

| | | | | |
|----------------|------------------|-------------|--------------|----------|
| DATE IN 6/1/98 | SUSPENSE 6/22/98 | ENGINEER DC | LOGGED BY RV | TYPE DHC |
|----------------|------------------|-------------|--------------|----------|

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

2040 South Pacheco, Santa Fe, NM 87505



1972

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATION FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
 [DD-Directional Drilling] [SD-Simultaneous Dedication]
 [DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
 [PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
 [WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
 [SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
 [EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

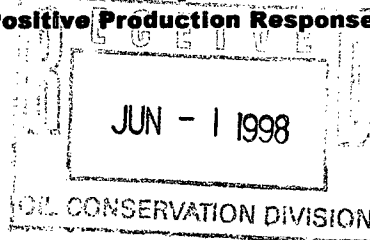
[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Directional Drilling
☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☒ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR



[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners
 [B] ☐ Offset Operators, Leaseholders or Surface Owner
 [C] ☐ Application is One Which Requires Published Legal Notice
 [D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
 [E] ☐ For all of the above, Proof of Notification or Publication is Attached, and/or,
 [F] ☐ Waivers are Attached

[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Certification

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I understand that any omission of data (including API numbers, pool codes, etc.), pertinent information and any required notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Mark Stodola
Print or Type Name

Mark Stodola
Signature

Reservoir Engr.
Title

5/29/98
Date

DISTRICT I

P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II

811 South First St., Artesia, NM 88210-2835

DISTRICT III

1000 Rio Brazos Rd. Aztec, NM 87410-1693

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 S. Pacheco
Santa Fe, New Mexico 87505-6429Form C-107-A
New 3-12-96

APPROVAL PROCESS:

☒ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Operator Phillips Petroleum Company Address 5525 Hwy. 64, Farmington, NM 87401

Lease San Juan 29-5 Unit Well No. 53M Unit Ltr. - Sec - Twp - Rge O Sec. 32, T29N, R5W County Rio Arriba, NM

OGRID NO. 017654 Property Code 009256 API NO. 30-039-25481 Spacing Unit Lease Types: (check 1 or more) ☒ Federal ☐ State ☐ (and/or) Fee ☐

| The following facts are submitted in support of downhole commingling: | Upper Zone | Intermediate Zone | Lower Zone |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------|-------------------------------------------------|
| 1. Pool Name and Pool Code | 72319 Blanco Mesaverde | | 71599 Basin Dakota |
| 2. Top and Bottom of Pay Section (Perforations) | 5259' - 5686' | | 7735' - 7839' |
| 3. Type of production (Oil or Gas) | Gas | | Gas |
| 4. Method of Production (Flowing or Artificial Lift) | Flowing | | Flowing |
| 5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original | a. (Current) 600 psi (est.) b. (Original) 1234 (est.) psi | a. b. | a. 549 psi 24 hr SI b. 2981 (est.) psi |
| 6. Oil Gravity ($^{\circ}$ API) or Gas BTU Content | 1100 | | 1010 |
| 7. Producing or Shut-In? | Producing | | Producing |
| Production Marginal? (yes or no) | Yes | | Yes |
| * If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data | Date: Rates: | Date: Rates: | Date: Rates: |
| * If Producing, give date and oil/gas/water rates of recent test (within 60 days) | Date: 4/28/98 Rates: 203 mcfd 0 bopd | Date: Rates: | Date: 4/28/98 Rates: 194 mcfd 0 bopd |
| 8. Fixed Percentage Allocation Formula - % for each zone | Oil: % Gas: % | Oil: % Gas: % | Oil: % Gas: % |

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.

10. Are all working, overriding, and royalty interests identical in all commingled zones? ☐ Yes ☒ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ☒ Yes ☐ No
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ☐ No

11. Will cross-flow occur? ☒ Yes ☐ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ☒ Yes ☐ No (If No, attach explanation)

12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ☐ No

13. Will the value of production be decreased by commingling? ☐ Yes ☒ No (If Yes, attach explanation)

14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ☐ No

15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S): R-10771

16. ATTACHMENTS:

- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- * Production curve for each zone for at least one year. (If not available, attach explanation.)
- * For zones with no production history, estimated production rates and supporting data.
- * Data to support allocation method or formula.
- * Notification list of all offset operators.
- * Notification list of working, overriding, and royalty interests for uncommon interest cases.
- * Any additional statements, data, or documents required to support commingling.

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

SIGNATURE Mark Stodola TITLE Reservoir Engr. DATE 5/29/98

TYPE OR PRINT NAME Mark Stodola TELEPHONE NO. (505) 599-3455

DISTRICT III
A. Drawer DD, Artesia, N.M. 88211-0719

DISTRICT III
1000 Rio Brazos Rd., Artesia, N.M. 87410

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

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, NM 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| | | | | | |
|-------------------------|--|-------------------------------------|--|---------------------------------------|--------------------|
| API Number 30-039- | | Pool Code 72319 & 71599 | | Pool Name DUAL MESA VERDE & DAKOTA | |
| Property Code 009256 | | Property Name SAN JUAN 29-5 | | | Well Number 53M |
| OGRID No. 017654 | | Operator Name PHILLIPS PETROLEUM | | | Elevation 6500 |

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 |
|---------------|---------|----------|---------|---------|---------------|------------------|---------------|----------------|----------|
| 0 | 32 | T. 29 N. | R. 5 W. | | 978 | SOUTH | 1611 | EAST | RIO ARRI |

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 |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| | | | | | | | | | |

DK 12 Dedicated Acres 320 ac S/2
MV 12 Joint or Infill I
12 Consolidation Code U
12 Order No.

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

| | | |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <div>16</div> <div>RECEIVED JAN 30 1995 OIL CON. DIV. DIST. 3</div> | <div>17 OPERATOR CERTIFICATION</div> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</p> <div>Ed Hasely</div> <div>Signature</div> <div>Ed Hasely</div> <div>Printed Name</div> <div>Environmental/Regulator</div> <div>Title</div> <div>1-23-95</div> <div>Date</div> | |
| | <div>18 SURVEYOR CERTIFICATION</div> <p>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.</p> <div>DECEMBER 20, 1994</div> <div>Date of Survey</div> <div>Signature and Seal of Registered Professional Land Surveyor</div> <div>8894</div> <div>REGISTERED PROFESSIONAL LAND SURVEYOR</div> <div>Certificate Number</div> | |

W.C. Fd.Bc. U.S.G.L.O. 1914

2708' (R) 2700.84' (M)

1611'

978'

Fd.Bc. U.S.G.L.O. 1914

S 89-52 E 2640' (R) 2637.03' (M)



PHILLIPS PETROLEUM COMPANY

FARMINGTON, NEW MEXICO 87401
5525 HWY. 64 NBU 3004

May 29, 1998

New Mexico Oil & Gas Conservation Div.
2040 South Pacheco
Santa Fe, New Mexico 87505-6429

Downhole Commingling Allocation Method
on the San Juan 29-5 #53M

Dear Sirs:

Phillips is proposing to utilize the subtraction method on the subject well for approximately 1 year after actual commingling occurs. After the first year, we will convert to the ratio method as indicated in our commingling application. We believe this will be a more accurate method of allocating production considering that the Dakota interval presently demonstrates a more stabilized production rate.

Dakota Production Forecast

| | | | |
|----------------|-------|---------------|-------|
| August 1998 | 6,169 | February 1999 | 5,251 |
| September 1998 | 5,910 | March 1999 | 5,758 |
| October 1998 | 6,047 | April 1999 | 5,519 |
| November 1998 | 5,794 | May 1999 | 5,647 |
| December 1998 | 5,928 | June 1999 | 5,412 |
| January 1999 | 5,869 | July 1999 | 5,539 |

For example, if the total volume for September 1998 were 10,920 mcf, then the Dakota would be allocated 5,910 mcf and the Mesaverde 5,010 mcf. And subsequently, the Dakota would be allocated $(5,910/10,920)$ or 54.12%, and Mesaverde would be allocated $(5,010/10,920)$ or 45.88%.

Sincerely,

PHILLIPS PETROLEUM COMPANY

Mark W. Stodola

Mark W. Stodola
Reservoir Engineer

MS/pc

cc: OCD - Aztec
BLM- Farmington
NM Commissioner of Public Lands - Santa Fe

PHILLIPS PETROLEUM COMPANY
5525 HWY 64 NBU 3004
FARMINGTON, NEW MEXICO 87401

DATE: MAY 26, 1998

WELL NAME: SAN JUAN 29-5 # 53M
FORMATION: DAKOTA

TYPE TEST: STATIC GRADIENT

COUNTY: RIO ARRIBA
STATE: NEW MEXICO

ELEVATION: GL
TOTAL DEPTH: 7883'
PERFORATIONS: 7735' TO 7839'
TUBING SIZE: 2 3/8 TO 7820'
CASING SIZE: TO
PACKER:
OTHER: 1.78 RN @ 7723', 1.43 @ 7787'
1.81 @ 7712'

CASING PRESSURE: MV 230
TUBING PRESSURE: DK 475
OIL LEVEL:
WATER LEVEL:
TEMPERATURE:
AMERADA ELEMENT NUMBER: 87977
RANGE: 0-2500
WELL STATUS: SHUT IN 25 HRS
@ SHUT IN MV CASING 215, DK
TUBING @ 200. 200,000 CKM

INDIVIDUAL WELL DATA SHEET

=====

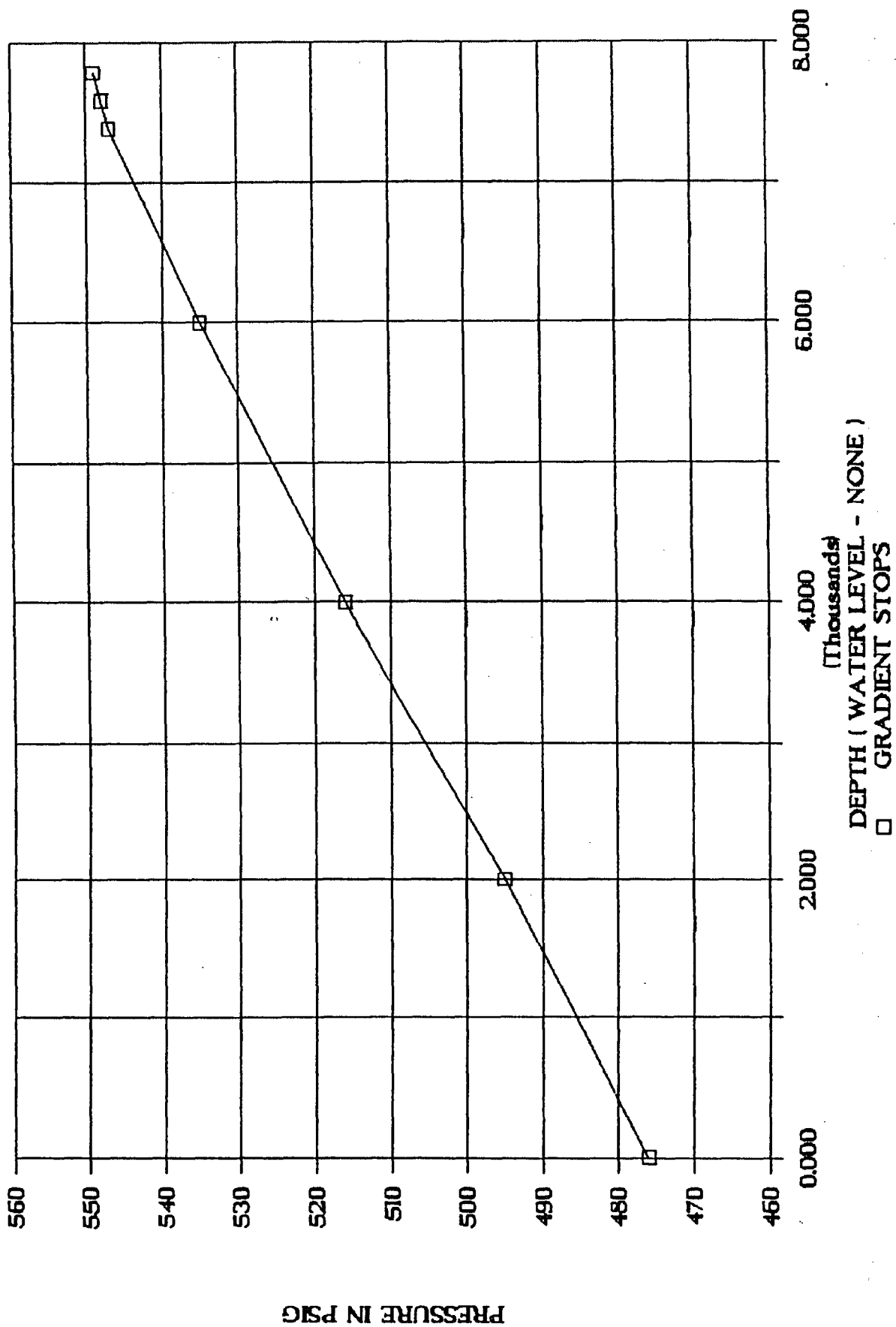
FLOWING GRADIENT TRAVERSE

| DEPTH IN FEET | PRESSURE PSIG | GRADIENT PSI/FOOT |
|------------------|------------------|----------------------|
| 0 | 476 | |
| 2000 | 495 | 0.010 |
| 4000 | 516 | 0.011 |
| 6000 | 535 | 0.010 |
| 7387 | 547 | 0.009 |
| 7587 | 548 | 0.005 |
| 7787 | 549 | 0.005 |

H & H WIRELINE SERVICE INC.
P. O. BOX 899
FLORA VISTA, N. MEX. 87415
OPERATOR: C. HUGHES
UNIT NO. T-11

PHILLIPS PETROLEUM SAN JUAN 29-5 # 53M

DATE: 05-26-98 STATIC GRADIENT



- b) the average current shut-in bottomhole pressure within the Mesaverde and Dakota formations are approximately 843 psi and 1,224 psi, respectively.

(10) There is sufficient pressure data available within the San Juan 29-5 Unit so as to except pressure criteria as proposed by the applicant.

(11) The applicant testified that various allocation methods will be utilized for downhole commingled wells within the San Juan 29-5 Unit depending on the circumstances. Some of the methods and circumstances are described as follows:

- a) in those instances where a newly completed zone is commingled with an existing producing interval with an established decline, the subtraction method will be utilized for a period of +/- 12 months. Subsequent to this time, and assuming that the production rate has stabilized, a fixed allocation will be determined and utilized; and,
- b) in those instances where a well is newly drilled, the lower zone will be production tested for a period of two to four weeks or until a stabilized rate is obtained. Subsequent to that time, a stabilized rate from both commingled zones within the well will be obtained. A fixed allocation of production will then be determined utilizing the data obtained from the flow tests.

(12) The allocation methods proposed by the applicant are routinely utilized by industry and approved by the Division and therefore, the proposal to except allocation formulas should be approved.

(13) In support of its request to establish a "reference case" or administrative procedure for providing notice within the San Juan 29-5 Unit the applicant presented evidence and testimony which indicates that:

- a) the interest ownership between two zones within a given wellbore in the San Juan 29-5 Unit is generally not common;
- b) pursuant to Division Rule No. 303.D., applicant is currently required to notify all interest owners within the San Juan 29-5 Unit every time a Form C-107-A is submitted to the Division. There are a considerable number of such interest owners within the unit;
- c) providing notice to each interest owner within the San Juan 29-5 Unit of subsequent downhole comminglings is unnecessary and is an excessive burden on the applicant;

29-5 Unit #53M Dakota Forecast

| | | |
|--------------------------------|---|----------|
| <i>Initial Production Rate</i> | = | 200 MCFD |
| <i>Hyperbolic Exponent</i> | = | 0.33 |
| <i>Decline Rate</i> | = | 12 % |

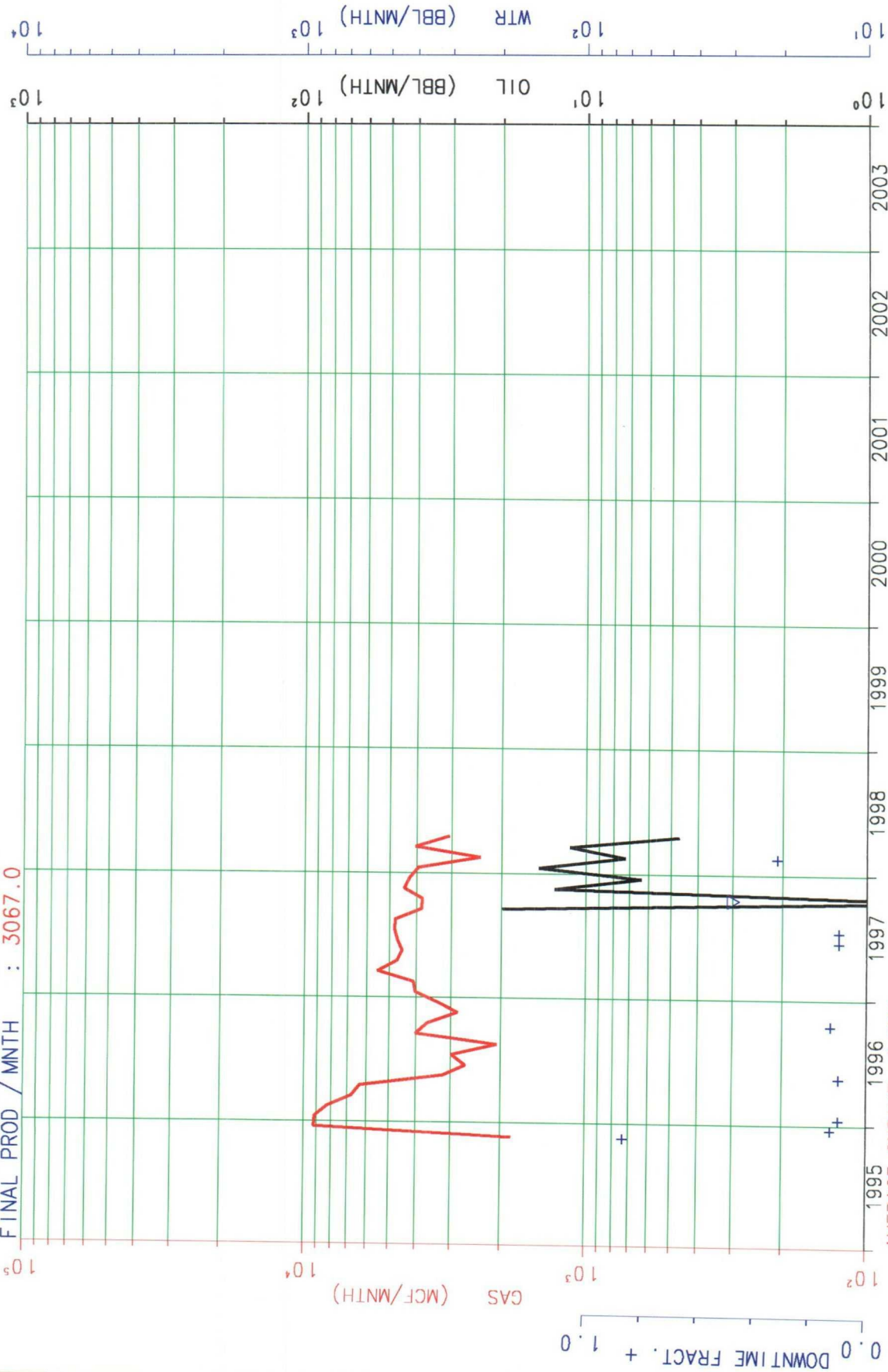
| | Month | Monthly MCF |
|------|-------|------------------------|
| 1998 | Aug | 6,169 |
| | Sep | 5,910 |
| | Oct | 6,047 |
| | Nov | 5,794 |
| | Dec | 5,928 |
| 1999 | Jan | 5,869 |
| | Feb | 5,251 |
| | Mar | 5,758 |
| | Apr | 5,519 |
| | May | 5,647 |
| | Jun | 5,412 |
| | Jul | 5,539 |
| | Aug | 5,485 |
| | Sep | 5,257 |
| | Oct | 5,380 |
| | Nov | 5,157 |
| | Dec | 5,279 |
| 2000 | Jan | 5,228 |

11/95-4/98

INITIAL PROD / MNTH : 13508.3
REMAINING LIFE : 2.50
CUM PRODUCTION : 132705.
FINAL PROD / MNTH : 3067.0

Current Cums

132705. MCF GAS
76. BBL OIL
31. BBL WTR



AVERAGE ONTIME = 0.944

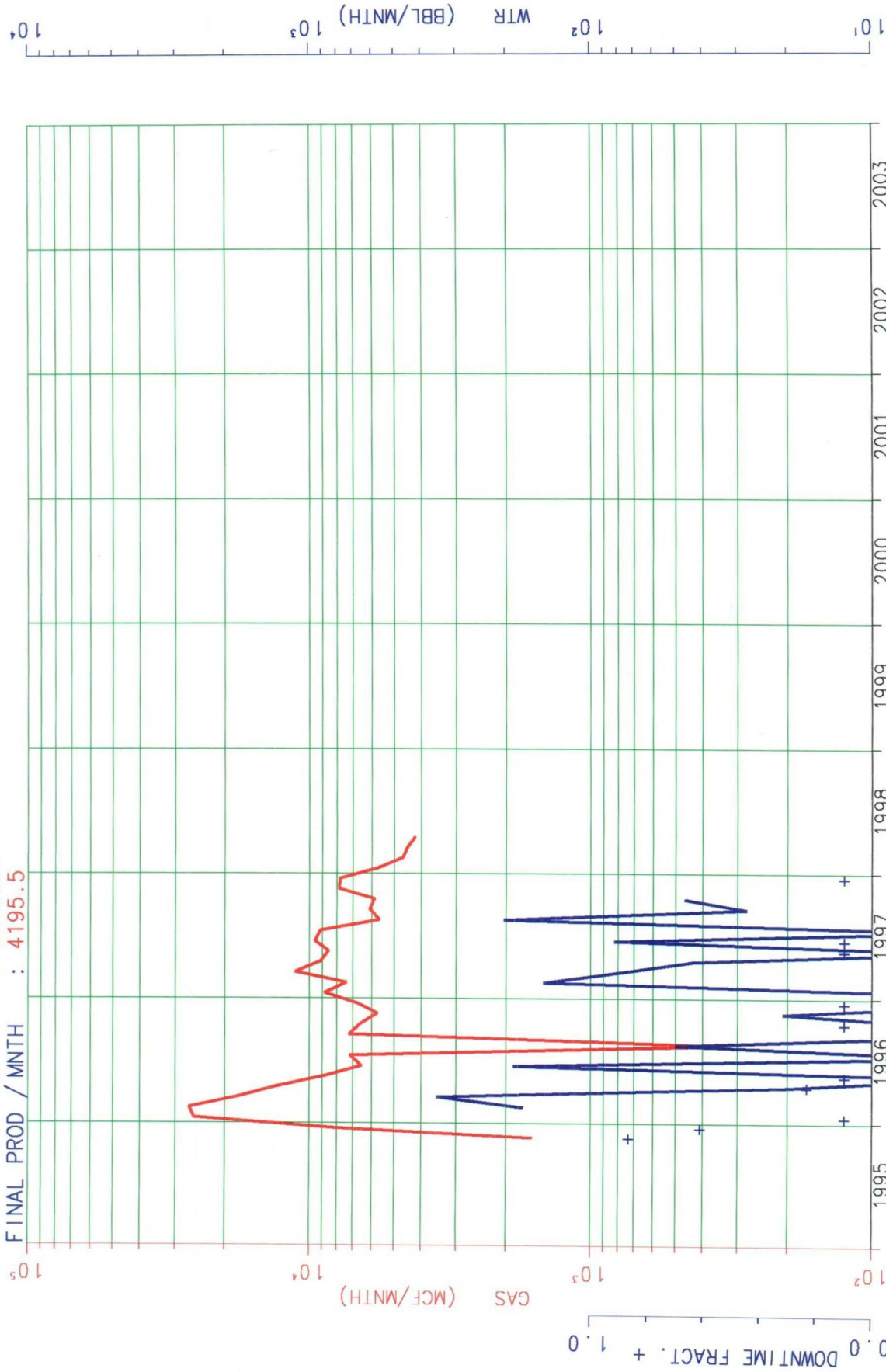
LEASE- 650111 : SAN JUAN 29-5 MESA VERDE
RESRV- 002 : BLANCO MESAVERDE
WELL - 00053M CUM MCF = 132706.

F061502
ZONE-650111002000053MF061502
API-30039254810000 THRU 98/04

11/95-4/98

INITIAL PROD / MNTH : 11899.8
REMAINING LIFE : 2.50
CUM PRODUCTION : 256830.
FINAL PROD / MNTH : 4195.5

Current Cums
256830. MCF GAS
1412. BBL WTR



AVERAGE ONTIME = 0.929

LEASE- 650265 : SAN JUAN 29-5 DAKOTA UNIT
RESVR- 076 : BASIN DAKOTA
WELL - 00053M CUM MCF = 256832.

F061501
ZONE-650265076000053MF061501
API-30039254810000 THRU 98/04

Production Allocation Methodology

◆ Adding New Zone to Existing Zone - Initially Subtraction Method followed by Fixed Allocation Method

- Subtraction Method (+/- 1st 12 months)
 - Forecast production rate by month for existing zone utilizing established decline curve for zone
 - Subtract forecasted rate from commingled rate to define new zone rate
 - Utilize subtraction method for +/- 12 months until new zone rate stabilizes, then utilize fixed allocation method with current rates
- Fixed Allocation Method (after Subtraction Method)
 - Utilize forecasted rate from established decline curve for lower zone
 - Calculate upper zone rate by subtracting lower zone rate from commingled rate
 - Lower zone allocation = $\frac{\text{Lower zone rate}}{\text{Commingled rate}}$
 - Upper zone allocation = $\frac{(\text{Commingled rate} - \text{Lower zone rate})}{\text{Commingled rate}}$

Attachment

OCD Form C-107A (3/12/96)

Item No. 12 - additional explanation:

Based on water analysis from the Mesaverde and Dakota zones and discussions with the chemical treating/analysis company the water from these two zones are compatible. Lab analysis of the individual waters from both the Mesaverde and Dakota formations resulted in positive scaling indices for barium sulfate. There was a slight increase in the barium sulfate scaling index of the combined waters relative to the scaling index of the individual waters.

None of the waters, combined or individual, had meaningful scaling tendencies and combined with the fact that typical water production from either of these zones in San Juan 30-5 are 0-1 BWPD and no barium sulfate scale has been detected to date, no negative impacts to the formations are anticipated.

San Juan County
Oil & Gas Division
C-107A
3/12/96
[Signature]
[Stamp]