



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 15  
for the Melvin Shannon C. et al  
OPERATOR LEASE & WELL NO.

D-3-27, N-12W and my recommendations are as follows:  
UL-S-T-R

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

Yours truly,

[Signature]

# MERIDIAN OIL

June 11, 1992

RECEIVED  
JUN 15 1992  
OIL CON. DIV. I  
DIST. 3

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

RE: Thompson C #5  
Unit D, Section 3, T27N, R12W  
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 West 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 Marathon Oil Company, BHP Petroleum and Dekalb Energy Company. The Bureau of Land Management and the above mentioned operators will receive notification of this downhole commingling.

The subject well was completed in the West Kutz Pictured Cliffs interval in February 1952. Gas sales commenced in February 1952 with a cumulative to date production of 879 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.

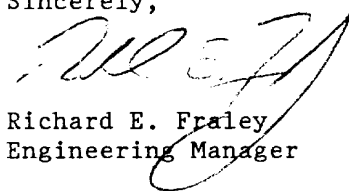
It is proposed to clean out the open hole Pictured Cliffs formation and re-establish production. It is then proposed to set a bridge plug above the Pictured Cliffs, perforate and stimulate the Fruitland Coal, then remove the bridge plug and produce both zones through a single string of tubing. The reservoir 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 170 and 315 psi, respectively.

New Mexico Oil Conservation Division  
Mr. Bill LeMay  
Thompson C #5  
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,

A handwritten signature in dark ink, appearing to read 'R. E. Fraley', is written over the typed name and title.

Richard E. Fraley  
Engineering Manager

KAS:tg  
attachments

cc: Frank Chavez - NMOCD/Aztec

Pertinent Data Sheet - Thompson C #5

Location: 990' FNL, 990' FEL, Section 3, T27N, R12W, San Juan County, NM

Field: West Kutz Pictured Cliffs

Elevation: 5847'GL TD: 1590'

PBTD: 1590'

Completed: 02-13-52

Initial Potential: 3310-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/Cement</u>
12 1/4"	10 3/4"	N/A	70'	80 sxs	Surface
9"	7"	23.0#	1486'	75 sxs	1105' (75%)

Tubing Record: 1" set @ 1475'.

Formation Tops:

Ojo Alamo	269'
Kirtland	375'
Fruitland	1209'
Pictured Cliffs	1482'

Logging Record: None

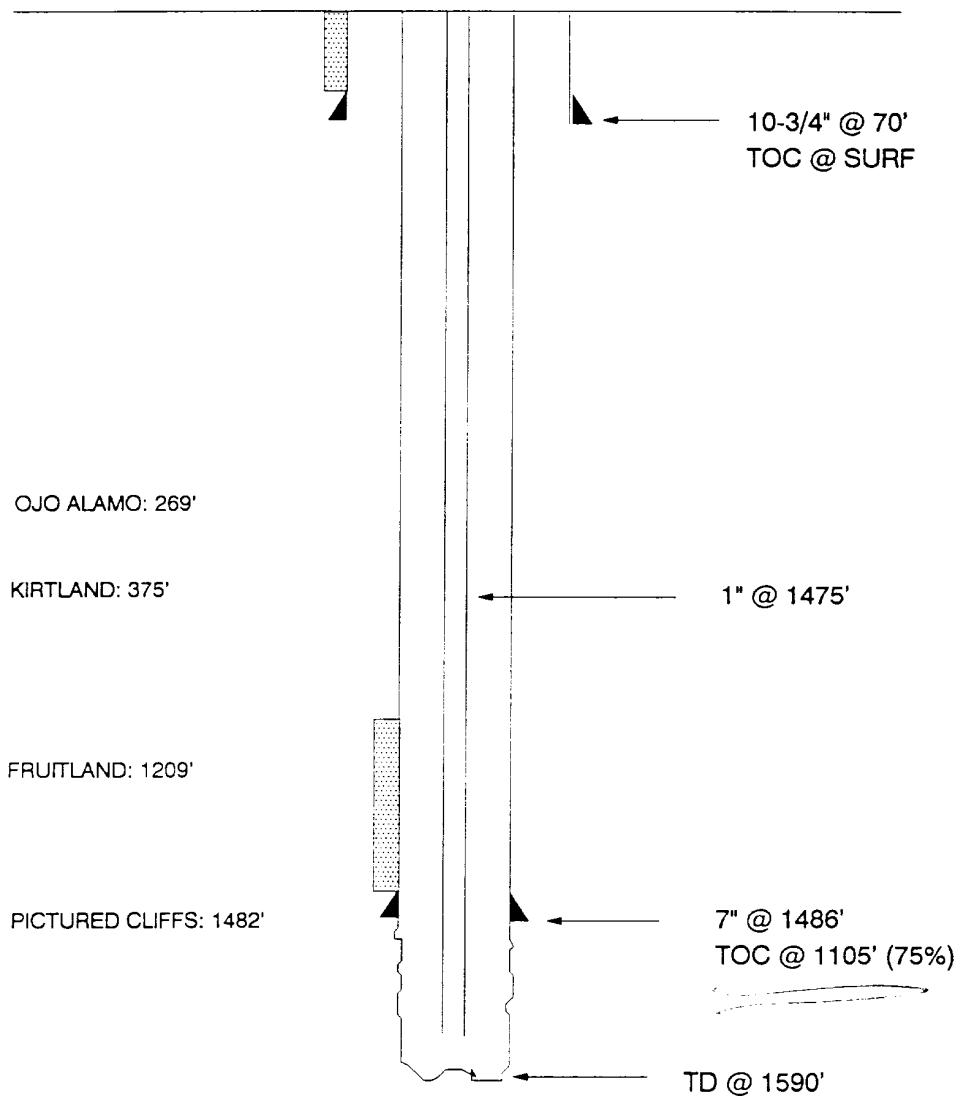
Stimulation: 1952: Open hole shot with 268 qts. SNG.

Workover History: None

Production History: PC cum = 879 MMCF since first delivery in February, 1952. The well has been inactive since January, 1987.

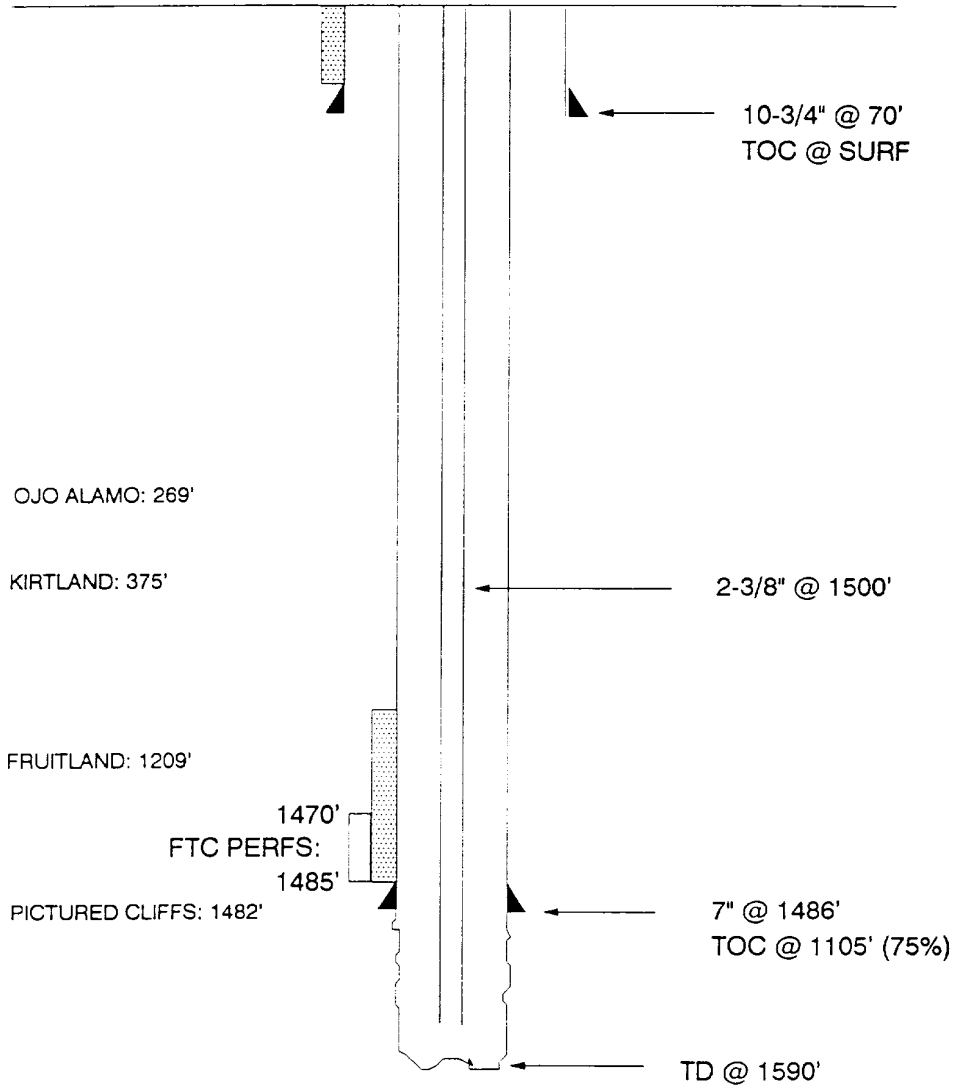
CURRENT  
**THOMPSON C #5**

UNIT D SECTION 3 T27N R12W  
SAN JUAN COUNTY, NEW MEXICO



PROPOSED  
**THOMPSON C #5**

UNIT D SECTION 3 T27N R12W  
SAN JUAN COUNTY, NEW MEXICO

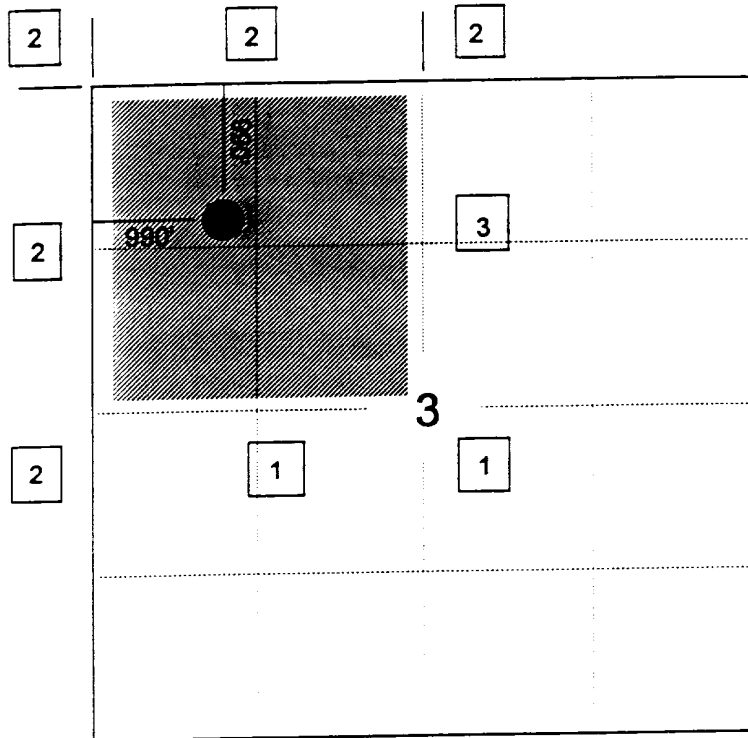


**MERIDIAN OIL INC  
OFFSET OPERATOR PLAT**

**Thompson C #5**

Fruitland Coal \ Pictured Cliffs Comingle

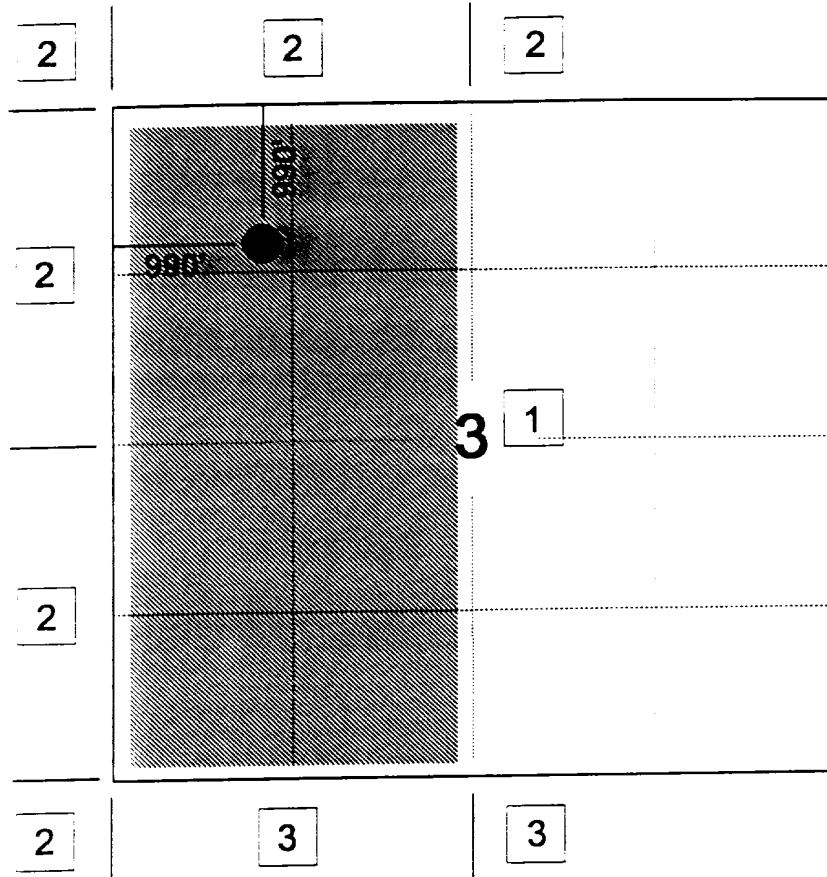
Township 27 North, Range 12 West



- 1) Meridian Oil Inc
  - 2) BHP Petroleum, PO Box 845877, Dallas, TX 75284-5877
  - 3) Marathon Oil Company, PO Box 552, Midland, TX 79702
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Pictured Cliffs Formation

**MERIDIAN OIL INC**  
**OFFSET OPERATOR \ OWNER PLAT**  
**THOMPSON C #5**  
**Fruitland Coal \ Pictured Cliffs Commingle**  
Township 27 North, Range 12 West



1) Meridian Oil Inc

Marathon Oil Company, PO Box 552, Midland, TX 79702

2) BHP Pretroleum, PO Box 845877, Dallas, TX 75284-5877

3) Dekalb Energy Company, 1625 Broadway, Denver, CO 80202

Marathon Oil Company

**Fruitland Coal Formation**

FIGURE 1

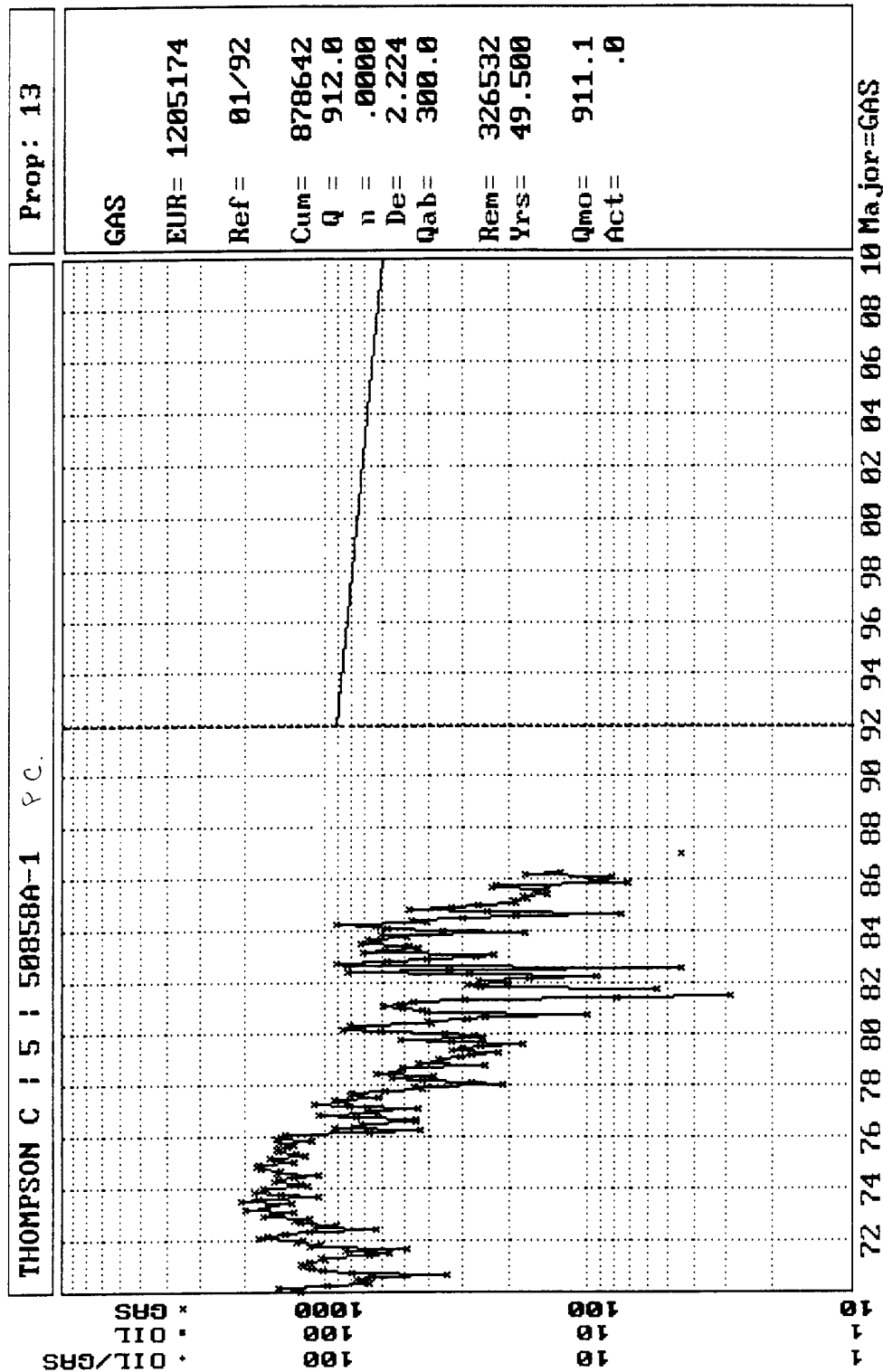
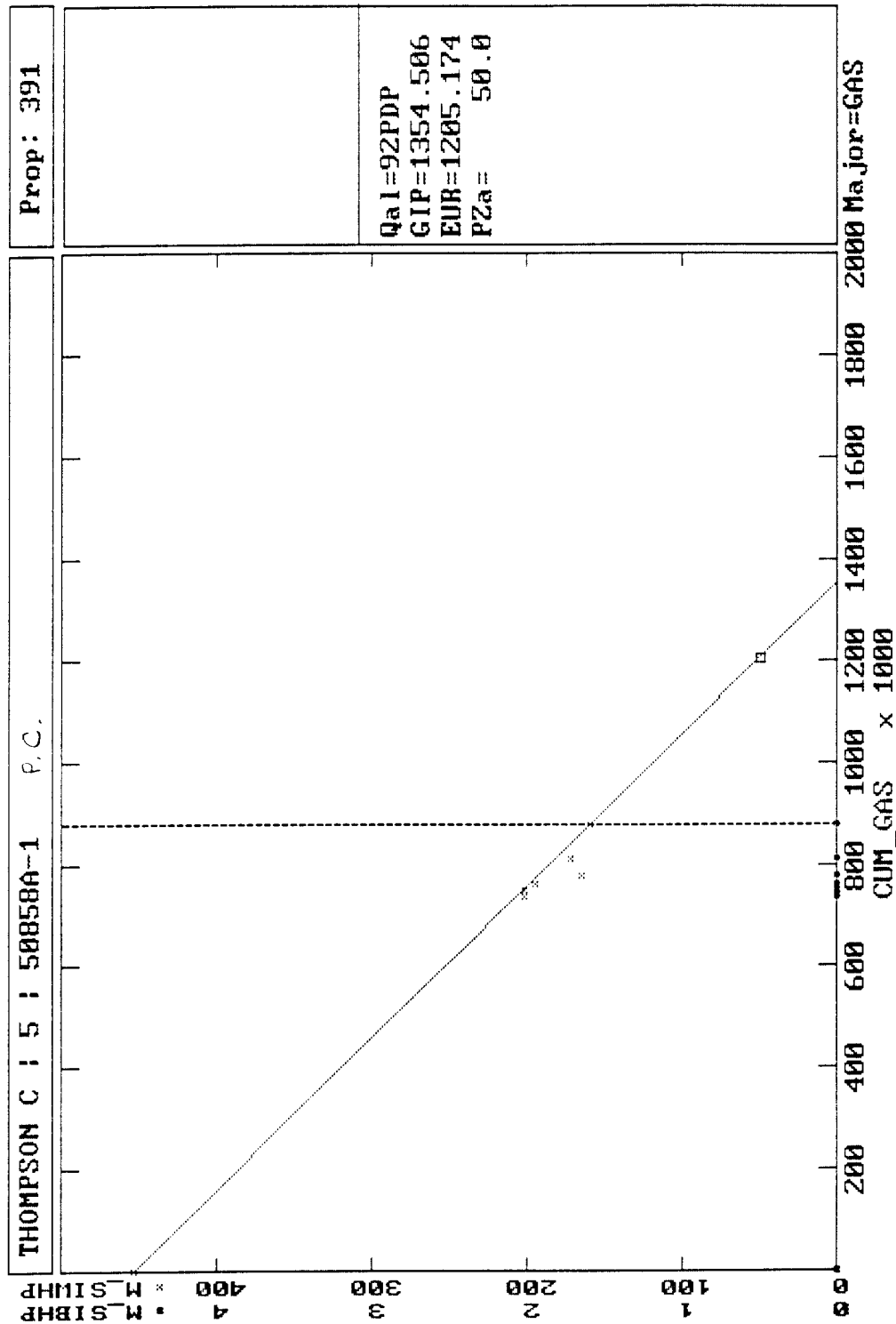


FIGURE 2



## Thompson C #5 Allocation Formula

### Equation Derivation

Given the exponential decline cure 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>:

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

### Thompson C #5 Formula

Using Production plot (Fig 1):

Last production rate = Q<sub>1</sub> = 912 MCFM  $\cong$  30 MCFD

De = 2.224% from plot

$$Q_{2PC} = 30 (1 - 0.02224)^{Yr} \text{ MCFD}$$

$$Q_{2PC} = 30 (0.97776)^{Yr} \text{ MCFD} \quad \text{FORMULA FOR FUTURE PC RATES}$$

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

### Curtailment 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:

$$Q_{2PC} = 30 (0.97776)^{(Yr - \text{curtailment time})}$$

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

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

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

Example:                      Date Now = 1/1/93

Assuming the well produces steadily in 1993. On 1/1/94, the well produces 300 MCFD.

$$\begin{aligned}Q_1 &= 30 \text{ MCFD} & De &= 2.224\% \\Q_{PC} &= 30 (0.97776) (\text{Yr} - \text{curtailment time}) \\Q_{PC} &= 30 (0.97776) (1 - 0) = 29 \text{ MCFD} \\Q_{TOT} &= 300 \text{ MCFD} = Q_{FTC} + Q_{PC} \\Q_{FTC} &= 300 - 29 = 271 \text{ MCFD}\end{aligned}$$

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:

$$\begin{aligned}1 \text{ month curtailment} &= 1/12 = 0.0833 \\Tot. \text{ Time} &= 1 \text{ yr} + 1 \text{ month} = 1 + 1/12 = 1.0833 \\Q_{PC} &= 30 (0.97776) (1.0833 - 0.0833) = 29 \text{ MCFD}. \\Q_{TOT} &= 300 \text{ MCFD} \\Q_{FTC} &= 271 \text{ MCFD}\end{aligned}$$

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# MERIDIAN OIL

June 11, 1992

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

RE: Thompson C #5  
Unit D, Section 3, T27N, R12W  
San Juan County, New Mexico  
Downhole Commingling Request


Gentlemen:

Meridian Oil, Inc. is in the process of applying for a downhole commingling order for the Thompson C #5 well located in Unit D, Section 3, T27N, R12W, N.M.P.M., San Juan County, New Mexico, in the Fulcher Kutz Pictured Cliffs and Basin Fruitland Coal fields.

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 11, 1992

Marathon Oil Company  
P.O. Box 552  
Midland, Texas 79702

RE: Thompson C #5  
Unit D, Section 3, T27N, R12W  
San Juan County, New Mexico  
Downhole Commingling Request


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Production Engineer

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June 11, 1992

BHP Petroleum  
P.O. Box 845877  
Dallas, Texas 75284-5877

RE: Thompson C #5  
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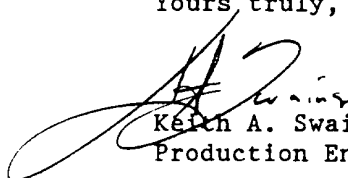
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Production Engineer

KAS:tg

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

# MERIDIAN OIL

June 11, 1992

Dekalb Energy Company  
1625 Broadway  
Denver, Colorado 80202

RE: Thompson C #5  
Unit D, Section 3, T27N, R12W  
San Juan County, New Mexico  
Downhole Commingling Request

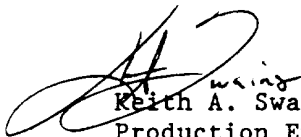
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