

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED
BY THE OIL CONSERVATION DIVISION
FOR THE PURPOSE OF CONSIDERING:

CASE NO. 10920

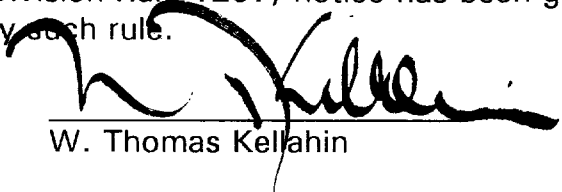
APPLICATION OF MERIDIAN OIL INC.
FOR DOWNHOLE COMMINGLING,
AND UNORTHODOX GAS WELL LOCATIONS,
C.M. MORRIS #100 WELL-10G-T27N, R10W
HUERFANO UNIT COM #509 WELL-30D-T27N, R10W
SAN JUAN COUNTY, NEW MEXICO.

CERTIFICATE OF MAILING

AND

COMPLIANCE WITH ORDER R-8054

W. THOMAS KELLAHIN, attorney in fact and authorized representative of Meridian Oil Inc., states that the notice provisions of Division Rule 1207 (Order R-8054) have been complied with, that Applicant has caused to be conducted a good faith diligent effort to find the correct addresses of all interested parties entitled to receive notice, that on the 25th day of January 1994, I caused to be mailed by certified mail return-receipt requested notice of this hearing and a copy of the application for the above referenced case along with the cover letter, at least twenty days prior to the hearing set for February 17, 1994, to the parties shown in the application as evidenced by the attached copies of return receipt cards, and that pursuant to Division Rule 1207, notice has been given at the correct addresses provided by such rule.


W. Thomas Kellahin

SUBSCRIBED AND SWORN to before me this 16th day of FEBRUARY,
1994.


Notary Public

My Commission Expires:

June 9 1997

P 321 001 110



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Bonneville Fules Company
1600 Broadway Suite 1100
Denver, CO 80202

Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

800, June 1991
PS

Huerfano # 100
01/25/94

Envelope to

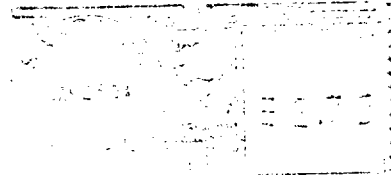
CERTIFIED

P 321 001 110

MAIL

LAHIN AND KELLAHIN
ATTORNEYS AT LAW
EL PATIO BUILDING
17 NORTH GUADALUPE
POST OFFICE BOX 2265
DENVER, NEW MEXICO 87504-2265

Bonneville Fules Company
1600 Broadway Suite 1100
Denver, CO 80202



NAME _____
1st Notice _____
2nd Notice _____
Return _____

P 321 001 112



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
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Bradley H. Keyes
P.O. Box 842
Aztec, NM 87410

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing Date and Address of Addressee	
Total Postage & Fees	\$

00, June 1991

Huerfano # 100
01/25/94

PS

SHIN AND KELLAHIN
ATTORNEYS AT LAW
EL PATIO BUILDING
NORTH GUADALUPE
ST OFFICE BOX 2265
NEW MEXICO 87504-2265

CERTIFIED

P 321 001 112

MAIL

Bradley H. Keyes
P.O. Box 842
Aztec, NM 87410

RETURNED TO
SENDER
UNDELIVERED
After 10 days
Insurance
No
No
Do not remain in this envelope

Name
1st Notice 1-21-94
2nd Notice 2-1
Return 2-11

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
Huerfano # 100
01/25/94

so that we can
back if space

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery
Consult postmaster for fee.

• Write "Return Receipt Requested" on the mailpiece below the article number.
• The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:
Amoco Production Company
P.O. Box 800
Denver, Co 80201

4a. Article Number
321001105

4b. Service Type
☒ Registered ☐ Insured
☐ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 ★U.S. GPO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

P 321 001 105



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Amoco Production Company
P.O. Box 800
Denver, Co 80201

PS Form 3800, June 1991

Postmark	
Date	
Restricted	
Return Receipt for Merchandise	
Postage	
Date and time of delivery	
Postage and Fees	\$2.75
Postmark Date	

Huerfano # 100
01/25/94

P 321 001 109



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Postage)

BBL Limited
P.O. Box 911
Breckenridge, Ts
76024-0911

Certified Mail	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt (Forwarding to Whom & Date Delivered)	
Return Receipt (Forwarding to Whom, Date, and Addressee's Signature)	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, June 1991

Huerfano # 100
01/25/94

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

Huerfano # 100
01/25/94

so that we can
back if space

- Write "Return Receipt Requested" on the envelope with the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:

BBL Limited
P.O. Box 911
Breckenridge, Ts
76024-0911

4a. Article Number

4b. Service Type

- ☐ Registered ☐ Insured
☐ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

JAN 28

5. Signature (Addressee)

6. Signature (Agent)

[Handwritten Signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

U.S. GPO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

P 321 001 111



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

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

PS Form 3800, June 1991

Certified Mail	
Special Delivery	
Restricted Delivery	
Return Receipt (with to Whom & Date Delivered)	
Return Receipt (showing to Whom Date and Address Delivered)	
TOTAL Postage & Fees	\$
Postmark (if any)	

Huerfano # 100
01/25/94

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

Huerfano # 100
01/25/94

so that we can

does not permit.

- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:
Marathon Oil Company
P.O. Box 552
Midland, Texas 79702

4a. Article Number

321 001 111

4b. Service Type.

- ☒ Registered ☐ Insured
☐ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery

1-27-94

5. Signature (Addressee)

6. Signature (Agent)

[Handwritten Signature]

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991

★U.S. GPO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

Huerfano # 100
1/25/94

so that we can
back if space

I also wish to receive the
following services (for an extra
fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:
Breck Operating Corp.
P.O. Box 911
Breckenridge, Texas 76024

Huerfano # 100

4a. Article Number
670 814 648

4b. Service Type
☒ Registered ☐ Insured
☐ Certified ☒ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
JAN 31

5. Signature (Addressee)

8. Addressee's Address (Only if requested
and fee is paid)

6. Signature (Agent)
Tina Whiff

PS Form 3811, December 1991 ★U.S. PO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.



Certified Mail Receipt

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Breck Operating Corp.
P.O. Box 911
Breckenridge, Texas 76024

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Address of Delivery	
TOTAL Postage & Fees	\$

Postmark
1/25/94 HUEFANO

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
 Huerfano # 100
 01/25/94

so that we can
 return to the front of the mailpiece, or on the back if space
 does not permit.
 • Write "Return Receipt Requested" on the mailpiece below the article number.
 • The Return Receipt will show to whom the article was delivered and the date delivered.

3. Article Addressed to:
 Breck Operating Corpportion
 P.O. Box 911
 Breckenridge, Texas 79024

4a. Article Number
 321 001 106

4b. Service Type
☒ Registered ☒ Insured
☐ Certified ☐ COD
☐ Express Mail ☒ Return Receipt for Merchandise

7. Date of Delivery
 JAN 31

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 *U.S. GPO: 1992-323-402

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

P 321 001 106



**Receipt for
 Certified Mail**
 No Insurance Coverage Provided
 Do not use for international Mail
 (See Reverse)

Breck Operating Corpportion
 P.O. Box 911
 Breckenridge, Texas 79024

Huerfano # 100
 01/25/94

CMD :
OG5SECT

ONGARD
INQUIRE LAND BY SECTION

03/14/94 15:40:42
OGOMES -EMB4
PAGE NO: 1

Sec : 19 Twp : 27N Rng : 10W Section Type : NORMAL

1 43.48 Federal owned	C 40.00 Federal owned	B 40.00 Federal owned	A 40.00 Fee owned A
2 43.41 Federal owned	F 40.00 Federal owned A	G 40.00 Federal owned A	H 40.00 Federal owned

M0002:This is the first page

PF01 HELP	PF02	PF03 EXIT	PF04 GoTo	PF05	PF06
PF07 BKWD	PF08 FWD	PF09 PRINT	PF10 SDIV	PF11	PF12

1/2 equivalent

1	43.48
2	43.41
3	43.57
4	43.62
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	174.08
16	
<hr/>	
	334.08

*Checked w/
Survey Data
in SLO,*

56/4 equivalent

1	43.57
	43.62
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	87.19
8	
<hr/>	
	167.19

CMD :
OG5SECT

ONGARD
INQUIRE LAND BY SECTION

03/14/94 15:40:17
OGOMES -EMB4
PAGE NO: 2

Sec : 19 Twp : 27N Rng : 10W Section Type : NORMAL

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4 43.62 Federal owned A A	N 40.00 Federal owned	O 40.00 Federal owned	P 40.00 Federal owned A

PF01 HELP	PF02	PF03 EXIT	PF04 GoTo	PF05	PF06
PF07 BKWD	PF08 FWD	PF09 PRINT	PF10 SDIV	PF11	PF12

County San Juan Pool West Kutz-Pictured Cliffs

TOWNSHIP 27 North RANGE 10 West NEW MEXICO PRINCIPAL MERIDIAN

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Description: $\frac{SW}{4}$ Sec. 29; $\frac{S}{2}$ Sec. 30; All Sec. 31 & 32; $\frac{SW}{4}$ Sec. 33 (R. 566, 11-23-54)
Ext. $\frac{SE}{4}$ Sec. 33 (R. 607, 3-16-55) - $\frac{N}{2}$ Sec. 30 (R. 903, 10-16-56)
- $\frac{N}{2}$ Sec. 33 (R. 959, 3-8-57) - $\frac{SE}{4}$ Sec. 29 (R. 983, 4-23-57)

NMOCD CASES 10918 - 10921 **FEBRUARY 17, 1994**

CASE # WELL NAME	SPACING		FIELD #1	EXISTING		EXISTING	LOCATION	RECOMP/		MARGINAL	LOC	LOC
	PC/FTC	FIELD #1		FORM	FIELD #2	FORM		NEW	DRILL	FORM	PC	FTC
10919 LODGEWICK #1	NW/4 - W/2	FULCHER KUTZ P.C.	YES	FTC	NO	027N009W18D	RECOMP	PC	-	ORL		
10918 NEUDECKER #2	NE/4 - E/2	AZTEC P.C.	YES	FTC	YES	029N010W35G	RECOMP	FTC	-	-		
10918 ZACHRY #11	* - S/2	AZTEC P.C.	YES	FTC	NO	028N010W10M	RECOMP	FTC	NSP-APP	-		
10918 PIERCE FEDERAL A #1	NE/4 - N/2	AZTEC P.C.	YES	FTC	NO	029N010W34A	RECOMP	FTC	-	-		
10921 HUERFANO UNIT #74	SW/4 - W/2	FULCHER KUTZ P.C.	YES	FTC	NO	027N010W19M	RECOMP	PC	NSL-APP	-		
10921 HUERFANO UNIT #18	SW/4 - S/2	KUTZ P.C. WEST	YES	FTC	NO	027N010W32M	RECOMP	PC	-	-		
10920 C M MORRIS #100	NE/4 - S/2	FULCHER KUTZ P.C.	NO	FTC	NO	027N010W10G	NEWDRILL	PC	NSL	-		
10920 HUERFANO UNIT COM #509	NW/4 - N/2	FULCHER KUTZ P.C.	NO	FTC	NO	027N010W30D	NEWDRILL	PC	NSL	NSL-APP		

* Note: Lot 1, SE/SE Sec. 9; Lots 3, 4, S/2 SW/4 Sec. 10

** FTC = Basin Fracture Control

NSL = Non-Standard Location

OPL = Off Pattern Location

NSP-APP = Non-Standard Spacing Unit previously approved

NSL-APP = Non-Standard Location previously approved

MERIDIAN OIL

CASE # 10920

FEBRUARY 17, 1994

EXHIBIT 1

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

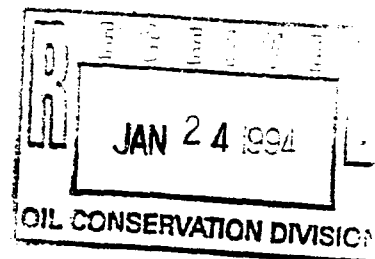
*NEW MEXICO BOARD OF LEGAL SPECIALIZATION
RECOGNIZED SPECIALIST IN THE AREA OF
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

January 24, 1994

HAND DELIVERED



Mr. William J. LeMay
Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail, 2nd Floor
Santa Fe, New Mexico 87501

Re: C. M. Morris #100 Well-10G-T27N,R10W
Huerfano Unit Com #509 Well-30D-T27N,R10W
Application of Meridian Oil Inc.
for downhole commingling and unorthodox
gas well locations,
San Juan County, New Mexico

Dear Mr. LeMay:

On behalf of Meridian Oil Inc., please find enclosed our referenced application which we request be set for hearing on the next available Examiner's docket now scheduled for February 17, 1994.

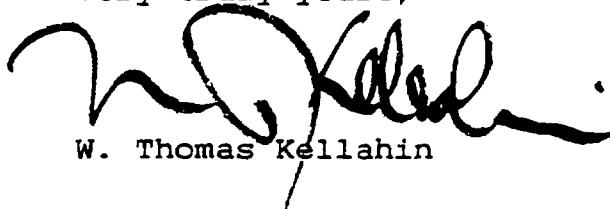
By copy of this letter and application, sent certified mail, we are notifying all interested parties of their right to appear at the hearing and participate in this case, including the right to present evidence either in support of or in opposition to the application and that failure to appear at the hearing may preclude them from any involvement in this case at a later date.

Mr. William J. LeMay
January 24, 1994
Page Two

Pursuant to the Division's Memorandum 2-90, all parties are hereby informed that if they appear in this case, then they are requested to file a Pre-Hearing Statement with the Division not later than 4:00 PM on Friday, February 11, 1994, with a copy delivered to the undersigned.

Also enclosed is our proposed advertisement of this case for the NMOC Docket.

Very truly yours,

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', with a large, stylized initial 'W' and a long, sweeping horizontal stroke at the end.

W. Thomas Kellahin

WTK/mg
Enclosure

cc: Meridian Oil Inc. and
By Certified Mail - Return Receipt
All Interested Parties

Mr. William J. LeMay
January 24, 1994
Page Two

PROPOSED ADVERTISEMENT

Case _____ : Application of Meridian Oil Inc. for downhole commingling and unorthodox gas well locations, San Juan County, New Mexico. Applicant seeks approval (a) to drill its proposed C.M. Morris #100 Well at an unorthodox gas location 1340 feet FNL and 1405 feet FEL (Unit G) of Section 10, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NE/4 dedication) with the Basin-Fruitland Coal Gas Pool production (E/2 dedication) within the wellbore; and (b) to drill its proposed Huerfano Unit Com #509 Well at an unorthodox gas well location 775 feet FNL and 545 feet FWL (Unit D) of Section 30, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NW/4 dedication) and the Basin-Fruitland Coal Gas Pool production (N/2 dedication) within the wellbore.

The C. M. Morris #100 Well is located approximately 2.5 miles northwest from Angles Peak, New Mexico.

The Huerfano Unit Com #509 Well is located approximately 4.25 miles west-southwest from Angles Peak, New Mexico.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

APPLICATION OF MERIDIAN OIL INC.
FOR DOWNHOLE COMMINGLING AND
UNORTHODOX GAS WELL LOCATIONS,
SAN JUAN COUNTY, NEW MEXICO.

CASE:

A P P L I C A T I O N

Comes now MERIDIAN OIL INC., ("Meridian") by and through its attorneys, Kellahin and Kellahin, and applies to the New Mexico Oil Conservation Division for approval (a) to drill its proposed C.M. Morris #100 Well at an unorthodox gas location 1340 feet FNL and 1405 feet FEL (Unit G) of Section 10, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NE/4 dedication) with the Basin-Fruitland Coal Gas Pool production (E/2 dedication) within the wellbore; and (b) to drill its proposed Huerfano Unit Com #509 Well at an unorthodox gas well location 775 feet FNL and 545 feet FWL (Unit D) of Section 30, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NW/4 dedication) and the Basin-Fruitland Coal Gas Pool production (N/2 dedication) within the wellbore.

In support of its application, Meridian states:

(1) Meridian is the operator of:

(a) its proposed C.M. Morris #100 Well to be drilled at an unorthodox gas location 1340 feet FNL and 1405 feet FEL (Unit G) of Section 10, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NE/4 dedication) with the Basin-Fruitland Coal Gas Pool production (E/2 dedication) within the wellbore (See Exhibit A-1); and

Application of Meridian Oil, Inc.

Page 2

(b) its proposed Huerfano Unit Com #509 Well to be drilled at an unorthodox gas well location 775 feet FNL and 545 feet FWL (Unit D) of Section 30, T27N, R10W and to downhole commingle Fulcher Kutz-Pictured Cliffs Gas Pool (NW/4 dedication) and the Basin-Fruitland Coal Gas Pool production (N/2 dedication) within the wellbore. (See Exhibit B-1).

(2) Each well is to be drilled and completed so that production from the Basin-Fruitland Coal Gas Pool and the Pictured Cliffs formation can be downhole commingled in the wellbore.

(3) The C. M. Morris #100 Well is to be located 1340 feet FNL and 1405 feet FEL of said Section 10 which is an unorthodox gas well location in Fulcher Kutz-Pictured Cliffs Gas Pool because it is to be located closer than 130 feet to interior quarter-quarter sections lines within the spacing units.

(4) Because of both topographic limitations and BLM restrictions, the Huerfano Unit Com #509 Well is to be located 775 feet FNL and 545 feet FWL of said Section 30 which is an unorthodox gas well location in both pools because it is closer than 790 feet to the outer boundary of each spacing unit.

(5) In addition, Meridian has selected to drill its Huerfano Unit Com #509 Well at an unorthodox "off pattern" coal gas well location in order to downhole commingle that production with the Pictured Cliffs production in order to recover marginal Pictured Cliffs gas reserves located in the NW/4 of Section 30.

(6) The ownership is not common for each well and its respective spacing and proration units in both pools.

(7) In accordance with Division Rule 303-C-1.(b), the Applicant states and will demonstrate at hearing:

1. the downhole commingling in these wellbores is necessary because evidence indicates that the Pictured Cliffs formation in this area of the San Juan Basin should be marginally productive and that due to the marginal production expected, it is uneconomic to drill a stand alone Pictured Cliffs Well. In addition, it is not economic to attempt to dually complete those formations in these wells;

2. there will be no crossflow between the two zones commingled;

3. neither commingled zones exposes the other to damage by produced liquids;

4. the fluids from each zone are compatible with the other;

5. it is expected that the bottom hole pressure of the lower pressure zone is not less than 50 percent of the bottom hole pressure of the higher pressure zone adjusted to a common datum.

6. the value of the commingled production will not be less than the sum of the values of the individual production.

(8) The proposed downhole commingling is necessary in order for the applicant to economically recover Basin-Fruitland Coal Gas and Pictured Cliffs Gas Pool reserves underlying each respective proration unit.

(9) Due to the nature of the Basin-Fruitland Coal Gas production, straight allocation of gas volumes from both zones is not appropriate. Meridian therefore seeks the adoption of a monthly allocation formula to be presented at the time of the hearing.

(10) Applicant requests that this matter be docketed for hearing on the Division's Examiner docket now scheduled for February 17, 1994.

(11) Division Order R-9921-A authorized downhole commingling of pictured cliffs and Basin Fruitland Coal Gas Pool production without further notice to the interest owners in the Huerfano Unit. However, there are owners involved in the Huerfano Unit Com #509 Well who have not been previously notified.

(12) A copy of this application is being sent to all owners of production within the respective spacing unit for the Huerfano Unit Com #509 well who may be affected by downhole commingling and who were not notified in the case resulting in Division Order R-9921-A.

(13) Copy of this application has been sent to all offsetting operators to the two spacing units for each well as set forth on Exhibits A-2, A-3, B-2, and B-3.

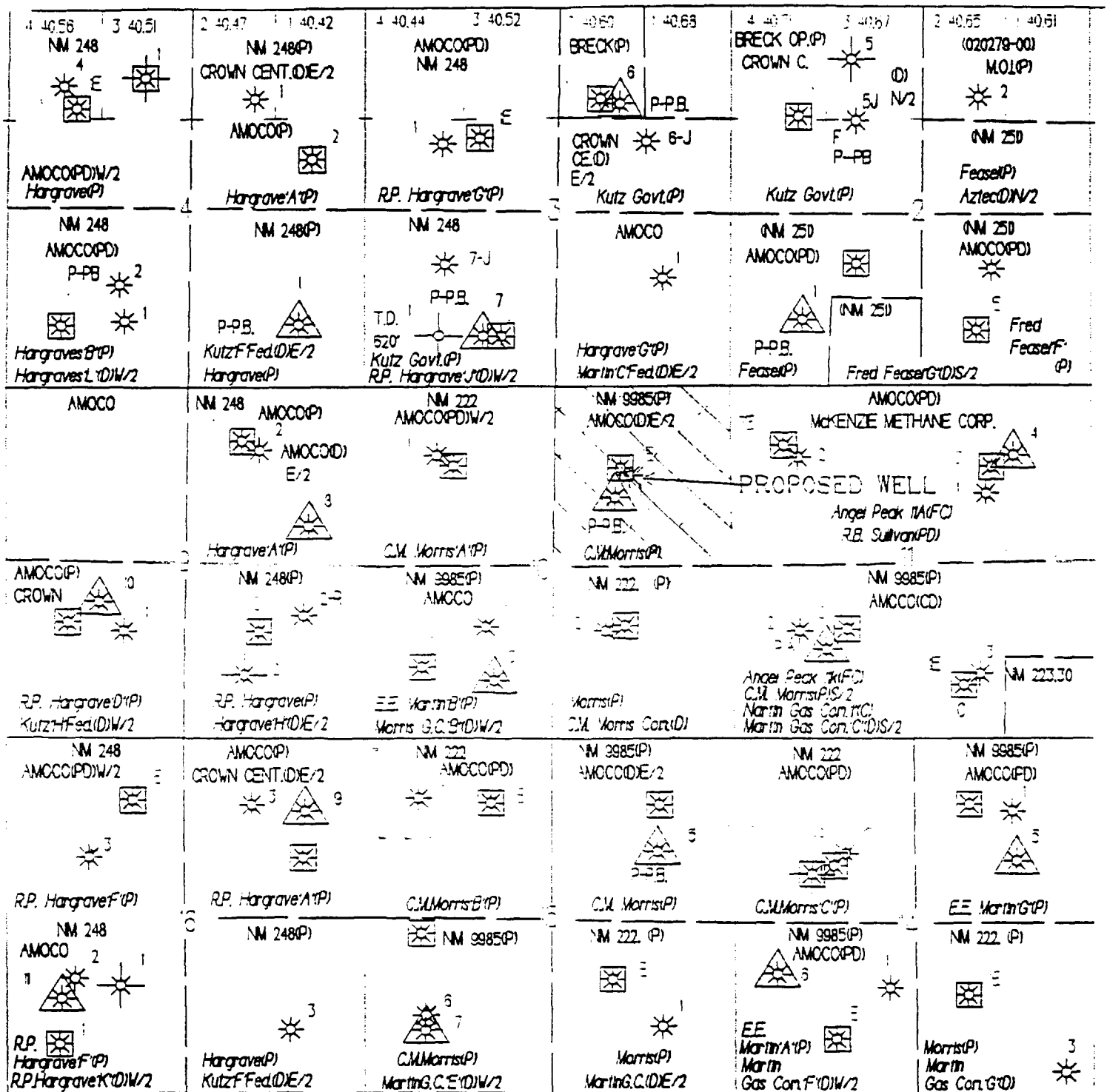
WHEREFORE Applicant requests that this matter be set for hearing on February 17, 1994 before a duly appointed Examiner of the Oil Conservation Division and that after notice and hearing as required by law, the Division enter its order granting this application.

Respectfully submitted

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', is written over the typed name and address.

W. Thomas Kellahin
KELLAHIN and KELLAHIN
P. O. Box 2265
Santa Fe, New Mexico 87501
(505) 982-4285
Attorneys for Applicant

C. M. MORRIS #100 WELL SWNE SECTION 10, T27N, R10W SAN JUAN CO., NEW MEXICO



FRUITLAND SAND WELL



MESAVERDE WELL



FRUITLAND COAL WELL



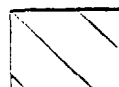
DAKOTA WELL



PICTURED CLIFFS WELL



GALLUP WELL



SPACING UNIT PICTURED CLIFFS



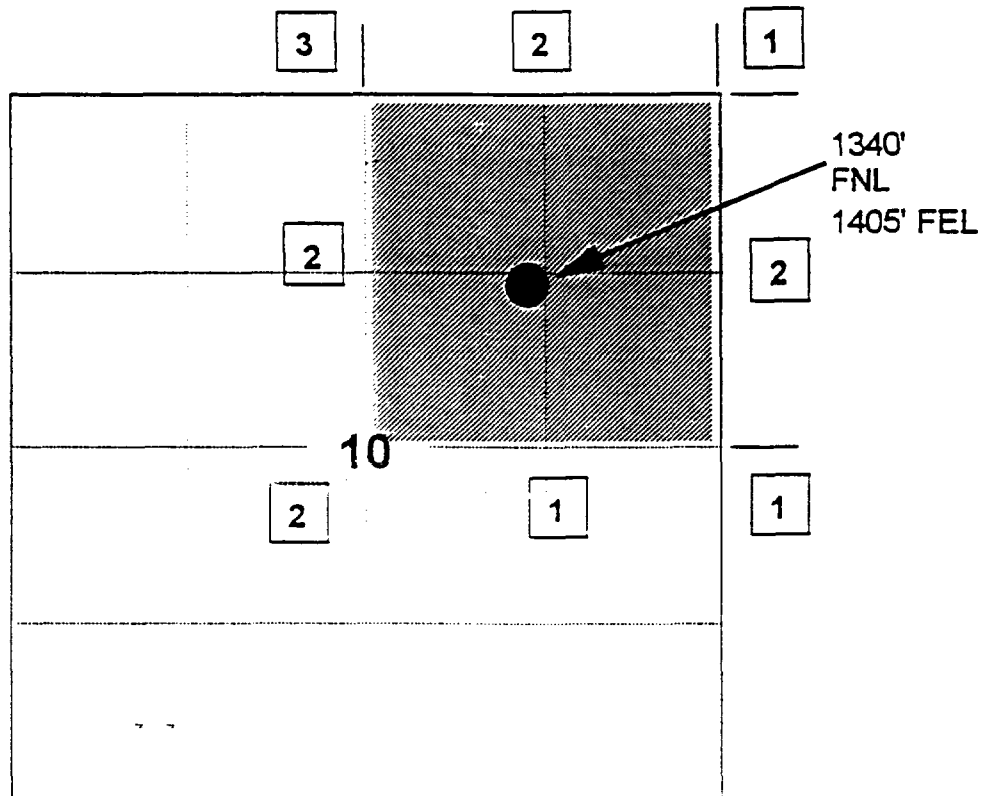
SPACING UNIT FRUITLAND COAL

MERIDIAN OIL INC

C. M. MORRIS #100 OFFSET OPERATOR PLAT

Fruitland Coal | Pictured Cliffs Formations Commingle Well

Township 27 North, Range 10 West



1) Meridian Oil Inc

2) Amoco Production Company PO Box 800, Denver, CO 80201

3) Breck Operating Corporation PO Box 911, Breckenridge, TX 76024

Exhibit A-2

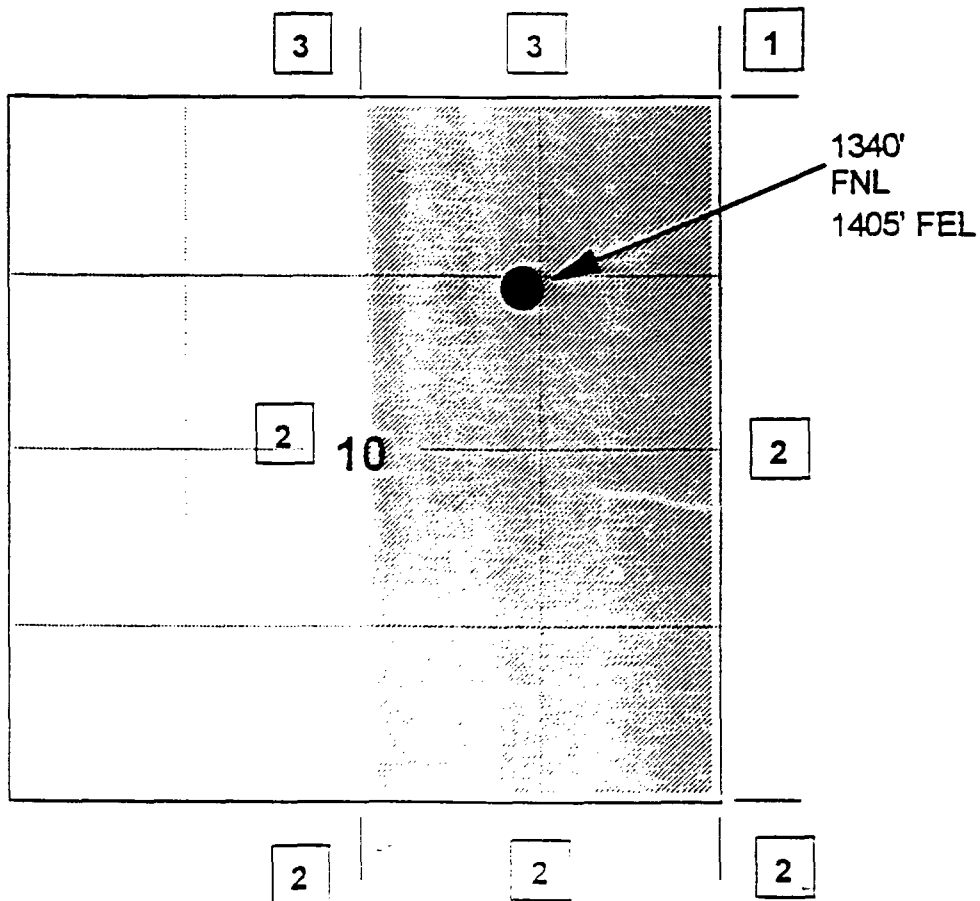
Pictured Cliffs

MERIDIAN OIL INC

C. M. MORRIS #100 OFFSET OPERATOR PLAT

Unorthodox Pictured Cliffs Location

Township 27 North, Range 10 West



1) Meridian Oil Inc &

Breck Operating Corporation PO Box 911, Breckenridge, TX 76024

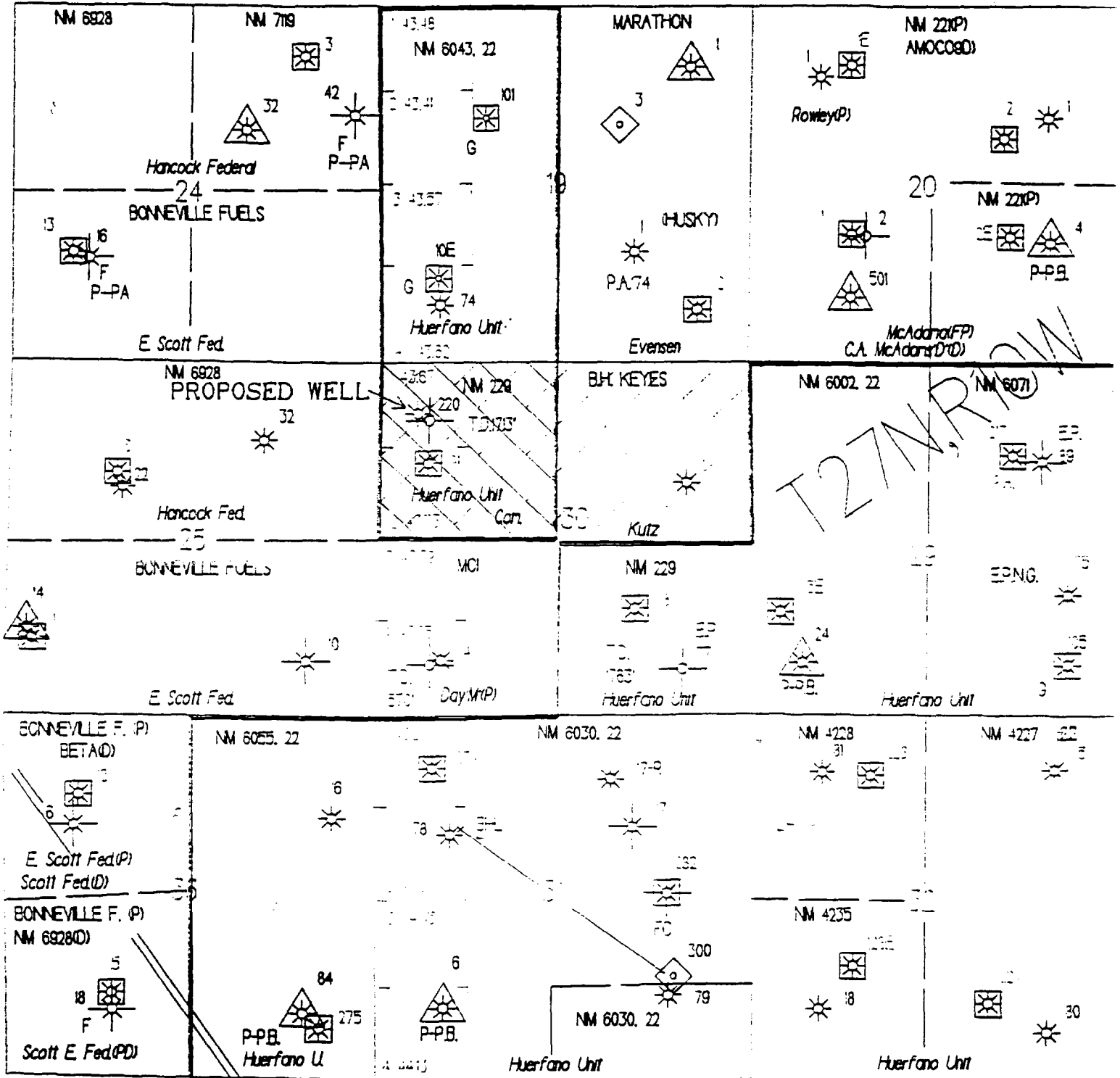
2) McKenzie Methane 1625 Broadway, Suite 2580, Denver, CO 80201 &

Quintana Petroleum Services 601 Jefferson St, Houston, TX 77002

3) Breck Operating Corporation PO Box 911, Breckenridge, TX 76024

Exhibit A-3

HUERFANO UNIT #509 WELL
NWNW SECTION 30, T27N, R10W
SAN JUAN CO., NEW MEXICO











- | | | | | | |
|--|----------------------|---|----------------|---|------------------------------|
|  | FRUITLAND SAND WELL |  | MESAVERDE WELL |  | SPACING UNIT PICTURED CLIFFS |
|  | FRUITLAND COAL WELL |  | DAKOTA WELL | | |
|  | PICTURED CLIFFS WELL |  | GALLUP WELL |  | SPACING UNIT FRUITLAND COAL |

Exhibit B-1

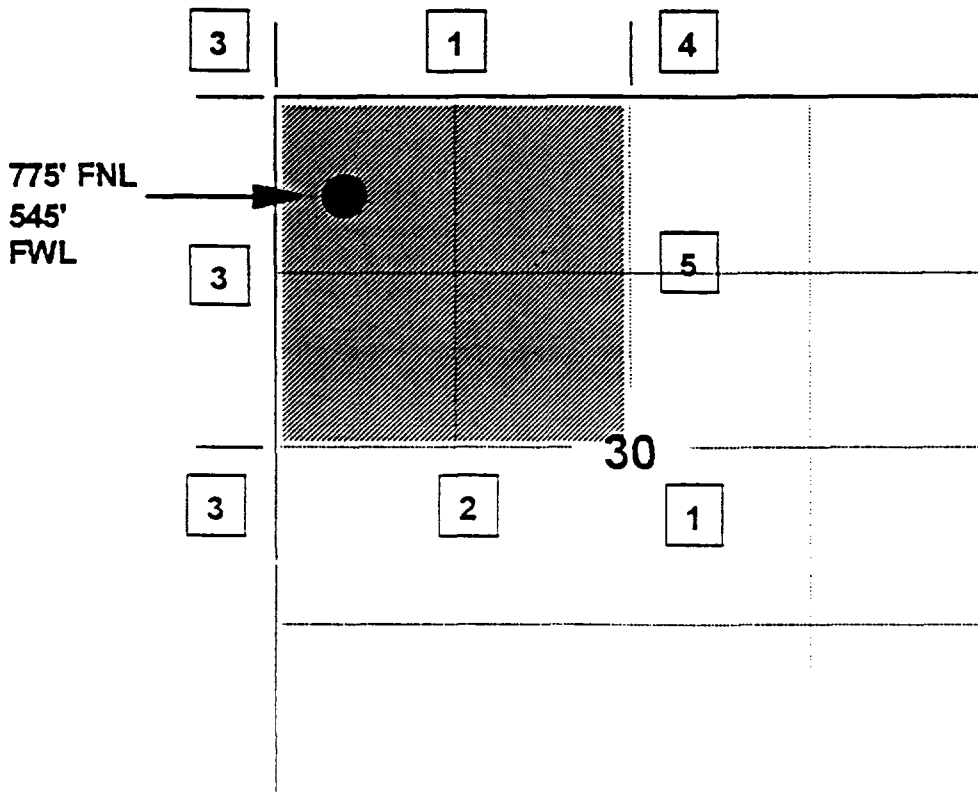
MERIDIAN OIL INC

HUERFANO UNIT COM #509

OFFSET OPERATOR PLAT

Fruitland Coal / Pictured Cliffs Commingle Well

Township 27 North, Range 10 West



1) Meridian Oil Inc

2) Meridian Oil Inc &

BBL, Limited

PO Box 911, Breckenridge, TX 76024-0911

3) Bonneville Fuels Corp.

1660 Lincoln St, Suite 1800, Denver, CO 80264

4) Marathon Oil Company

PO Box 552, Midland, TX 79702

5) Bradley H. Keyes

PO Box 842, Aztec, NM 87410

Exhibit B-2

Pictured Cliffs

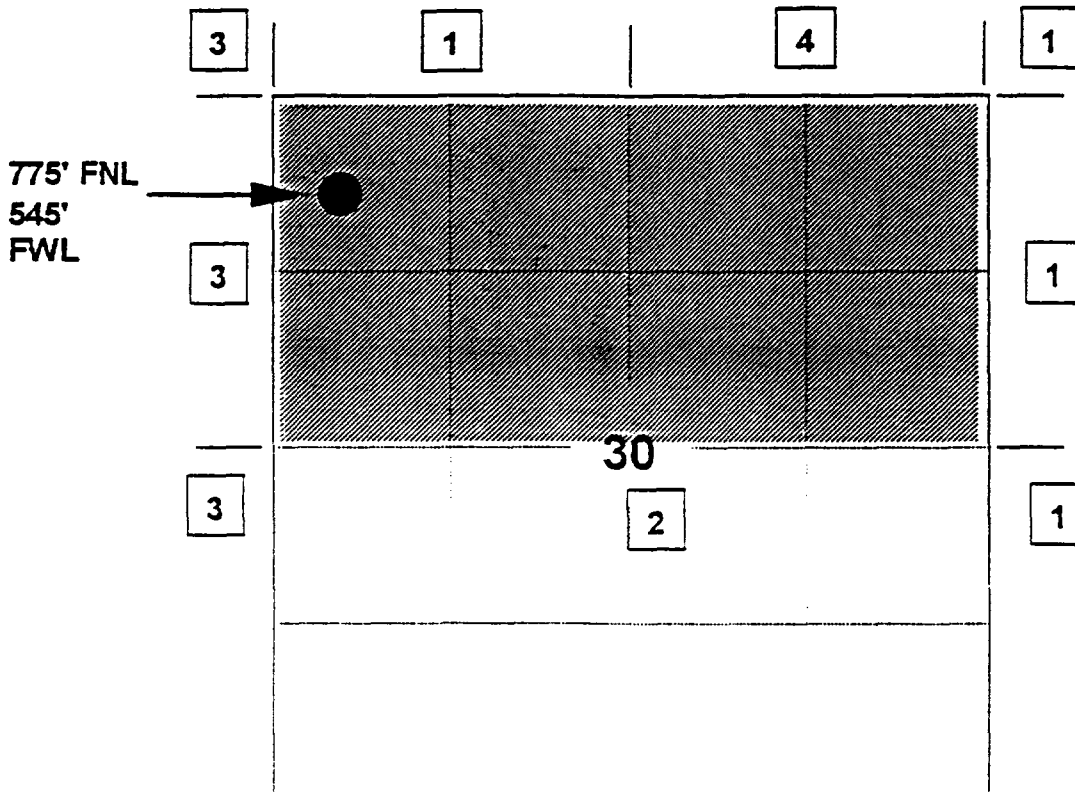
MERIDIAN OIL INC

HUERFANO UNIT COM #509

OFFSET OPERATOR PLAT

Fruitland Coal / Pictured Cliffs Commingle Well

Township 27 North, Range 10 West



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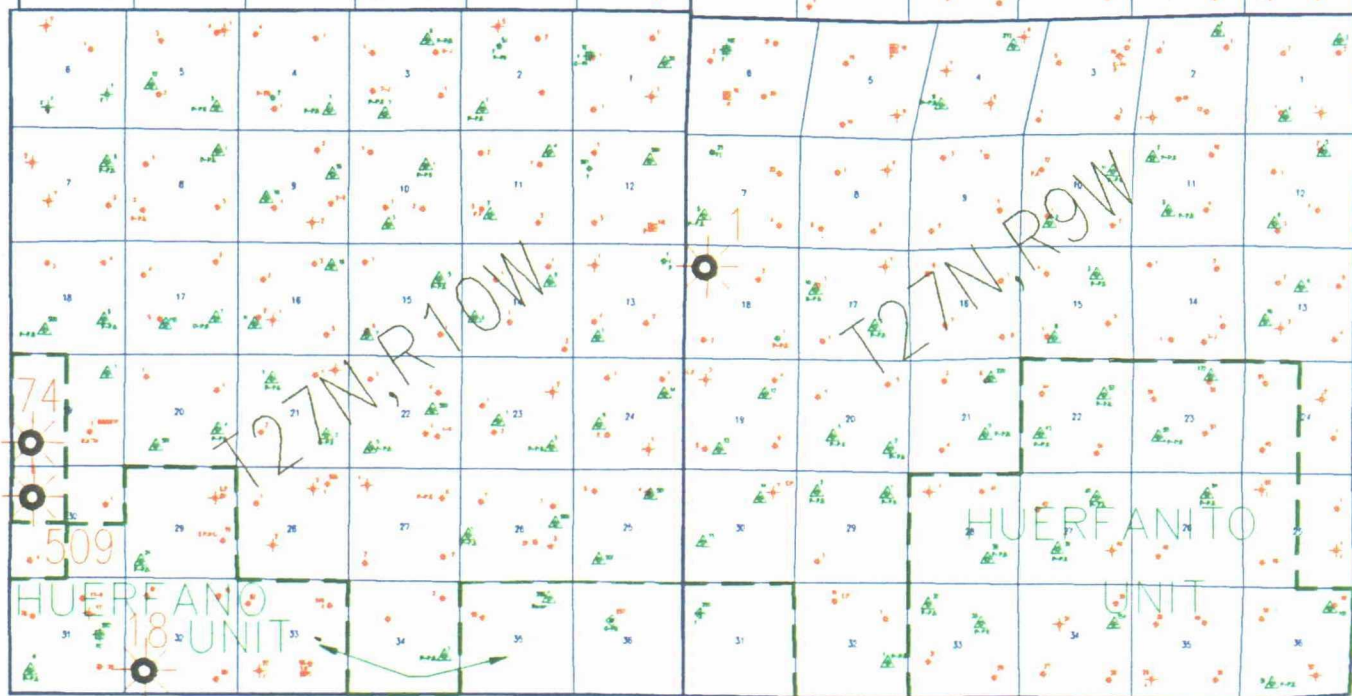
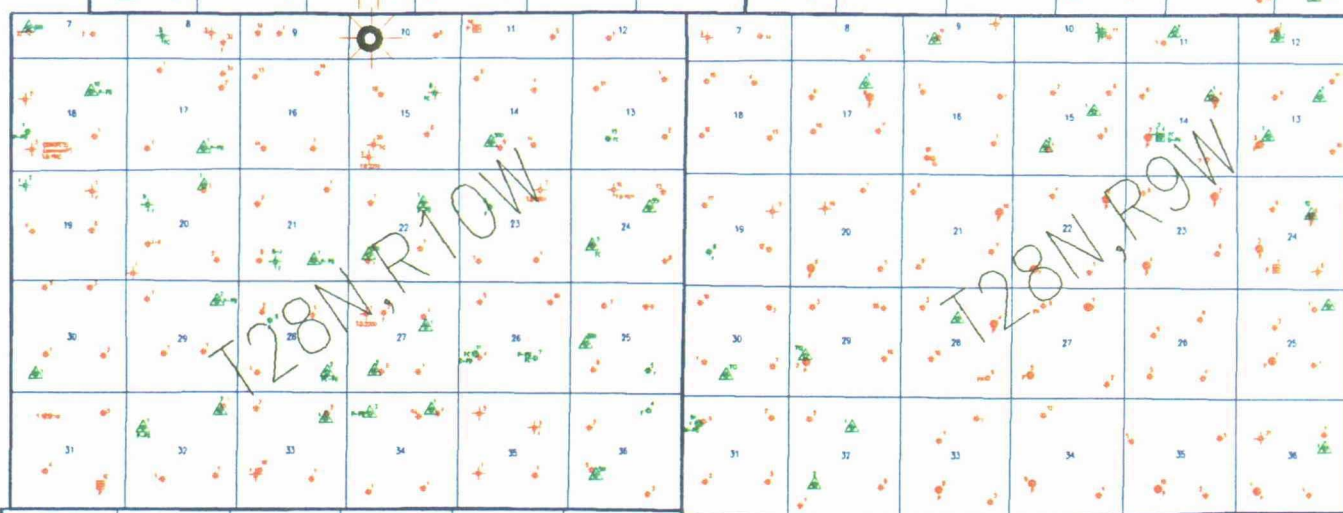
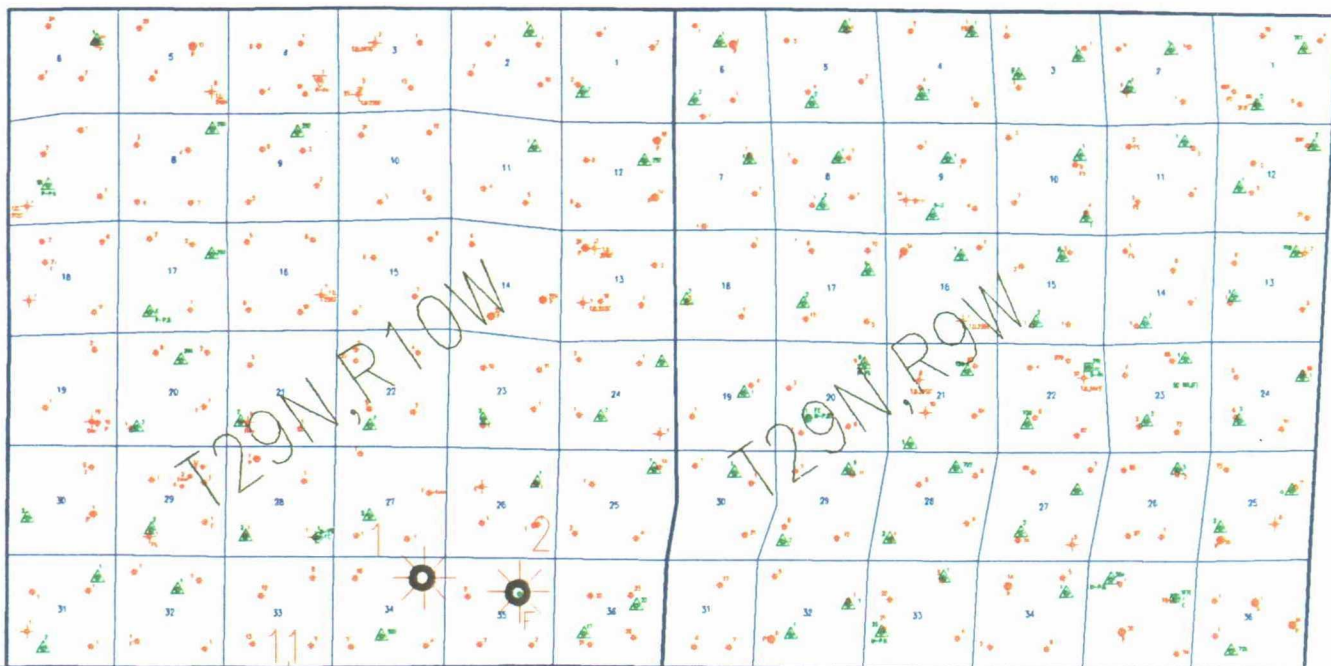
4) Marathon Oil Company

PO Box 552, Midland, TX 79702

Exhibit B-3

Fruitland Coal

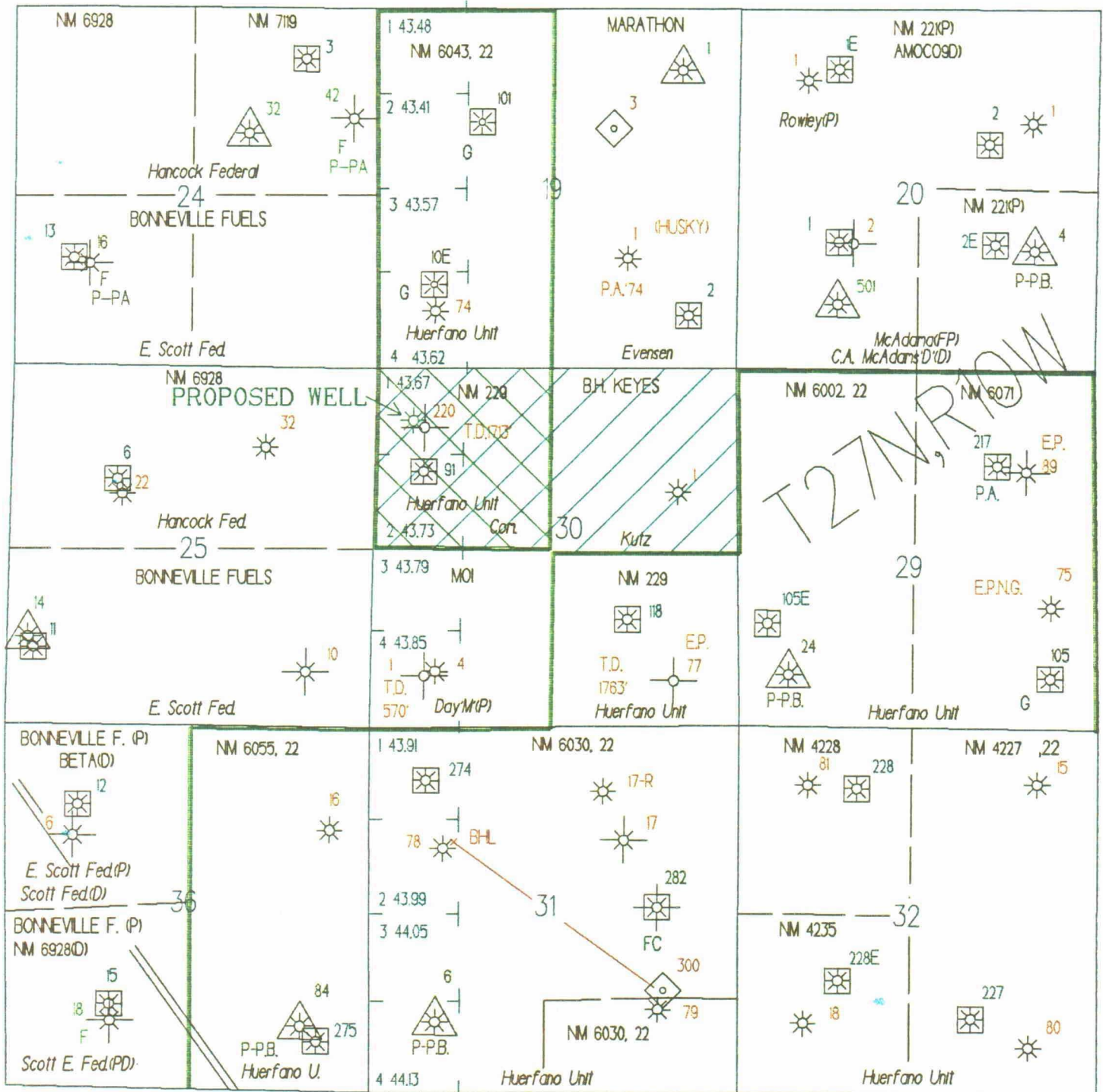
EXHIBIT 2








▲ FRUITLAND COAL

★ PICTURED CLIFFS

HUERFANO UNIT #509 WELL
NWNW SECTION 30, T27N, R10W
SAN JUAN CO., NEW MEXICO

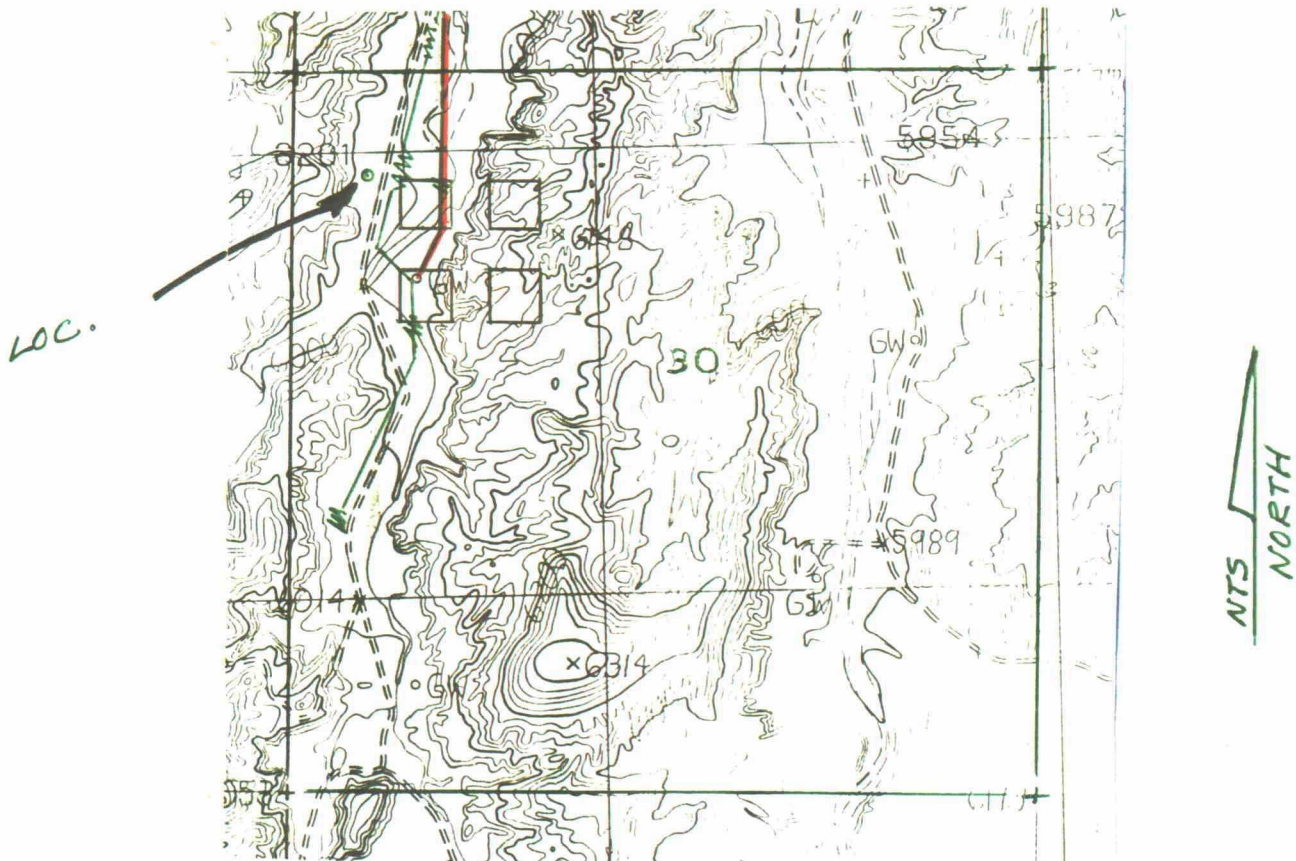


- | | | | |
|---|----------------------|---|----------------|
|  | FRUITLAND SAND WELL |  | MESAVERDE WELL |
|  | FRUITLAND COAL WELL |  | DAKOTA WELL |
|  | PICTURED CLIFFS WELL |  | GALLUP WELL |

-  SPACING UNIT PICTURED CLIFFS
-  SPACING UNIT FRUITLAND COAL

HUERFANO UNIT COM #509

775' FNL, 545' FWL
Section 30, T27N, R10W, NMPM



Location is Unorthodox due to BLM Approval for the following reasons:

- E/2NW/4 is in clay hills of badlands, the presence of endangered cactus and rough terrain.
- W/2NW/4 is in a vulnerable watershed area, also, this area is further restricted by existing pipelines and powerlines.

RED = PIPELINE

GREEN = POWER LINE

Neale C. Edwards, NMRLS 6857



EXHIBIT 3

1



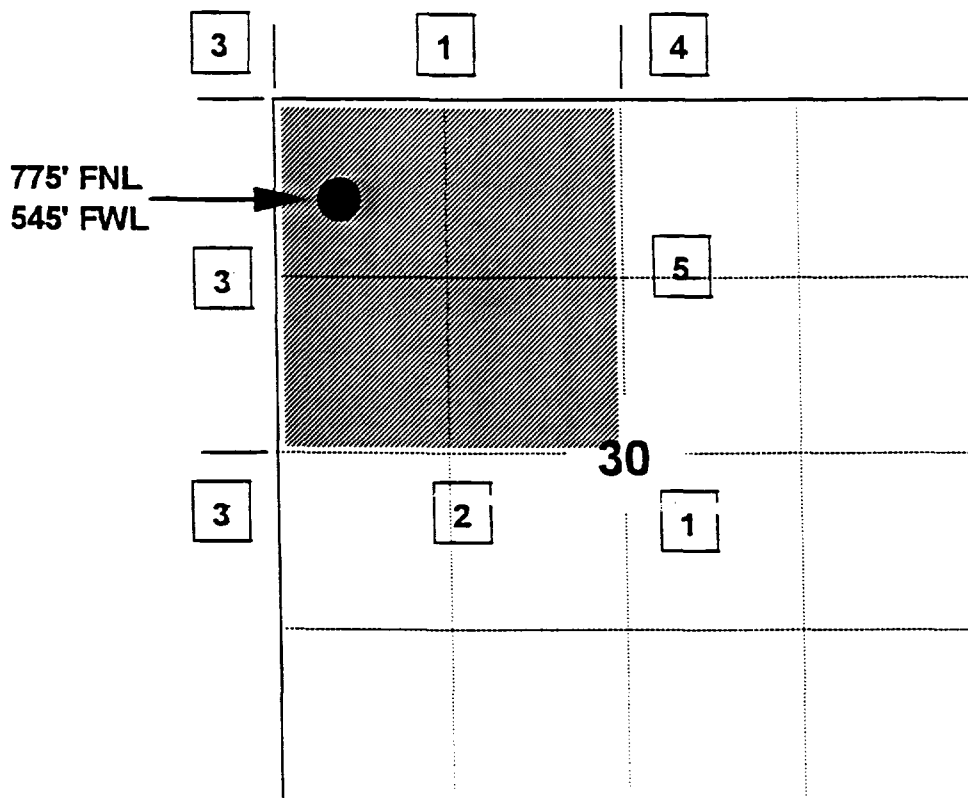
MERIDIAN OIL INC

HUERFANO UNIT COM #509

OFFSET OPERATOR PLAT

Unorthodox Pictured Cliffs Location

Township 27 North, Range 10 West



1) Meridian Oil Inc

2) Meridian Oil Inc &

BBL, Limited

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3) Bonneville Fuels Corp.

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4) Marathon Oil Company

PO Box 552, Midland, TX 79702

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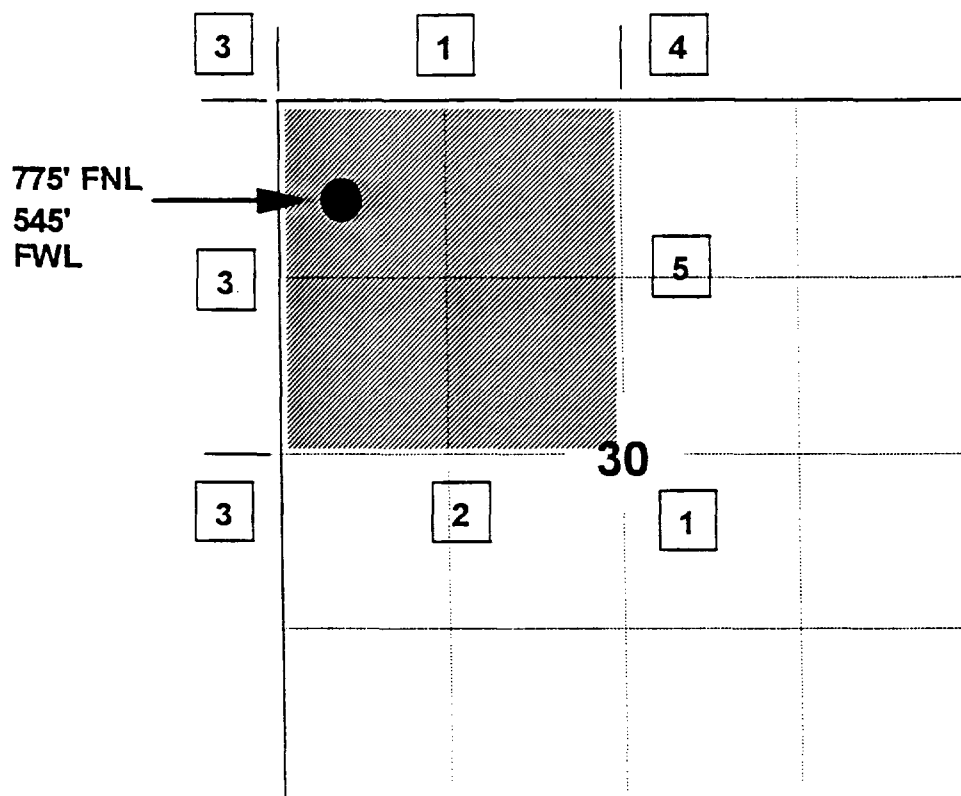
MERIDIAN OIL INC

HUERFANO UNIT COM #509

OFFSET OPERATOR PLAT

Fruitland Coal / Pictured Cliffs Commingle Well

Township 27 North, Range 10 West



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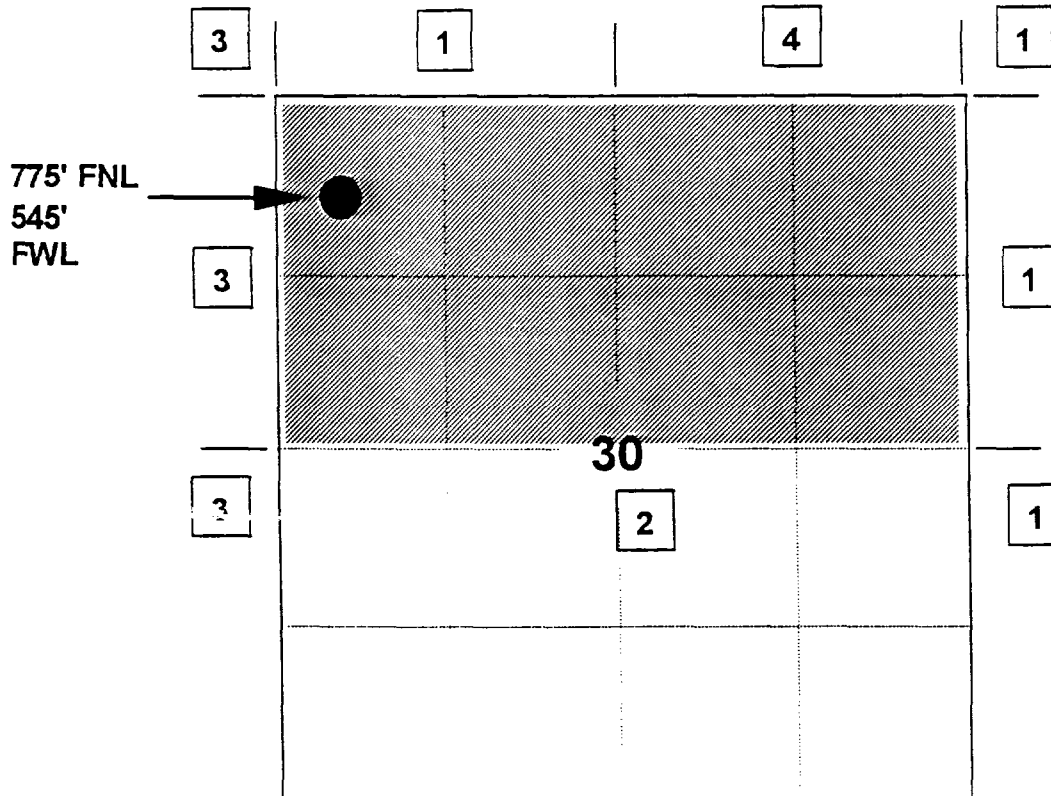
MERIDIAN OIL INC

HUERFANO UNIT COM #509

OFFSET OPERATOR PLAT

Fruitland Coal / Pictured Cliffs Commingle Well

Township 27 North, Range 10 West



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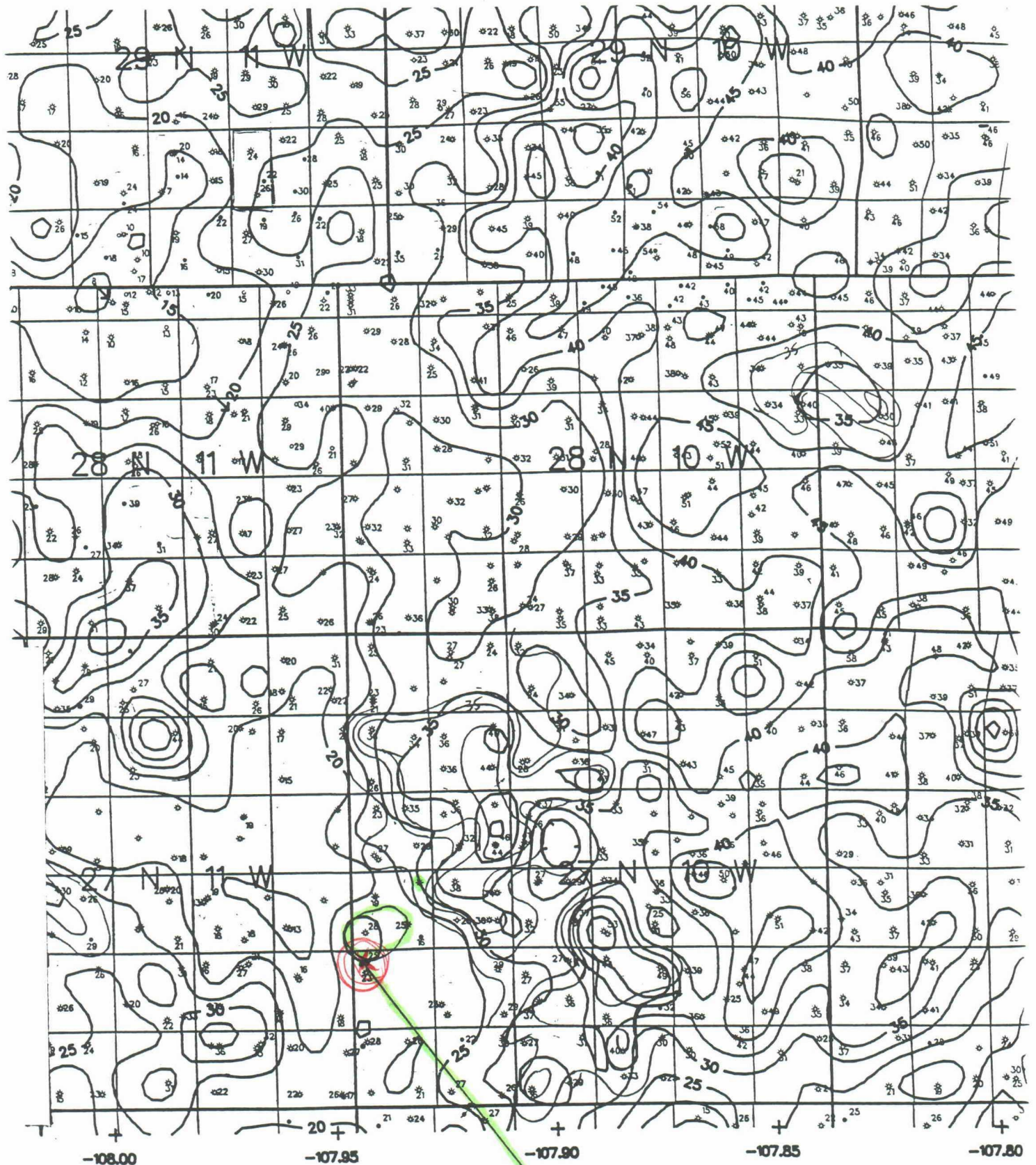
PO Box 552, Midland, TX 79702



EXHIBIT 4



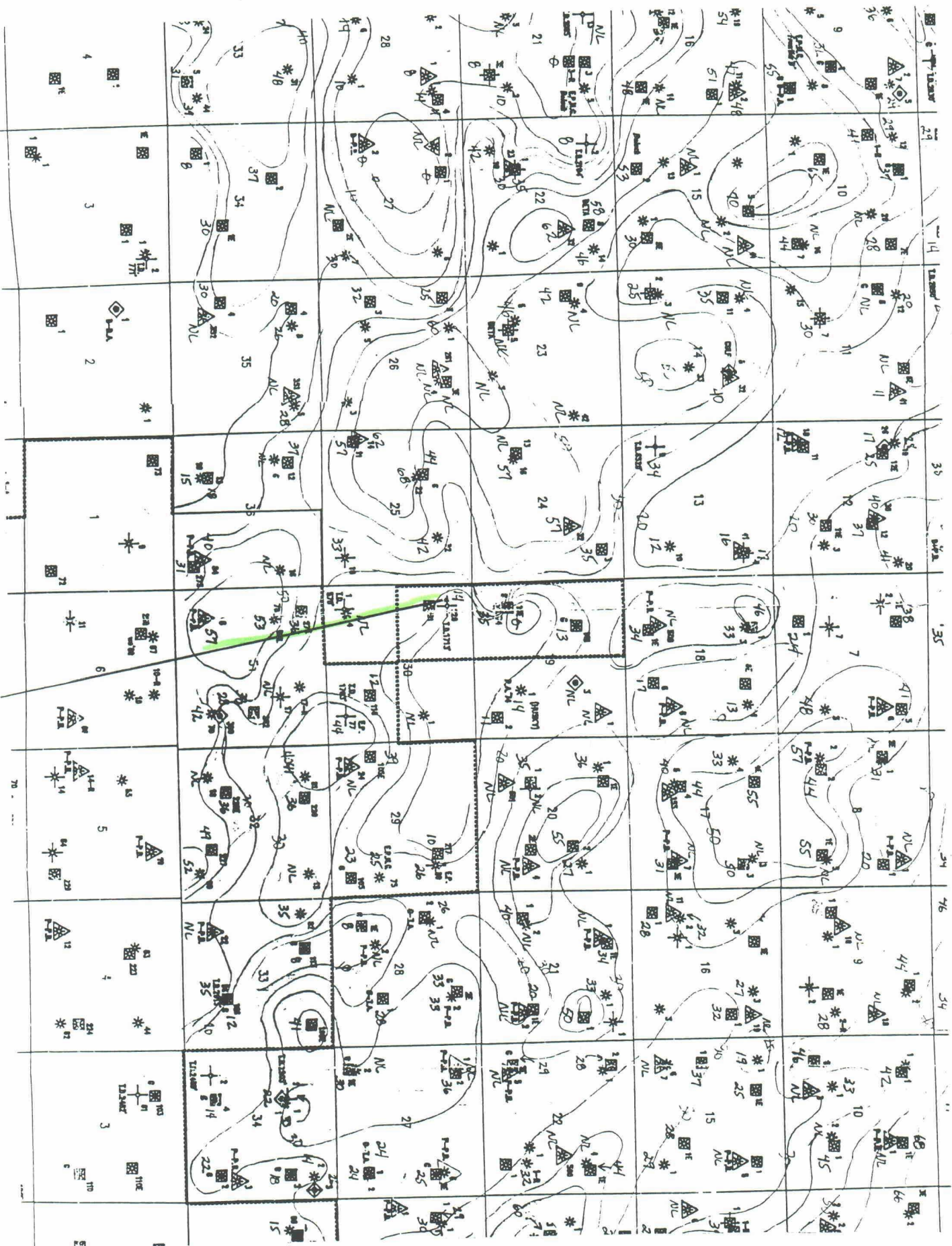
Fruitland coal isothem map (feet)
 Sandoz Co., NM



Huerfano Unit cont #509

775 FWL S45 FWL
 Sec. 30, T27N, R10W

Retired Cuffs Isolink Map



*Rt = Skid & Seive; SP = 10-1m de Hecker

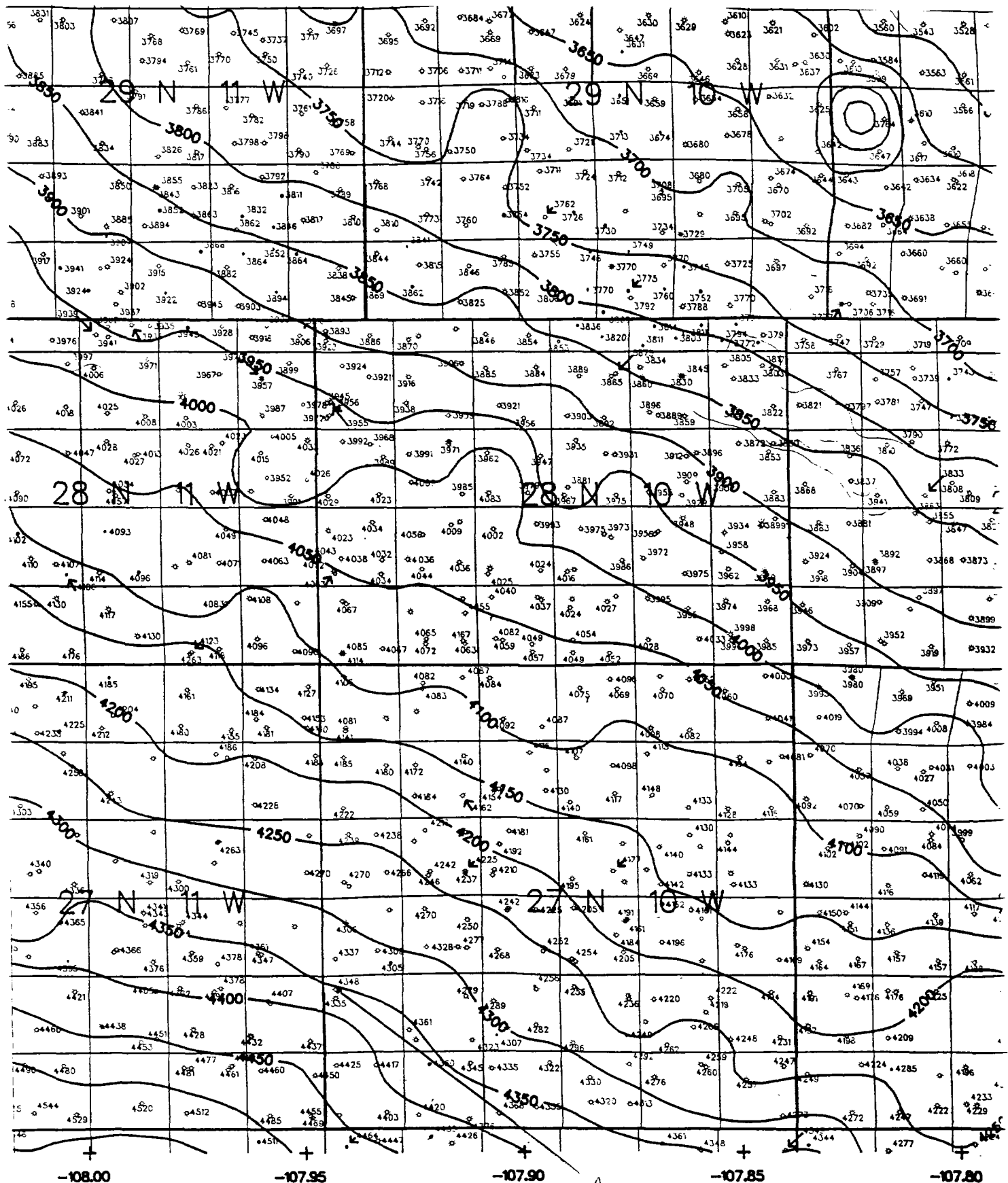
Two two unit com #107

7-75 FNL 545 FNL Sec. 30

T23N, E10W

EXHIBIT S

Base of Basal coal Structure Top (MSL)



-108.00

-107.95

-107.90

-107.85

-107.80

Huerfano Unit on #509

775 FNL 545 FNL

Sec. 30, T27N, R10W

Huerfano #220

890 FNL 890 FWL

Sec. 30, T27N, R10W

Sa San Co., NM

KB 5588 ft

offset type log for

Huerfano dist cor #509

775 FNL 545 FWL

Sec. 30, T27N, R10W

KB 6007 est.

Huerfano #509 depths
19 feet deeper (est.)

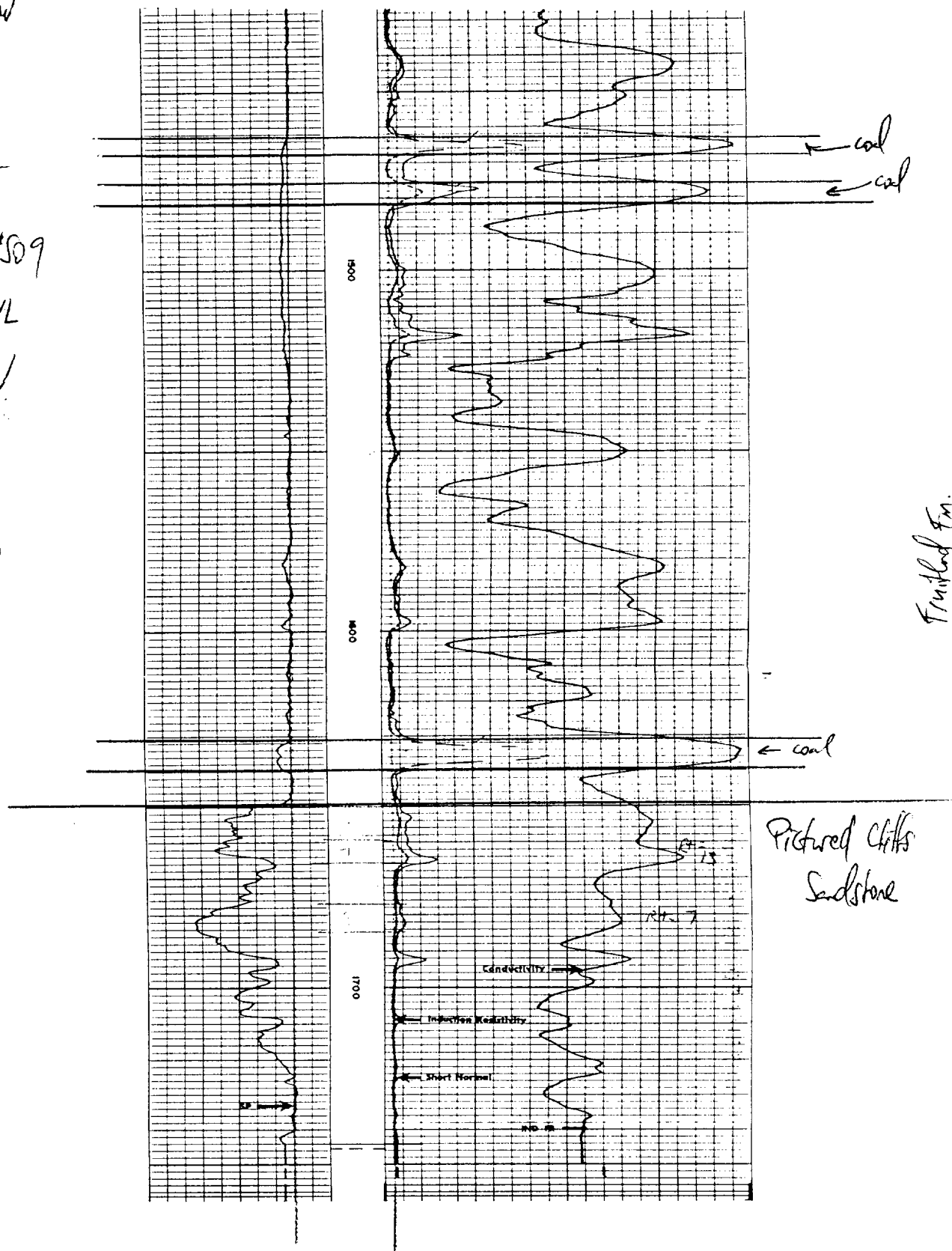


EXHIBIT 6



HUERFANO UNIT COM 509

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

GENERAL EQUATION

$$Q_t = Q_{ftc} + Q_{pc}$$

WHERE: Q_t = TOTAL MONTHLY PRODUCTION (MCF/MONTH)

Q_{ftc} = FRUITLAND COAL (ftc) MONTHLY PRODUCTION

Q_{pc} = PICTURED CLIFFS (pc) MONTHLY PRODUCTION (MCF/MONTH)

REARRANGING THE EQUATION TO SOLVE FOR Q_{ftc} :

$$Q_{ftc} = Q_t - Q_{pc}$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS (PC) USING THE APPLIED FORMULA IS FRUITLAND COAL (FTC) PRODUCTION.

ICTURED CLIFFS (PC) FORMATION PRODUCTION FORMULA IS:

$$Q_{pc} = Q_{pci} \times e^{-\{D_{pc} \times (t)\}}$$

WHERE: Q_{pci} = INITIAL PC MONTHLY FLOW RATE (CALCULATED FROM FLOW TEST)

D_{pc} = PICTURED CLIFFS MONTHLY DECLINE RATE CALCULATED FROM:
 $D_{pc} = (Q_{pci} - Q_{pcabd}) / N_{p(pc)}$
 See Determination of Q_{pci} and PC Estimated Ultimate Recovery ($N_{p(pc)}$)
 $Q_{pcabd} = 300 \text{ MCF/M}$

WHERE: $N_{p(pc)}$ = PICTURED CLIFFS ESTIMATED ULTIMATE RECOVERY (EUR)
 $N_{p(pc)} = P \times 0.62 \text{ MMCF/PSI}^{**} \times R_f$
 P^* = INITIAL RESERVOIR PRESSURE (SIBHP)
 R_f = RECOVERY (FIELD ANALOGY): = 0.85
 ** DETERMINED FROM MATERIAL BALANCE (FIELD ANALOGY) AND VOLUMETRIC RESERVES (LOG ANALYSIS)

By calculating $N_{p(pc)}$ from SIBHP and determining Q_{pci} , D_{pc} can then be calculated utilizing the previously described parameters. See derivation of D_{pc} , item (c) on page 4.

THUS: $Q_{ftc} = Q_t - Q_{pci} \times e^{-\{D_{pc} \times (t)\}}$

WHERE: (t) IS IN MONTHS

REFERENCE: Thompson, R. S., and Wright, J. D., "Oil Property Evaluation", pages 5-2, 5-3, 5-4.

HUERFANO UNIT COM 509

DETERMINATION OF Q_{pci} :
(INITIAL PICTURED CLIFFS MONTHLY PRODUCTION)

$$\underline{Q_{pci} = Q_t(1) \times Q_{pc}(p) / \{Q_{pc}(p) + Q_{ftc}(p)\}}$$

WHERE:

$Q_t(1)$ = FIRST MONTH TOTAL PRODUCTION (MCF)

$Q_{pc}(p)$ = FINAL PICTURED CLIFFS FLOW TEST (MCFPD)

$Q_{ftc}(p)$ = FINAL FRUITLAND COAL FLOW TEST (MCFPD)



EXHIBIT 7

1



HUERFANO UNIT COM 509

EXAMPLE DETERMINATION OF:

(a) $N_p(pc)$

PC EUR

(b) Q_{pci}

INITIAL PC MONTHLY FLOW RATE

(c) D_{pc}

PC MONTHLY DECLINE RATE

(a) DETERMINATION OF $N_p(pc)$

(see page 5 for $N_p(pc)$ derivation)

$$N_p(pc) = 0.62 \text{ (MMCF/PSI)} \times P^* \text{ (PSI)} \times R_f$$

$$P^* = 209 \text{ PSI (FROM SIBHP)}$$

$$N_p(pc) = 0.62 \text{ MMCF/PSI} \times 209 \text{ PSI} \times 0.85$$

$$\underline{N_p(pc) = 110 \text{ MMCF}}$$

(b) DETERMINATION OF Q_{pci}

$$Q_{pci} = Q_t(1) \times \{Q_{pc}(p) / (Q_{pc}(p) + Q_{ftc}(p))\}$$

$$Q_t(1) = 10,000 \text{ MCF}$$

1ST MONTH TOTAL PRODUCTION

$$Q_{pc}(p) = 500 \text{ MCF/D}$$

PC FLOW TEST

$$Q_{ftc}(p) = 400 \text{ MCF/D}$$

FTC FLOW TEST

$$Q_{pci} = 10,000 \text{ MCF/M} \times \{500 \text{ MCF/D} / (500 \text{ MCF/D} + 400 \text{ MCF/D})\}$$

$$\underline{Q_{pci} = 5,556 \text{ MCF/M}}$$

(c) DETERMINATION OF D_{pc}

$$D_{pc} = (Q_{pci} - Q_{pcabd}) / N_p(pc)$$

$$Q_{pcabd} = 300 \text{ MCF/M}$$

$$D_{pc} = (5,556 \text{ MCF/M} - 300 \text{ MCF/M}) / (110,000 \text{ MCF})$$

$$\underline{D_{pc} = 0.0478/M}$$

$$\underline{\text{THUS: } Q_{ftc} = Q_t(\text{MCF/M}) - 5,556(\text{MCF/M}) \times e^{\{-(0.0478(1/M))\}} \times t(M)\}$$

HUERFANO UNIT COM 509

A.	DETERMINATION OF PC RESERVES $N_p(pc) = (HCPV \times B_g \times R_f)$			
	Volumetric Evaluation (averages are for subject 160 acre drill block)			
a.	(t)	thickness	=	31.0 ft
b.	(phi)	porosity	=	14.5 %
c.	(Sw)	H2O saturation	=	70.0 %
d.	(Rf)	Recovery Factor	=	85.0 %
e.	(rcf)	Reservoir Cubic Feet	@ reservoir conditions	
f.	(scf)	Standard Cubic Feet	@ standard conditions	

1. $HCPV = \text{HYDROCARBON PORE VOLUME (rcf)}$

$$= t \text{ (ft)} \times a \text{ (ft}^2\text{)} \times \phi \times (1-S_w)$$

$$= 31 \text{ (ft)} \times 160 \text{ (acres)} \times 43,560 \text{ (ft}^2\text{/acre)} \times 0.145 \times (1-0.70)$$

$$= 9,398,500 \text{ ft}^3 \quad 1 \text{ mmrcf} = 1,000,000 \text{ ft}^3$$

HCPV = 9.399 mmrcf

2. $B_g = \text{FORMATION VOLUME FACTOR (scf/rcf)}$

UTILIZING THE REAL GAS LAW TO DETERMINE THE FORMATION VOLUME FACTOR (B_g):

REAL GAS LAW states:

$$P V = Z n R T$$

Rearranging to solve for n:

$$n = P V / Z R T$$

assuming:

$$n_r = n_s$$

WHERE: $n_r = \text{NUMBER OF MOLES OF GAS AT RESERVOIR CONDITION}$

$n_s = \text{NUMBER OF MOLES OF GAS AT SURFACE CONDITIONS}$

THUS: $P_r V_r / Z_r T_r R = P_s V_s / Z_s T_s R$

Rearranging: $V_s / V_r = B_g = Z_s T_s P_r / Z_r T_r P_s$

assuming:

$$\begin{aligned} Z_s &= 1.00 \\ Z_r &= 0.94 \\ T_s &= 60 \text{ } ^\circ\text{F} \quad \text{or } 520 \text{ } ^\circ\text{R} \\ T_r &= 100 \text{ } ^\circ\text{F} \quad \text{or } 560 \text{ } ^\circ\text{R} \\ P_s &= 15.025 \text{ psia} \\ P_r &= \text{Determined from build-up test} \end{aligned}$$

$$\begin{aligned} B_g &= \text{FORMATION VOLUME FACTOR (scf/rcf)} = Z_s T_s P_r / Z_r T_r P_s \\ &= (\text{scf/rcf}) \{1.00 \times 520 \text{ (} ^\circ\text{R)} \times P_r \text{ (psia)}\} / \{0.94 \times 560 \text{ (} ^\circ\text{R)} \times 15.025 \text{ (psia)}\} \end{aligned}$$

$B_g = 0.0657 \{\text{scf/ (rcf psia)}\} \times P_r \text{ (psia)}$

3. $EUR = HCPV \times B_g \times R_f$

$$= 9.399 \text{ (mmrcf)} \times 0.0657 \{\text{scf/(rcf psia)}\} \times P_r \text{ (psia)} \times 0.85$$

$N_p(pc) = 0.62 \text{ (mmscf/psia)} \times P_r \text{ (psia)} \times 0.85$

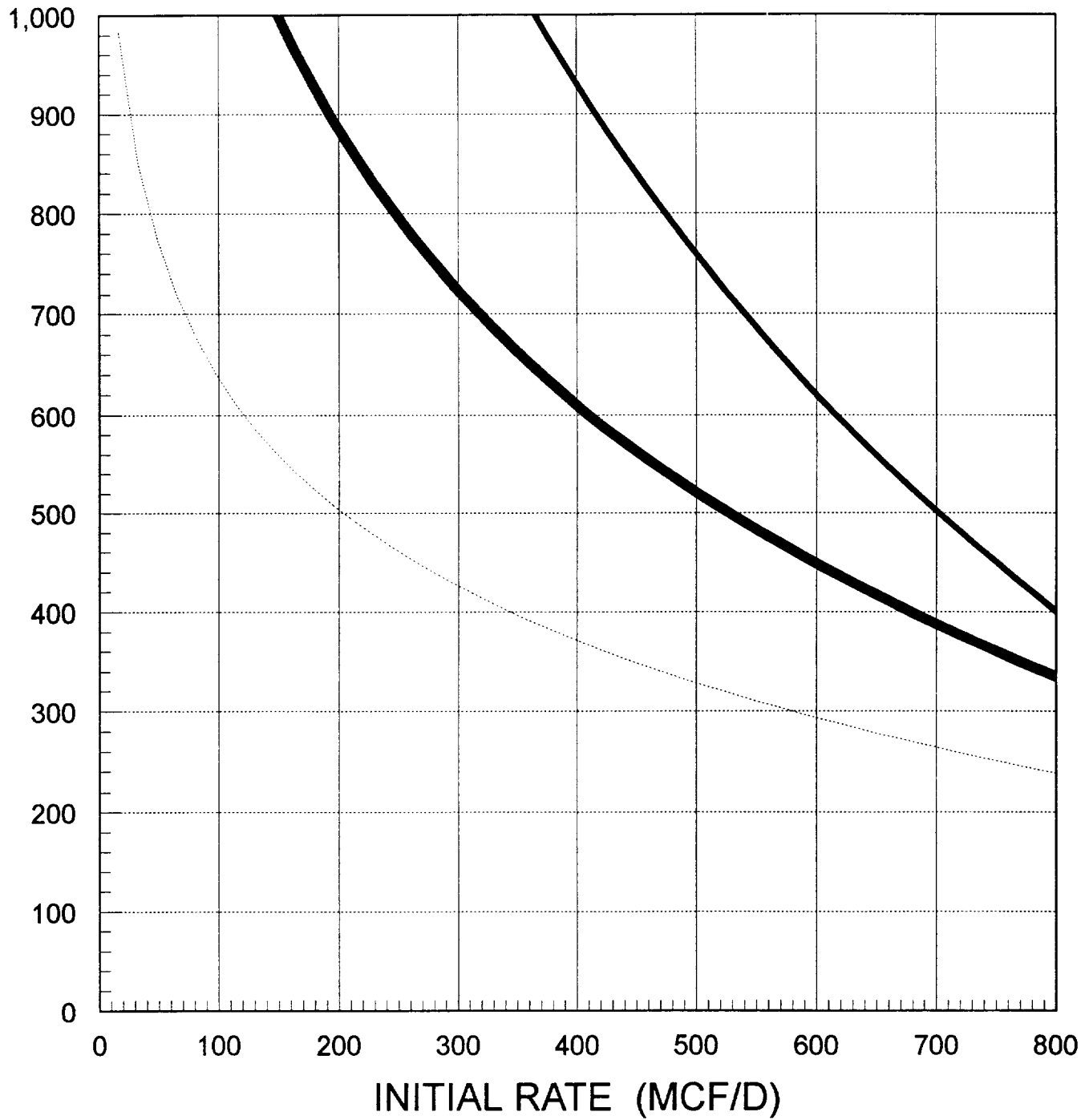
EXHIBIT 8

PICTURED CLIFFS / FRUITLAND COAL

ECONOMIC EVALUATION

COMPLETION TECHNIQUE SENSITIVITY

EUR (MMCF)



SINGLE DUAL COMMINGLE
15% ROR 15% ROR 15% ROR

— —

INITIAL RATE VS EUR