Form 3160-3
(December 1990)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires: December 31, 1991

# UNITED STATES
# DEPARTMENT OF THE INTERIOR
## BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR DEEPEN

5. LEASE DESIGNATION AND SERIAL NO.: SF 078767

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ]

7. UNIT AGREEMENT NAME: Rosa Unit 17033

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER — SINGLE ZONE [ ] MULTIPLE ZONE [ ]

8. FARM OR LEASE NAME, WELL NO.: 66M

2. NAME OF OPERATOR: WILLIAMS PRODUCTION COMPANY 120782

9. API WELL NO.: 30-039-25749

3. ADDRESS AND TELEPHONE NO.: c/o Walsh Engr. & Prod. Corp.
7415 E. Main Farmington, New Mexico 87402 (505) 327-4892

10. FIELD AND POOL, OR WILDCAT: Blanco MV & Basin DK

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 2565'FNL & 2350'FWL
At proposed prod. zone: MV - 1904'FNL & 2074'FWL; DK - 1320'FNL & 1830'FWL

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Section 13, T31N, R6W

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 25 miles NE of Blanco, New Mexico

12. COUNTY OR PARISH: Rio Arriba — 13. STATE: NM

| 15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any) | 16. NO. OF ACRES IN LEASE | 17. NO. OF ACRES ASSIGNED TO THIS WELL |
|---|---|---|
| 566 | 2518.04 | W/320 - MV W/320 - DK |
| **18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.** | **19. PROPOSED DEPTH** | **20. ROTARY OR CABLE TOOLS** |
| 1700' | 8120' TVD | Rotary |

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 6346' GR

22. APPROX. DATE WORK WILL START*: October 1997

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4.

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

23. PROPOSED CASING AND CEMENTING PROGRAM

| SIZE OF HOLE | GRADE, SIZE OF CASING | WEIGHT PER FOOT | SETTING DEPTH | QUANTITY OF CEMENT |
|---|---|---|---|---|
| 17 1/2 | 13 3/8 | 48.0 | 300 | 345sx (415cuft) Cl "B" |
| 12 1/4 | 9 5/8 | 36.0 | 3610 | 825sx (1760cuft)+330sx (396cuft) |
| 8 3/4 | 7 | 26.0 | 6160 | 460sx (796cuft) Cl "B" w/4% gel |
| 6 1/4 | 4 1/2 | 11.6 | 6100 - 8650 | 210sx (315cuft) Cl "H" w/35% silica flour |

Williams Production Company proposes to drill a directional well to test the Blanco Mesa Verde and Basin Dakota Pools according to the attached Drilling Program and Surface Use Plan.

This location was archaeologically surveyed by Southwest Archaeological Services. Copies of their report were sent directly to your office.

This APD is also serving as an application to obtain BLM road and pipeline ROW. The well will be accessed by a new road approximately 1900' long that crosses the N2/SW of Section 13 where it connects with an existing road that continues across the S2/SE of Section 14 where it joins the Rosa Road. The Rosa Road continues for 15 miles where it joins the Sims Mesa Highway. The pipeline will follow the access route.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

SIGNED Paul C. Thompson TITLE Agent DATE 9/8/97

(This space for Federal or State office use)

PERMIT NO _____ APPROVAL DATE _____

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:

Hold C-104 for DD & NSL

APPROVED BY /S/ Duane W. Spencer TITLE _____ DATE OCT - 9 1997

*See Instruction On Reverse Side

NMOCD

RECEIVED
OCT 14 1997
OIL CON. DIV.
DIST. 3

OCT 09 1997

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
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

97 SEP 12 PM 1:01

☐ AMENDED REPORT

070 FARMINGTON, NM

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| ¹API Number | ²Pool Code | ³Pool Name |
|---|---|---|
| 30-039-25747 | 72319 | Blanco Mesa Verde |

| ⁴Property Code | ⁵Property Name | ⁶Well Number |
|---|---|---|
| 17033 | ROSA UNIT | 66M |

| ⁷OGRID No. | ⁸Operator Name | ⁹Elevation |
|---|---|---|
| 120782 | Williams Production Company | 6346' |

## ¹⁰ Surface Location

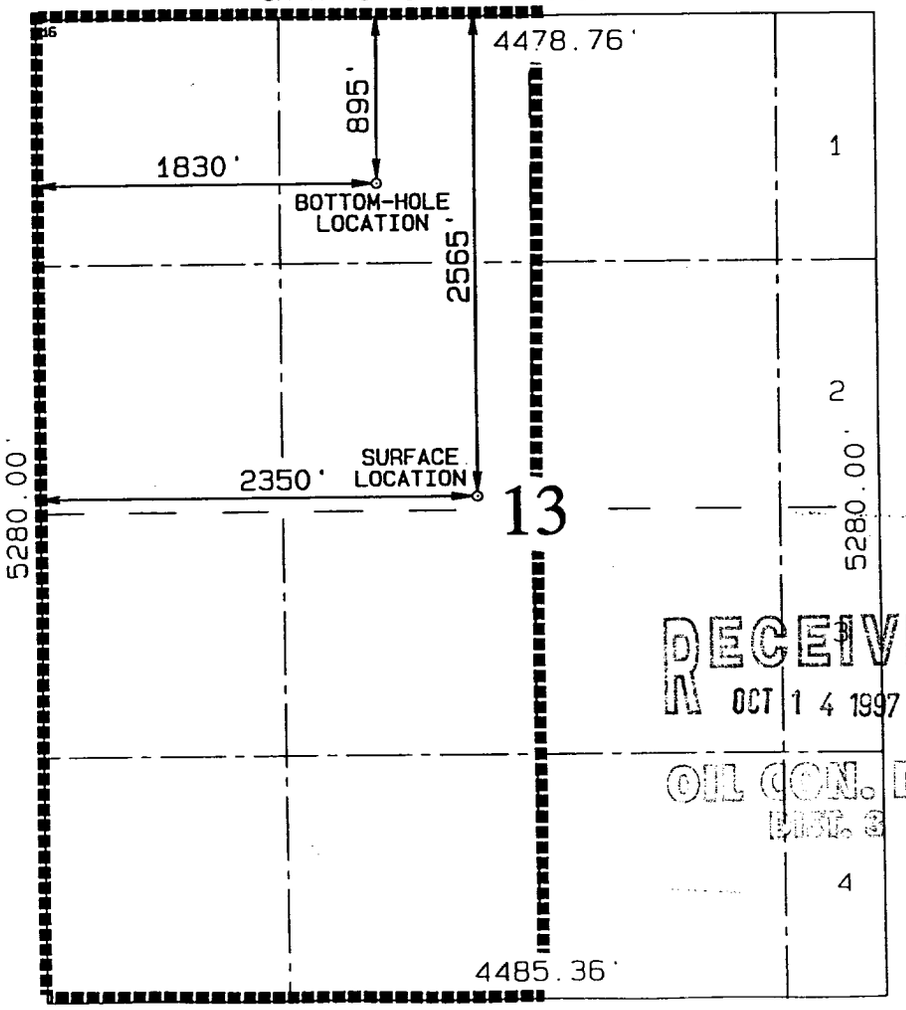
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| F | 13 | 31N | 6W | | 2565 | North | 2350 | West | Rio Arriba |

## 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 |
|---|---|---|---|---|---|---|---|---|---|
| C | 13 | 31N | 6W | | 895 | North | 1830 | West | Rio Arriba |

| ¹²Dedicated Acres | ¹³Joint or Infill | ¹⁴Consolidation Code | ¹⁵Order No. |
|---|---|---|---|
| 320 | I | 4 | |

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

Paul C. Thompson
Signature

Paul C. Thompson
Printed Name

Agent
Title

9/8/97
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.

AUGUST 11, 1997
Date of Survey

Signature and Seal of Professional Surveyor

NEALE C. EDWARDS
NEW MEXICO
6857
REGISTERED PROFESSIONAL SURVEYOR

6857
Certificate Number

RECEIVED
OCT 14 1997
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DIST. 3

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

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| ¹API Number | ²Pool Code | ³Pool Name |
|---|---|---|
| | 71599 | Basin Dakota |

| ⁴Property Code | ⁵Property Name | ⁶Well Number |
|---|---|---|
| 17033 | ROSA UNIT | 66M |

| ⁷OGRID No. | ⁸Operator Name | ⁹Elevation |
|---|---|---|
| 120782 | Williams Production Company | 6346' |

## 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 |
|---|---|---|---|---|---|---|---|---|---|
| F | 13 | 31N | 6W | | 2565 | North | 2350 | 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 |
|---|---|---|---|---|---|---|---|---|---|
| C | 13 | 31N | 6W | | 895 | North | 1830 | West | Rio Arriba |

| ¹² Dedicated Acres | ¹³ Joint or Infill | ¹⁴ Consolidation Code | ¹⁵ Order No. |
|---|---|---|---|
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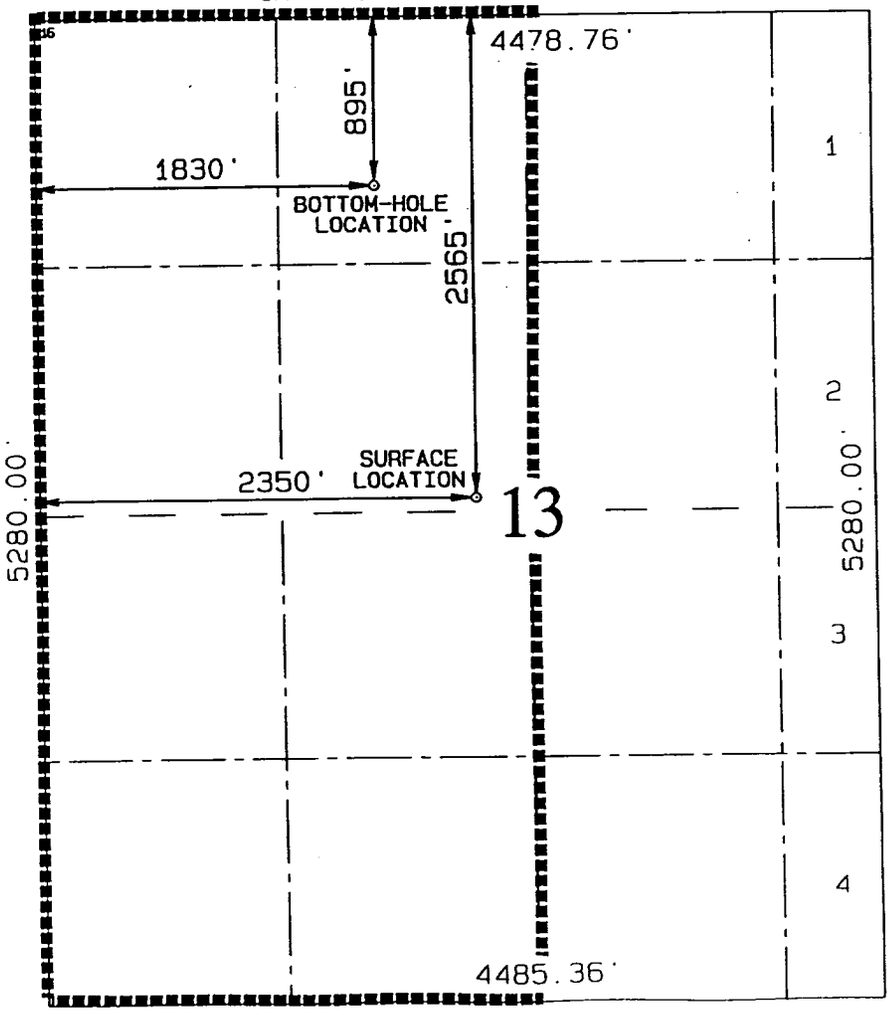


## ¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Paul C. Thompson
Signature

Paul C. Thompson
Printed Name

Agent
Title

9/8/97
Date

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AUGUST 11, 1997
Date of Survey

Signature & Seal of Professional Surveyor

NEALE C. EDWARDS
NEW MEXICO
6857
REGISTERED PROFESSIONAL SURVEYOR

6857
Certificate Number

# WILLIAMS PRODUCTION COMPANY
# OPERATIONS PLAN

**DATE:** 08/29/97

**WELLNAME:** ROSA #66M
**LOCATION:** 2350' FWL 2565' FNL
Sec. 13, T31N, R6W
Rio Arriba, NM

**FIELD:** Blanco MV/Basin DK

**SURFACE:** BLM
**MINERALS:** BLM

**ELEVATION:** 6348' GR

**TOTAL DEPTH:** 8124' TVD 8650' MD
**LEASE #** SF-078767

## I. GEOLOGY:

Surface formation - San Jose

### A. FORMATION TOPS: (TVD @ KB)

| | | | |
|---|---|---|---|
| Ojo Alamo | 2420' | Point Lookout | 5650' |
| Kirtland | 2525' | Mancos | 5785' |
| Fruitland | 2925' | Gallup | 6450' |
| Pictured Cliffs | 3180' | Greenhorn | 7710' |
| Lewis | 3460' | Graneros | 7770' |
| Cliff House | 5385' | Dakota | 7870' |
| Menefee | 5430' | Total Depth | 8120' |

**NOTE: ALL DEPTHS ARE TVD; ADJUST DEPTHS IN DIRECTIONAL SECTION OF HOLE FOR LOGS & GAUGES.**

B. LOGGING PROGRAM: IND/GR, CDL/SNL;
1) Mesa Verde from 3000' to 5800'
2) Dakota from TD to 300' above the top of the Greenhorn

C. NATURAL GAUGES: Gauge any noticeable increases in gas flow.
Gauge well @ 5350', 5430', 5640', 5800', 7850' and before TOH for logs @ 8120'.
Record all gauges in Tour book and on morning reports.

## II. DRILLING

### A. MUD PROGRAM:

1) Clear water with benex in the 13 3/8" Surface Hole.
2) Clear water with benex in the 9-5/8" Intermediate Hole.
3) Air mist in the 7" MesaVerde Production Hole.
4) Air mist in the 4-1/2" Dakota Production Hole. This section of hole may be mudded up if deviations cannot be maintained with air mist. Treat for lost circulation as necessary.
Expect 100% returns prior to cementing. Notify Engineering before mudding up or of any mud losses.

B. BOP TESTING: While drill pipe is in use, the pipe rams will be tested not less than once each day. The blind rams will be tested once each trip. The drum brakes will 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:(DEPTHS ARE MEASURED DEPTHS)

| CASING TYPE | HOLE SIZE | DEPTH(MD) | CASING SIZE | WT. & GRADE |
|---|---|---|---|---|
| Surface | 17-1/2" | 300' | 13-3/8" | 48.00# H-40 |
| Intermediate | 12-1/4" | 3610' | 9-5/8" | 36.0# K-55 |
| MV Production | 8-3/4" | 6160' | 7" | 26.0# K-55 |
| DK Production | 6-1/4" | 6100'-8650' | 4-1/2" | 11.6# N-80 |

## B. FLOAT EQUIPMENT:

1) SURFACE CASING: 13-3/8" notched regular pattern guide shoe.

2) INTERMEDIATE CASING: 9-5/8" cement nose guide shoe with a self- fill insert float. Place float one (1) joint above the shoe and five (5) centralizers, spaced every other joint, starting with the float collar. Place turbulent centralizers, every third (3), starting at 2525' to the surface. Total centralizers = 5 regular and 21 turbulent.

3) MV PRODUCTION CASING: 7" cement nose guide shoe with a self - fill insert float. Place float one (1) joint above the shoe. Place one (1) centralizer every joint 6820' to 4500' and then every third (3) joint from 4500' to 3510'. Total centralizers = 61. Place a 20' marker joint on top of the 20th joint.

4) DK PRODUCTION LINER: 4-1/2" whirler type cement nose guide shoe with a float collar and an insert float on top of a 20' bottom joint. Place one (1) centralizer from TD to 7500' and then every third (3) joint from 7500' to top of Production Liner. Total centralizers = 29. Place a 20" marker joint on top of the 10th joint.

## C. CEMENTING:

1) SURFACE: Use 345 sx (415 cu.ft.) of class "B" with 3% CaCl2 and 1/4# of cello-flake/sk (Yield = 1.19 cu.ft./sk, Weight = 15.6 #/gal.). Use 100% excess to circulate the surface. WOC 12 hours. Test to 1500#.

2) INTERMEDIATE (9-5/8"): Lead - 825 sx (1760 cu.ft.) of class "B" 65/35 poz with 10% gel, 2% CaCl2, and 1/4# cello-flake/sk (Yield = 2.13 cu.ft./sk, Weight = 12.1 #/gal.). Tail - 330 sx (396 cu.ft.) of class "B" with 2% CaCl2 and 1/4# celloflake/sk (Yield = 1.20 cu.ft./sk, Weight = 15.6#/gal.). Use 100% excess in lead and 75% excess in tail to circulate to surface. Total volume = 2156 cu.ft. WOC 12 hours.
Run a temperature survey after 8 hours if cement is not circulated.
Test to 1500#.

3) MV PRODUCTION CASING (7"): Use- 460 sx (796 cu.ft.) of class "B" with 4% gel, 2% CaCl2, 0.5% FL-25, and 0.02 gal/sk FP-6L (Yield = 1.75 cu.ft/sk, Weight = 15.6 lb/gal). Use 60% excess to circulate into 9-5/8". WOC 12 hrs.
Run a temperature survey after 8 hrs if cement is not circulated.
Test to 1500#.

4) DK PRODUCTION LINER(4 1/2"): Use- 210 sx ( 315 cu.ft.) of class "H" with 35% silica flour, 1.8% FL-62 , 0.2% A-2, 0.02 gal/sk FP-6L ( Yield = 1.50 cu.ft./sk, Weight = 15.9 #/gal.) Use 60% excess to cover liner top.
WOC 12 hours. Test to 1500#.

## IV COMPLETION

### A. PRESSURE TEST

1. Pressure test 7" casing to 3300# for 15 minutes. 4-1/2" casing to 6000# for 15 minutes using 3-1/2" frac string.

### B. STIMULATION

1. Stimulate Dakota with approximately 70,000# of 20/40 sand.
2. Isolate Dakota with a DBP.
3. Stimulate the Point Lookout with approximately 80,000# of 20/40 sand.
4. Isolate Point Lookout with a RBP.
5. Stimulate the Menefee and Cliffhouse with approximately 80,000# of 20/40 sand.
6. Test each zone before removing bridge plugs.

### C. RUNNING TUBING

1. ***Dakota***: Run 2-1/16", 3.25#, IJ tubing with 1/2 mule shoe on bottom , SN with pump-out plug on top of bottom joint and five(5) Seal Units. Land tubing approximately 100' above bottom Dakota perf.

2. ***Mesa Verde:*** Run 2-1/16", 3.25#, IJ tubing with a bull plugged perforated nipple on bottom and a SN with pump-out plug on top of bottom joint. Land tubing approximately 100' above the bottom Point Lookout perforations.

3/29/97

Mike Turnbaugh
Manager Operations & Engineering
Rocky Mountain Division

file:S:\WPX\LANCE\ROSA66M.wpd

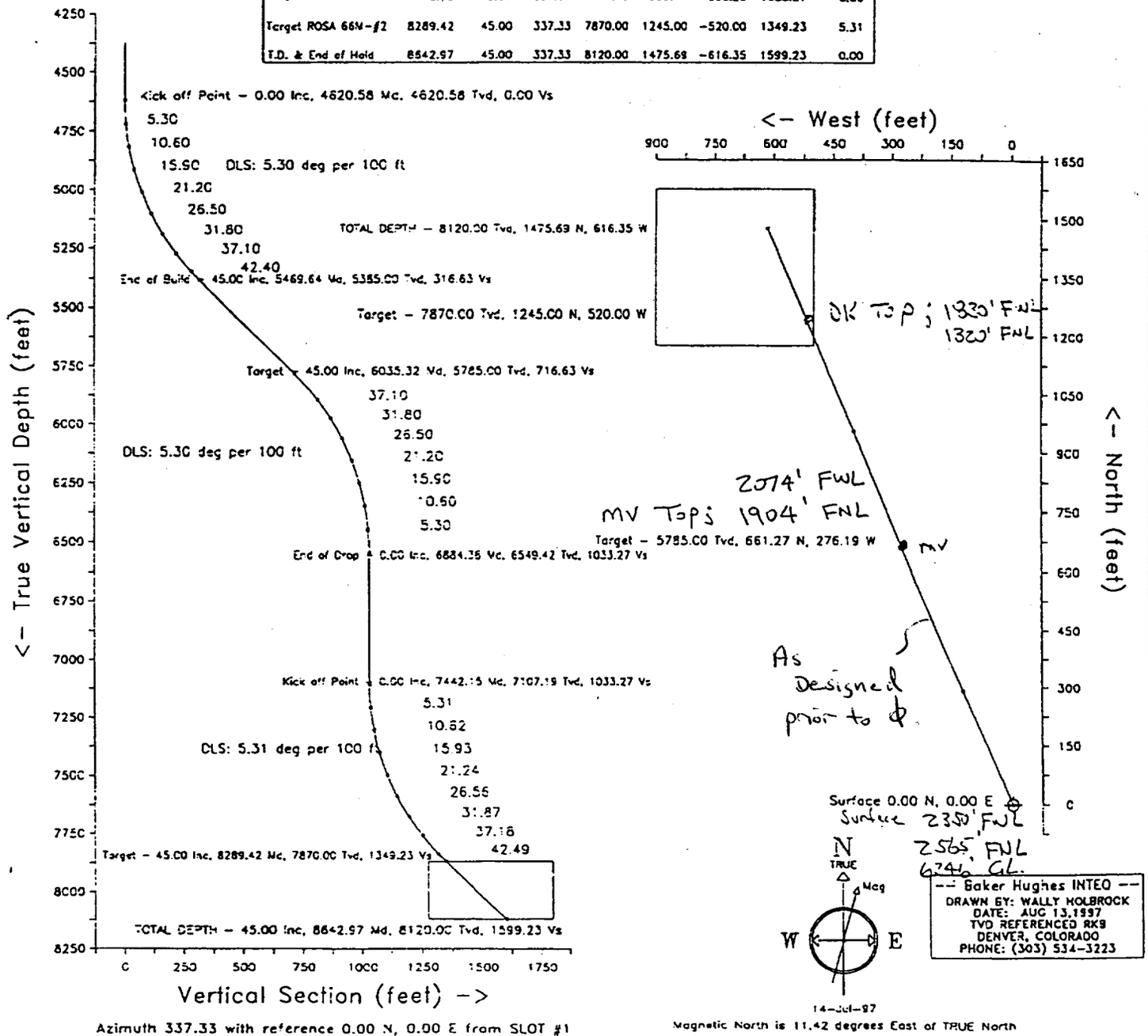
# WILLIAMS PRODUCTION COMPANY

Structure : SEC.13-T31N-R6W Well : RCSA UNIT #66M (3/13/97)

Field : SAN JUAN COUNTY Location : NEW MEXICO.

## WELL PROFILE DATA

| Point | MD | Inc | Dir | TVD | North | East | V. Sect | Deg/100 |
|---|---|---|---|---|---|---|---|---|
| Tie on | 0.00 | 0.00 | 337.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| KOP | 4620.58 | 0.00 | 337.33 | 4620.58 | 0.00 | 0.00 | 0.00 | 0.00 |
| End of Build | 5469.64 | 45.00 | 337.33 | 5385.00 | 292.17 | -122.03 | 316.63 | 5.30 |
| Target | 6035.32 | 45.00 | 337.33 | 5785.00 | 661.27 | -276.19 | 716.63 | 0.00 |
| End of Drop | 6884.38 | 0.00 | 337.33 | 6549.42 | 953.44 | -398.23 | 1033.27 | 5.30 |
| KOP | 7442.15 | 0.00 | 337.33 | 7107.19 | 953.44 | -398.23 | 1033.27 | 0.00 |
| Target ROSA 66M-#2 | 8289.42 | 45.00 | 337.33 | 7870.00 | 1245.00 | -520.00 | 1349.23 | 5.31 |
| T.D. & End of Hold | 8642.97 | 45.00 | 337.33 | 8120.00 | 1475.69 | -616.35 | 1599.23 | 0.00 |




-- Baker Hughes INTEQ --
DRAWN BY: WALLY HOLBROCK
DATE: AUG 13,1997
TVD REFERENCED RKB
DENVER, COLORADO
PHONE: (303) 534-3223

Azimuth 337.33 with reference 0.00 N, 0.00 E from SLOT #1

Magnetic North is 11.42 degrees East of TRUE North
To correct azimuth from Magnetic to TRUE add 11.42 deg

# ROSA UNIT PORE PRESSURES

| FORMATION | DEPTH | FRAC GRADIENT | PORE PRESSURE | RESERVOIR PRESS |
|---|---|---|---|---|
| FRUITLAND | 2950 | 0.69 | 1578 | 1400 |
| PICTURED CLIFFS | 3200 | 0.65 | 1520 | 1400 |
| CLIFF HOUSE | 5200 | 0.50 | 1300 | 1200 |
| MENEFEE | 5350 | 0.50 | 1338 | 1200 |
| POINT LOOKOUT | 5650 | 0.48 | 1201 | 1200 |
| GALLUP | 6800 | 0.55 | 2210 | 2000 |
| DAKOTA | 7850 | 0.65 | 3729 | 2600 |

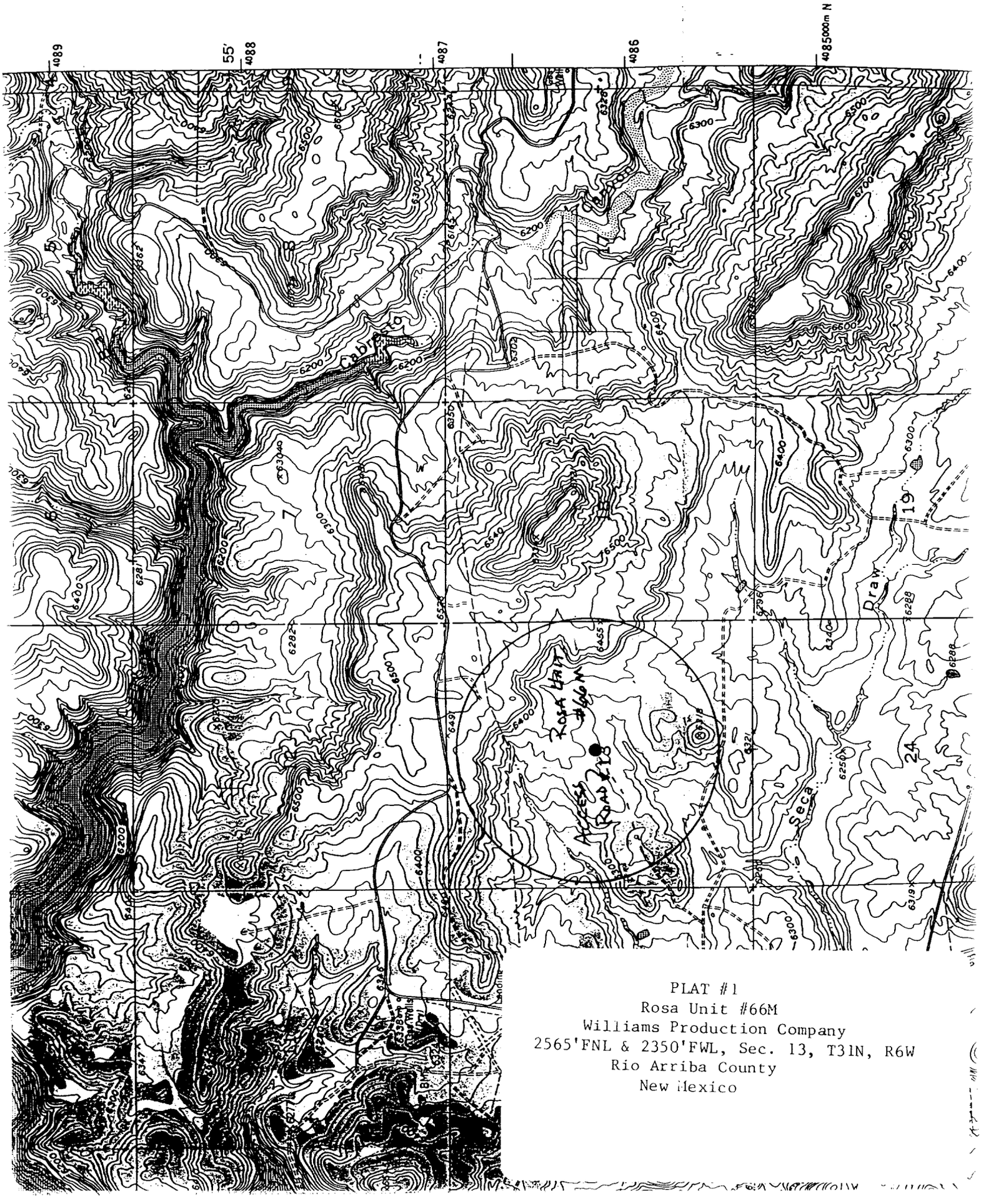
Based on : $F = 1/3(1+2Pf/D)$

$Pf = (3F-1)D/2$

Where: F = Frac Gradient

Pf = Pore Pressure

D = Depth




PLAT #1
Rosa Unit #66M
Williams Production Company
2565'FNL & 2350'FWL, Sec. 13, T31N, R6W
Rio Arriba County
New Mexico