

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 87505-6429

Form C-107-A
New 3-12-96

APPROVAL PROCESS:

☒ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

Union Oil Company of California 1004 N. Big Spring, Midland, TX 79702
Operator Address
Rincon Unit 166E F 32-T27N-R6W Rio Arriba
Lease Well No. Unit Ltr. - Sec - Twp - Rge County

OGRID NO. 023798 Property Code 011510 API NO. 30-039-25483 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 | Blanco Mesaverde 72319 | | Basin Dakota 71599 |
| 2. Top and Bottom of Pay Section (Perforations) | 4876-5485 | | 7356-7570 |
| 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) 283 b. (Original) 1254 | a. b. | a. 428 b. 1667 |
| 6. Oil Gravity (°API) or Gas BTU Content | 1192 | | 1192 |
| 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: 11/21/97 Rates: BOPD .3 MCFD 100 BWPD .1 | Date: Rates: | Date: 11/21/97 Rates: BOPD .3 MCFD 182 BWPD .1 |
| 8. Fixed Percentage Allocation Formula - % for each zone | Oil: 53 % Gas: 35 % | Oil: % Gas: % | Oil: 47 % Gas: 65 % |

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). See Attached
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 Heather Dahlgren TITLE Eng. Tech. DATE 12/10/97
TYPE OR PRINT NAME Heather Dahlgren TELEPHONE NO. (915) 685-7665

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2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised October 18, 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 30-039-25483 | | 2Pool Code 73219 | | 3Pool Name Blanco Mesaverde | | |
| 4Property Code 011510 | | 5Property Name Rincon Unit | | | 6Well Number 166-E | |
| 7OGRID No. 023708 | | 8Operator Name Union Oil Company of California | | | 9Elevation 6650 | |


10Surface Location

| | | | | | | | | | |
|--------------------|---------------|------------------|--------------|---------|-----------------------|---------------------------|-----------------------|------------------------|----------------------|
| UL or lot no. F | Section 32 | Township 27-N | Range 6-W | Lot Idn | Feet from the 1815 | North/South line North | Feet from the 1840 | East/West Line West | County Rio Arriba |
|--------------------|---------------|------------------|--------------|---------|-----------------------|---------------------------|-----------------------|------------------------|----------------------|

11Bottom 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 |
| 12Dedicated Acres 160.00 | 13Joint or Infill Y | 14Consolidation Code U | | 15Order No. Unitized | | | | | |

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

| | | | | | |
|---|--|--|--|---|--|
| | | | | <p>17OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</p> <p> Signature Thomas E. Baiar Printed Name Petroleum Engineer Title 12/10/97 Date</p> | |
| <p>18SURVEYOR CERTIFICATION</p> <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> <p>Date of Survey Signature and Seal of Professional Surveyer: Certificate Number</p> | | | | | |

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☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

| | | | | | | |
|-----------------------------|--|---|--|----------------------------|-----------------------|--|
| 1API Number 30-039-25483 | | 2Pool Code 71599 | | 3Pool Name Basin Dakota | | |
| 4Property Code 011510 | | 5Property Name Rincon Unit | | | 6Well Number 166-E | |
| 7OGRID No. 023708 | | 8Operator Name Union Oil Company of California | | | 9Elevation 6650 | |

10Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West Line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|------------|
| F | 32 | 27-N | 6-W | | 1815 | North | 1840 | West | Rio Arriba |

11Bottom 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 |
|-----------------------------|---------|------------------------|-------|---------------------------|---------------|-------------------------|---------------|----------------|--------|
| | | | | | | | | | |
| 12Dedicated Acres 160.00 | | 13Joint or Infill Y | | 14Consolidation Code U | | 15Order No. Unitized | | | |

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>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief</i> | |
| | | | | Signature Thomas E. Baiar Printed Name Petroleum Engineer Title Date 12/10/97 | |
| | | | | 18 SURVEYOR CERTIFICATION <i>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.</i> | |
| | | | | Date of Survey Signature and Seal of Professional Surveyer: Certificate Number | |

NMOCD Reference Cases for Rule 303(D) Exceptions

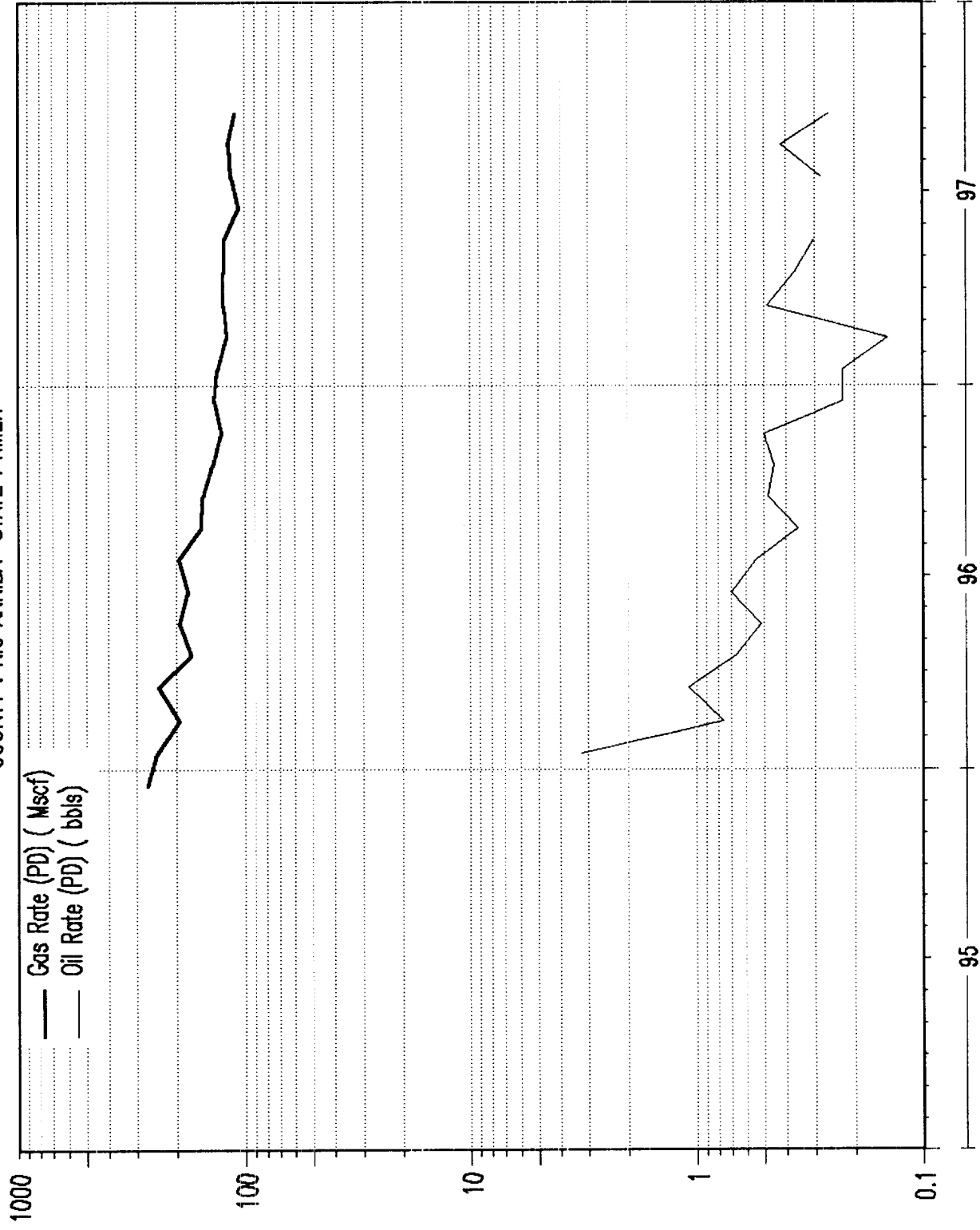
Unocal, Rincon Unit, Rio Arriba County, New Mexico

| Rincon Unit Well | Legal Description | | | | | | | NMOCD Order No. | Issue Date |
|------------------|-------------------|---|----|---|----|---|-------|-----------------|------------|
| 302 | C | S | 11 | T | 26 | N | R 7 W | DHC-1050 | 11/3/94 |
| 134 | B | S | 12 | T | 26 | N | R 7 W | DHC-1190 | 3/7/96 |
| 159M | F | S | 18 | T | 27 | N | R 6 W | DHC-904 | 6/18/93 |
| 174M | F | S | 19 | T | 27 | N | R 6 W | DHC-966 | 1/31/94 |
| 170 | M | S | 20 | T | 27 | N | R 6 W | DHC-1192 | 3/7/96 |
| 170M | I | S | 20 | T | 27 | N | R 6 W | DHC-920 | 9/17/93 |
| 175M | F | S | 20 | T | 27 | N | R 6 W | DHC-864 | 11/24/92 |
| 171M | J | S | 21 | T | 27 | N | R 6 W | DHC-1101 | 3/7/95 |
| 180M | D | S | 21 | T | 27 | N | R 6 W | DHC-940 | 10/25/93 |
| 158M | J | S | 22 | T | 27 | N | R 6 W | DHC-909 | 4/27/93 |
| 125M | F | S | 26 | T | 27 | N | R 6 W | DHC-95 | 9/17/93 |
| 126M | P | S | 27 | T | 27 | N | R 6 W | DHC-914 | 9/17/93 |
| 127M | D | S | 28 | T | 27 | N | R 6 W | DHC-916 | 8/17/93 |
| 128M | O | S | 28 | T | 27 | N | R 6 W | DHC-1042 | 8/31/94 |
| 129M | P | S | 29 | T | 27 | N | R 6 W | DHC-903 | 6/18/93 |
| 1E | G | S | 30 | T | 27 | N | R 6 W | DHC-902 | 6/18/93 |
| 303 | E | S | 33 | T | 27 | N | R 6 W | DHC-1086 | 2/3/95 |
| 186M | L | S | 33 | T | 27 | N | R 6 W | DHC-1176 | 12/21/95 |
| 167M | C | S | 13 | T | 27 | N | R 7 W | DHC-863 | 11/5/92 |
| 151M | O | S | 14 | T | 27 | N | R 7 W | DHC-918 | 9/17/93 |
| 133E | D | S | 14 | T | 27 | N | R 7 W | DHC-1043 | 8/31/94 |
| 184M | P | S | 15 | T | 27 | N | R 7 W | DHC-911 | 8/25/93 |
| 185E | J | S | 22 | T | 27 | N | R 7 W | DHC-1038 | 8/31/94 |
| 136E | D | S | 23 | T | 27 | N | R 7 W | DHC-912 | 9/17/93 |
| 178E | I | S | 23 | T | 27 | N | R 7 W | DHC-1040 | 8/31/94 |
| 138E | P | S | 25 | T | 27 | N | R 7 W | DHC-1044 | 8/31/94 |
| 139E | F | S | 25 | T | 27 | N | R 7 W | DHC-1041 | 8/31/94 |
| 203 | M | S | 27 | T | 27 | N | R 7 W | DHC-1261 | 5/23/96 |
| 149M | F | S | 30 | T | 27 | N | R 7 W | DHC-1037 | 8/31/94 |
| 229E | M | S | 34 | T | 27 | N | R 7 W | DHC-1124 | 5/16/95 |
| 187E | P | S | 35 | T | 27 | N | R 7 W | DHC-1176 | 12/21/95 |
| 131E | C | S | 36 | T | 27 | N | R 7 W | DHC-1039 | 8/31/94 |
| 168E | I | S | 36 | T | 27 | N | R 7 W | DHC-1191 | 3/7/96 |
| 183 | K | S | 31 | T | 27 | N | R 6 W | DHC-1376 | 10/16/96 |

WELL: RINCON UNIT 166E:DK

LOCATION : N027 W006 32 SENW

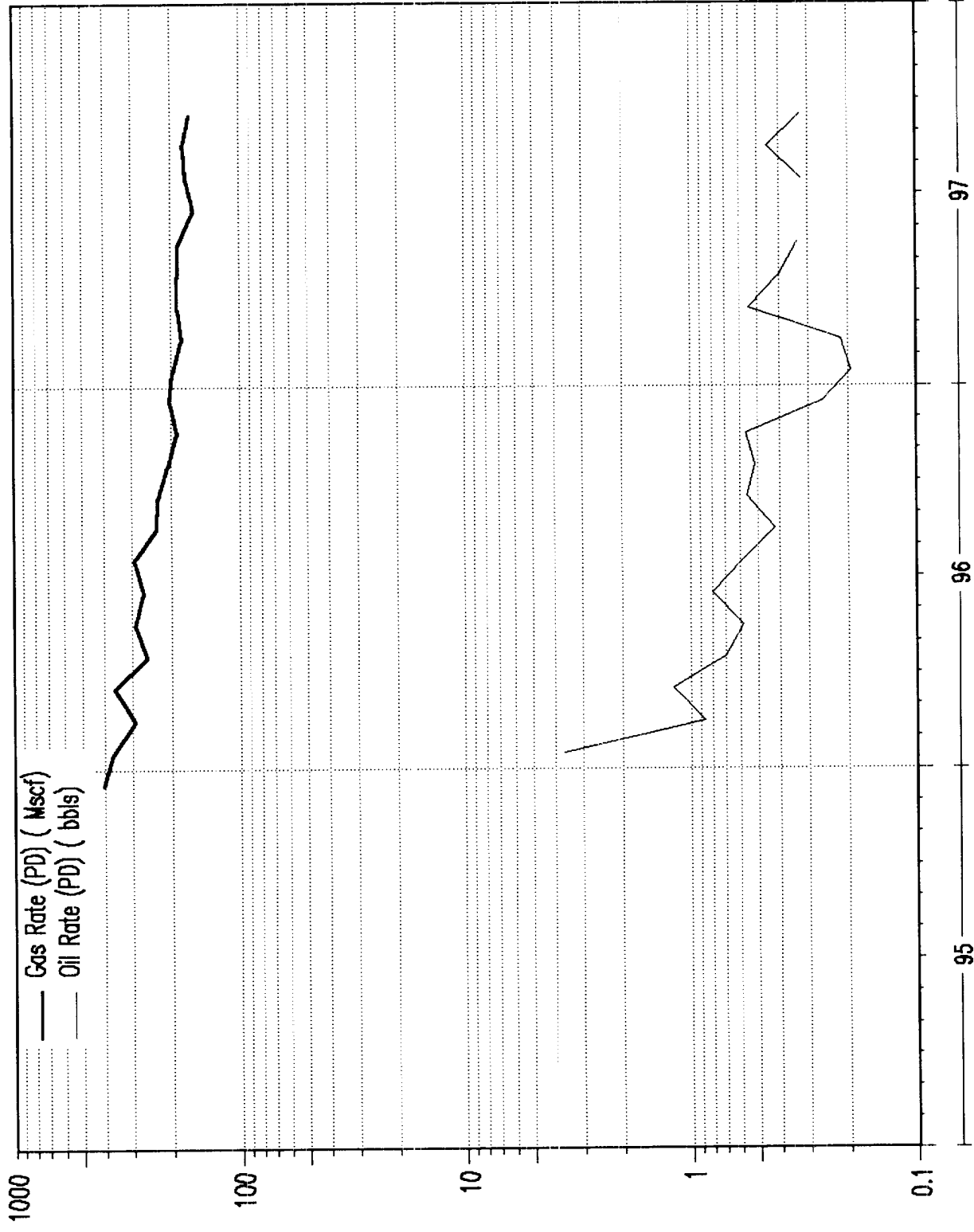
COUNTY : RIO ARriba STATE : NMEX



WELL: RINCON UNIT 166E:MV

LOCATION : N027 W006 32 SENW

COUNTY : RIO ARriba STATE : NMEX



RINCON UNIT NO. 166E

After a 5 day SI period:

| | | | |
|-----------------|---------|------------------|--------------------------------------|
| Mesaverde BHP = | 283 psi | 5181' (Mid perf) | Calc BHP from 5 day SITP - July 1997 |
| Dakota BHP = | 428 psi | 7463' (Mid perf) | Calc BHP from 5 day SITP - July 1997 |

$$\text{Gas Gradient} = \frac{(.0133)(.69)(2282)}{(.96)(655)} = 0.03 \text{ psi/ft}$$

Adjusting to a common datum of 5181':

| | | |
|-----------------|---------------------------|-----------|
| Mesaverde BHP = | 283 psi | |
| Dakota BHP = | 428 - [(0.03)(7463-5181)] | = 360 psi |

Therefore the reservoir pressures fall within the 50% requirement.

--BHPCALC--

Calculate BHP and Z-factor from surface shut-in pressure

12/09/97

| | | | | | |
|---------------------|--------------------------|-------|--|--|----------|
| WELL NAME : | RINCON UNIT #166E DAKOTA | | | | |
| GAS GRAVITY: | 0.69 | % N2 | | | 0.43 |
| CONDENSATE (YES=1): | 1 | % CO2 | | | 1.02 % |
| RESERVOIR TEMP: | 195 F | % H2S | | | 0.00 % |
| SURFACE TEMP: | 60 F | Pc = | | | 669.09 % |
| DEPTH OF ZONE: | 7463 Foot | Tc = | | | 379.46 |

| | | | |
|--------------|------|--------|-------|
| SURFACE PRES | BHP | Z | BHP/Z |
| Psia | psia | | psia |
| 360 | 428 | 0.9618 | 445 |

--BHPCALC--

Calculate BHP and Z-factor from surface shut-in pressure

12/09/97

WELL NAME : RINCON UNIT #166E MESAVERDE
GAS GRAVITY: 0.69 % N2 0.43
CONDENSATE (YES=1): 1 % CO2 1.02 %
RESERVOIR TEMP: 150 F % H2S 0.00 %
SURFACE TEMP: 60 F PC = 669.09 %
DEPTH OF ZONE: 5181 Foot TC = 379.46

| SURFACE PRES | BHP | Z | BHP/Z |
|--------------|------|--------|-------|
| psia | psia | | psia |
| 250 | 283 | 0.9671 | 293 |

RINCON UNIT NO. 166E

After a 1 month SI period:

| | | | |
|-----------------|----------|------------------|--|
| Mesaverde BHP = | 1254 psi | 5181' (Mid perf) | Calc BHP from 1 month SITP prior to 1st Delivery |
| Dakota BHP = | 1667 psi | 7463' (Mid perf) | Calc BHP from 1 month SITP prior to 1st Delivery |

$$\text{Gas Gradient} = \frac{(.0133)(.69)(2282)}{(.89)(655)} = 0.03 \text{ psi/ft}$$

Adjusting to a common datum of 5181':

| | | |
|-----------------|------------------------------|------------|
| Mesaverde BHP = | 1254 psi | |
| Dakota BHP = | $1667 - [(0.03)(7463-5181)]$ | = 1585 psi |

Therefore the reservoir pressures fall within the 50% requirement.

--BHPCALC--

Calculate BHP and Z-factor from surface shut-in pressure

12/09/97

WELL NAME : RINCON UNIT #166E DAKOTA
GAS GRAVITY: 0.69 % N2 0.43
CONDENSATE (YES=1): 1 % CO2 1.02 %
RESERVOIR TEMP: 195 F % H2S 0.00 %
SURFACE TEMP: 60 F Pc = 669.09 %
DEPTH OF ZONE: 7463 Foot Tc = 379.46

| SURFACE PRES | BHP | Z | BHP/Z |
|--------------|-------|--------|-------|
| Psia | psia | | psia |
| 1362 | 1,667 | 0.8851 | 1,883 |

--BHPCALC--

Calculate BHP and Z-factor from surface shut-in pressure

12/09/97

WELL NAME : RINCON UNIT #166E MESAVERDE
GAS GRAVITY: 0.69 % N2 0.43
CONDENSATE (YES=1): 1 % CO2 1.02 %
RESERVOIR TEMP: 150 F % H2S 0.00 %
SURFACE TEMP: 60 F Pc = 669.09 %
DEPTH OF ZONE: 5181 Foot Tc = 379.46

| SURFACE PRES | BHP | Z | BHP/Z |
|--------------|-------|--------|-------|
| Psia | psia | | psia |
| 1087 | 1,254 | 0.8716 | 1,439 |



New Name. Same Spirit.
A Business Unit of UNOCAL

RECEIVED
DEC 15 1997
OIL CON. DIV.
DIST. 3

Certified Receipt No. Z740626056

December 10, 1997

New Mexico Oil Conservation Division
Attn.: Mr. Frank Chavez
1000 Rio Brazos Road
Aztec, NM 87410

Dear Mr. Chavez:

Union Oil Company of California d.b.a. UNOCAL requests approval to down-hole commingle hydrocarbon production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit well, Rio Arriba County, New Mexico.

| <u>Well</u> | <u>Legal Location</u> |
|-------------|--|
| 166E | 1815' FNL, 1340' FWL, NW Sec 32, T27N, R6W |

A UNOCAL operated well located on State acreage.

This well was drilled and completed with 7" casing November 1995, in the Dakota and Mesaverde formations. Unocal proposes to add a completion in the Pictured Cliffs formation and downhole commingle the Dakota and Mesaverde. The Dakota and Mesaverde were approved for surface commingling March 27th, 1995 - **Commingling Order PC-906**. Current commingled production is 276 Mcfd with trace oil and water. UNOCAL conducted a 48-hr. flow test in November 1997 from which the fixed allocation for this well was derived.

UNOCAL is confident that production will not be wasted and the proposed method of completion will efficiently drain Dakota and Mesa Verde acreage around this wellbore.

Form C-107-A with supporting data is attached

If you have any questions regarding this proposal please contact me at 915/685-7665.

Sincerely,

Spirit Energy 76
A Business Unit of UNOCAL

Heather Dahlgren
Engineering Technician

TEB:had:ss

Att.

cc: New Mexico Oil Conservation Division/Santa Fe, NM
Attn.: Mr. William J. LeMay

1004 North Big Spring • Post Office Box 3100 • Midland, Texas 79702



New Name. Same Spirit.

A Business Unit of Unocal

Certified Receipt No. Z740626057

December 10, 1997

RECEIVED
DEC 15 1997

New Mexico Oil Conservation Division
Attn.: Mr. William J. LeMay
2040 S. Pacheco Street
Santa Fe, NM 87505

OIL CON. DIV.
DIST. 3

Dear Mr. LeMay:

Union Oil Company of California d.b.a. UNOCAL requests approval to down-hole commingle hydrocarbon production from the Blanco Mesa Verde and Basin Dakota formations in the following Rincon Unit well, Rio Arriba County, New Mexico.

| <u>Well</u> | <u>Legal Location</u> |
|-------------|--|
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Sincerely,

Spirit Energy 76
A Business Unit of UNOCAL


Heather Dahlgren
Engineering Technician

TEB:had:ss

Att.

cc: New Mexico Oil Conservation Division/District III Aztec, NM
Attn.: Mr. Frank Chavez

1004 North Big Spring • Post Office Box 3100 • Midland, Texas 79702