

# MERIDIAN OIL

OIL CONSERVATION DIVISION  
RECEIVED

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May 18, 1992

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

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

Dear Mr. LeMay:

Meridian Oil Inc. requests administrative approval as per Rule 303 C to downhole commingle production from the South Blanco Pictured Cliffs and Basin Fruitland Coal pools in the referenced well. The ownership of the zones to be commingled is common. The operators of the offsetting leases as indicated on the attached plats will receive notification of this application.

The subject well is a 1957 South Blanco Pictured Cliffs fracture stimulated completion. To date the well has produced 405 MMCF of gas and no liquids. The well last produced in 1985 at a rate of +/- 25 MCFD. Production was shut-in due to low market demand in 1985 and blind plated in 1986 by El Paso Natural Gas. Current casing and tubing pressures are 387 and 385 psi respectively with no pressure or flow at the bradenhead. There is no apparent evidence of any downhole mechanical failure. The current interval is not a candidate for plug back.

The Fruitland Coal is productive in this area as proven by numerous completions. This production however would not economically support drilling a new wellbore to recover these reserves. Meridian has no other available wellbores for plug back on this leasehold to develop these reserves.

Meridian intends to complete the Fruitland Coal and 12 feet of pay in the upper Pictured Cliffs in the subject wellbore. These zones will be fracture stimulated in a single stage above a bridge plug set to isolate the existing Pictured Cliffs perforations. The attached log section indicates the existing and proposed perforations. Upon completion, the existing and added zones will be produced through a single tubing string after the bridge plug is removed.

The estimated Fruitland Coal bottom-hole pressure at 2900' is 450 psi on the basis of offset surface shut-in pressure data. Using a static gas gradient of 0.012 psi/ft, the Pictured Cliffs bottom-hole pressure to the same datum is 422 psi. The Pictured Cliffs bottom-hole pressure is within 50% of the Fruitland Coal pressure.

New Mexico Oil Conservation Division  
Mr. William J. LeMay  
Downhole Commingling Request  
Page Two

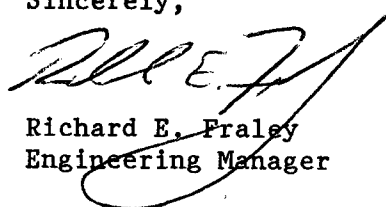
Neither zone in the area produces any appreciable amount of oil or water. The commingling of production from these zones will not have any detrimental effect to either reservoir.

Meridian proposes to allot production to the Pictured Cliffs using the attached allocation formula. This allocation is based on the prior producing history of the well and estimated remaining reserves derived from material balance of the reservoir. Decline curve analysis shows recoverable reserves of 106 MMCF based on historical producing trends. However, material balance indicates remaining reserves of 304 MMCF in the Pictured Cliffs. The added pay in the upper Pictured Cliffs will allow for better pressure communication throughout the reservoir and enhance the well's productive capacity from this zone. On the basis of the established 4.6% yearly effective decline, an initial rate of 53 MCFD is calculated to recover the remaining reserves indicated from material balance.

All production above the Pictured Cliffs allocation will be attributed to the Fruitland Coal. This allocation method addresses potential inclining production rates from the Fruitland Coal and pipeline curtailment of both zones.

Approval of this commingling application will allow for the prevention of wasted resources and the protection of correlative rights. This application includes details of the production allocation formula, a resume of the well's completion history, a wellbore diagram, and offset operators plats in the Fruitland Coal and Pictured Cliffs. A production history curve with projection of future volumes, material balance derived from a pressure versus cumulative production plot, a log section indicating existing and proposed perforations and a copy of the letter notifying the BLM and offset operators of this application are also included.

Sincerely,



Richard E. Fraley  
Engineering Manager

DTB:tg  
attachments

cc: Frank Chavez/NMOCD-Aztec

**San Juan 27-8 B #3  
Allocation Formula**

**Equation Derivation**

Given the exponential decline curve analysis formula\*:

$$D_e = 1 - (Q_2 / Q_1) (1/yr)$$

Where:  $D_e$  = Yearly Effective Decline in %/yr.  
 $Q_2$  = Future Rate MCFD.  
 $Q_1$  = Current Rate MCFD.  
 $yr$  = Future Production Time in Years.

Rearranging the formula to solve for  $Q_2$ :

$$Q_2 = Q_1 (1 - D_e)^{yr}$$

**San Juan 27-8 B #3 Allocation Formula**

**Pictured Cliffs Production:**

From the attached production plot  $D_e$  is 4.6%/yr.  
Matching material balance reserves  $Q_1$  is 53 MCFD.

$$Q_2 = 53 (1 - 0.046)^{yr}$$

$$Q_2 = 53 (0.954)^{yr} \quad \text{Formula for Future Pictured Cliffs Rates}$$

The total amount of Pictured Cliffs gas produced assuming sufficient wellbore life will equal reserves of 304 MMCF indicated from material balance based on the above allocation.

**Fruitland Coal Production:**

Any production rate greater than  $Q_2$  at any future point is Fruitland Coal production.

$$Q_{FTC} = Q_{TOT} - Q_2$$

Where:  $Q_{TOT}$  = Production Rate Total MCFD  
 $Q_{FTC}$  = Fruitland Coal Production Rate MCFD

**Curtailment Situations**

If curtailment occurs, both production streams will be affected the same resulting in no production from either zone.

When production resumes the Pictured Cliffs rate will equate to the rate at the time of shut-in.

Where:  $yr$  = Future Production Time in Years; (Total Time - Cumulative Curtailment).  
 $Q_2 = 53 (0.954)^{yr}$   
 $Q_{FTC} = Q_{TOT} - Q_2$

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

## PERTINENT DATA SHEET

### General Information:

DP Number : 49984A	Spud Date : 11/08/57
Well Name : San Juan 27-8 B #3	Comp Date : 12/10/57
Formation : Pictured Cliffs	Total Depth : 3045'
Field : South Blanco PC	PBTD : 3038'
Location : SE/NE/4 Sec. 13, T27N, R08W	GWl : 100.0% PC / 100.0% FTC
Survey : 1850' FNL, 990' FEL	NRI : 87.5% PC / 87.5% FTC
County, St : San Juan County, NM	Foreman : Lary Byars (9865)

### Casing Program:

Hole	Csng	Weight/Grade/Thread	Depths	TOC	Cement	Tools
9 7/8"	7 5/8"	24.0# H-40 8rd	0'- 144'	Surf	100 sx	None
6 3/4"	5 1/2"	15.5# J-55 8rd	0'-3038'	2050' Clc	100 sx	None

Additional Information: Cement volume 118 ft<sup>3</sup>. Assume 70% efficient for TOC calculation.

### Tubing Program:

String	Tbng	Weight/Grade/Thread	Depths	SN @	Joints/Tools
PC	1 1/4"	2.3# J-55 10rd	0'-2968'	N/A	93 jts

Additional Information: 2' perf sub on bottom of tubing string.

### Wellhead:

Rector 7 5/8" X 5 1/2" Type "R" casinghead, McEvoy 5 1/2" X 7 1/16" 2M tubinghead, McEvoy 7 1/16" 2M X 1 1/4" companion flange, 1 1/4" master valve.

### Formation Tops:

Elevations: 6626'GL			
Ojo Alamo	: 2100'	Fruitland	: 2710'
Kirtland	: 2185'	Pictured Cliffs	: 2915'
		Lewis	: 3012'

### Logging Program:

IEL, ML

### Stimulation History:

Perf'd Pictured Cliffs interval @ 2940'-80' with 3 spf (40', 120 holes). Frac'd with 42M gal water and 30M# sand. Ball-off with 150 balls. BDP - 2600#, MTP - 1800#, ATP - 1600#, ATR - 51.6 bpm, ISIP - 600#.

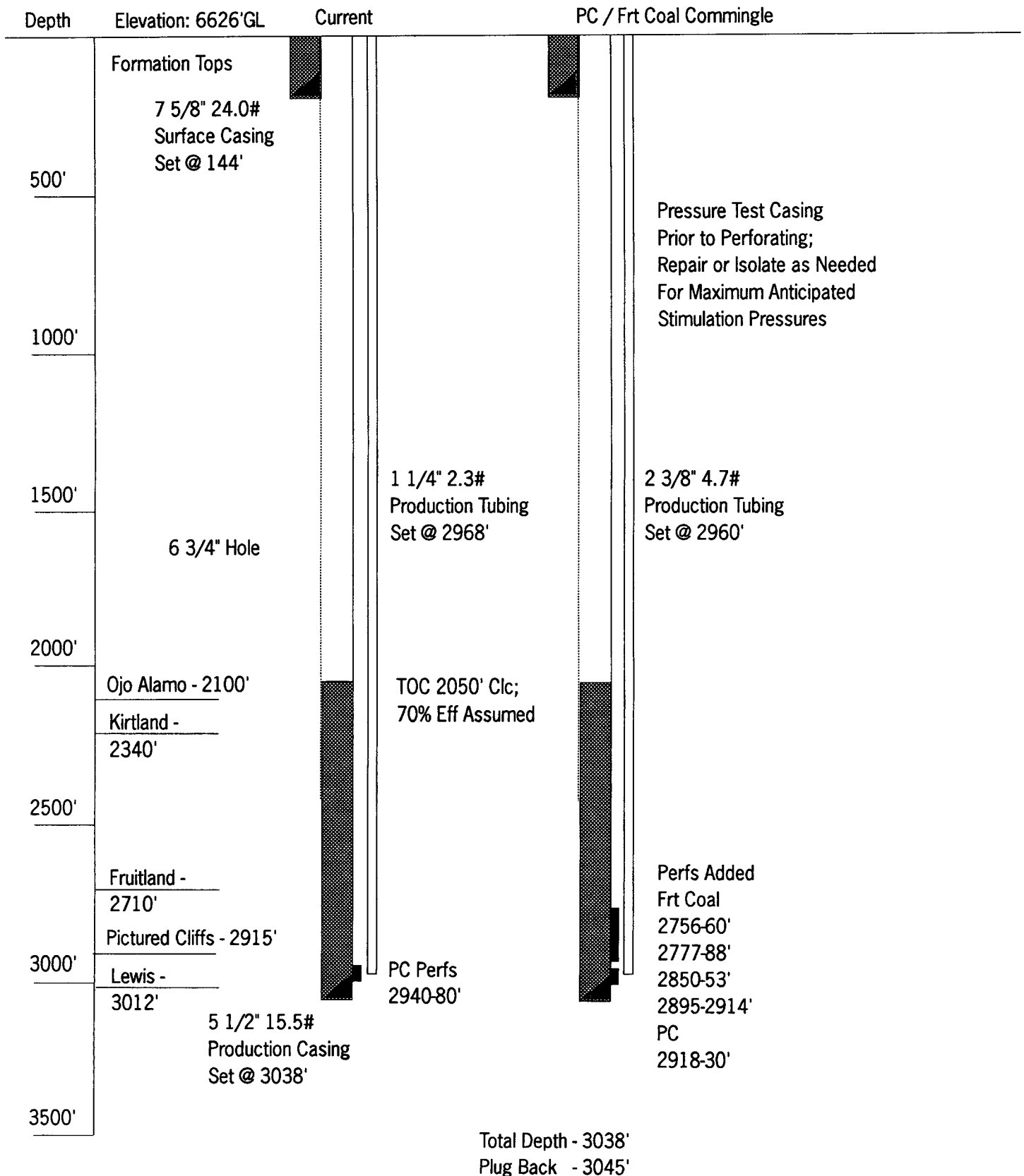
### Workover History:

None

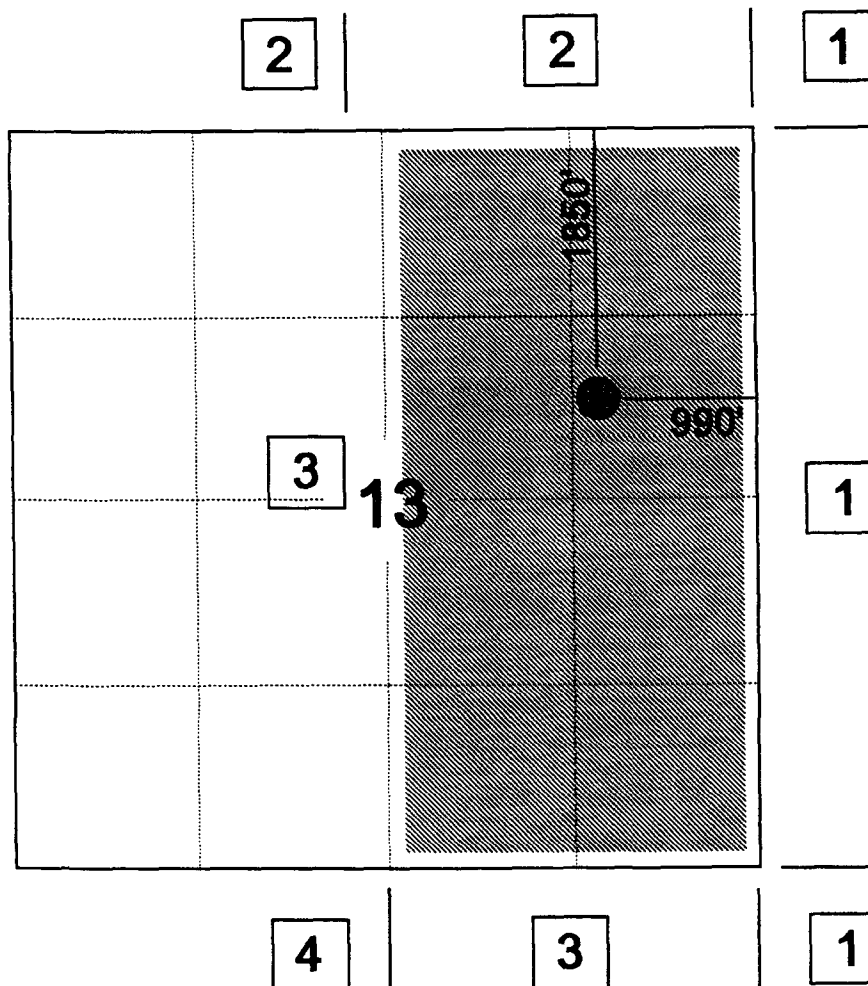
### Production History:

First Delivery : N/A	Gas Transporter : EPNG
Initial Potential : 953 MCFD	Current Status : Shut-in 05/87
Current Deliverability: N/A	Most Recent Wellhead Pressures (3/92):
Cumulative Production:	Casing: 387 psi
Gas - 405.3 MMCF	Tubing: 385 psi
Oil - 0.0 MBO	Brdnhd: 0 psi / No Flow
Comments:	
Well shut in due to low market demands by EPNG in 1985. Meter taken out of service.	

San Juan 27-8 B #3  
 South Blanco PC  
 SE/NE/4 Sec.13, T27N,R08W  
 Wellbore Schematic



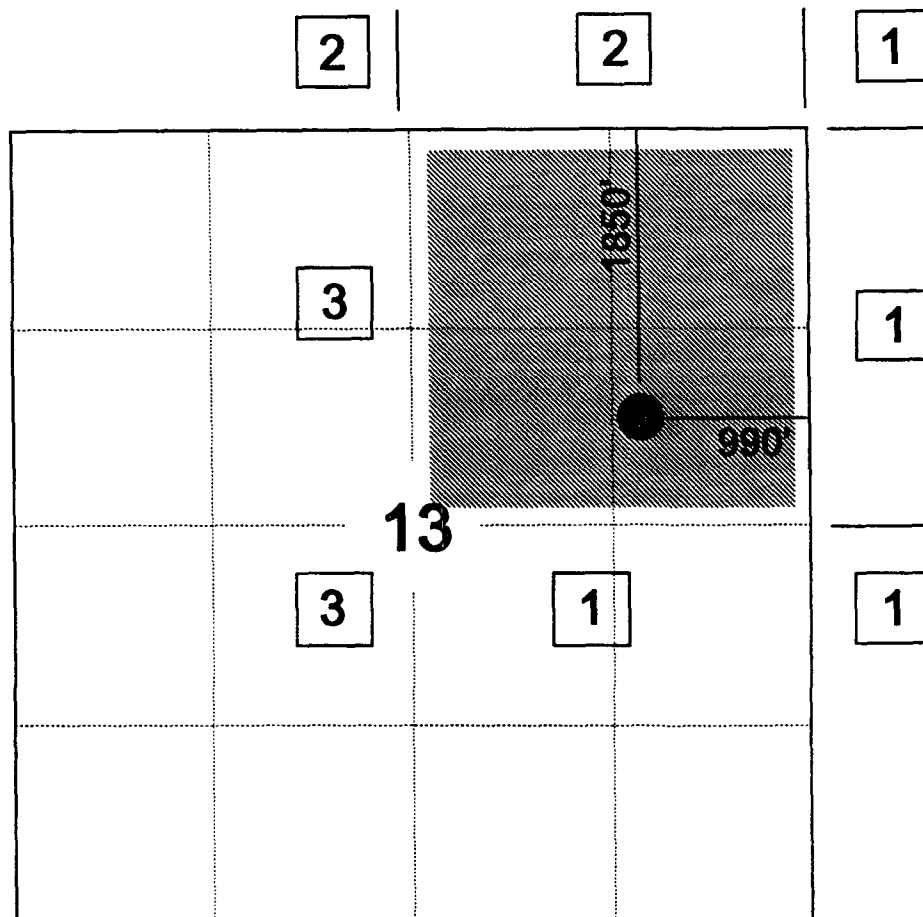
**MERIDIAN OIL INC**  
**OFFSET OPERATOR \ OWNER PLAT**  
**SAN JUAN 27-8 B #3**  
**Fruitland Coal \ Pictured Cliffs Commingle**  
 Township 27 North, Range 08 West



- 1) Meridian Oil Inc
- 2) Amoco Production Co., PO Box 800, Denver, CO 80202  
 Conoco, Inc., PO Box 951063, Houston, TX 75395-1063
- 3) SG Methane Co., Inc., 811 Dallas #1505, Houston, TX, 77002  
 Maralex Resources, Inc., 410 17th St., Suite 220, Denver, CO 80202
- 4) Western Oil & Minerals, Ltd. PO Box 1228, Farmington, NM 87499  
 SG Methane Co., Inc.

Fruitland Coal Formation

**MERIDIAN OIL INC**  
**OFFSET OPERATOR \ OWNER PLAT**  
**SAN JUAN 27-8 B #3**  
**Fruitland Coal \ Pictured Cliffs Commingle**  
 Township 27 North, Range 08 West



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2) Amoco Production Co., PO Box 800, Denver, CO 80202

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

3) ARCO, PO Box 688, Dallas, TX 75221

Pictured Cliffs Formation

Mcf

3

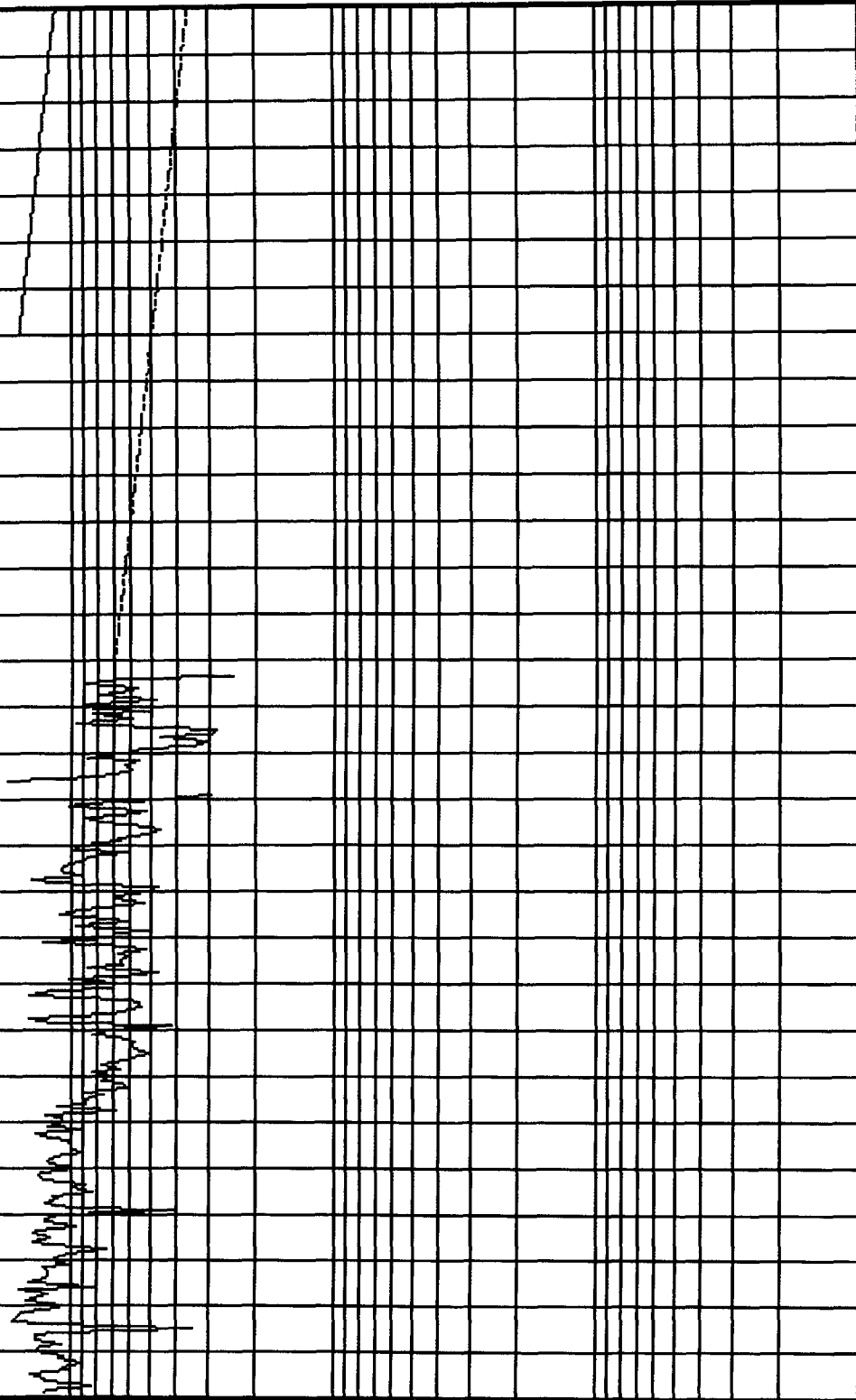
Lease : SAN JUAN 27-8 B  
County : SAN JUAN , State: NM  
Location: 027N008W13H  
Field : BLANCO P.C. SOUTH (GAS)

GAS

Qol=RCVRABLE  
Ref= 01/93  
Cum= 405.326  
Rem= 304.000  
EUR= 709.326  
Yrs= 27.667  
Qi= 1640.0  
De= 4.600  
n= .000  
Qab= 447.0

GAS

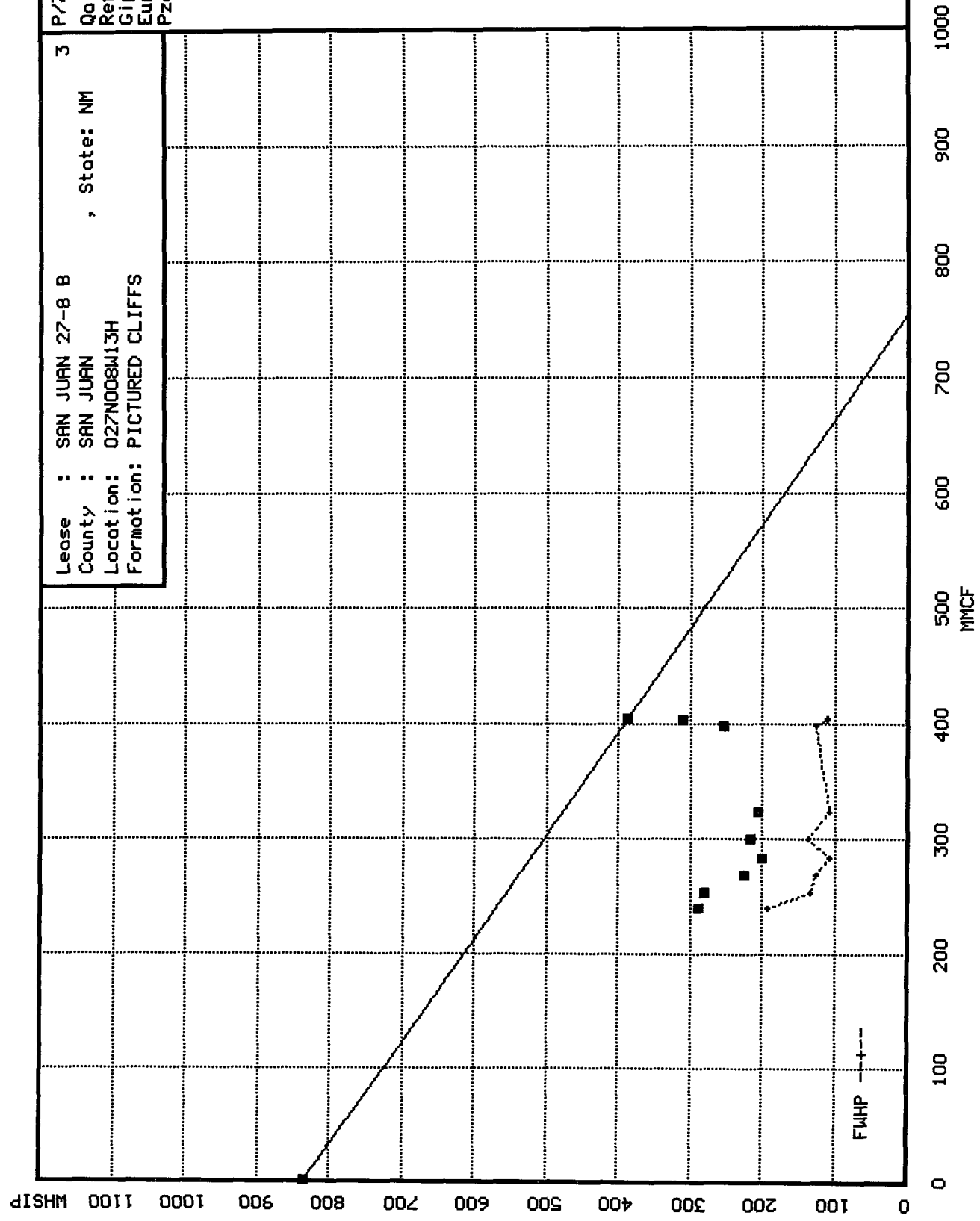
Qol=HISTORIC  
Ref= 12/85  
Cum= 404.347  
Rem= 106.061  
EUR= 510.408  
Yrs= 18.500  
Qi= 715.7  
De= 4.600  
n= .000  
Qab= 300.0



70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

Lease : SAN JUAN 27-8 B  
County : SAN JUAN , State: NM  
Location: 027N008W13H  
Formation: PICTURED CLIFFS

P/Z 3  
Qal=2PNT  
Ref=04/29/92  
Gip= 754  
Eur= 709  
Pzo= 50

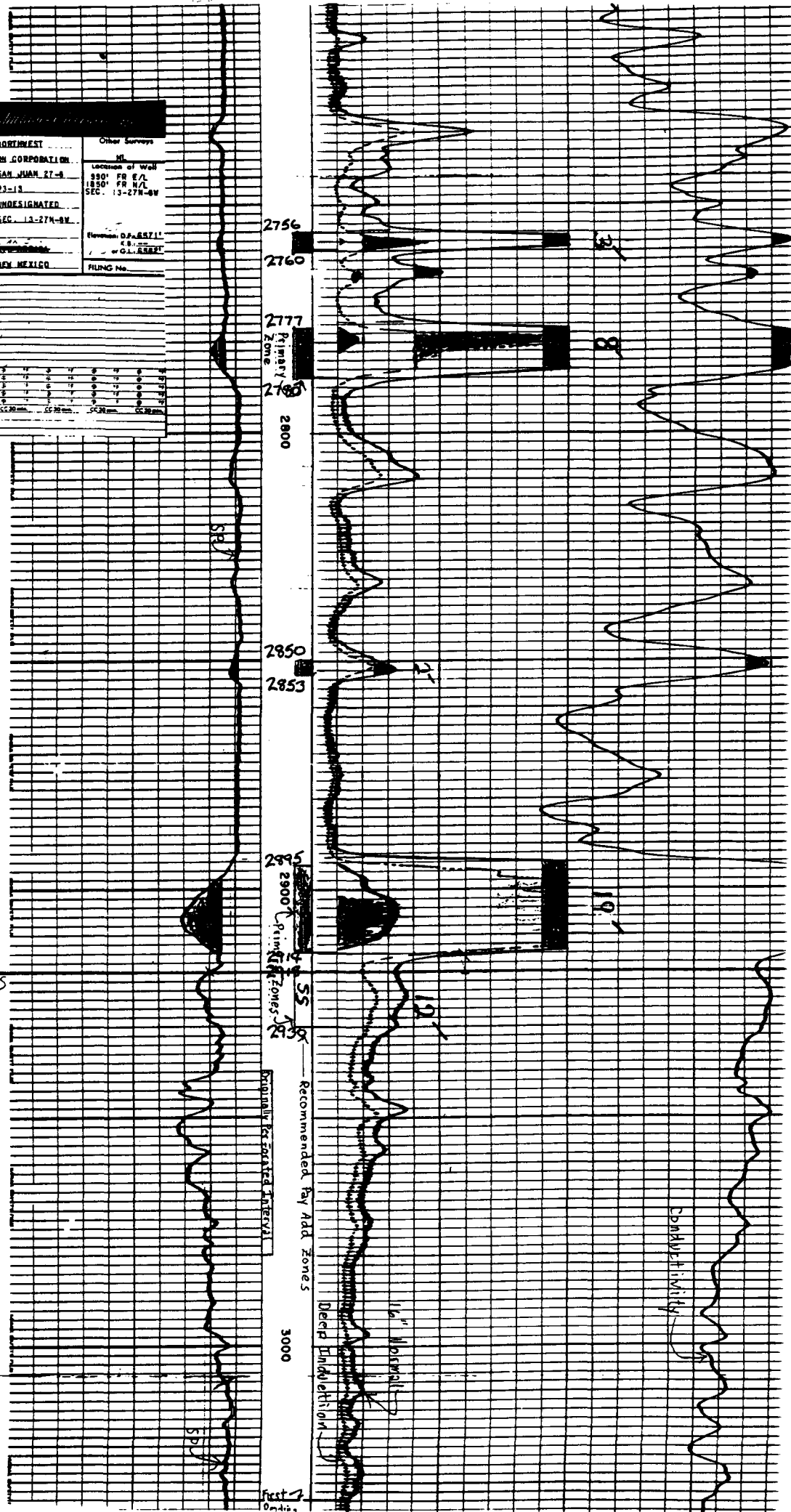


32' Net  
Coal

Top Pictured Cliffs SS

2756' - 2760'  
2777' - 2788'  
2850' - 2853'  
2895' - 2914'  
2918' - 2930'

Perfs will be corrected based on correlation to Cased-hole GR.



# MERIDIAN OIL

May 18, 1992

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

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

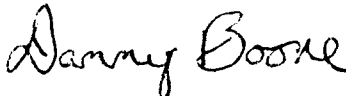
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Meridian Oil, Inc. is applying to the New Mexico Conservation Division for administrative approval as per Rule 303 C to downhole commingle production from the South Blanco Pictured Cliffs and Basin Fruitland Coal pools in the referenced well.

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,



Danny T. Boone  
Production Engineer

DTB:tg

The above downhole commingling request is hereby approved:

---

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

# MERIDIAN OIL

May 18, 1992

Amoco Production Company  
Attn: Mr. Larry Emmons  
P.O. Box 800  
Denver, Colorado 80202

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

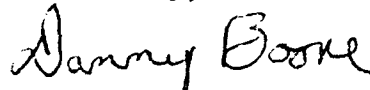
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Date: \_\_\_\_\_

# MERIDIAN OIL

May 18, 1992

ARCO  
P.O. Box 688  
Dallas, Texas 75221

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

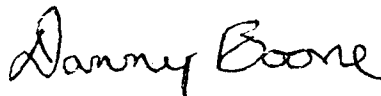
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Date: \_\_\_\_\_

# MERIDIAN OIL

May 18, 1992

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

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

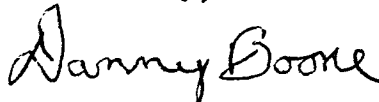
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Danny T. Boone  
Production Engineer

DTB:tg

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

# MERIDIAN OIL

May 18, 1992

Maralex Resources, Inc.  
410 17th Street  
Suite #220  
Denver, Colorado 80202

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

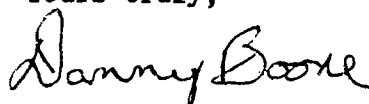
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Date: \_\_\_\_\_

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May 18, 1992

SG Methane Company, Inc.  
811 Dallas #1505  
Houston, Texas 77002

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San Juan County, New Mexico  
Downhole Commingling Request

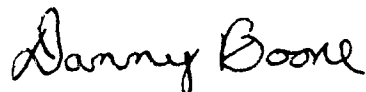
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Danny T. Boone  
Production Engineer

DTB:tg

The above downhole commingling request is hereby approved:

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

# MERIDIAN OIL

May 18, 1992

Western Oil & Mineral, Ltd.  
P.O. Box 1228  
Farmington, New Mexico 87499

Re: San Juan 27-8 B #3  
SE/NE/4, Section 13, T27N, R08W  
San Juan County, New Mexico  
Downhole Commingling Request

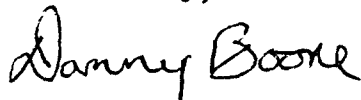
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Date: \_\_\_\_\_



OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

DEPARTMENT OF ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
AZTEC DISTRICT OFFICE

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

Date: 5/27/92

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 5/22/92  
for the Meridian San Juan 27-8 B #3  
OPERATOR LEASE & WELL NO.

14-13-27N-8W and my recommendations are as follows:  
UL-S-T-R

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

Yours truly,

37.8