

**MERIDIAN OIL**

OIL CONSERVATION DIVISION  
RECEIVED

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June 10, 1992

New Mexico Oil Conservation Division  
Attn: Mr. Bill LeMay  
P.O. Box 2088  
310 Old Santa Fe Trail  
Santa Fe, New Mexico 87501

RE: Omler #4  
Unit B, Section 36, T28N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

Dear Mr. LeMay:

Meridian Oil Inc. is applying for an administrative downhole commingling order for the referenced well in the Fulcher Kutz Pictured Cliffs and the Basin Fruitland Coal fields. The ownership of the zones to be commingled is common. The offset operators to this well are Amoco Production Company, Conoco, Inc. and McKenzie Methane. The Bureau of Land Management and the above mentioned operators will receive notification of this downhole commingling.

The subject well was completed open hole in the Fulcher Kutz Pictured Cliffs interval in November 1954. Gas sales commenced in December 1954 with a cumulative to date production of 1,017 MMCF. This well has been inactive for five years and is currently blind plated.

The Fruitland Coal is proven to be productive in this area by Meridian and other operators producing wells. Based on offset production in this area, new well drilling is not economically justified. The only economical way to recover the Fruitland Coal reserves in this area is to commingle the production with an existing well.

It is proposed to clean out the open hole Pictured Cliffs formation and re-establish production. It is then proposed to set a bridge plug above the Pictured Cliffs, perforate and stimulate the Fruitland Coal, then remove the bridge plug and produce both zones through a single string of tubing. The reservoir characteristics of each of the subject zones are such that underground waste will not be caused by the proposed commingling. Neither producing interval makes oil or water in the offset wells. The shut-in pressure for the Pictured Cliffs and Fruitland Coal is 235 and 350 psi, respectively.

New Mexico Oil Conservation Division  
Mr. Bill LeMay  
Omler #4  
Downhole Commingling Request  
Page Two

The allocation of the commingled production will be calculated using the attached allocation formula. This formula is based on the Pictured Cliffs production history for the last 19 years and uses accepted Reservoir Engineering methods to allocate the remaining Pictured Cliffs reserves. All additional reserves will be attributed to the Fruitland Coal reservoir. This addresses the Fruitland Coal producing characteristics of early life inclining production rates. The formula also addresses the possible situation of pipeline curtailment.

Approval of this commingling application will allow for the prevention of wasted resources and protection of correlative rights. Included with this letter are plats showing ownership of offsetting leases for both the Pictured Cliffs and Fruitland Coal, a copy of letters to the BLM and offset operators, wellbore diagrams, production history curves, pertinent data sheet, and an allocation formula.

Sincerely,



Richard E. Fraley  
Engineering Manager

KAS:tg  
attachments

cc: Frank Chavez - NMOCD/Aztec

Pertinent Data Sheet - Omler #4 FTC/PC

Location: 955' FNL, 1650' FEL, Section 36, T28N R10W, San Juan County, N.M.

Field: Basin Fruitland Coal  
Futcher Kutz Pictured Cliffs

Elevation: 5949' GL

TD: 2042'  
PBTD: none

Completed: 11-15-54

GWI: 100%  
NRI: 66.25%  
DP Number: 50895A PC  
50895B FTC

Initial Potential:  
PC: 880 MCF/D - Pitot

Casing Record:

<u>Hole Size</u>	<u>Csg Size</u>	<u>Wt. &amp; Grade</u>	<u>Depth Set</u>	<u>Cement</u>	<u>Top/Cmt.</u>
12-1/4"	9-5/8"	32 # NA	99'	75 sxs	SURF (CIRC)
8-3/4"	5-1/2"	14 # J55	2001'	100 sxs	1651' (75%)

Tubing Record:

1" 1.7# NA 2010'

Formation Tops:

Ojo Alamo: 995'  
Kirtland: 1113'  
Fruitland: 1685'  
Pictured Cliffs: 1996'

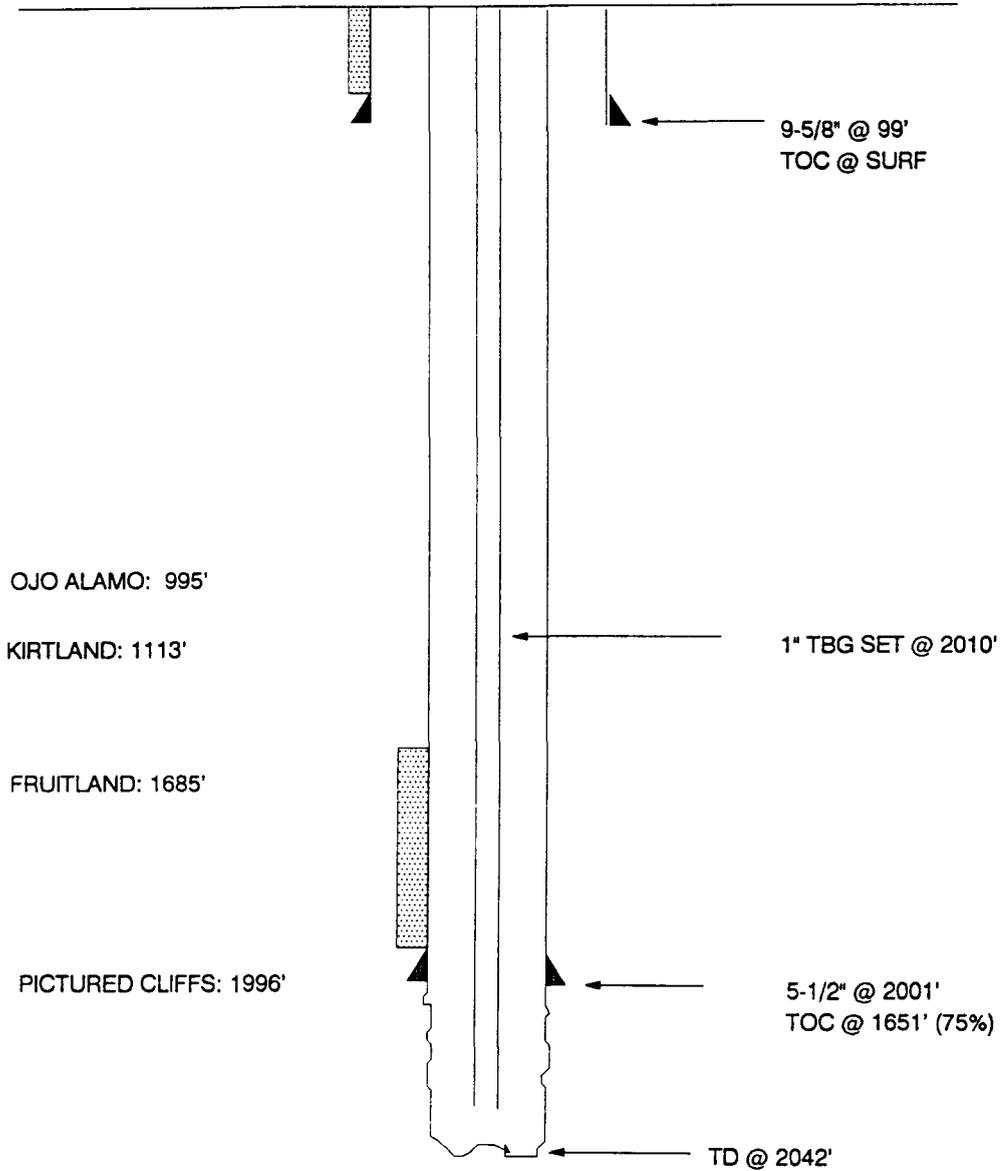
Logging Record: N/A

Stimulation: Open hole fraced with 8,100 gallons oil and 7,700 lbs sand. Injection rate 24.6 BPM.

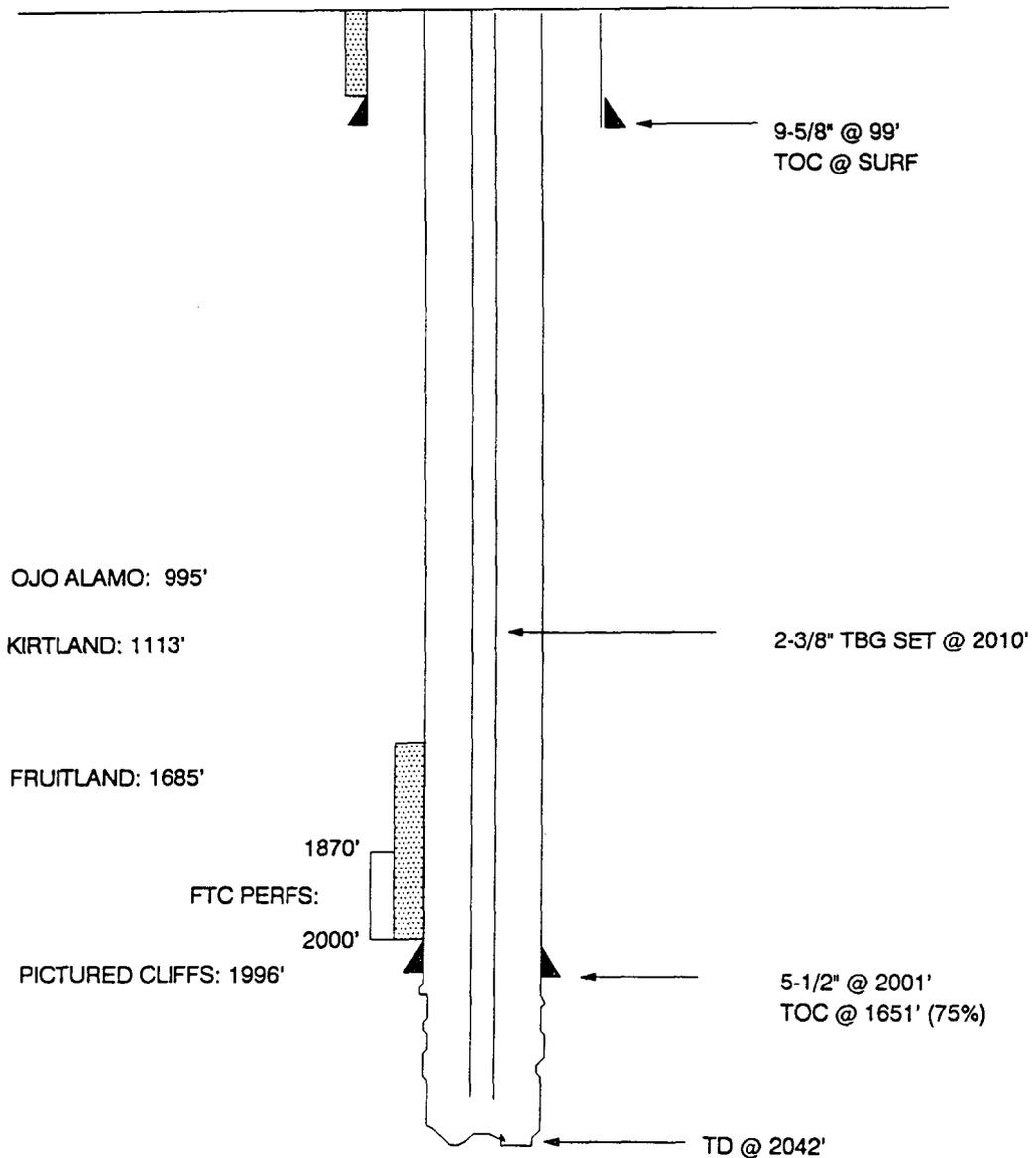
Workover History: None.

Production History: PC cum = 1,017 MMCF since 1st delivery in December of 1954. Well has been inactive since 1986 and is currently SIBP.

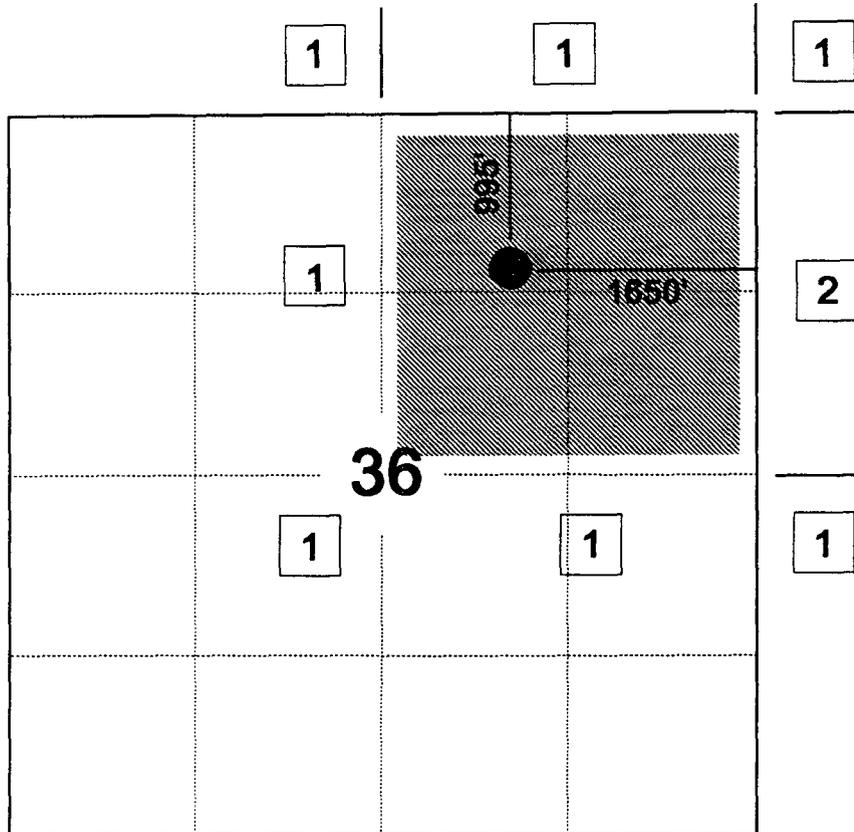
CURRENT  
**OMLER #4**  
UNIT B SECTION 36 T28N R10W  
SAN JUAN COUNTY, NEW MEXICO



PROPOSED  
**OMLER #4**  
UNIT B SECTION 36 T28N R10W  
SAN JUAN COUNTY, NEW MEXICO

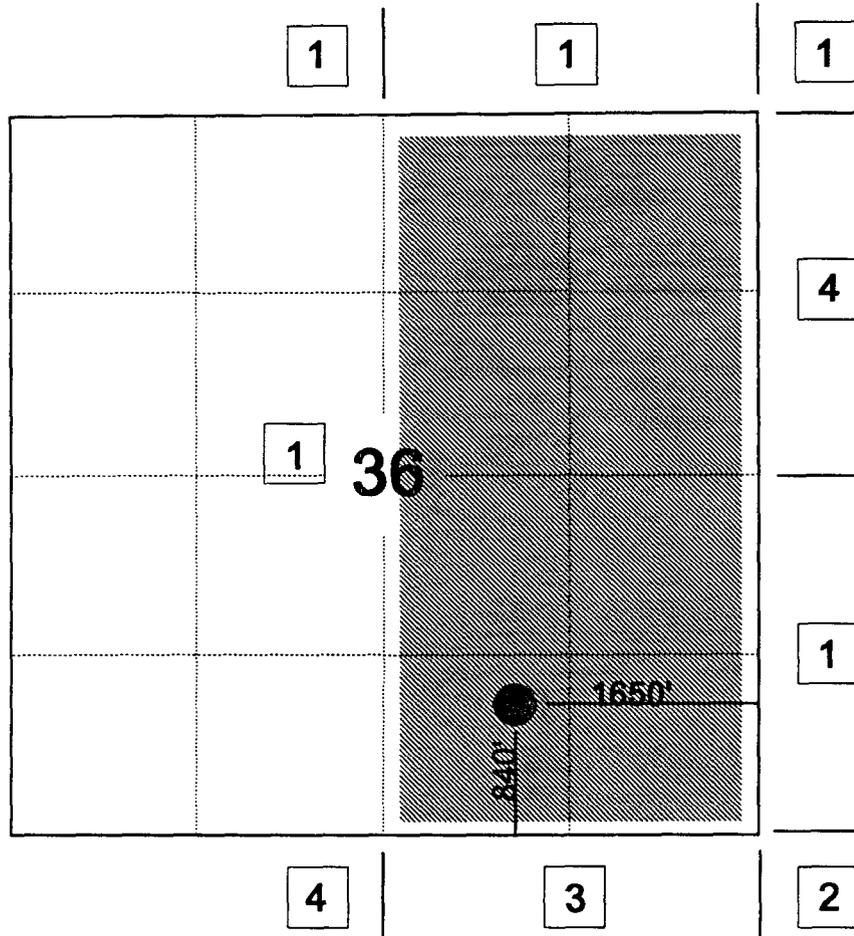


**MERIDIAN OIL INC**  
**OFFSET OPERATOR \ OWNER PLAT**  
**OMLER #4**  
**Fruitland Coal \ Pictured Cliffs Commingle**  
 Township 28 North, Range 10 West



- 1) Meridian Oil Inc \_\_\_\_\_
- 2) Amoco Production Company, PO Box 800, Denver, CO 80202 \_\_\_\_\_
- Conoco, Inc., PO Box 951063, Houston, TX 75395-1063 \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**MERIDIAN OIL INC**  
**OFFSET OPERATOR \ OWNER PLAT**  
**OMLER #4**  
**Fruitland Coal \ Pictured Cliffs Commingle**  
 Township 28 North, Range 10 West



- 1) Meridian Oil Inc

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- 2) Southland Royalty Company

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- 3) McKenzie Methane, 7880 San Felipe, Houston, TX 77062

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- 4) Amoco Production Company, PO Box 800, Denver, CO 80202

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- Conoco, Inc., PO Box 951063, Houston, TX 75395-1063

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- McKenzie Methane

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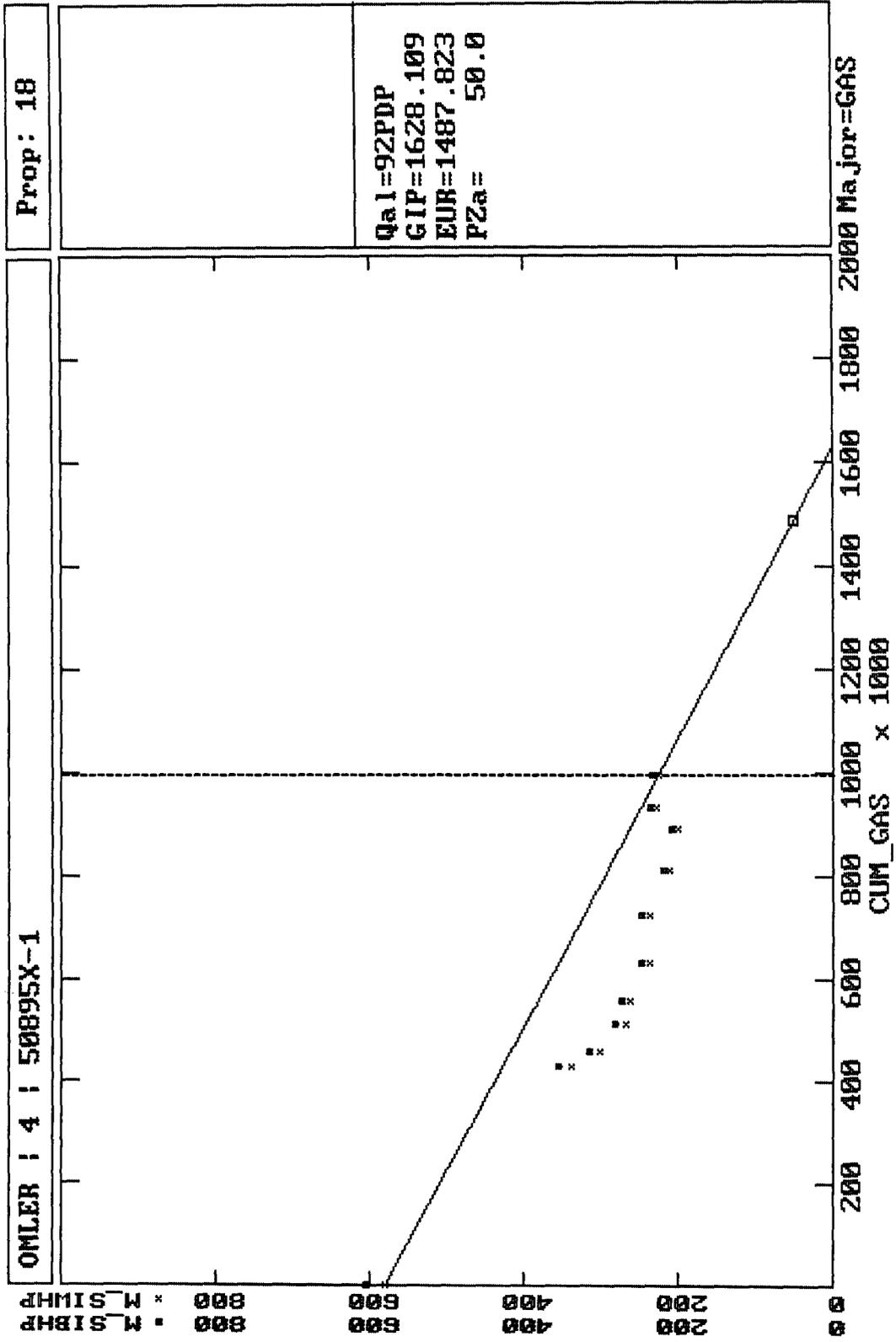


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**Fruitland Coal Formation**



FIGURE 2



## Omler #4 Allocation Formula

### Equation Derivation

Given the exponential decline curve analysis formula\*:

$$De = 1 - (Q_2/Q_1) (1/Yr)$$

Where: De = Effective Decline in %/yr  
Q<sub>2</sub> = Rate two (at some future date) MCFD  
Q<sub>3</sub> = Rate one (current rate) MCFD

Rearranging the equation to solve for Q<sub>2</sub>:

$$Q_2 = Q_1 (1 - De)^{Yr} \text{ MCFD}$$

### Omler #4 Formula

Using Production plot (Fig 1):

Last production rate = Q<sub>1</sub> = 2736 MCFM  $\cong$  90 MCFD  
De = 6.022% from plot

$$Q_{2PC} = 90 (1 - 0.06022)^{Yr} \text{ MCFD}$$

$$Q_{2PC} = 90 (0.93978)^{Yr} \text{ MCFD} \quad \text{FORMULA FOR FUTURE PC RATES}$$

Any production rate over what is calculated using the above PC formula on a specific date is Fruitland Coal.

### Curtailement Situations

If any curtailment occurs, both streams will be affected the same and go to 0 MCFD.

When production resumes, the rates will equate to those when the well was shut in:

$$Q_{2PC} = 90 (0.93978)^{(Yr - \text{curtailment time})}$$

$$Q_{FTC} = Q_{TOT} - Q_{PC}$$

$$Q_{TOT} = Q_{FTC} + Q_{PC}$$

The total amount of PC gas produced will be the EUR calculated through decline curve and P-Sum analysis (see Figs 1 & 2).

\*Reference: pg. 5-46 Oil Property Evaluation  
by R. S. Thompson & J. D. Wright

Omler #4 Allocation Formula, page 2

Example:                    Date Now = 1/1/93

Assuming the well produces steadily in 1993. On 1/1/94, the well produces 400 MCFD.

$$Q_1 = 90 \text{ MCFD} \qquad \qquad \qquad De = 6.022\%$$

$$Q_{PC} = 90 (0.93978) (\text{Yr} - \text{curtailment time})$$

$$Q_{PC} = 90 (0.93978) (1 - 0) = 85 \text{ MCFD}$$

$$Q_{TOT} = 400 \text{ MCFD} = Q_{FTC} + Q_{PC}$$

$$Q_{FTC} = 400 - 85 = 315 \text{ MCFD}$$

Then on 1/2/94, the well gets shut in for 1 month:

On 2/2/94, assume that the PC stream will come back on line at the same rate it left off. Or:

$$1 \text{ month curtailment} = 1/12 = 0.0833$$

$$\text{Tot. Time} = 1 \text{ yr} + 1 \text{ month} = 1 + 1/12 = 1.0833$$

$$Q_{PC} = 90 (0.93978) (1.0833 - 0.0833) = 85 \text{ MCFD.}$$

$$Q_{TOT} = 400 \text{ MCFD}$$

$$Q_{FTC} = 315 \text{ MCFD}$$

# MERIDIAN OIL

June 10, 1992

Bureau of Land Management  
1235 La Plata Highway  
Farmington, New Mexico 87401

RE: Omler #4  
Unit B, Section 36, T28N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

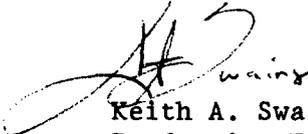
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The purpose of this letter is to notify you of such action. If you have no objections to the proposed commingling order, we would appreciate your signing the attached copy of this letter and returning it to this office.

Your prompt attention to this matter would be appreciated.

Yours truly,

  
Keith A. Swainson  
Production Engineer

KAS:tg

The above downhole commingling request is hereby approved:

\_\_\_\_\_  
Date: \_\_\_\_\_

# MERIDIAN OIL

June 10, 1992

Amoco Production Company  
P.O. Box 800  
Denver, Colorado 80202

RE: Omler #4  
Unit B, Section 36, T28N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

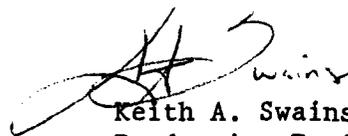
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Keith A. Swainson  
Production Engineer

KAS:tg

The above downhole commingling request is hereby approved:

\_\_\_\_\_  
Date: \_\_\_\_\_

# MERIDIAN OIL

June 10, 1992

Conoco, Inc.  
P.O. Box 951063  
Houston, Texas 75395-1063

RE: Omler #4  
Unit B, Section 36, T28N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

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Keith A. Swainson  
Production Engineer

KAS:tg

The above downhole commingling request is hereby approved:

\_\_\_\_\_  
Date: \_\_\_\_\_

# MERIDIAN OIL

June 10, 1992

McKenzie Methane  
7880 San Felipe  
Houston, Texas 77062

RE: Omler #4  
Unit B, Section 36, T28N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

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Keith A. Swainson  
Production Engineer

KAS:tg

The above downhole commingling request is hereby approved:

\_\_\_\_\_

Date: \_\_\_\_\_



CONSERVATION DIVISION STATE OF NEW MEXICO  
 ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT  
 OIL CONSERVATION DIVISION  
 AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD  
 AZTEC, NEW MEXICO 87410  
 (505) 334-6178

Date: June 23, 1992

Oil Conservation Division  
 P.O. Box 2088  
 Santa Fe, NM 87504-2088

RE: Proposed MC \_\_\_\_\_  
 Proposed NSL \_\_\_\_\_  
 Proposed WFX \_\_\_\_\_  
 Proposed NSP \_\_\_\_\_

Proposed DHC   x   \_\_\_\_\_  
 Proposed SWD \_\_\_\_\_  
 Proposed PMX \_\_\_\_\_  
 Proposed DD \_\_\_\_\_

Gentlemen:

I have examined the application received on June 11, 1992  
 for the Meridian OPERATOR Order #4 LEASE & WELL NO.

B-36-28N-10W and my recommendations are as follows:  
 UL-S-T-R

Approve  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Yours truly,

3-1-g