

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.

NMSF-078772

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

Rosa Unit

8. Lease Name and Well No.

164C

9. API Well No.

30-039-30109

10. Field and Pool, or Exploratory

Blanco Mesaverde

11. Sec., T., R., M., or Blk. and Survey or Area

J Section 1. 31N. 6W

12. County or Parish

Rio Arriba

13. State

NM

1a. Type of Work: ☒ DRILL

☐ REENTER

1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other

☒ Single Zone ☐ Multiple Zone

2. Name of Operator

Williams Production Company, LLC

3a. Address

P.O. Box 640 Aztec, NM 87410

3b. Phone No. (include area code)

(505) 634-4208

4. Location of Well (Report location clearly and in accordance with any State requirements. *)

At surface Lot J: 1840' FSL & 865' FEL

At proposed prod. zone Lot O: 330' FSL & 865' FEL

14. Distance in miles and direction from nearest town or post office*

approximately 25 miles northeast of Blanco, New Mexico

15. Distance from proposed*

location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)

865'

16. No. of Acres in lease

2,561.86

17. Spacing Unit dedicated to this well

303.88 - Entire section

18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.

50'

19. Proposed Depth

6,565'

20. BLM/BIA Bond No. on file

UT0847

21. Elevations (Show whether DF, KDB, RT, GL, etc.)

6,358' GR This action is subject to technical and

procedural review pursuant to 43 CFR 3165.3
and appeal pursuant to 43 CFR 3165.4

22. Approximate date work will start*

April 1, 2006

23. Estimated duration

1 month

24. Attachments

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

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 file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be required by the authorized officer.

25. Signature

Name (Printed/Typed)

Date

Title

Larry Higgins

10-31-06

Drilling COM

Approved by (Signature)

Name (Printed/Typed)

Date

Title

Office

FFO

3/9/07

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)

Williams Production Company, LLC, proposes to drill a directional well to develop the Blanco Mesaverde formation at the above described location in accordance with the attached drilling and surface use plans.

The well pad surface is under jurisdiction of the Bureau of Land Management, Farmington Field Office.

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

This APD is also serving as an application to obtain a pipeline right-of-way. An associated pipeline tie of 149.80 feet would be required for this location.

NOTIFY AZTEC OGD
IN TIME TO WITNESS

24 hrs
59 p.m. 11
NMOCD

RCVD MAR 12 '07
OIL CONS. DIV.
DIST. 3

3/14/07

HOLD COPY FOR

directional survey
and B.H. Dev.

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
PO Drawer DD, Artesia, NM 88211-0719

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

District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

PO Box 2088 9 PM 5 16
Santa Fe, NM 87504-2088

Form C-102
Revised February 21, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

RECEIVED
OTO FARMINGTON NM

☐ AMENDED REPORT

RCVD NOS 1307
OIL CON. DIV.

WELL LOCATION AND ACREAGE DEDICATION PLAT

DIST. 3

*API Number 30-039-30109		*Pool Code 72319	*Pool Name BLANCO MESAVERDE
*Property Code 17033	*Property Name ROSA UNIT		*Well Number 164C
*OGRID No. 120782	*Operator Name WILLIAMS PRODUCTION COMPANY		*Elevation 6358

¹⁰ Surface Location

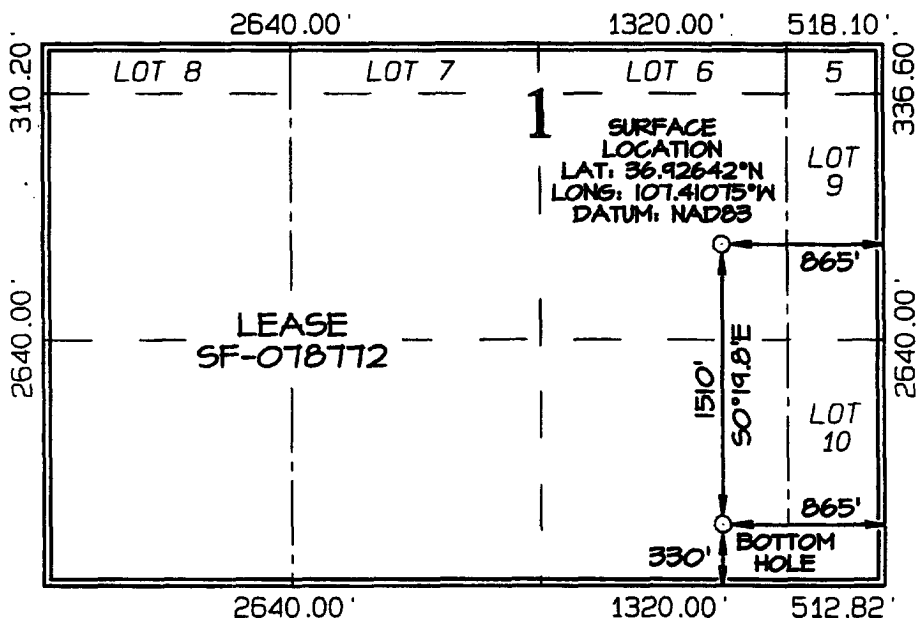
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
J	1	31N	6W		1840	SOUTH	865	EAST	RIO ARriba

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
O	1	31N	6W		330	SOUTH	865	EAST	RIO ARriba

¹² Dedicated Acres 303.88 Acres - Entire Section	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

Larry Higgins
Signature

LARRY HIGGINS
Printed Name

DRILLING CDM
Title

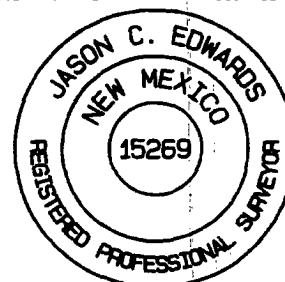
1031-06
Date

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: MARCH 21, 2006

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., 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 and Natural Resources

Form C-103
May 27, 2004

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

WELL API NO. 30-039-30109
5. Indicate Type of Lease FEDERAL X STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. NMSF-078772
7. Lease Name or Unit Agreement Name Rosa
8. Well Number 164C
9. OGRID Number 120782
10. Pool name or Wildcat Basin Fruitland Coal

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.)	
1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other	
2. Name of Operator Williams Production Company, LLC	
3. Address of Operator POB 640, Aztec, NM	
4. Well Location Unit Letter J : 1840 feet from the S line and 865 feet from the E line Section 1 Township 31N Range 06W NMPM County Rio Arriba	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6358' GR	
Pit or Below-grade Tank Application <input checked="" type="checkbox"/> or Closure <input type="checkbox"/>	
Pit type Drilg/Completion Depth to Groundwater >100 ft Distance from nearest fresh water well >1000 ft Distance from nearest surface water >500 ft	
Pit Liner Thickness: 12 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:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	P AND A <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	MULTIPLE COMPL <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>	
OTHER: <input type="checkbox"/>		OTHER: <input type="checkbox"/>	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Drilling/Completion pit to be located approximately 50 to 75 feet from well head. Pit multi-use drilling and completion to avoid additional site disturbance and pit will be considered out of service once production tubing set. Pit to be constructed, operated and closed in accordance with NMOCD guidelines and Williams procedures.

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 Drilling COM DATE 10-31-06

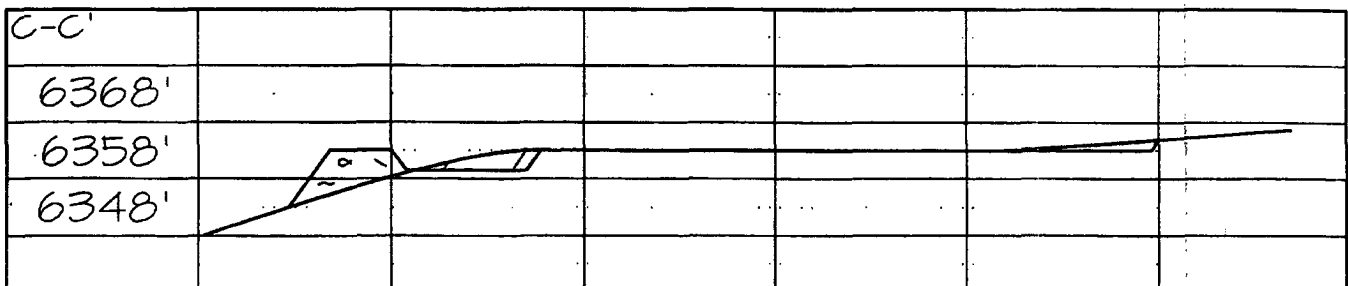
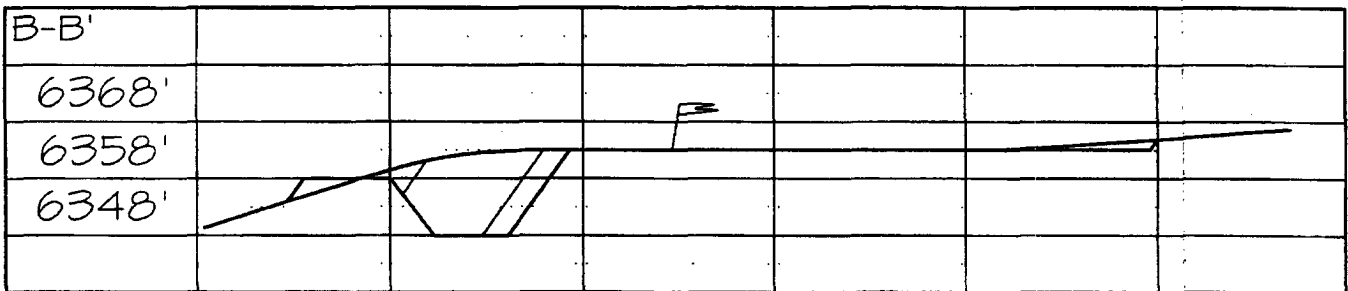
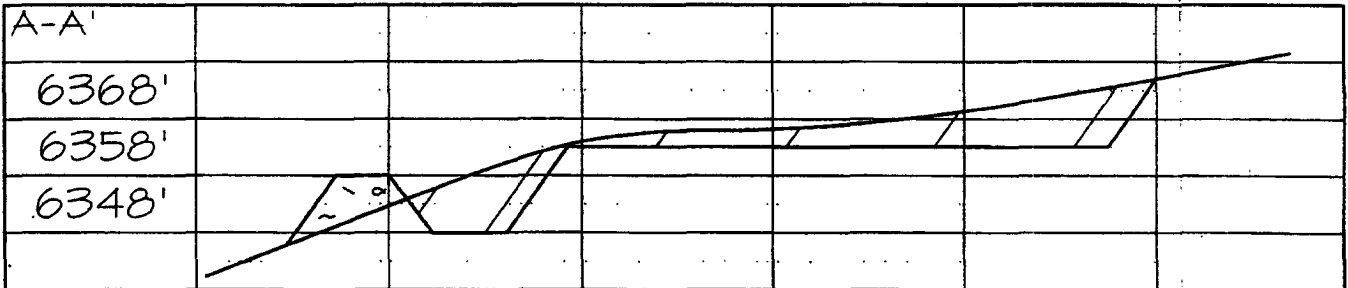
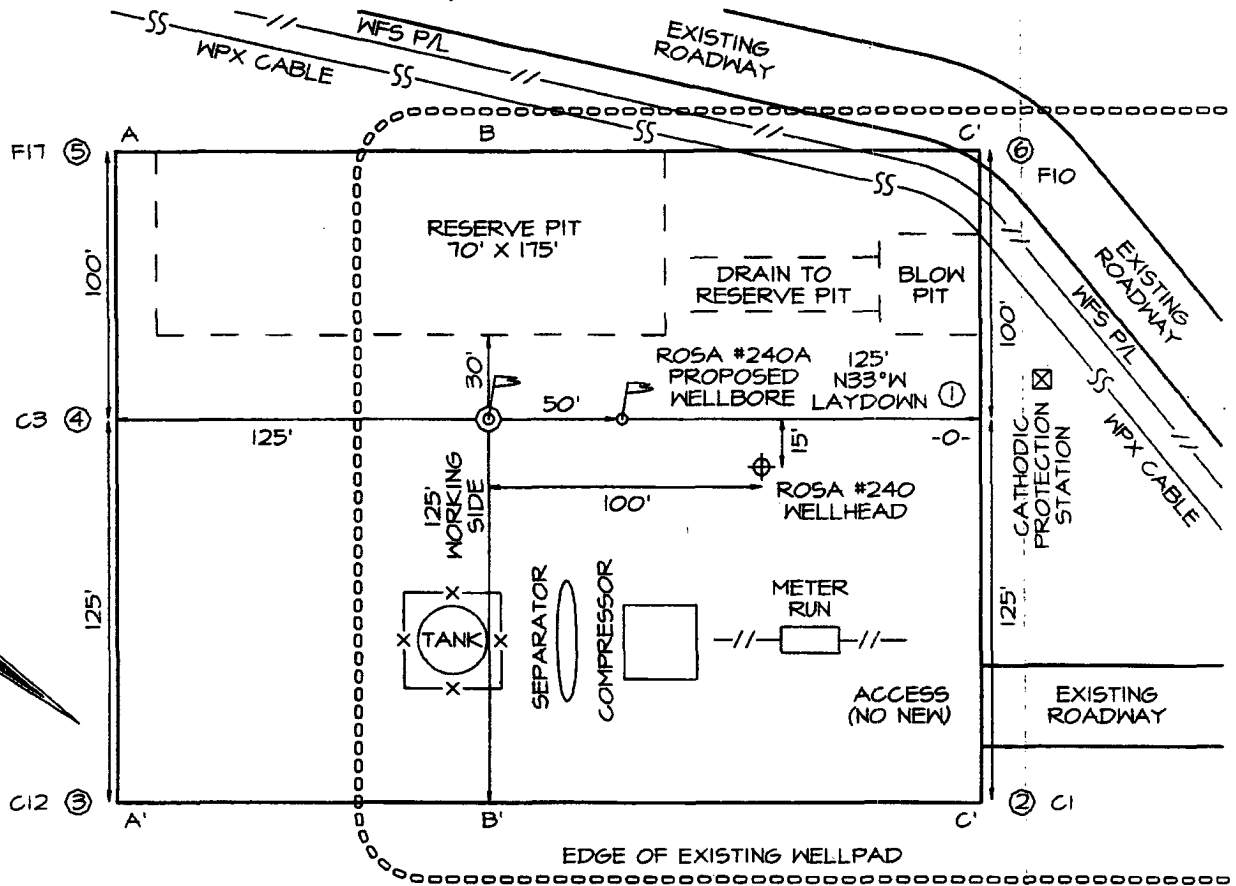
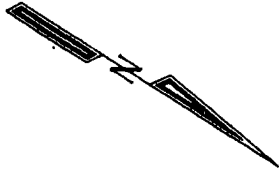
Type or print name **Larry Higgins** E-mail address: **larry.higgins@williams.com** Telephone No. **505-634-4208**

For State Use Only

APPROVED BY: [Signature] TITLE **DEPUTY OIL & GAS INSPECTOR, DIST. #3** DATE **MAR 14 2007**
Conditions of Approval (if any):

WILLIAMS PRODUCTION COMPANY ROSA UNIT #164C
1840' FSL & 865' FEL, SECTION 1, T31N, R6W, NMPM
RIO ARriba COUNTY, NEW MEXICO ELEVATION: 6358'

LATITUDE: 36.92642° N
LONGITUDE: 107.41075° W
 DATUM: NAD1983





WILLIAMS PRODUCTION COMPANY

Operations Plan

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

DATE: 10/25/2006 **FIELD:** Blanco MV
WELL NAME: Rosa #164C **SURFACE:** FED
BH LOCATION: SWSE Sec 1-31N-6W **MINERALS:** BLM
SURF LOCATION: NWSE Sec 1-31N-6W **LEASE #** SF-078772
Rio Arriba, NM
ELEVATION: 6,358' GR
MEASURED DEPTH: 6,565'

I. GEOLOGY: Surface formation - San Jose

A. FORMATION TOPS: (KB)

Name	TVD	MD	Name	TVD	MD
Ojo Alamo	2,427	2,771	Cliff House	5,427	5,855
Kirtland	2,562	2,932	Menefee	5,472	5,900
Fruitland	2,957	3,370	Point Lookout	5,687	6,115
Picture Cliffs	3,207	3,631	Mancos	5,977	6,405
Lewis	3,502	3,929	TD	6,137	6,565

B. MUD LOGGING PROGRAM: none

C. LOGGING PROGRAM: Cased hole logs only.

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 in. 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	4,110	7	20	K-55
Liner	6 1/4	4,010 6,565	4 1/2	10.5	J-55

B. FLOAT EQUIPMENT:

- SURFACE CASING:** 9-5/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- 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).
- PRODUCTION CASING:** 4-1/2" & 5-1/2" 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.

IV. CEMENTING:

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

- SURFACE:** Slurry: 150sx (205 cu.ft.) of "Type III" + 2% CaCl₂ + ¼ # of cello-flake/sk (Yield = 1.39 cu.ft./sk, Weight = 14.5 #/gal.). The 100% excess should circulate cement to the surface. WOC 12 hours. Test csg to 1500psi.
- INTERMEDIATE:** Lead - 525 sx (1,095) cu.ft.) of "Premium Light with 8% gel, 1% CaCl₂ and 1/4# cello-flake/sk (Yield = 2.09 cu.ft./sk, Weight = 12.1 #/gal.). Tail - 50 sx (70cu.ft.) of "Type III" with 1/4# cello-flake/sk (Yield = 1.4 cu.ft./sk, Weight = 14.5#/gal.). Use **100% excess in Lead Slurry** to circulate to surface. **No excess in Tail Slurry.** Total volume = 1,165 cu.ft. Bump Plug to 1,500 psi. Notify engineering if cement is not circulated to surface.
- PRODUCTION LINER:** 10 bbl Gelled Water space. Cement: 155 sx (327 ft³) of Premium Light HS + 1% FL-52 + .2% CD-32, 0.1% R-3, 3 #/sk CSE, ¼ #/sk cello flake and 4% Phenoseal. (Yield = 2.15 ft³/sk, Weight = 12.3 #/gal.). Displace cement at a minimum of 8 BPM. The 20% excess in lead and tail should cover 100 ft into intermediate casing. Total volume 327 ft³. WOC 12 hours

V. IV COMPLETION**A. CBL**

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

B. PRESSURE TEST


- Pressure test 7" & 4-1/2" casing to 3300# for 15 minutes.

C. STIMULATION

1. Perforate the Point Lookout as determined from the open hole logs.
2. Stimulate with approximately 9,300# of 14/30 LiteProp™ sand in slick water.
3. Isolate Point Lookout with a CIBP.
4. Perforate the Menefee/Cliff House as determined from the open hole logs.
5. Stimulate with approximately 9,300# of 14/30 LiteProp™ sand in slick water.
6. Test each zone before removing bridge plugs.

D. RUNNING TUBING

1. Mesa Verde: 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.


for Gary Sizemore
Sr. Drilling Engineer



Rosa Unit 164 C
Section 1 T 31N R 6W
1840' FSL & 865' FEL
Rio Arriba County, NM
Plan 1 revision



Weatherford®

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	179.68	0.00	0.00	0.00	0.00	0.00	0.00	
2	400.00	0.00	179.68	400.00	0.00	0.00	0.00	0.00	0.00	
3	1733.33	40.00	179.68	1627.63	-446.82	2.50	3.00	179.68	446.82	
4	2600.02	40.00	179.68	2291.56	-1003.90	5.61	0.00	0.00	1003.92	
5	4110.18	0.00	179.68	3682.00	-1509.98	8.43	2.65	180.00	1510.00	Int. Cs. Pt
6	6565.18	0.00	179.68	6137.00	-1509.98	8.43	0.00	179.68	1510.00	PBHL

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Rosa Unit 164 C	0.00	0.00	2156822.83	2846614.24	36°55'35.112N	107°24'38.700W	N/A

KB ELEVATION: 6372'
GR ELEVATION: 6358'



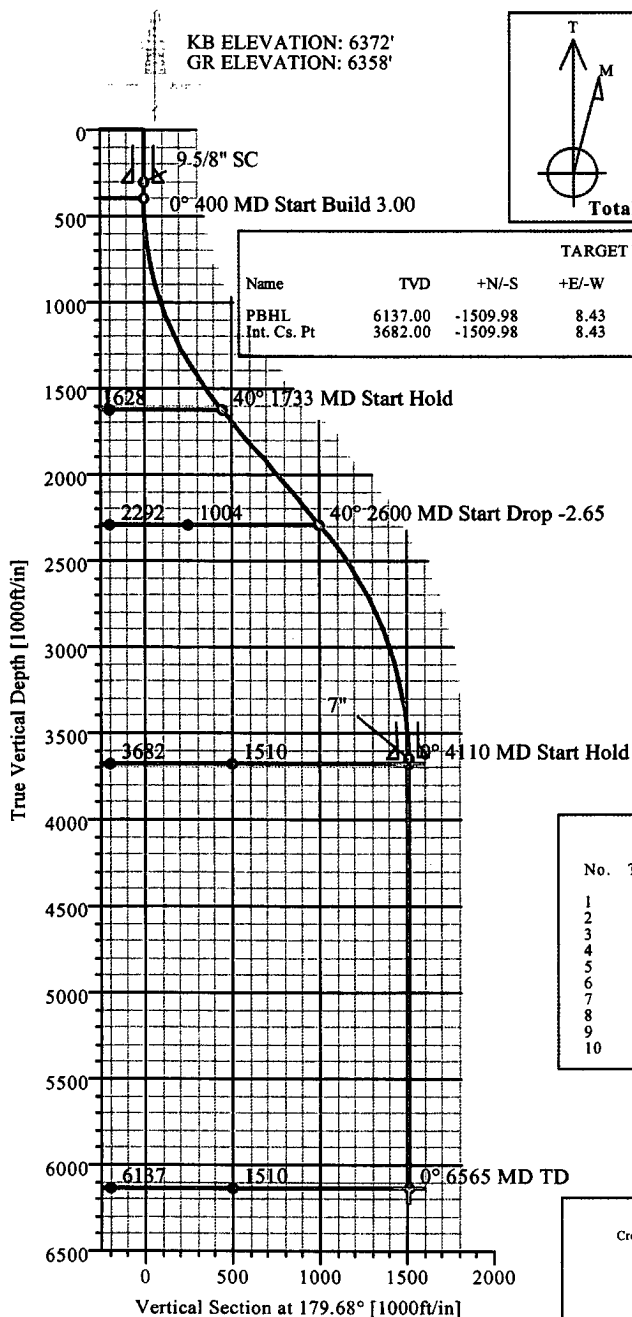
Azimuths to True North
Magnetic North: 10.33°

Magnetic Field
Strength: 51421nT
Dip Angle: 63.81°
Date: 10/16/2006
Model: igrf2005

Total Correction 10.33°

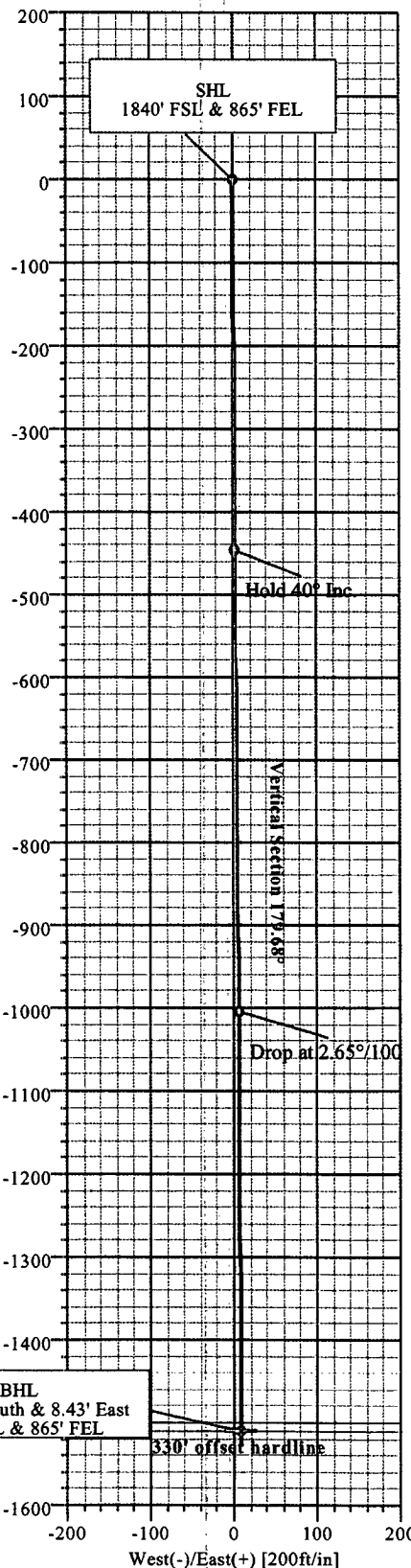
TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	6137.00	-1509.98	8.43	2155312.90	2846629.37	Circle (Radius: 50)
Int. Cs. Pt	3682.00	-1509.98	8.43	2155312.90	2846629.37	Point



FORMATION TOP DETAILS

No.	TVDPath	MDPath	Formation
1	2427.00	2771.32	Ojo Alamo
2	2562.00	2932.92	Kirtland
3	2957.00	3370.87	Fruitland
4	3207.00	3631.28	Pictured Cliffs
5	3502.00	3929.98	Lewis
6	5112.00	5540.18	Cliff House Ss Trans
7	5427.00	5855.18	Cliff House Ss
8	5472.00	5900.18	Menefee
9	5687.00	6115.18	Point Lookout
10	5977.00	6405.18	Mancos



Plan: Plan #1 (Rosa Unit 164 C)
Created By: Jose Perez Date: 10/19/06
Weatherford Drilling Services
11943 FM 529
Houston TX USA 77041
(713) 896 8194 MAIN
(713) 896 0498 FAX

GEOLOGIC PROGNOSIS

Company: Williams Production Company, LLC
Project: 2006 Drilling Plan
Area: Rosa Unit

Operator: Williams Production Company, LLC
Well Name: Rosa Unit No. 164C (Kmv-Directional)
Location: NWSE 01-31N-06W
Footage: 1840' FSL & 0865' FEL
County/State: Rio Arriba/New Mexico

Surveyed GL: 6358 Estimate (14') KB: 6372

<u>Formation</u>	<u>Thickness</u>	<u>TVD</u>	<u>Struct. Elev.</u>
San Jose Fm.	2427	Surface	6358
Ojo Alamo Ss.	135	2427	3945
Kirtland Sh.	395	2562	3810
Fruitland Fm.	250	2957	3415
Pictured Cliffs Ss.	295	3207	3165
Lewis Sh.	180	3502	2870
<u>Intermediate Casing Depth</u>	1430	<u>3682</u>	2690
Cliff House Ss. Trans.	315	5112	1260
Cliff House Ss.	45	5427	945
Menefee Fm.	215	5472	900
Point Lookout Ss.	290	5687	685
Mancos Sh.	160	5977	395
<u>Total Depth</u>	NA	<u>6137</u>	235

Mechanical Logs: Cased hole (TMDL, CBL) logs only

Correlation Logs: Rosa Unit No. 164A (NWSE 01-31N-06W)

Notes: This well will be drilled to a BHL 0330' FSL &
0865' FEL 01-31N-06W

Revised for surface and bottom hole location changes

GENERAL ROSA DRILLING PLAN

Rosa Unit boundaries:

T31N, R4W: all except sections 32-36

T31N, R5W: all except sections 1 & 2

T31N, R6W: all except sections 6,7,18,20, & 27-36

T32N, R6W: sections 32-36

FORMATION	LITHOLOGY	WATER	GAS	OIL/COND	OVER-PRES	LOST CIRC
Nacimlento	Interbedded shales, siltstones and sandstones	Possible	Possible	No	No	No
Ojo Alamo	Sandstone and conglomerates with lenses of shale	Fresh	No	No	No	No
Kirtland	Shale W/interbedded sandstones	No	Possible	No	No	No
Fruitland	Inter, SS, SiltSt, SH & Coals w/carb, SS, SiltSt, SH	Yes	Yes	No	Possible	Possible
Pictured Cliffs	Massive Sandstone w/thin interbedded shales	Possible	Yes	Possible	No	Possible
Lewis	Shale w/thin interbedded sandstones and siltstones	No	Possible	No	No	No
Cliff House	Transgressive sandstones	Possible	Yes	No	No	No
Menefee	Sandstones, carb shales and coal	Possible	Yes	No	No	No
Point Lookout	Regressive coastal barrier sandstone	Possible	Yes	Possible	No	Yes
Mancos	Marine shale and interbedded sandstone	No	Possible	Possible	No	Possible
Upr Dadota	Marine sand and shales	No	Yes	Possible	No	Possible
Lwr Dakota	Fluvial sands, shales, & coal	Possible	Yes	Possible	No	Possible

DRILLING

Potential Hazards:

1. There are no overpressured zones expected in this well.
2. No H2S zones will be penetrated while drilling this well.

Mud System:

1. Surface - The surface hole will be drilled with a low-solids, non-dispersed system with starch and lost circulation material as needed. Expected mud weights will be in the 8.4 to 9.0 lb per gal range. Viscosities will be in the 30 to 60 sec/qrt range as needed to remove drill cuttings.
2. Intermediate - The intermediate hole will be drilled with clear water and Benex to TD where the well will be mudded up to log and run casing. The mud system will be low-solids, non-dispersed with mud weights in the 9 to 10 lb per gal range as needed to control the well. Viscosities will be in the 45 to 55 range as needed to support any weight material. The weight material will consist of Barite.
3. Production - The well will be drilled using air from the intermediate casing point to TD. For Fruitland Coal wells, the coal section will be drilled with air/mist.

WILLIAMS PRODUCTION Company, LLC

Well Control Equipment Schematic for 2M Service

Attachment to Drilling Technical Program

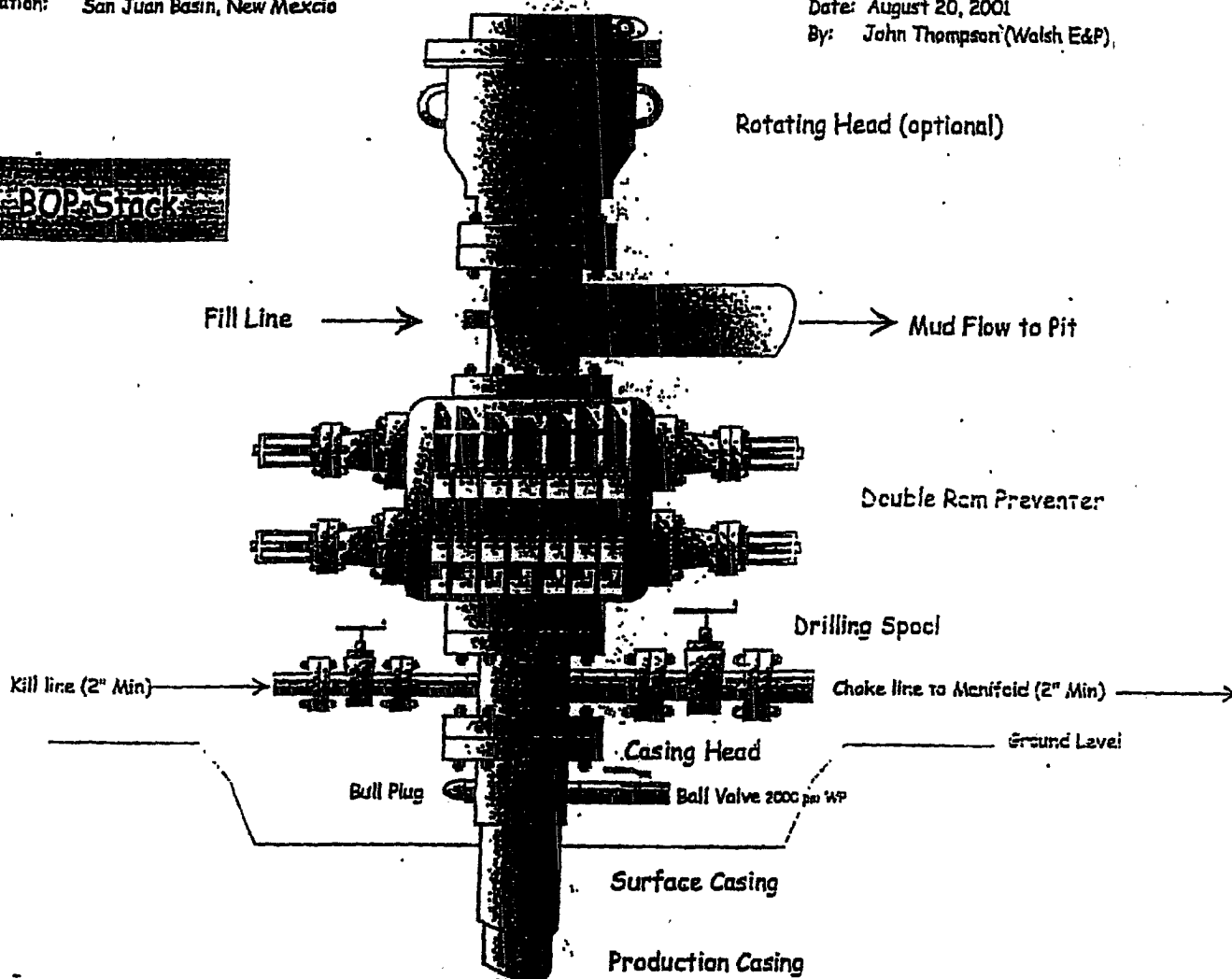
Typical BOP setup

Location: San Juan Basin, New Mexico

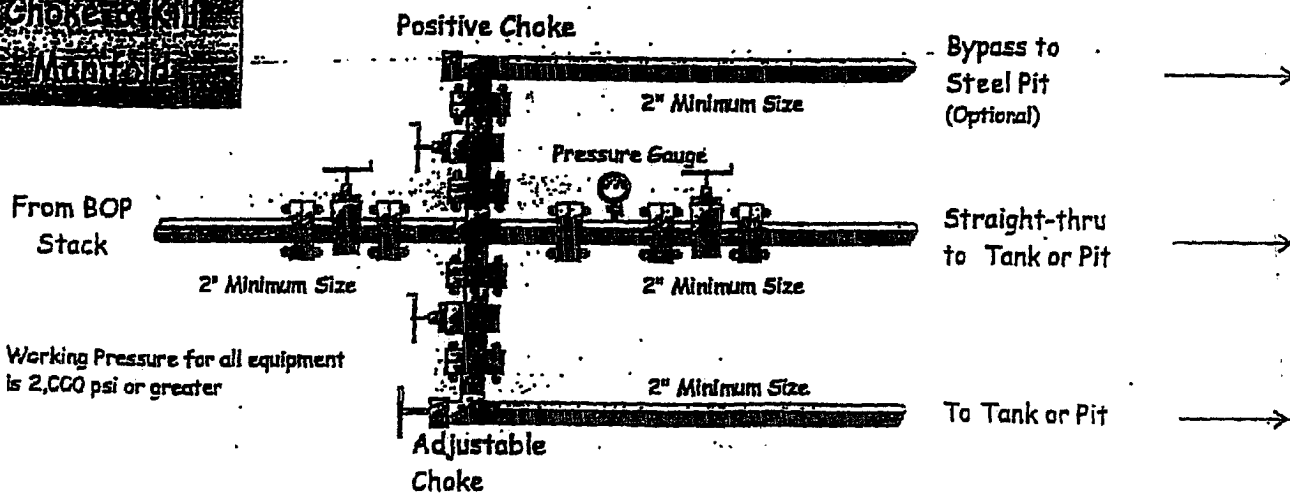
Date: August 20, 2001

By: John Thompson (Walsh E&P)

BOP Stack



Choke & Kill Manifold



Working Pressure for all equipment is 2,000 psi or greater