Company

Project: Rio Arriba County
Site: Rosa Unit
Well: #399A
Wellbore: OH
Plan: Plan #2 (#399A/OH)

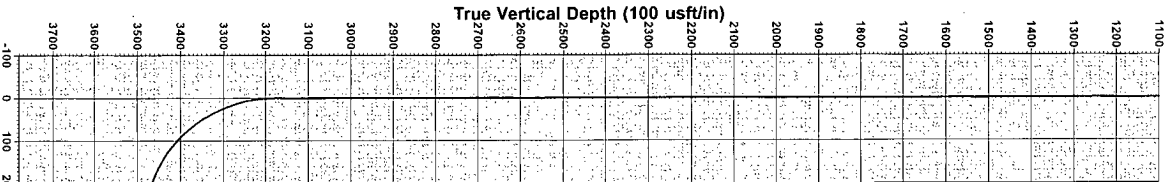
MD	Inc	Azi	TVD	+N-S	+E/W	Dlog	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3178.40	0.00	0.00	3178.40	0.00	0.00	0.00	0.00	0.00	
3652.15	90.00	339.42	3480.00	282.35	-106.02	19.00	339.42	282.35	
46248.71	90.00	339.42	3480.00	2713.21	-1018.75	0.00	0.00	2713.21	BHL (Rosa#399A)

WELL DETAILS: #399A

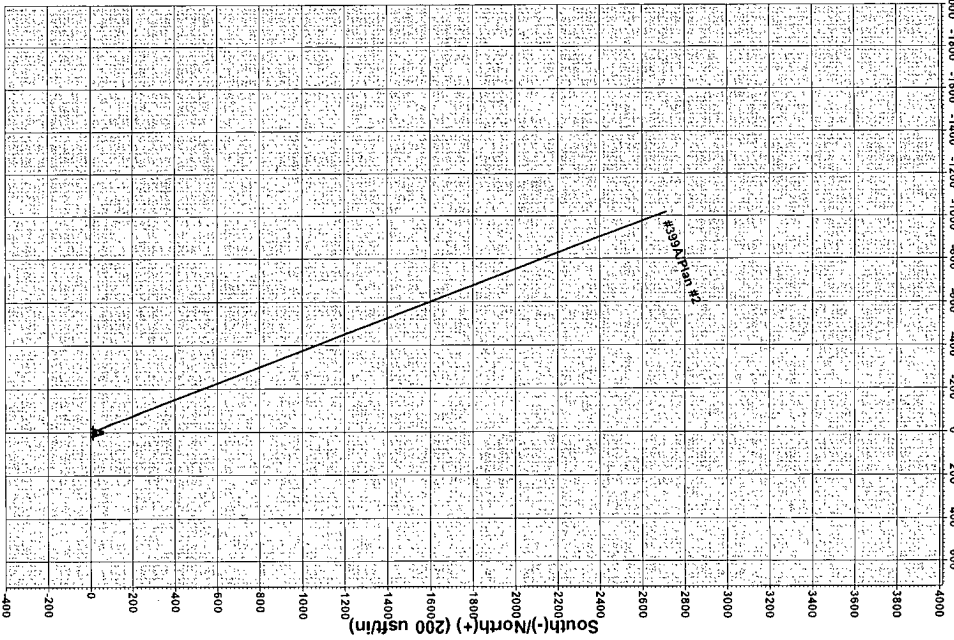
Ground Elevation: 6678.00
RKB Elevation: RKB=12' @ 6690.00usft
Rig Name:
Northing 2130919.829 Easting 195666.191
Latitude 36° 51' 6.300 N Longitude 107° 17' 24.612 W

LEGEND

• Plan #2



West(-)/East(+) (200 usft/in)



Vertical Section at 0.00° (100 usft/in)



Williams Production

Rio Arriba County

Rosa Unit

#399A

OH

Plan: Plan #2

Pathfinder X & Y Planning Report

19 April, 2011

PATHFINDER
A Schlumberger Company



Pathfinder Pathfinder X & Y Planning Report



Company:	Williams Production	Local Co-ordinate Reference:	Well #399A
Project:	Rio Arriba County	TVD Reference:	RKB=12' @ 6690.00usft
Site:	Rosa Unit	MD Reference:	RKB=12' @ 6690.00usft
Well:	#399A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db
Project:	Rio Arriba County	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico Central 3002		

Site:	Rosa Unit	Northings:	2,173,444.807 usft	Latitudes:	36° 56' 0.193 N
Site Position:		Eastings:	-397,626.039 usft	Longitudes:	109° 19' 15.108 W
From:	Lat/Long	Slot Radius:	13-3/16 "	Grid Convergence:	-1.85 °
Position Uncertainty:	0.00 usft				

Well	#399A	Northings:	2,130,919.829 usft	Latitudes:	36° 51' 6.300 N
Well Position	+N/S	Eastings:	195,666.191 usft	Longitudes:	107° 17' 24.612 W
	+E/W	Wellhead Elevation:	usft	Ground Level:	6,678.00 usft
Position Uncertainty	0.00 usft				

Wellbore	OH	Dip Angle	63.67	Field Strength	50.913
Magnetics	Model Name	Sample Date	Declination		
	IGRF200510	04/07/11	(°)	9.71	(nT)

Design	Plan #2	Phase:	PLAN	Tie On Depth:	0.00
Audit Notes:					
Version:					
Vertical Section:	Depth From (TVD)	+N/S	+E/W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	0.00	

Survey Tool Program:	Date	04/19/11	Tool Name	Description	
From	To	Survey/Wellbore			
(usft)	(usft)				
0.00	6,248.71	Plan #2 (OH)	MWD	MWD - Standard	



Pathfinder
Pathfinder X & Y Planning Report



Company:	Williams Production	Local Co-ordinate Reference:	Well #399A
Project:	Rio Arriba County	TVD Reference:	RKB=12' @ 6690.00ust
Site:	Rosa Unit	MD Reference:	RKB=12' @ 6690.00ust
Well:	#399A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey										
MD (ustft)	Inc (°)	Azi (°)	TVD (ustft)	TVDSS (ustft)	N/S (ustft)	EW (ustft)	V. Sec (ustft)	DLeg (°/100ustft)	Northing (ustft)	Easting (ustft)
0.00	0.00	0.00	0.00	6,690.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
100.00	0.00	0.00	100.00	6,590.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
200.00	0.00	0.00	200.00	6,490.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
300.00	0.00	0.00	300.00	6,390.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
400.00	0.00	0.00	400.00	6,290.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
500.00	0.00	0.00	500.00	6,190.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
600.00	0.00	0.00	600.00	6,090.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
700.00	0.00	0.00	700.00	5,990.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
800.00	0.00	0.00	800.00	5,890.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
900.00	0.00	0.00	900.00	5,790.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,000.00	0.00	0.00	1,000.00	5,690.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,100.00	0.00	0.00	1,100.00	5,590.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,200.00	0.00	0.00	1,200.00	5,490.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,300.00	0.00	0.00	1,300.00	5,390.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,400.00	0.00	0.00	1,400.00	5,290.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,500.00	0.00	0.00	1,500.00	5,190.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,600.00	0.00	0.00	1,600.00	5,090.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,700.00	0.00	0.00	1,700.00	4,990.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,800.00	0.00	0.00	1,800.00	4,890.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
1,900.00	0.00	0.00	1,900.00	4,790.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,000.00	0.00	0.00	2,000.00	4,690.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,100.00	0.00	0.00	2,100.00	4,590.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,200.00	0.00	0.00	2,200.00	4,490.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,300.00	0.00	0.00	2,300.00	4,390.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,400.00	0.00	0.00	2,400.00	4,290.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,500.00	0.00	0.00	2,500.00	4,190.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
2,600.00	0.00	0.00	2,600.00	4,090.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19



Pathfinder Pathfinder X & Y Planning Report



Company: Williams Production
Project: Rio Arriba County
Site: Rosa Unit
Well: #399A
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
Well #399A
TVD Reference: RKB=12 @ 6690.00ustf
MD Reference: RKB=12 @ 6690.00ustf
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Planned Survey	MD (ustf)	Inc (°)	Azi (°)	TVD (ustf)	TVDSS (ustf)	N/S (ustf)	EW (ustf)	V. Sec (ustf)	Dleg (°/100ustf)	Northing (ustf)	Easting (ustf)
	2,700.00	0.00	0.00	2,700.00	3,990.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	2,800.00	0.00	0.00	2,800.00	3,890.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	2,900.00	0.00	0.00	2,900.00	3,790.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	3,000.00	0.00	0.00	3,000.00	3,690.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	3,100.00	0.00	0.00	3,100.00	3,590.00	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	3,178.40	0.00	0.00	3,178.40	3,511.60	0.00	0.00	0.00	0.00	2,130,919.83	195,666.19
	3,200.00	4.10	339.42	3,199.98	3,490.02	0.72	-0.27	0.72	19.00	2,130,920.56	195,665.93
	3,225.00	8.85	339.42	3,224.81	3,465.19	3.36	-1.26	3.36	19.00	2,130,923.21	195,664.96
	3,250.00	13.60	339.42	3,249.33	3,440.67	7.92	-2.97	7.92	19.00	2,130,927.78	195,663.30
	3,275.00	18.35	339.42	3,273.36	3,416.64	14.36	-5.39	14.36	19.00	2,130,934.25	195,660.96
	3,300.00	23.10	339.42	3,296.73	3,393.27	22.64	-8.50	22.64	19.00	2,130,942.56	195,657.94
	3,325.00	27.85	339.42	3,319.29	3,370.71	32.70	-12.28	32.70	19.00	2,130,952.66	195,654.27
	3,350.00	32.60	339.42	3,340.89	3,349.11	44.48	-16.70	44.48	19.00	2,130,964.49	195,649.97
	3,375.00	37.35	339.42	3,361.37	3,328.63	57.89	-21.74	57.89	19.00	2,130,977.96	195,645.08
	3,400.00	42.10	339.42	3,380.59	3,309.41	72.85	-27.35	72.85	19.00	2,130,992.97	195,639.63
	3,425.00	46.85	339.42	3,398.43	3,291.57	89.24	-33.51	89.24	19.00	2,131,009.43	195,633.66
	3,450.00	51.60	339.42	3,414.75	3,275.25	106.96	-40.16	106.96	19.00	2,131,027.22	195,627.20
	3,475.00	56.35	339.42	3,429.45	3,260.55	125.88	-47.26	125.88	19.00	2,131,046.22	195,620.30
	3,500.00	61.10	339.42	3,442.43	3,247.57	145.88	-54.77	145.88	19.00	2,131,066.29	195,613.01
	3,525.00	65.84	339.42	3,453.59	3,236.41	166.81	-62.63	166.81	19.00	2,131,087.31	195,605.38
	3,550.00	70.59	339.42	3,462.87	3,227.13	188.54	-70.79	188.54	19.00	2,131,109.13	195,597.46
	3,575.00	75.34	339.42	3,470.19	3,219.81	210.91	-79.19	210.91	19.00	2,131,131.59	195,589.30
	3,600.00	80.09	339.42	3,475.50	3,214.50	233.77	-87.78	233.77	19.00	2,131,154.54	195,580.97
	3,625.00	84.84	339.42	3,478.78	3,211.22	256.97	-96.49	256.97	19.00	2,131,177.83	195,572.51
	3,652.15	90.00	339.42	3,480.00	3,210.00	282.35	-106.02	282.35	19.00	2,131,203.32	195,563.25
	3,700.00	90.00	339.42	3,480.00	3,210.00	327.15	-122.84	327.15	0.00	2,131,248.29	195,546.92
	3,800.00	90.00	339.42	3,480.00	3,210.00	420.77	-157.99	420.77	0.00	2,131,342.29	195,512.79



Pathfinder Pathfinder X & Y Planning Report



Company:	Williams Production	Local Co-ordinate Reference:	Well #399A
Project:	Rio Arriba County	TVD Reference:	RKB=12 @ 6690.00usft
Site:	Rosa Unit	MD Reference:	RKB=12 @ 6690.00usft
Well:	#399A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Planned Survey											
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	TVDSS (usft)	N.S. (usft)	EW (usft)	V. Sec (usft)	D-leg (°/100usft)	Northing (usft)	Easting (usft)	
3,900.00	90.00	339.42	3,480.00	3,210.00	514.38	-193.14	514.38	0.00	2,131,436.29	195,478.66	
4,000.00	90.00	339.42	3,480.00	3,210.00	608.00	-228.29	608.00	0.00	2,131,530.28	195,444.53	
4,100.00	90.00	339.42	3,480.00	3,210.00	701.62	-263.44	701.62	0.00	2,131,624.28	195,410.40	
4,200.00	90.00	339.42	3,480.00	3,210.00	795.24	-298.59	795.24	0.00	2,131,718.27	195,376.27	
4,300.00	90.00	339.42	3,480.00	3,210.00	888.86	-333.75	888.86	0.00	2,131,812.27	195,342.14	
4,400.00	90.00	339.42	3,480.00	3,210.00	982.47	-368.90	982.47	0.00	2,131,906.26	195,308.01	
4,500.00	90.00	339.42	3,480.00	3,210.00	1,076.09	-404.05	1,076.09	0.00	2,132,000.26	195,273.88	
4,600.00	90.00	339.42	3,480.00	3,210.00	1,169.71	-439.20	1,169.71	0.00	2,132,094.25	195,239.75	
4,700.00	90.00	339.42	3,480.00	3,210.00	1,263.33	-474.35	1,263.33	0.00	2,132,188.25	195,205.62	
4,800.00	90.00	339.42	3,480.00	3,210.00	1,356.95	-509.50	1,356.95	0.00	2,132,282.24	195,171.49	
4,900.00	90.00	339.42	3,480.00	3,210.00	1,450.57	-544.65	1,450.57	0.00	2,132,376.24	195,137.36	
5,000.00	90.00	339.42	3,480.00	3,210.00	1,544.18	-579.81	1,544.18	0.00	2,132,470.24	195,103.23	
5,100.00	90.00	339.42	3,480.00	3,210.00	1,637.80	-614.96	1,637.80	0.00	2,132,564.23	195,069.10	
5,200.00	90.00	339.42	3,480.00	3,210.00	1,731.42	-650.11	1,731.42	0.00	2,132,658.23	195,034.97	
5,300.00	90.00	339.42	3,480.00	3,210.00	1,825.04	-685.26	1,825.04	0.00	2,132,752.22	195,000.84	
5,400.00	90.00	339.42	3,480.00	3,210.00	1,918.66	-720.41	1,918.66	0.00	2,132,846.22	194,966.71	
5,500.00	90.00	339.42	3,480.00	3,210.00	2,012.27	-755.56	2,012.27	0.00	2,132,940.21	194,932.58	
5,600.00	90.00	339.42	3,480.00	3,210.00	2,105.89	-790.71	2,105.89	0.00	2,133,034.21	194,898.45	
5,700.00	90.00	339.42	3,480.00	3,210.00	2,199.51	-825.87	2,199.51	0.00	2,133,128.20	194,864.32	
5,800.00	90.00	339.42	3,480.00	3,210.00	2,293.13	-861.02	2,293.13	0.00	2,133,222.20	194,830.19	
5,900.00	90.00	339.42	3,480.00	3,210.00	2,386.75	-896.17	2,386.75	0.00	2,133,316.19	194,796.06	
6,000.00	90.00	339.42	3,480.00	3,210.00	2,480.37	-931.32	2,480.37	0.00	2,133,410.19	194,761.93	
6,100.00	90.00	339.42	3,480.00	3,210.00	2,573.98	-966.47	2,573.98	0.00	2,133,504.19	194,727.80	
6,200.00	90.00	339.42	3,480.00	3,210.00	2,667.60	-1,001.62	2,667.60	0.00	2,133,598.18	194,693.67	
6,248.92	90.00	339.42	3,480.00	3,210.00	2,713.41	-1,018.82	2,713.41	0.00	2,133,644.17	194,676.98	



Pathfinder
Pathfinder X & Y Planning Report



Company:	Williams Production	Local Co-ordinate Reference:	Well #339A
Project:	Rio Arriba County	TVD Reference:	RKB=12' @ 6690.00usft
Site:	Rosa Unit	MD Reference:	RKB=12' @ 6690.00usft
Well:	#339A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #2	Database:	EDM 5000.1 Single User Db

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,178.40	3,178.40	0.00	0.00	KOP-3178.40MD,0.00°INC,0.00°AZI,3178.40TVD
3,652.15	3,480.00	282.35	-106.02	EOC-3652.15MD,90.00°INC,339.98°AZI,3480.00TVD
6,268.89				TD at 6268.89

Checked By: _____	Approved By: _____	Date: _____
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