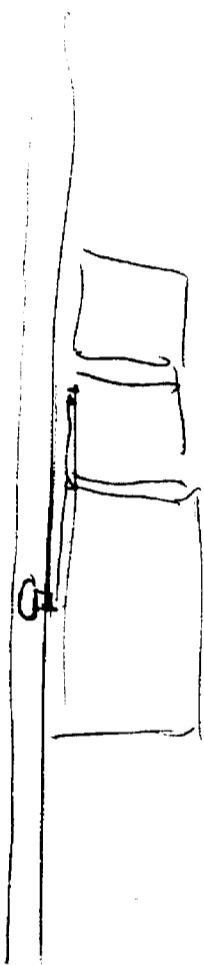


Case No.

163

Application, Transcript,  
Small Exhibits, Etc.

Case No. 102 in the matter of the petition of  
Marshall & Co. for the adoption etc.  
of regulations establishing the 640 spacing





UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Morrell's Exhibit A

Case 163

*Morrell's Exhibit A*

**CLASS OF SERVICE**  
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

JOSEPH L. EGAN  
PRESIDENT

1220

SYMBOLS	
DL	Day Letter
NL	Night Letter
LC	Deferred Cable
NLT	Cable Night Letter
RD	Radio Telegram

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination.

.DA216 FWB95

FW.HX083 LONG DL PD=HX FTWORTH TEX 24 201P=

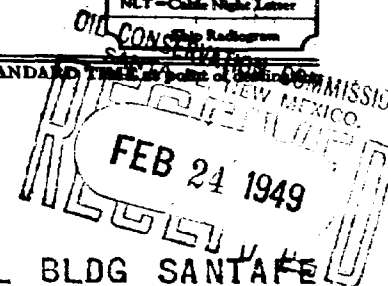
R R SPURRIER=

NEW MEXICO OIL CONSERVATION COMM CAPITOL BLDG SANTA FE

NMEX=

REFERENCE YOUR PROPOSED ISSUANCE OF ORDER NO. 799 CASE NO. 163, BLANCO FIELD, SAN JUAN COUNTY, NEW MEXICO. STANOLIND : STILL BELIEVES IT WOULD BE DESIRABLE TO INITIALLY SET UP 640 ACRE SPACING PRORATION UNITS, HOWEVER, WE WILL NOT ACTIVELY OPPOSE FURTHER YOUR ORDER OF 320 ACRE SPACING PRORATION UNITS. WE RESPECTFULLY RECOMMEND THAT THE FIRST SENTENCE OF SECTION 1 (C) SHOULD READ "SUCH WELL SHALL BE LOCATED 330 FEET FROM THE CENTER OF EITHER THE NORTHEAST OR SOUTHWEST QUARTER OF THE GOVERNMENTAL SECTION IN WHICH IT IS LOCATED SUBJECT TO VARIATION OF 200 FEET FOR TOPOGRAPHIC CONDITIONS. FURTHER TOLERANCE SHALL BE ALLOWED BY THE COMMISSION ONLY IN CASES OF EXTREMELY ROUGH TERRAIN WHERE COMPLIANCE WOULD NECESSARILY INCREASE DRILLING COSTS." IN SECTION 3 A ADD THE WORDS "OF 320 ACRES" TO THE LAST SENTENCE. THE FIRST FIVE SENTENCES OF SECTION 4 A BEGINNING WITH "THE SURFACE PIPE" AND ENDING WITH "TO STAND THIRTY MINUTES" BE REVISED TO READ "THE SURFACE PIPE SHALL BE SET THROUGH THE SHALLOW POTABLE WATER BEARING BEDS TO A MINIMUM DEPTH OF 250 FEET AND A SUFFICIENT AMOUNT OF CEMENT SHALL BE USED TO CIRCULATE THE CEMENT BEHIND THE PIPE TO THE BOTTOM OF THE CELLAR. THIS SURFACE CASING SHALL STAND CEMENTED FOR AT LEAST 24 HOURS BEFORE DRILLING PLUG OR INITIATING TESTS. THE SURFACE CASING SHALL BE=

END 1-ERNING ITS SERVICE



**CLASS OF SERVICE**  
This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

JOSEPH L. EGAN  
PRESIDENT

1220

SYMBOLS
DL = Day Letter
NL = Night Letter
LC = Deferred Cable
NLT = Cable Night Letter
Ship Radiogram

The filing time shown in the rate line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

DA220 FWB06

FW.HX086-083 LONG SHEET 2 DL PD=HX FTWORTH TEX 24 201P=

R R SPURRIER=

NEW MEXICO OIL CONSERVATION COMM CAPITOL BLDDG SANTAFE  
NMEX=

TESTED AFTER DRILLING PLUG BY BAILING THE HOLE DRY. THE HOLE SHALL REMAIN DRY FOR ONE HOUR TO CONSTITUTE SATISFACTORY PROOF OF A WATER SHUT-OFF. IN LIEU OF THE FOREGOING TEST THE CEMENT JOB SHALL BE TESTED BY BUILDING UP PRESSURE OF 1,000 PSI, CLOSING THE VALVES, AND ALLOWING TO STAND THIRTY MINUTES. SECTION 9-A, CORING SHOULD NOT BE REQUIRED IN THE RULES, BUT SHOULD BE LEFT UP TO THE DISCRETION OF EACH OPERATOR. TESTIMONY INDICATED THAT EACH OPERATOR HAD THE INTENTION OF PERFORMING THIS CORING. HOWEVER, WE DO NOT FEEL THAT IT WOULD BE WISE TO SET UP A PRECEDENT OF REQUIRING CORES, ESPECIALLY IN THIS FIELD AND AT THIS TIME. SECTION 9-E, WE BELIEVE IT WOULD BE MORE DESIRABLE FOR THE OPERATORS TO MEET VOLUNTARILY SEMI-ANNUALLY RATHER THAN TO REQUIRE THESE MEETINGS. IT IS OUR THOUGHT THAT FROM THESE VOLUNTARY MEETINGS ADEQUATE INFORMATION DISSEMINATION CAN BE ACHIEVED AND POSSIBLY LEAD EVENTUALLY TO AN ORGANIZATION OF THE SAN JUAN BASIN OPERATORS SIMILAR TO THAT IN LEA COUNTY. IN VIEW OF THE RECENT COMPLETION OF THE DELHI RIDDLE NO. 1 AND TO CORRECT THE OMISSION OF SECTION 33 IN THE FINAL CLOSING "ORDER" PARAGRAPH WHICH DELINEATES THE FIELD, WE FURTHER SUGGEST THE DESIRABLE ADDITIONS OF SECTIONS 16, 22, 27, 33 AND 34 OF T-30-N.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

**CLASS OF SERVICE**  
 This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

# WESTERN UNION

JOSEPH L. EGAN  
PRESIDENT

1220

**SYMBOLS**  
 DL - Day Letter  
 NL - Night Letter  
 LC - Deferred Cable  
 NLT - Cable Night Letter  
 Ship Radiogram

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

R-9-W. THE FOREGOING RECOMMENDATIONS ARE RESPECTFULLY  
 SUBMITTED FOR YOUR EARNEST CONSIDERATION IN THE FINAL  
 PREPARATION OF ORDER NO. 799=

C F BEDFORD STANOLIND OIL AND GAS CO=

1,000 PSI 9-A 9-E 1 33 16 22 27 33 34 T-30-N R-9W=

STANOLIND OIL AND GAS COMPANY

January 11, 1949

File: LF-7003-175

Re: Status of Unitization,  
Blanco Field, San Juan County,  
New Mexico

Mr. Foster Norrell  
Supervisor of Oil and Gas Operations  
U. S. Geological Survey  
Reswell, New Mexico

Dear Mr. Norrell:

Your letter of December 27, 1948, made inquiry as to the status of unitization proceedings for the Blanco Area, San Juan County, New Mexico. In this connection, you furnished a copy of your letter of December 24 to Mr. Frank A. Schultz, Delhi Oil Corporation.

You will recall that the subject of unitization was briefly touched upon at the meeting of interested parties which you called on October 1, 1948, at Santa Fe. At this meeting, you suggested that the Operators consider the possibilities of unitization and that a reasonable plan would be likely to receive U.S.G.S. concurrence. No discussion took place as to who should take the lead in a unitization program and we recognize, of course, that this is something to be worked out between the Operators themselves. You will recall that Stanolind is not the largest owner of interests in this field. However, other units in which we are a party have proved so satisfactory in general that we believe there are sufficient advantages to all parties of interest, both working interest owners and royalty owners, in joining in unitization of this field that we are willing to commence unitization efforts commensurate with our interests in this field.

We accordingly have given some thought to the plan of unitization which would be most suitable to all concerned. The particular features applying to this field which will have to be worked out involve the matter of participation in the four existing wells which are non-uniform in spacing and the fact that it will be difficult to establish a participating area of lands determined productive on the basis of geological information. In an effort to work out these basic points with other concerned parties, it is our thought that perhaps the first step should be to agree upon a set of principles of unitization. We contemplate having a set of proposed principles ready for examination at an early date and will plan to distribute copies of these principles to other Operators about mid-January. We will invite the other Operators to comment upon these principles and we hope that the responses received will indicate sufficient interest to warrant immediate concerted effort toward early formation of a fieldwide unit.

COPY

Mr. Foster Merrell

- 2 -

January 11, 1949

In view of the recent inquiry of Mr. Schultz, we are furnishing him a carbon copy of this letter. A copy is likewise being forwarded to Mr. A. H. Spurrer of the New Mexico Oil Conservation Commission.

Yours very truly,

STANOLIND OIL AND GAS COMPANY

Original  
Signed By C. F. BEDFORD  
C. F. BEDFORD

JBJ/mp

cc: Mr. G. B. Caruthers

Mr. Frank A. Schultz  
Dakota Oil Corporation  
1315 Pacific Avenue  
Dallas 1, Texas

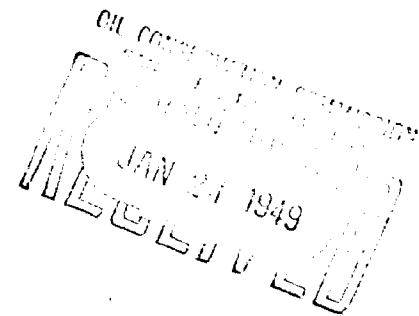
Mr. A. H. Spurrer ✓  
New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

STANOLIND OIL AND GAS COMPANY  
TULSA, OKLAHOMA

January 20, 1949

File: CBC-41.278

Re: Unitization of Blanco Field  
San Juan County, New Mexico



TO ALL OPERATORS  
IN THE BLANCO FIELD, SAN JUAN COUNTY, NEW MEXICO

Gentlemen:

Those in attendance at a meeting of parties interested in the Blanco Field, held in Santa Fe on October 1, 1948, will recall that the prospects of fieldwide unitization came up for brief discussion. Mr. Foster Morrell, Supervisor of Oil and Gas Operations, pointed out to the group that a reasonable plan of unitization could expect to be favorably received by the U.S.G.S. No particular plans toward unitization were developed at that time and no discussion took place as to who should take the lead in a unitization program. You will recall that Stanolind is not the largest owner of interests in this field. However, other units in which we are a party have proved so satisfactory in general that we believe there are sufficient advantages to all parties of interest, both working interest owners and royalty owners, in joining in unitization of this field that we are willing to commence unitization efforts commensurate with our interests in this field.

We accordingly have given some thought to the plan of unitization which would be most suitable to all concerned. The particular features applying to unitization of this field which will have to be worked out involve the matter of participation in the four existing wells which are non-uniform in spacing and the manner in which wells drilled in the future will be handled. In an effort to work out these basic points with other concerned parties, it is our thought that perhaps the first step would be to develop a set of principles of unitization.

We have accordingly prepared a set of possible principles of which a copy is attached for your examination. Since these principles will provide the basis for preparing the Unit Agreement and Accounting (or Operating) Agreement, we would appreciate receiving your remarks and suggestions. We particularly would appreciate reply from each of you as to whether or not you are interested in working with the other Operators toward a fieldwide unit. Should sufficient interest be indicated, it is likely that it will be in order to hold another meeting of Operators for the purpose of developing a program leading toward early formation of a fieldwide unit. Your early response will be appreciated.

Yours very truly,

*C. B. Caruthers*  
C. B. Caruthers  
Unitization Superintendent

Attachment

MAILING LIST

Letter dated January 20, 1949 to all Operators  
in the Blanco Field, San Juan County, New Mexico

Mr. M. J. Florance  
Florance Drilling Company  
Aztec, New Mexico

Mr. Caswell Silver  
Florance Drilling Company  
Aztec, New Mexico

Mr. Fred C. Koch  
Wood River Oil and Refining Co., Inc.  
335 West Lewis Street  
Wichita, Kansas

Mr. H. B. Alspaugh  
Wood River Oil and Refining Co., Inc.  
335 West Lewis Street  
Wichita, Kansas

Mr. L. C. Morgan  
Wood River Oil and Refining Co., Inc.  
335 West Lewis Street  
Wichita, Kansas

Mr. Frank A. Schultz  
Delhi Oil Corporation  
1315 Pacific Avenue  
Dallas 1, Texas

Mr. J. R. Cole  
Southern Union Gas Company  
Burt Building  
Dallas, Texas

Mr. Van Thompson  
Southern Union Gas Company  
Burt Building  
Dallas, Texas

Byrd-Frost, Inc.  
1110 Tower Petroleum Building  
Dallas 1, Texas

Mr. H. P. Slegel  
Byrd-Frost, Inc.  
Durango, Colorado

Mr. P. B. English  
Farmington, New Mexico

Mr. Scott R. Brown  
Western Natural Gas Company  
Midland, Texas

Mr. Thomas B. Scott, Jr.  
Brookhaven Oil Company  
Albuquerque, New Mexico

POSSIBLE PRINCIPLES OF UNITIZATION  
BLANCO FIELD, SAN JUAN COUNTY, NEW MEXICO

- I. Unit Area - To be defined on a map and by a schedule of all lands within the Unit Area. The Unit Area is intended to include all lands deemed to be in the Blanco Field.
- II. Unitized Substances - All oil, gas and associated hydrocarbons in any and all formations in the Unit Area.
- III. Working Interest Owner - A party who owns a right to search for and produce unitized substances within the Unit Area.
- IV. Royalty Owner - Any owner who, subject to the right of a Working Interest Owner to search for and produce Unitized Substances, owns mineral rights, royalties, overriding royalties, reversionary interests or other rights in and to the Unitized Substances produced from the Unit Area.
- V. Unit Operator - Party designated to develop and operate the Unit Area for the production of Unitized Substances. As to operations in a Participating Area, the Unit Operator shall be subject to the control and policies established by the Working Interest Owners through the Operating Committee for that Participating Area.
- VI. Operators' Committee - The Operating Committee for a Participating Area shall be composed of a representative designated by each of the Owners of Working Interests in that Participating Area. Each such representative shall have a voting power in proportion to the participating interest of his principal. An affirmative vote of not less than 75% shall be required for approval of any matter coming before the Committee for a vote. Powers and duties of the Operating Committee shall be as follows:
  1. Provide for proper auditing of accounts of Unit Operator.
  2. Provide for the enlargement of the Unit Area.
  3. Instruct Unit Operator as to the payment of taxes.
  4. Determine and approve percentage participation and adjustment of investment cost in accordance with the provisions of the agreement.
  5. Appoint and grant authority to such sub-committees as are desired.
  6. To have the powers and duties reasonably necessary to control operations which come under the terms of the agreement so as to carry out the purposes and provisions of the agreement.
  7. Approve:
    - a. Location, drilling, completion program and equipping of wells.
    - b. Well workovers, recompletions, abandonments, or the change of status of any wells.
    - c. Single expenditures other than normal operating expenses in excess of \$5,000.00.
    - d. Location of tank batteries or other jointly owned facilities.
    - e. Sale of major items of surplus equipment and material.
    - f. Major changes in operating methods.
- VII. Basis of Participation in Production and Costs - Each separately owned tract or portion of tract within a participating area shall have allocated to it such percentage of production from that participating area as its surface acreage area bears to the surface acreage of the Participating Area in which said tract is located. Costs and expenses applying to a Participating Area shall be apportioned in the same manner.

- VIII. Enlargement of Unit Area - Subject to concurrence of Operating Committees, the Unit Area may be enlarged upon approval of the Commissioner of Public Lands of the State of New Mexico and the Director of the U.S.G.S.
- IX. Participating Area - The land in the Participating Areas shall consist of the acreage proved by successfully completed wells and the establishment of such Participating Areas and the enlargement thereof shall be in the manner hereinafter set forth and shall be subject to the approval of the Director of the U.S.G.S.
- X. Initial Mesa Verde Participating Areas - The following four existing wells are deemed as having proved up lands in the Mesa Verde Formation: Florance-Wood River Pierce #1, Florance-Wood River Jane Mansfield #1, Florance-Wood River Bill Mansfield #2, and Stanolind Elliott B#1. The four above wells are deemed to occasion the two following initial Mesa Verde Participating Areas:
1. A Participating Area of 640 acres around Stanolind Elliott B#1, consisting of SE/4 Section 10, SW/4 Section 11, NW/4 Section 14, NE/4 Section 16, Township 29 North, Range 9 West.
  2. As to the three Florance-Wood River wells, one overall contiguous Participating Area of 2240 acres more or less is established for these three wells consisting of the W/2 Section 17, E/2 Section 18, E/2 Section 19, W/2 and SE/4 Section 20, SW/4 Section 21, NW/4 Section 28, N/2 Section 29, and NE/4 Section 30, Township 30 North, Range 9 West.
- XI. Enlargement of Mesa Verde Participating Areas - A Mesa Verde Participating Area may be enlarged to include additional lands on the basis of completion of outside wells which are capable of production from the Mesa Verde formation in paying quantities (the term "paying quantity" as used here is defined as the quantity sufficient to pay the cost of drilling and equipping and the estimated cost of operating the well). In order to cause an enlargement of an established Mesa Verde Participating Area, the outside well must be successfully completed in a quarter section subdivision of the public land survey of which the center of such quarter section is not beyond 3960' (3/4 of a mile) of the nearest point of the boundary of the nearest established Mesa Verde Participating Area. To determine what lands shall be added to the Participating Area by a successfully completed outside well in the Mesa Verde Formation, two straight lines shall be drawn from the center of the quarter section subdivision, in which the outside well is located, to the most distant points of contact with the boundary of the nearest established Mesa Verde Participating Area in such a manner that these straight lines enclose an area contiguous to the Participating Area. The lands to be added to the Participating Area shall consist of the following quarter section subdivisions of the public land survey:
1. (a) The quarter section under the completed well.  
(b) Those quarter sections of which each is 1/2 or more within the contiguous area referred to above provided that the lands qualifying for addition herein are contiguous to the land admitted by subsection 1 above and provided further that the total of such quarter sections does not exceed 6 in number.  
(c) Those quarter sections which are bounded on 2 or more sides by lands either in the then established Participating Area or admitted thereto pursuant to subsections (a) and (b) above to the end that the total number of contiguous quarter sections qualifying for addition herein and in subsections (a) and (b) above does not exceed 6.
  2. Those quarter sections bounded on three sides by lands either in the then established Participating Area or qualifying for addition pursuant to subsection 1 above, or qualifying for addition as provided herein.

In event an outside Mesa Verde well is successfully completed which is located at a distance from an established Participating Area which does not cause enlargement of the Participating Area to include the well as outlined above, a separate Participating Area of not to exceed 4 quarter sections in the form of a square may be established for that well. The party or parties financing such well may select the 4 quarter sections to be established as the Participating Area for such well provided that the quarter sections selected are not less than the linear distance of 5280' (1 mile) from the nearest established Participating Area.

When a linear distance of 2640' (1/2 mile) or less separates two or more Mesa Verde Participating Areas, such Participating Areas may be combined into one and in that event there shall be only one Operating Committee for the areas so combined.

There shall be no retroactive adjustment as to production obtained or as to operating expenses prior to the effective date of revision of a Participating Area. Upon enlargement of any Participating Area, there shall be an adjustment as to investment to the end that each Working Interest Owner will own an undivided interest in the equipment and property on the same basis of participation upon which each owner shares in production and expenses. The cost per well shall be based on the average cost of drilling wells of like character and depth in the Blanco Field in a good and workmanlike manner at the time of the drilling of the well. Appraised values shall apply for lease equipment and improvements erected or constructed thereon.

No Participating Area shall be contracted because of depletion of Unitized Substances or any other cause except loss of title.

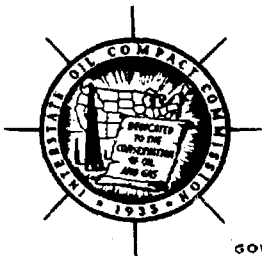
XII. Drilling of Outside Wells - Any Working Interest Owner owning or controlling a majority of the working interests in any unitized land not included in a Participating Area and having thereon a regular well location in accordance with an established well-spacing pattern, may drill a well at such location at his own expense, unless within 90 days of receipt of notice from said party of his intention to drill the well the Operating Committee for the adjacent Participating Area elects and commences to drill such well.

XIII. Disposition of Unitized Substances - All produced Unitized Substances shall be apportioned among the tracts constituting the Participating Area in proportion to the per cent participation of each tract. The Unitized Substances thus allocated to each tract shall be distributed among the owners of the leasehold and royalty interests in each tract in accordance with the provisions of the lease agreement to the same extent as if the Unitized Substances allocated to each such tract had been produced from such tract.

Each Operator shall take in kind his share of the produced Unitized Substances and shall market individually or through an agent and shall pay individually or through an agent all royalties due on such produced Unitized Substances in accordance with the existing lease terms.

No retroactive adjustment of ownership of Unitized Substances shall be made as to any Operator or Royalty Owner produced prior to the date such Operator or Royalty Owner entered into the agreement or as to tracts added to the Participating Area prior to the date such tracts become a part of the Participating Area.

Note: The above principles are to be incorporated in the Unit Agreement and the Accounting (or Operating) Agreement. The Working Interest Owners will be parties to both Agreements but Royalty Owners will be parties to only the Unit Agreement.



# INTERSTATE OIL COMPACT COMMISSION

*Dedicated to the Conservation of Oil and Gas*

GOVERNOR FRANK CARLSON, CHAIRMAN

DON T. ANDRUS, FIRST VICE CHMN.

JAMES MCCLURE, JR., SECOND VICE CHMN.

Headquarters Office: Telephone 5-3556 P. O. Box 3127 State Capitol

Oklahoma City 5, Oklahoma

January 27, 1949

EARL FOSTER, EXECUTIVE SECRETARY

ALBERT E. SWEENEY, JR., DIRECTOR  
SECONDARY RECOVERY DIVISION

File: Research and Coordinating Committee  
Unitization and Cooperative Projects  
Survey

Mr. R. R. Spurrier  
Oil Conservation Commission  
Box 871  
Santa Fe, New Mexico

Dear Dick:

We have been anxiously awaiting your reply to our letter of October 19, 1948, in which we requested you to send us a short resume on the unitized and cooperative projects in New Mexico. To date we have received no reply to this request.

We need a statement which covers generally all of the unitized and cooperatively operated fields in your state in order to complete our publication on unitization. Would it be possible for you to send us such a statement before February 15? Please let us know whether or not you can supply this information.

Sincerely yours,

Ty

E. G. Dahlgren

EHD:jb

DOMESTIC SERVICE	
Check the class of service desired; otherwise this message will be sent as a full rate telegram	
FULL RATE TELEGRAM	SERIAL
DAY LETTER	NIGHT LETTER

# WESTERN UNION

1206

INTERNATIONAL SERVICE	
Check the class of service desired; otherwise this message will be sent at the full rate	
FULL RATE	DEFERRED
CODE	NIGHT LETTER

JOSEPH L. EGAN, PRESIDENT

NO. WDS.-CL. OF SVC.	PD. OR COLL.	CASH NO.	CHARGE TO THE ACCOUNT OF	TIME FILED
			OIL CONSERVATION COMMISSION	

Send the following message, subject to the terms on back hereof, which are hereby agreed to

SANTA FE, N. M.

MARCH 1, 1949

FRANK SMULTE, VICE PRESIDENT  
DELMY OIL CORPORATION  
BUNT BUILDING  
DALLAS, TEXAS

ORDER NO. 799, CASE 163, SIGNED EFFECTIVE 25 FEBRUARY 1949.

F. R. SPURRIER, OIL CONSERVATION COMM.

MR. FOSTER MORRELL  
U. S. GEOLOGICAL SURVEY  
ROSWELL, NEW MEXICO

## ALL MESSAGES TAKEN BY THIS COMPANY ARE SUBJECT TO THE FOLLOWING TERMS:

To guard against mistakes or delays, the sender of a message should order it repeated, that is, telegraphed twice, the originating office for comparison. For this, one-half the repeated message rate is charged in addition. Unless otherwise indicated on its face, this is an un-repeated message and paid for as such, in consideration whereof it is agreed between the sender of the message and this Company as follows:

1. The Company shall not be liable for mistakes or delays in the transmission or delivery, or for non-delivery, of any message received for transmission at the un-repeated-message rate beyond the sum of five hundred dollars; nor for mistakes or delays in the transmission or delivery, or for non-delivery, of any message received for transmission at the repeated-message rate beyond the sum of five thousand dollars, unless specially valued; nor in any case for delays arising from unavoidable interruption in the working of its lines.

2. In any event the Company shall not be liable for damages for mistakes or delays in the transmission or delivery, or for the non-delivery, of any message, whether caused by the negligence of its servants or otherwise, beyond the actual loss, not exceeding in any event the sum of five thousand dollars, at which amount the sender of each message represents that the message is valued, unless a greater value is stated in writing by the sender thereof at the time the message is tendered for transmission, and unless the repeated-message rate is paid or agreed to be paid, and an additional charge equal to one-tenth of one per cent of the amount by which such valuation shall exceed five thousand dollars.

3. The Company is hereby made the agent of the sender, without liability, to forward this message over the lines of any other company when necessary to reach its destination.

4. Except as otherwise indicated in connection with the listing of individual places in the filed tariffs of the Company, the amount paid for the transmission of a domestic telegram or an incoming cable or radio message covers its delivery within the following limits: In cities or towns of 5,000 or more inhabitants where the Company has an office which, as shown by the filed tariffs of the Company, is not operated through the agency of a railroad company, within two miles of any open main or branch office of the Company; in cities or towns of 5,000 or more inhabitants where, as shown by the filed tariffs of the Company, the telegraph service is performed through the agency of a railroad company, within one mile of the telegraph office; in cities or towns of less than 5,000 inhabitants in which an office of the Company is located, within one-half mile of the telegraph office. Beyond the limits above specified the Company does not undertake to make delivery, but will endeavor to arrange for delivery as the agent of the sender, with the understanding that the sender authorizes the collection of any additional charge from the addressee and agrees to pay such additional charge if it is not collected from the addressee. There will be no additional charge for deliveries made by telephone within the corporate limits of any city or town in which an office of the Company is located.

5. No responsibility attaches to this Company concerning messages until the same are accepted at one of its transmitting offices; and if a message is sent to such office by one of the Company's messengers, he acts for that purpose as the agent of the sender.

6. The Company will not be liable for damages or statutory penalties in the case of any message except an intrastate message in Texas where the claim is not presented in writing to the Company within sixty days after the message is filed with the Company for transmission, and in the case of an intrastate message in Texas the Company will not be liable for damages or statutory penalties where the claim is not presented in writing to the Company within ninety-five days after the cause of action, if any, shall have accrued; provided, however, that neither of these conditions shall apply to claims for damages or overcharges within the purview of Section 415 of the Communications Act of 1934.

7. It is agreed that in any action by the Company to recover the tolls for any message or messages the prompt and correct transmission and delivery thereof shall be presumed, subject to rebuttal by competent evidence.

8. Special terms governing the transmission of messages according to their classes, as enumerated below, shall apply to messages in each of such respective classes in addition to all the foregoing terms.

9. No employee of the Company is authorized to vary the foregoing.

10-42

## CLASSES OF SERVICE

### DOMESTIC SERVICES

#### FULL RATE TELEGRAMS

A full rate expedited service.

#### DAY LETTERS

A deferred service at lower than the full rate

#### SERIALS

Messages in sections during the same day.

#### NIGHT LETTERS

Accepted up to 2 A.M. for delivery not earlier than the following morning at rates substantially lower than the full rate telegram or day letter rates.

### CABLE SERVICES

#### FULL RATE CABLES

The standard fast service at full rates. May be written in any language that can be expressed in Roman letters or in cipher.

#### CODE (CDE)

A fast message service consisting of words formed without condition or restriction, counted at 5 characters per word. Minimum charge of 5 words applies.

#### DEFERREDS (LC)

Plain language messages, subject to being deferred in favor of full rate and CDE messages.

#### NIGHT LETTERS (NLT)

Overnight plain-language messages. Minimum charge of 25 words applies.

March 2, 1949

Mr. Al Greer  
P. O. Box 337  
Artes, New Mexico

Dear Al:

Please find enclosed, copy of Order No. 799, Case 163, dated  
February 25, 1949, for your records.

Very truly yours,

R. R. Spurrier  
Secretary and Director

RRS:bw  
encl.

March 2, 1949

Oil Conservation Commission  
205 Booker Building  
Artesia, New Mexico

Gentlemen:

Please find enclosed, copy of Order No. 799, Case No. 163, dated  
February 25, 1949, for your records.

Very truly yours,

R. R. Spurrier  
Secretary and Director

RRS:bw  
encl.

March 1, 1942

Mr. Foster Morrell  
United States Geological Survey  
P. O. Box 997  
Roswell, New Mexico

Dear Mr. Morrell:

Enclosed please find signed copy of the Commission's Order No. 799,  
Case No. 163, dated February 25, 1942, for your records.

Very truly yours,

R. R. Spurrer  
Secretary and Director

RRS:bw  
encl.

March 1, 1949

Mr. Glenn Staley  
Lea County Operators Committee  
Drawer I  
Robbs, New Mexico

Dear Mr. Staley:

Enclosed please find signed copy of Order No. 799, Case 163, dated  
February 25, 1949, for your records.

We would appreciate receiving 100 mimeographed copies of this order.

Very truly yours,

R. R. Spurrier  
Secretary and Director

RRS:bw  
encl.

March 1, 1949

Mr. J. O. Seth  
111 E. San Francisco Street  
Santa Fe, New Mexico

Dear Judge Seth:

Enclosed please find a signed copy of Order No. 799, Case No. 163,  
entered and adopted by the Commission on February 25, 1949.

Very truly yours,

R. R. Spurrier  
Secretary and Director

RRS:bw  
encl.

February 14, 1949

Mr. J. O. Seth  
111 E. San Francisco Street  
Santa Fe, New Mexico

Dear Judge Seths:

Enclosed please find an unsigned copy of proposed Order No. 799, in Case 163, in accordance with your request.

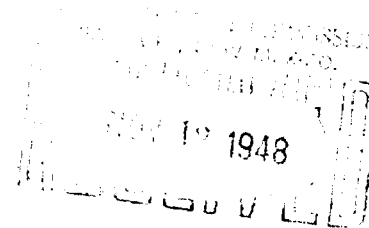
It is expected to promulgate this order in the near future, therefore if you will kindly indicate your ideas of its applicability as soon as possible, I am sure Mr. Spurrier will appreciate same.

Very truly yours,

George A. Graham

GAG:baw  
encl.

**Wm. Mansfield**  
OIL OPERATOR  
**AZTEC, NEW MEXICO**  
Farmington, New Mexico  
November 10, 1948



*Case 163*

Oil Conservation Commission  
Santa Fe, New Mexico

Attn: Mr. R. R. Spurrier  
State Geologist

Gentlemen:

It was not possible for me to attend the recent hearings with respect to well spacing for the Blanco Gas Field, San Juan County, New Mexico.

As a very small lease owner in this area, I desire to go on record as opposing 640 acre spacing at this stage of development of the field.

Very truly yours,

*William Mansfield*  
William Mansfield

O'H

January 11, 1949

Mr. Albert R. Greer  
Anderson-Prichard Oil Corporation  
Oklahoma City, Oklahoma

Dear Al:

This will acknowledge your comments addressed to the Commission,  
dated January 3, 1949.

We are very happy to have your comments and appreciate very much  
the analysis you have made of gas well spacing in the Blanco pool, San  
Juan County.

Sincerely,

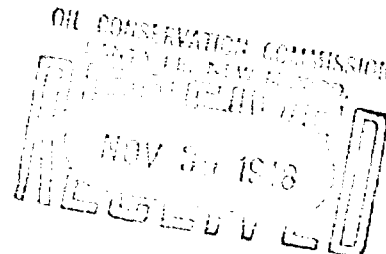
R. R. Spurrier  
Secretary and Director

RRS:bw

J. O. SETH  
A. K. MONTGOMERY  
OLIVER SETH

SETH AND MONTGOMERY  
ATTORNEYS AND COUNSELORS AT LAW  
III SAN FRANCISCO ST  
SANTA FE NEW MEXICO

November 30, 1948.



Oil Conservation Commission  
Santa Fe, New Mexico

Gentlemen:

I have received from Mr. Card, of the Stanolind Oil and Gas Company, the enclosed copies of proposed field rules for the Blanco gas field, following the testimony introduced at the hearing beginning on October 28th last, also a plat setting forth the proposed drilling program.

This is submitted, of course, merely as a suggestion from the Stanolind Oil and Gas Company, and it is submitted pursuant to the suggestion made by Mr. Spurrier at the time of the hearing.

The order includes all provisions believed desirable to control development, production and drilling.

Very truly yours,

A handwritten signature in cursive script, appearing to read "J. O. Seth".

JOS:CB  
Encls.

ALBERT R. GREER  
REGISTERED PETROLEUM ENGINEER  
STATE OF NEW MEXICO

3 January, 1949

The New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

Re: Case 163, October 28-29, 1948; relative  
to gas well spacing in the Blanco Field,  
San Juan County.

Gentlemen:

I have studied the testimony presented at this hearing and would like to summarize some of the evidence as I have interpreted it, for the benefit of the commissioners. I am interested in this area in a small personal way, however I feel competent to analyze the engineering information presented.

Two things were apparently agreed upon in principle by all concerned:

- 1) Development of the field is necessary, desirable and should be encouraged.
- 2) Economics is the most important limiting factor relative to well spacing.

There was a difference of opinion, however, as to whether close or wide spacing would encourage development, and just how much gas was necessary to provide a satisfactory payout. Considerable testimony was presented in favor of both close and wide spacing, which I will not repeat here.

One salient fact relative to both development and economics was not pointed out, however, and I would like to bring it to the minds of the commissioners. This is simply that a field will be more easily and rapidly developed when all of the reserves proven by each additional well are economically valuable. Practically all companies, large and small, make loans from time to time for development purposes, buy and sell producing properties, etc. In order for the reserves underlying any well to be considered of value they must be produced within a reasonable length of time. The present value of gas to be produced 50 years hence is negligible. Some reputable engineering firms do not assign any value to production that must be delayed as much as thirty years.

In this connection it was shown that the producing formation is tight, that anticipated delivery rates are low. The wells that were tested showed abilities to deliver only 1,000 MCF ~~per~~ day per well against a normal line pressure. It was not pointed out, however, that as the reservoir pressure declines the producing ability will decline at an accelerated rate, and individual well production may easily be limited by the formations ability to produce, rather than to a limited market. From the evidence presented at the hearing, I think a reasonable overall production rate for the life of a well would be 500 MCF per day. For the reserves

ALBERT R. GREER  
REGISTERED PETROLEUM ENGINEER  
STATE OF NEW MEXICO

indicated at the hearing (20,000 MCF per acre), it would take 70 years for one well to deplete a 640-acre tract.

Hence, for 640 acre spacing, a large part of the reserves underlying each well would be of no economic value, either for initial financing or later trading; and it seems to me that field development must be slower as a result. By the same token, this long delayed production can be of small economic value relative to initial payout of investment.

Yours very truly,

*Albert R. Greer*

Albert R. Greer

BROOKHAVEN OIL COMPANY

316 ROSENWALD BUILDING

(MAIL) P. O. BOX 644

PHONE 7830

Albuquerque, New Mexico

RECEIVED  
OCT 17 1948  
U. S. GEOLOGICAL SURVEY  
WASHINGTON, D. C.

October 16, 1948.

Mr. Foster Morrell  
U. S. Geological Survey  
Federal Building  
Roswell, New Mexico

163

✓ Mr. R. R. Spurrier, State Geologist  
Oil Conservation Commission  
408 Galisteo  
Santa Fe, New Mexico

Gentlemen:

With reference to the informal discussion on the proposition of unitizing (communitizing) the Blanco area, San Juan County, New Mexico, held October 1st, 1948, at Santa Fe in the State Oil Conservation Offices, I and my associates are owners of oil and gas leases on State and patented land and likewise owners of minerals (royalty) on patented land within and adjacent to the proposed unitized area.

Before making any recommendations, I would like to strongly emphasize how vitally necessary it is to unitize (communitize) the operating interests on State and patented lands with the operating interests on Federal lands, and to unitize (communitize) the mineral (royalty) interests on patented lands within reasonable drilling plats. If these matters are not attended to promptly, the small and numerous patented lease and royalty owners and the State of New Mexico, as a mineral (royalty) owner, will suffer irreparable damage due to lack of development and drainage. The owners of leases on State land are scattered all over the country in as small a lease ownership as forty (40) acres. It is my guess that many of these lease owners are not familiar with the oil business and have merely purchased these leases as a gamble and as a result of high pressuring. For instance, I and my associates own an eighty (80) acre State lease in Section 2, Township 29 North, Range 9 West, and as far as I can tell, this is the largest lease in this section, the other owners being scattered from New Mexico to St. Albany, Oregon, Marion, Pennsylvania, and Silvis, Illinois. Unless the area is communitized, and development takes place on this section, both myself as an operator and the State of New Mexico as a royalty owner will probably find ourselves in the dilemma of either being unable to develop due to wide spacing or if we are allowed to drill a well, being cut down in our production due to ratable taking. The single operator can not buy out these small interests or carry them out of production. On the other hand, a large community interest can do this. As to the small lease owners on patented lands, similar circumstances prevail. It is for these reasons and for the purposes of conservation and orderly development that I, from the practical standpoint, propose and recommend the following:

Messrs. Morrell and Spurrier  
October 16, 1948.  
Page 2.

- 1 - To promptly unitize (communitize) the "operating" interest within an area that is thought likely to produce from the Mesa Verde formation (Cliff House and Point Lookout).

It is suggested that this area initially be smaller than that already proposed. If, as and when it appears quite certain that the productive area might expand beyond the initially formed unitized area, additional operating and mineral interests can be added to the unitized area. When such unit is formed, each operating interest within it would have the same interest in each well drilled within the unit. His operating interest would be proportionate as his total lease acreage is to the total of all acreage in the unit.

As to the wells already drilled and capable of producing (Florence-Wood River and Stanolind), reasonable charges should be made against the other operators for their share of the costs of these wells.

Southern Union-Delhi, as an incentive to provide an outlet, would have a proportional share in production with or without drilling additional wells.

- 2 - To promptly unitize (communitize) the "mineral" (royalty) interests on patented lands within the unitized operating area into drilling plats as large as practical (maximum 640 acres-minimum 160 acres). The royalty need not be unitized under Federal or State lands except in isolated border cases. It is foolish to suppose that a ten acre royalty owner on patented land will permit his small interest to be unitized (communitized) with all the other 31,000 royalty acres, mostly Federal and State. By communitizing royalty interests on patented lands into practical drilling plats, the drilling pattern on patented lands would be about the same as on Federal and State lands. If these proposals are accepted, some patented land may have a greater density of wells than the Federal or State land. This would make no difference to the operating owners who have the same proportional share in all wells. Production allowables per well (ratable take) would compensate the Federal and State royalty holdings.
- 3 - The unitized area would be operated by a unit operator chosen by a majority vote of the operating interests under a unit operating agreement comparable to that form adopted by the Midcontinent Oil & Gas Association, copy of which is enclosed.

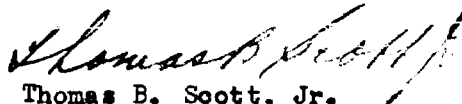
To summarize the above,

- (a) unless the operating interests on State and patented lands are unitized (communitized) with the operating interests on Federal lands, these State and patented lands will be the last to be drilled and thus receive irreparable damage from drainage.

Messrs. Morrell and Spurrier  
October 16, 1948  
Page 3.

- (b) unless the mineral (royalty) interests on patented lands are unitized (communitized) on a size plat practical to unitize and drill, patented lands will be the last to be drilled and thus receive irreparable damage from drainage.

Very truly yours,

  
Thomas B. Scott, Jr.

TBS:ms  
Enc - Unit Operating Agreement (Model Form)

CC: Stanolind Oil & Gas Company  
P. O. Box 335  
Albuquerque, New Mexico

Florence Drilling Company  
Aztec, New Mexico

Wood River Oil & Refining Co.  
Wichita, Kansas

Mr. Frank A. Schultz  
Delhi Oil Corporation  
Southern Union Gas Company  
Burt Building  
Dallas, Texas

Mr. P. B. English, Byrd Frost, Inc.  
Farmington, New Mexico

# UNIT OPERATING AGREEMENT

**This Agreement,** Made and entered into this..... day of....., 19....., between the parties signatory hereto:

WITNESSETH: THAT,

WHEREAS, each of the parties hereto represents that he or it is the owner of valid, subsisting and merchantable oil and gas leases upon and covering certain lands situated in..... County (Parish), State of....., as set forth opposite the names of each of said parties on the schedule of leases attached hereto, marked "Exhibit A" and made a part hereof, said leases covering an aggregate of..... acres, more or less; and

WHEREAS, with the view of more economically operating said leases for the extraction of oil and gas, the parties desire to unitize said leases into a common ownership to the end that each of said parties will own an undivided interest in the whole thereof proportionate to the ratio which each party's present ownership bears to the entire unitized area, and to develop and operate said leases as a unit but in harmony with the terms, conditions and provisions of said oil and gas leases:

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements herein contained, said parties have contracted and agreed, as follows:

## I. UNITIZATION OF LEASES

To execute and deliver assignments in the manner hereinafter provided to the end that each of the parties shall be vested with title to an undivided interest in the oil and gas leases described in the schedule attached hereto, marked "Exhibit A", in the proportion that each party's present interest in the acreage within the unitized area bears to the entire unitized area.

The unitization of said leases shall be accomplished in the following manner, to-wit:

Each of the parties, other than the examining party as hereinafter referred to, shall, within..... days from the date hereof, submit abstracts and all title papers on his or its respective interest in leases to be included within the unitized area to .....

..... hereby designated and appointed as the Examining Party, for the purpose of causing such abstracts and title papers to be examined by his or its attorneys on behalf of all the parties hereto. Abstracts and title papers on the respective interest in leases to be included within the unitized area by said examining party shall be submitted to..... for examination by his or its attorneys. All of such examinations shall be made without charge to the other parties. Such examinations shall include an examination of the form of said leases and the opinion of said attorneys as to the condition of said titles shall be binding and conclusive on the parties.

If such examining attorneys shall find that any lease or leases covered by this agreement have less than..... months within which to complete a well on the leased premises, to prevent the termination or expiration of such lease, said attorneys shall make a requirement that the owner or owners of any such lease or leases shall, within thirty (30) days after notice of such requirement, at his or its sole cost and expense, secure a renewal or extension of said lease or leases for a period of not less than..... Should any owner or holder of any such lease or leases fail or elect not to secure such renewal or extension then, at the election of the other parties hereto, such title may be rejected, and thereupon any of the parties hereto may withdraw from this agreement by giving ten (10) days' written notice to the other parties of his or its election to so withdraw.

Said attorneys shall report requirements, delinquencies and defects in titles to the respective parties, who shall exercise due diligence to remedy the same. The disapproval or rejection of title to any lease of any party hereto shall operate to reduce the proportionate interest of such party in the unitized area and the proportionate interest of the other parties shall be increased accordingly, and the disapproval or rejection of all the titles of any one party shall relieve such party from further liability and from further participation in the benefits hereunder. Should the titles of any of the parties hereto be finally rejected, in whole or in part, notice thereof shall be given to the remaining parties and thereupon any of the parties may withdraw from this agreement by giving written notice, within ten (10) days, to the other parties of his or its election so to do. Thereupon the parties hereto, or such remaining parties as may elect to proceed hereunder, shall be vested with title to an undivided interest in the unitized area in the proportion that each party's interest in the acreage bears to the whole thereof. Thereafter, each of the parties shall bear his or its proportionate part of the loss of any or all titles that may for any reason fail.

Upon the completion of the well hereinafter provided for, each of the parties hereto, or such remaining parties as shall have elected to proceed hereunder, shall execute, acknowledge and deliver to one another assignments of undivided interests in the leases covering the entire unitized area, to the end that each of the parties shall be vested with record title to his or its undivided interest in the unitized area, as herein provided for. Such assignments shall be made subject to and shall incorporate this agreement by specific reference thereto. Upon acceptance and approval of titles, as aforesaid, the following provisions of this agreement shall become operative.

## II. EFFECTIVE PERIOD

This agreement is to remain in force for the full term of any and all of the leases in the unitized area and of any renewals or extensions thereof, whether by production or otherwise, and may be terminated only by the consent of the parties hereto owning proportionate interests aggregating not less than..... per cent of the unit; provided, that if any party so desires, he or it may be released from all obligations and liability not previously incurred under this agreement by assigning, conveying and transferring to the other parties hereto all of his or its right, title and interest in the leases covered hereby, said assigned interest to be held by the assignees in proportion to their then respective interests in the unitized acreage. Thereupon, the right of such party to any benefits thereafter

accruing hereunder shall cease; provided, however, such assignment shall not relieve said assigning party from any liabilities incurred prior to the execution and delivery of any such assignment

### III. JOINT OPERATIONS

The leasehold estates embraced in said unitized area shall be owned, developed and operated under the terms of this agreement for the joint benefit of the parties hereto, and all cost and expense in connection therewith shall be borne in the proportion in which said unitized leases are owned by the parties. The parties shall severally own their respective proportions of the working interest in the oil and gas that may be produced therefrom. Income and liabilities accrued or incurred shall be shared and borne in said proportion, each party being entitled to receive his or its proportion of income and shall be liable for his or its proportionate part of all cost and expense.

### IV. OPERATOR

The term "Operator", as herein used, shall be construed to mean the party designated as such by the Advisory Committee, as hereinafter created.

### V. RENTALS

Each party shall, before the due date, pay all delay rentals which may become due lessors, or their successors in interest, under the lease or leases which he or it has contributed to the unitized area as described in "Exhibit A", and each party so paying said rentals shall within ten (10) days after said rentals have been paid notify Operator hereinafter designated of such payment or payments and submit evidence thereof. The party paying such rentals shall charge the other parties with their respective proportion or proportions of such rental.

If any party fails to use reasonable diligence to timely pay such delay rental and any lease or leases are forfeited by reason thereof, said party, at his or its sole cost and expense, shall obtain a new lease on the land covered by said forfeited lease and contribute the same to the unit, and failing so to do shall be liable to the remaining parties for the reasonable market value of their interest in such forfeited lease.

Each of the parties hereto, as soon as practicable after the execution of this agreement, shall furnish Operator, hereinafter designated, a statement of his or its leases to be included within the unitized area containing a description of the land covered thereby and the due date for any delay rentals under the terms of any and all such leases. Operator shall, at least sixty (60) days before the due date for any such delay rental or rentals, notify the party charged with the payment of such delay rental or rentals of the due date for the payment thereof, but Operator shall not be liable for failure to so notify any party so charged with the payment of said delay rental or rentals nor for the failure or neglect of such party to pay said rental or rentals as hereinabove provided.

### VI. ADVISORY COMMITTEE

An Advisory Committee is hereby created, hereinafter designated as the "Committee", consisting of a representative of each of the parties hereto. Each party shall immediately designate its committee member and shall give notice, in writing, thereof to Operator. Each party shall have the right at any time to substitute another person as his or its committee member by notifying Operator in writing. The member of the Committee designated by Operator shall be the Chairman of the Committee.

It shall be the duty of the Committee to advise and confer with Operator to the extent herein provided.

Each member of the Committee shall have a vote in the proportion which the interest of his or its principal bears to the entire unitized area. A vote of the majority interests shall be binding upon all the parties; provided, however, that should the interest of any one of the parties hereto be a majority interest, the vote of at least \_\_\_\_\_ other members of the Committee shall be required in addition to the vote of the representative of such majority interest to bind all the parties.

### VII. FUNCTIONS OF COMMITTEE

The Committee shall have the power and it shall be its duty:

(a) From time to time, when it deems it necessary or expedient to designate one of the parties hereto as Operator to carry on operations of the leased premises for oil and gas under the terms hereof; and when deemed necessary or expedient, to substitute and replace Operator with another of the parties hereto; provided, such substitution shall not be effective until \_\_\_\_\_ days after written notice thereof to the then existing Operator, unless such Operator sooner consents thereto.

(b) To determine the extent of drilling operations to be carried on by Operator and to approve or disapprove the contemplated drilling of any well or wells, and the location thereof; provided the consent and approval of the drilling of any well shall be construed to mean the approval of all necessary expenditures in drilling, completing and equipping such well, including the necessary lease tankage.

(c) To approve or disapprove the abandonment of any well or wells.

(d) To direct Operator to carry or not to carry public liability or other forms of insurance, except as hereafter prescribed by Paragraph XIII. If insurance is to be carried, the Committee shall determine and prescribe the various types and amounts of coverage and may designate the carrier thereof.

(e) To pass upon and approve or disapprove Operator's advance estimates of costs and expenditures.

(f) To approve or disapprove any proposed expenditures of Operator in any sum in excess of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), except as provided in subdivision "(b)" hereof.

(g) To approve or disapprove the proposed sale and disposition of surplus materials and equipment by Operator.

(h) To compromise or effect settlements of material overages and shortages determined at time of inventories which cannot be settled, compromised or agreed upon by the auditors, for the purpose of effecting prompt reconciliation of the inventories to the records of the parties hereto.

(i) To meet regularly at the call of the Chairman for the purpose of considering any business affecting the unitized area; provided, however, that a period of not more than three (3) months shall elapse between any two meetings, and provided further that any party hereto shall be entitled to call a meeting of the Committee upon the failure of the Chairman so to do.

(j) The Committee may, at its option, employ an auditor or inspector to represent all of the parties hereto in auditing, inspecting and checking Operator's books and records relating to said unitized properties, the expense of such work to be charged to the joint account.

### VIII. EMPLOYEES

The number of employees, the selection of such employees, the hours of labor and the compensation for services to be paid any and all such employees, shall be determined by Operator. Such employees shall be the employees of Operator.

### IX. DESIGNATION OF OPERATOR AND TEST WELL

Effective with the approval of titles, and until the Committee may otherwise direct, the parties hereto designate \_\_\_\_\_

\_\_\_\_\_, one of the parties hereto, as Operator, who shall within \_\_\_\_\_ days thereafter, or within such time as may be fixed by the Committee, commence the drilling of a well for oil and gas upon the following location: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

and prosecute the drilling of said well with diligence and dispatch to a depth sufficient to test the \_\_\_\_\_ formation, usually encountered at an approximate depth of \_\_\_\_\_ feet, unless otherwise directed by the Committee.

### X. AUTHORITY FOR INCURRING OF EXPENDITURES

Operator before incurring any item of expenditure in excess of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), except expenditures for the drilling and equipment of wells specifically authorized by the Committee, shall secure the express consent and approval of the Committee thereto. Operator shall, upon request, furnish copies of its authority for expenditures for any project costing in excess of \_\_\_\_\_

Dollars (\$ \_\_\_\_\_).

### XI. DRILLING OPERATIONS

All wells drilled on the unitized area shall be drilled on a competitive contract basis at the usual rates prevailing in the field in which said leases are located. Operator, if it so desires, may employ its own tools and equipment in the drilling of wells, but in such event the charge therefor shall not exceed the prevailing

Mid-Continent Committee Form No. 2-A  
In stock and for sale by  
The OLDS PRESS, Tulsa, Okla.

**"EXHIBIT A"**  
**(Descriptions)**

Model Form—Adopted by  
Mid-Continent Oil & Gas Association  
(1938)

Attached to and made a part of.....

## ACCOUNTING PROCEDURE (UNIT AND JOINT LEASE SCHEDULE)

The term "joint property" as herein used shall be construed to mean the subject area covered by the agreement to which this "Accounting Procedure" is attached.

The term "Operator" as herein used shall be construed to mean the party designated to conduct the development and operation of the leased premises for the joint account.

The term "Non-operator" as herein used shall be construed to mean any one or more of the non-operating parties.

Operator shall bill Non-operator on or before the last day of each month for its proportionate share of costs and expenditures during the preceding calendar month. Itemized statements shall accompany such bills. Each party shall pay its proportion of all such bills within fifteen (15) days after the receipt thereof. If payment is not made within such time, the unpaid balance shall bear interest at the rate of six per cent (6%) per annum until paid. Payment of any such bill shall not prejudice the right of any party to protest or question the correctness thereof; provided that Operator shall not be required to adjust any item unless a claim therefor has been presented within a period of two (2) years from the date of the rendition of any itemized statement.

### 1. DEVELOPMENT AND OPERATING CHARGES

Subject to limitations hereinafter prescribed, Operator shall charge the joint account with the following items:

- (1) Delay or other rentals, when such rentals are paid by Operator for the joint account; royalties, when not paid direct to royalty owners by the purchaser of the oil, gas, casinghead gas or other products.
- (2) Labor, teaming and other services necessary for the development, maintenance and operation of the joint property.
- (3) Materials, equipment and supplies purchased and/or furnished by Operator from its warehouse stocks or from its other leases for use on the joint property. In so far as is practical and consistent with efficient and economical operation, only such materials shall be purchased for or transferred to the joint property as are required for immediate use, and the accumulation of warehouse and/or lease stock on the joint property shall be avoided.
- (4) Moving materials to the joint property from vendor's or from Operator's warehouse in the district or from other properties of Operator, but in either of the last events no charge shall be made to the joint account for a distance greater than the distance from the nearest reliable supply store or railway receiving point.
- (5) Moving surplus materials from the joint property to outside vendees, if sold f.o.b. destination, or minor returns to Operator's warehouse or other storage point. No charge shall be made to the joint account for moving major surplus materials to Operator's warehouse or other storage point for a distance greater than the distance to the nearest reliable supply store or railway receiving point, except by special agreement with Non-operator; and no charge shall be made to the joint account for moving materials to other properties belonging to Operator, except by special agreement with Non-operator.
- (6) Use of and service by Operator's exclusively owned equipment and utilities as provided in Paragraph (6) of Section II: "Basis of Charges to Joint Account."
- (7) Damages or losses incurred by fire, flood, storm or from any other cause not controllable by Operator through the exercise of reasonable diligence. Operator shall furnish Non-operator written notice of damages or losses incurred by fire, storm, flood or other natural or accidental causes as soon as practicable after report of the same has been received by Operator.
- (8) Expenses of litigation, liens, judgments and liquidated claims involving the joint property or incident to its development and operation. Actual expenses incurred by Operator or Non-operator in securing evidence pertaining to the joint property shall be a proper charge against the joint account.
  - (a) When any case, by prior agreement, is handled by Operator's and/or Non-operator's legal staff, thereby eliminating the retaining of outside counsel, a charge commensurate with the cost of services rendered may be made to the joint account. Charges of this nature shall not be rendered until the respective legal departments have agreed upon the proper amount.
  - (b) Fees and expenses of outside attorneys shall not be charged to the joint account except where the employment of such outside attorneys is authorized by a vote of the majority interests.
- (9) All taxes paid for the benefit of the parties hereto including ad valorem, property, gross production, occupation and any other taxes assessed against the jointly-owned properties, the production therefrom or the operations thereon.
- (10) Insurance:
  - (a) Premiums paid for insurance carried for the benefit of the joint account together with all expenditures incurred and paid in settlement of any and all losses, claims, damages, judgments and other expenses, including legal services, not recovered from insurance carrier.
  - (b) If no insurance is required to be carried, all actual expenditures incurred and paid by Operator in settlement of any and all losses, claims, damages, judgments and any other expenses, including legal services, shall be charged to the joint account.
- (11) District and Camp Expense:
  - (a) District Expense: A proportionate share of the salaries and expenses of Operator's district superintendent and other general district employes serving the joint property whose time is not allocated directly to the joint property, and a proportionate share of the expense of maintaining and operating a district office in conducting the management of operations on the joint property and other properties in the same locality owned and operated by Operator, such charges to be apportioned to such properties served on the following basis: .....
  - (b) Camp Expense: The expense of providing and maintaining on or in the vicinity of the joint property all necessary camps, housing facilities for employes and boarding employes, if necessary. When properties other than the joint property are served by these facilities, then an equitable distribution of expense, including depreciation, or a fair monthly rental in lieu of the investment, maintenance and operating cost of buildings and other camp facilities, shall be prorated against all properties so served on the following basis: .....
- (12) Overhead charges, which shall be in lieu of any charges for any part of the compensation or salaries paid to managing officers and employes of Operator, including the division superintendent, the entire staff and expenses of the division office located at.....  
..... any portion of the office expense of the principal business office located at .....  
..... but not in lieu of field office expenses incurred in operating any such properties, and such overhead charges do not include any other expenses of Operator incurred in the development and operation of said properties, and Operator shall have the right to assess against the joint property covered hereby the following overhead charges:
  - (a) \$.....per month for each drilling well, beginning on the date the well is spudded and terminating when it is on production or is plugged, as the case may be, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.
  - (b) \$.....per well per month for the first five (5) producing wells.
  - (c) \$.....per well per month for the second five (5) producing wells.
  - (d) \$.....per well per month for all producing wells over ten (10).In connection with overhead charges, the status of wells shall be as follows:
  - (1) In-put or key wells shall be included in overhead schedule the same as producing oil wells.
  - (2) Producing gas wells shall be included in overhead schedule the same as producing oil wells.
  - (3) Wells permanently shut down but on which plugging operations are deferred, shall be dropped from overhead schedule at the time the shutdown is effected. When such wells are plugged, overhead shall be charged at the producing well rate during the time required for the plugging operation.
  - (4) Wells being plugged back or drilled deeper shall be included in overhead schedule the same as drilling wells.
  - (5) Wells which are shut down temporarily and later replaced on production. If and when a well is shut down (other than for production) and not produced or worked upon for a period of a full calendar month, it shall not be included on the overhead schedule for such month.
  - (6) Salt water disposal wells shall not be included in overhead schedule.

The above specific overhead rates may be amended from time to time by agreement between Operator and Non-operator if, in practice, they are found to be insufficient or excessive.

- (13) Warehouse Handling Charges: .....
- (14) Any other expenditure incurred by Operator for the necessary and proper development, maintenance and operation of the joint property, except that Operator shall not charge the joint account with any expenditure or contribution made by Operator towards employees' stock purchase plan, group life insurance, pension, retirement, or bonus, other than such expenditures or contributions imposed or assessed by governmental authority.

## II. BASIS OF CHARGES TO JOINT ACCOUNT

- (1) Outside Purchases: All materials and equipment purchased and all service procured from outside sources shall be charged at their actual cost to Operator, after deducting any and all trade and/or cash discounts actually allowed off invoices, or received by Operator.
- (2) New materials furnished by Operator (Condition "A"):
- New materials transferred to the joint property from Operator's warehouse or other properties shall be priced f. o. b. the nearest supply store or railway receiving point at replacement cost of the same kind of materials. This will include large equipment such as tanks, rigs, pumps, boilers and engines. All tubular goods (2" and over) shall be charged on the basis of mill shipment or carload price. Other materials, where the replacement cost cannot be readily ascertained, may, for the purposes of consistency and convenience, be charged on the basis of a reputable supply company's preferential list price f. o. b. nearest supply store or railway receiving point to the joint property prevailing on the date of transfer of the materials to the joint property.
- In determining the value of any transferred materials, all special and preferential discounts shall be allowed but the regular cash discount shall not be considered.
- (3) Secondhand materials furnished by Operator (Conditions "B" and "C"):
- (a) Tubular goods (2" and over), fittings, machinery and other equipment which is in sound and serviceable condition at date of transfer, will be classed as condition "B" and charged at 75% of the price of new materials, in accordance with the provisions of Paragraph (2) above.
- (b) Tanks, derricks, and buildings or other equipment involving erection costs shall be charged on a basis not to exceed 75% of knocked-down new price for similar materials.
- (c) Other secondhand materials, such as units of machinery or other equipment that is serviceable, but substantially not good enough to be considered first-class secondhand material when transferred to the joint property, shall be classed as condition "C" and charged at 50% of the new price.
- (d) There may also be cases where some items of equipment, due to their unusual condition, should be fairly and equitably priced by Operator.
- (4) Warranty of Materials Furnished by Operator: Operator does not warrant the materials furnished from its warehouse or other properties beyond or back of the dealer's or manufacturer's guaranty, and in case of defective materials, credit shall not be passed until adjustment has been received by Operator from the manufacturers or their agents.
- (5) If materials required are not available in Operator's surplus stocks, Operator shall, whenever in its judgment it is practical to do so, give Non-operator opportunity of furnishing the materials required in proportion to his or its interest, provided that the same can be furnished at the time such materials are required, and further provided that any such materials so furnished shall be in condition acceptable to Operator and shall be charged to the joint account on the same terms and conditions as are provided herein to cover the furnishing of materials by Operator.
- (6) Operator's Exclusively-owned Facilities: The following rates shall apply to service rendered to the joint property by facilities owned exclusively by Operator:
- (a) Water service, gas, teaming, power, and compressor service: All at rates currently prevailing in the field where the joint property is located.
- (b) Automotive Equipment: Rates commensurate with cost of ownership and operation and in line with schedule of rates adopted by the Petroleum Motor Transport Association as recommended uniform standardized charges against the joint account. Automotive charges will be based on use in actual service on or in connection with the joint property. Truck, tractor and pulling unit rates shall include wages and expenses of driver.
- (c) A fair rate shall be charged for the use of drilling and cleaning-out tools and any other items of Operator's fully-owned machinery or equipment which shall be ample to cover maintenance, repairs, depreciation and the service furnished the joint property. Provided, however, that such charges shall not exceed those currently prevailing in the field where the joint property is located.
- (d) Whenever requested, Operator shall inform Non-operator in advance of the rates it proposes to charge.
- (e) Rates shall be revised and adjusted from time to time when found to be either excessive or insufficient.

## III. DISPOSAL OF LEASE EQUIPMENT AND MATERIALS

- (1) Materials purchased by Operator shall be credited to the joint account and included in the monthly statement of operations for the month in which the materials are removed from the joint property.
- (2) Materials purchased by Non-operator shall be invoiced by Operator and paid for by Non-operator to Operator immediately following receipt of invoice and delivery of materials. Operator shall thereupon immediately pass credit to the joint account and include the same in the monthly statement of operations for the month in which the materials were paid for by Non-operator.
- (3) Division of materials in kind, if made between Operator and Non-operator, shall be in proportion to their respective interests in the joint property. Each party will thereupon be charged individually with the value of the materials received or receivable and corresponding credits will be made to the joint account by Operator, and both credits shall appear in the same monthly operating statement.
- (4) Sales to outsiders of major materials shall be made only with the consent of Non-operator as to both terms and price and where made the proceeds shall be credited by Operator to the joint account at the full amount collected from vendee. Any claims by vendee for defective materials or otherwise shall be charged back to the joint account, if and when paid by Operator.

## IV. BASIS OF PRICING MATERIALS TRANSFERRED FROM JOINT ACCOUNT

Materials and equipment purchased by either Operator or Non-operator, or divided in kind between them, unless otherwise agreed, shall be valued on the following basis of condition and price: (New price as used in the following paragraphs shall have the same meaning and application as that used above in Section II: "Basis of Charges to Joint Account.")

- (1) New Materials: (Condition "A") being new equipment or supplies purchased or procured for the joint property but never used thereon; at 100% of current new prices.
- (2) Good Secondhand Materials: (Condition "B") being good serviceable materials which are further usable without repair, at:
- (a) 75% of current new prices, if materials were new when originally charged to the joint property.
- (b) 75% of current new prices less depreciation consistent with their usage on and service to the joint property, if materials were originally charged to the joint property as secondhand at 75% of new prices.
- (3) Other Used Materials: (Condition "C") being materials further usable for their original function only after repair and reconditioning; at 50% of current new prices.
- (4) Bad Order Materials: (Condition "D") being materials not further usable for their original function but for possible other service; at 25% of current new prices.
- (5) Junk: (Condition "E") being obsolete and unserviceable materials; at prevailing junk prices in the district. Where practicable, junk should be disposed of at the joint property.
- (6) Temporarily Used Materials: When the use of certain items of equipment on the joint property has been only temporary, and the time of actual use thereon does not justify the deduction of depreciation as listed in (a) and (b) of Paragraph (2) hereof, such materials will be priced on a basis that will leave a net charge against the joint account consistent with the service rendered and adequate for the time the materials were in use.

## V. INVENTORIES

- (1) Periodic inventories shall be taken by Operator of the materials and equipment on the joint property, which shall include such materials and equipment as are ordinarily considered controllable by operators of oil and gas properties.
- (2) Notice of intention to take inventory shall be given by Operator to Non-operator a week before any inventory is to begin, so that Non-operator may be represented when any inventory is being taken.
- (3) Special inventories shall be taken whenever there is any sale or change of interest in the joint property, and it shall be the duty of the party selling to notify the other party as quickly as possible after the transfer of interest takes place. In such cases both the seller and the purchaser shall be represented and shall be governed by the joint inventory.
- (4) If the initial test on the joint property is a dry hole and no further tests thereon are immediately contemplated, Non-operator may require that an inventory be taken of all materials as soon as the casing has been recovered from the well and that the materials be classified before any materials are removed from the joint property by Operator or otherwise disposed of.
- (5) Failure of Non-operator to be represented at the physical inventory shall bind it to accept the inventory taken by Operator who shall in that event furnish Non-operator with a copy thereof.
- (6) Reconciliation of inventory with charges to the joint account shall be made by each party at interest, and a list of overages and shortages shall be jointly determined by Operator and Non-operator.
- (7) Inventory adjustments shall be made by Operator on the joint account for overages and shortages, but Operator shall only be held accountable to Non-operator for shortages due to lack of reasonable diligence.

rate in the field; and such work shall be performed by Operator under the same terms and conditions as shall be customary and usual in the field in contracts of independent contractors who are doing work of a similar nature. All drilling contracts shall contain appropriate provisions that any wells drilled on the unitized area, when completed, shall not deviate in excess of five degrees (5°) from perpendicular.

#### XII. CONTROL AND COSTS OF OPERATION

Operator shall have full control and, subject to the terms of this agreement, shall conduct and manage the development and operation of the unitized area for the production of oil and gas for the joint account of the parties hereto. It shall pay and discharge all cost and expense incurred and shall charge the other parties hereto with their respective proportionate share upon the cost and expense basis provided for in the "Accounting Procedure", attached hereto as "Exhibit B", and which is by reference made a part of this agreement as though set forth at length herein.

Operator shall at all times keep the joint interest of the parties hereto, in and to the leases and equipment thereon, free and clear of all labor and mechanics' liens and encumbrances.

#### XIII. INSURANCE

Operator shall carry workmen's compensation and employer's liability insurance as required by the laws of the State of \_\_\_\_\_; provided, however, that Operator may, with the consent of the Committee, be a self-insurer as to either or both of such risks. Operator shall carry such other forms of insurance for the joint benefit of the parties hereto in such amount or amounts as shall be directed by the Committee and it shall be the duty of the Operator to keep all such insurance in force and effect at all times while operations are conducted on the unitized area.

#### XIV. APPORTIONMENT OF COST AND EXPENSE

Each of the parties shall promptly pay and discharge its proportionate part of all cost and expense upon the basis as set forth in the "Accounting Procedure", attached hereto as "Exhibit B".

#### XV. ADVANCES

Operator, at its election, may require the parties hereto to advance their respective proportion of development and operating cost according to the following conditions: On or before the first day of each calendar month, Operator shall submit an itemized estimate of such cost for the succeeding calendar month to the Committee for its approval. Upon approval of such estimate by the Committee, Operator shall submit a copy thereof to each of the parties with a request for the payment of his or its proportionate part thereof. Within ten (10) days thereafter, each of the parties shall pay, or secure the payment in a manner satisfactory to Operator, his or its proportionate share of such estimate.

Should any party fail and neglect to pay, or secure the payment, of his or its proportionate part of such estimate, the same shall bear interest at the rate of six per cent (6%) per annum until paid. Adjustments between estimates and actual costs shall be made by Operator at the close of each calendar month, and the accounts of the parties adjusted accordingly.

#### XVI. LIABILITY

The liability of the parties hereunder shall be several, and not joint or collective. Each party shall be responsible only for his or its obligations, as herein set out, and shall be liable only for his or its proportionate share of the cost of developing and operating said leasehold estates.

#### XVII. OPERATOR'S LIEN

Operator shall have a lien on the interest of each of the parties in said leases, the oil and gas produced therefrom, the proceeds thereof, and the material and equipment thereon, to secure the payment of his or its proportionate part of the cost and expense of developing and operating the unitized premises, and to secure the payment by any such party of his or its proportionate part of any advance estimate of such cost and expense.

#### XVIII. CONTRIBUTION

In the event of the neglect or failure of any non-operator to promptly pay his or its proportionate part of the cost and expense of development and operation when due, as hereinabove provided, the other non-operators and Operator shall, within thirty (30) days after the rendition of statements therefor by Operator, contribute to the payment of the delinquent indebtedness of any such non-operator in the proportion that the interest of each bears to the total of all such interest. Upon the payment by such delinquent or defaulting non-operator to Operator of any amount or amounts on such delinquent indebtedness, the amount or amounts so paid shall be distributed and paid by Operator to the other non-operators and Operator to the extent of the contribution so made to the payment of such delinquent indebtedness.

#### XIX. DISPOSITION OF PRODUCTION

Each of the parties hereto shall have the right and privilege, upon reasonable notice to Operator, and upon the payment of, or securing the payment of the royalty interest thereon, of receiving in kind or of separately disposing of his or its proportionate share of the oil and gas produced and saved from the unitized premises; provided, however, that in the event of the failure or neglect of any party to exercise the right and privilege of receiving in kind or separately disposing of his or its proportionate share of such production, Operator shall have the right to purchase any such oil and gas for its own account, or to sell the same to any of the parties hereto, or to others, at not less than the prevailing market price.

Any extra expenditure incurred by reason of the delivery of its proportionate part of the production to any one party shall be borne by such party.

#### XX. DISTRIBUTION OF INCOME

All income received by Operator, derived from the jointly owned leasehold estates, shall be distributed to the parties hereto in the proportion in which said leases are owned, such distribution to be made when such income is received.

#### XXI. SURPLUS MATERIAL AND EQUIPMENT

Surplus material and equipment from the unitized area, when, in the judgment of Operator, the same are not necessary for the development and operation of the leased premises, may, with the approval of the Committee, be divided in kind or sold to any of the parties hereto, or to others, for the benefit of the joint account. Proper charges and credits shall be made by Operator as provided in the "Accounting Procedure", attached hereto as "Exhibit B".

#### XXII. RIGHT OF PARTIES TO INSPECT PROPERTY AND RECORDS

The following specific rights, privileges and obligations of the parties hereto are hereby expressly provided, but not by way of limitation or exclusion of any other rights, privileges and obligations of the respective parties:

- (a) Any party hereto shall have access to the entire unitized area, at all reasonable times, to inspect and observe operations of every kind and character upon the property.
- (b) Any party hereto shall have access, at all reasonable times, to any and all information pertaining to wells drilled, production secured, oil marketed, and to the books, records and vouchers relating to the operation of the unitized area.
- (c) Operator shall, upon request, furnish the other parties hereto with daily drilling reports, true and complete copies of well logs, tank tables, daily gauge and run tickets and reports of stock on hand at the first of each month, and shall also, upon request, make available samples and cuttings from any and all wells drilled on the unitized area.

#### XXIII. TRANSFERS OF INTEREST

No assignment, mortgage or other transfer affecting the leases covered hereby, the production therefrom, or equipment thereon, shall be made unless the same shall cover the entire undivided interest of assignor, mortgagor or seller in all said leases; it being the intent of this provision to maintain the unit ownership, development and operation of the unitized area; provided that the sale of a lesser interest than the seller's entire undivided interest may be made upon securing the unanimous approval of the Committee thereto in writing.

In the event any party desires to sell all or any part of his or its interest in the unitized area, the other parties hereto shall have a preferential right to purchase the same. In such event, the selling party shall promptly communicate to the other parties hereto the offer received by him or it from a prospective purchaser ready, willing and able to purchase the same, together with the name and address of such prospective purchaser, and said parties shall thereupon have an option for a period of ten (10) days after the receipt of said notice to purchase such undivided interest for the benefit of the remaining parties hereto as may agree to purchase the same; provided that any interest so acquired shall be shared by the parties purchasing the same upon the basis of their then existing interest in the unitized area; provided, further, the limitations of this paragraph shall not apply where any party hereto desires to dispose of its interest by merger, reorganization, consolidation or sale of all its assets, or a sale of its interest hereunder to a subsidiary or to any company in which any one party hereto owns a majority of the stock.

#### XXIV. SURRENDER OF LEASES

No lease embraced within the unitized area shall be surrendered unless a majority of the Committee consents thereto; provided that if the Committee, by a majority vote, authorizes the surrender of any lease in the unitized area, and any of the parties not consenting thereto so desire, such lease shall be assigned to the party or parties desiring the same and shall thereupon be held and owned by such party or parties in severalty.

#### XXV. REGULATIONS

All of the terms and provisions of this agreement are hereby expressly made subject to all valid rules and regulations of any duly constituted authority having jurisdiction in the premises.

Operator shall prepare and furnish to any such duly constituted authority, through its proper agency or department, any and all reports, statements and information as may be requested when such reports are required to be furnished by Operator.

#### XXVI. MISCELLANEOUS PROVISIONS

The term "oil and gas" wherever used in this agreement shall be construed to include casinghead gas and any other mineral deposit covered by any oil and gas lease in the unitized area.

Operator shall not be liable for any loss of property or of time caused by strikes or riots, or by fires, tornadoes, floods or from any other cause beyond the

control of Operator through the exercise of reasonable diligence.

This agreement and "Exhibit A" and "Exhibit B", attached hereto, contain all the terms and provisions as agreed to by the parties hereto.

This agreement shall extend to and bind the respective heirs, executors, administrators, successors and assigns of the parties hereto, and it is hereby agreed that the terms and provisions hereof shall constitute a covenant running with the lands and leasehold estates covered hereby.

IN WITNESS WHEREOF, the parties hereto have signed this agreement the day and year first hereinbefore written.

ATTEST:

_____ Secretary.	_____ <i>First Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Second Party</i> President.
---------------------	--

ATTEST:

_____ Secretary.	_____ <i>Third Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Fourth Party</i> President.
---------------------	--

ATTEST:

_____ Secretary.	_____ <i>Fifth Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Sixth Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Seventh Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Eighth Party</i> President.
---------------------	--

ATTEST:

_____ Secretary.	_____ <i>Ninth Party</i> President.
---------------------	---

ATTEST:

_____ Secretary.	_____ <i>Tenth Party</i> President.
---------------------	---

_____	_____ <i>Eleventh Party</i>
-------	--------------------------------

_____	_____ <i>Twelfth Party</i>
-------	-------------------------------

(If this agreement is to be recorded, the acknowledgment of the parties thereto should be in conformity with the provisions of the recording laws of the state in which the subject matter is located.)

TURNER, HOWARD AND FRANCIS

ATTORNEYS AND COUNSELORS AT LAW

SUITE 1711 MERCANTILE BANK BUILDING

DALLAS, TEXAS

J. GLENN TURNER  
GILBERT P. HOWARD  
EDWARD L. FRANCIS

November 22, 1948

Mr. R. R. Spurrier  
New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

Re: Case No. 163, Petition of Stanolind Oil  
and Gas Company for well spacing in Blanco  
Field.

Dear Mr. Spurrier:

Pursuant to your request, we have finally prepared a proposed form of order of the commission in the subject case, which was heard by the Commission on October 28, and October 29, 1948, in Santa Fe, and are enclosing two copies of the same herewith.

We realize that we have been very dilatory in preparing and forwarding this instrument to you. However, in view of the fact that the evidence introduced was so lengthy, perhaps no harm has been done.

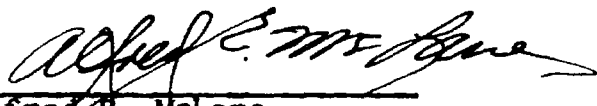
In our opinion, the Commission gave both sides a full and fair hearing, and I know the order of the Commission will be in accordance with the evidence presented. Naturally, we feel that this would mean entering an order in accordance with the form enclosed.

Thanking you again for your consideration, we are

Yours very truly,

TURNER, HOWARD AND FRANCIS

By

  
Alfred E. McLane  
Attorneys for Delhi Oil  
Corporation.

AEM/pas  
Enc.

*I have one copy  
filed*

OIL CONSERVATION COMMISSIG..

SANTA FE, NEW MEXICO

13 October 1948

The Aztec Independent Review  
Aztec, New Mexico

RE: Cases 163 & 165 - Notice  
of Publication

Gentlemen:

Please publish the enclosed notice once, immediately. Please proof-read the notice carefully and send a copy of the paper carrying such notice.

UPON COMPLETION OF THE PUBLICATION, PLEASE SEND PUBLISHER'S AFFIDAVIT IN DUPLICATE.

For payment please submit statement in duplicate, accompanied by voucher executed in duplicate. The necessary blanks are enclosed.

Very truly yours,

---

RRS:bsp

cc: Al Greer

C

O

P

Y

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice, pursuant to law, of the following public hearing to be held October 28, 1948, beginning at 10:00 o'clock A.M. on that day in the City of Santa Fe, New Mexico.

STATE OF NEW MEXICO TO:

All named parties in the following cases, and notice to the public:

CASE 163

In the matter of the petition of Stanolind Oil and Gas Company for the adoption of regulations establishing the 640 acre spacing in the Blanco Field in San Juan County, New Mexico; establishing the location of the initial well on each 640; fixing regulations as to the setting of pipe; and for back pressure tests of the various stratas.

CASE 165

In the matter of application of Jenkins and McQueen for order granting permission to drill unorthodox location designated as Well No. 1 on their Cassidy lease, described as NW/4 NE/4 SE/4 (2970 feet south of the north line and 990 feet west of the east line) section 19, T.29N, R.11W, N.M.P.M., in the Kutz Canyon-Fulcher Basin Field of San Juan County, New Mexico.

Given under the seal of the Oil Conservation Commission of New Mexico at Santa Fe, New Mexico on October 13, 1948.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

By R. R. Spurrier  
R. R. SPURRIER, Secretary

IN ACCOUNT WITH  
**AZTEC INDEPENDENT-REVIEW**  
San Juan County's Leading Newspaper, Established 1888  
AZTEC, NEW MEXICO

SOLD TO

October 15, 1948

Oil Conservation Commission  
R. R. Spurrier, Secretary  
Santa Fe, New Mexico

The San Juan Basin is the Richest Empire  
in the Great Southwest  
Agriculture—Fruit—Live-Stock—Oil—Gas—Mines  
Sixty years of Service have made us  
Leaders in this Rich Empire

QUANTITY	DESCRIPTION	AMOUNT
	Publication of Notice of Public Hearing in Cases No. 163 and No. 165, one time (47 lines at .10 per line)	4.70

AFFIDAVIT OF PUBLICATION  
STATE OF NEW MEXICO  
COUNTY OF SAN JUAN

NOTICE OF PUBLICATION

State of New Mexico,  
Oil Conservation Commission  
The State of New Mexico, by its  
Oil Conservation Commission,  
pursuant to the law, hereby gives  
notice of the following public hear-  
ing to be held on October 28, 1948,  
beginning at 10:00 o'clock a.m.:  
on that day, in the City of Santa Fe  
New Mexico;

STATE OF NEW MEXICO, TO  
ALL MAIN PARTIES IN THE  
FOLLOWING CASES AND NOTICE  
TO THE PUBLIC;

not  
the  
bein  
Case 163, in the Matter of the  
Petition of Stanolind Oil and Gas  
Co. for the adoption of regulations  
establishing 640 acre spacing in  
the Blanco field in San Juan County,  
New Mexico; establishing the  
location of the initial well on each  
640 acres; fixing regulations as to  
the setting of pipe; and for back-  
pressure tests of the various strata;

Case 165, in the Matter of Appli-  
cation of Jenkins and McQueen for  
Order granting permission to drill  
unorthodox location designated as  
Well No. 1 on the Cassidy Lease  
described as NW 1/4 NE 1-4  
SE 1-4 of (2970 feet south of the  
north line and 990 feet west of the  
east line) Sec. 19, Twp. 29N,  
Range 11 W. N. M. P. M., in the  
Kutz Canyon-Fulcher Basin Field  
of San Juan County, New Mexico.  
Given under the seal of the Oil  
Conservation Commission of New  
Mexico at Santa Fe, New Mexico,  
on Oct. 13, 1948.

My Cor  
State of New Mexico  
Oil Conservation Commission  
by R. R. Spurrier, Secretary  
(SEAL)  
Published in Aztec Independent-  
Review Oct. 15, 1948.

George B. Bowra, being duly sworn,  
declares and says that he is the  
Editor of The Aztec Independent-  
Review, a weekly newspaper published  
and having general circulation in  
the City of Aztec, County of San  
Juan, and State of New Mexico; that  
the publication; a copy of which is  
hereto attached, was published in  
said paper in the regular and entire  
issue of every number of the paper  
during the period and time of publi-  
cation, and that the notice was pub-  
lished in the newspaper proper and

one issues, the first publication being on  
er \_\_\_\_\_, 1948, and the last publication  
October \_\_\_\_\_, 1948. Publication fee \$4.70

*George B. Bowra*

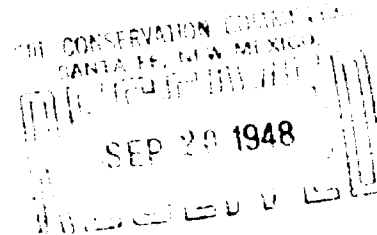
before me, a Notary Public, in and for the County  
New Mexico this 15 day of October, 1948

*Mary Taylor*  
Notary Public

~~21xx1844~~ 31, 1951.



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Mr. R. R. Spurrier  
New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Dear Mr. Spurrier:

Enclosed for you are two copies of a report on the New Mexico oil and gas resources in the Blando area. The report was prepared by the Geological Survey and is intended to provide information on the location and extent of the oil and gas reserves in the area. It is hoped that this information will be helpful in the development of the area.

It is essential in the development of the Blando area that the Messian and underlying formations be carefully studied and that the spacing of the wells will tend to secure the greatest ultimate recovery of gas, prevent waste and protect the conservation rights of all parties concerned. Consideration should be given to the location, pattern, and depth of the wells. The extent of the reservoirs may be determined after detailed study of the area. It is hoped that a closer spacing pattern may be needed after essential reservoir data is obtained.

Several operators have informally reviewed with me the possibility of formulating a unit plan of development and operation of the gas reserves of the deeper formations in the Blando area. The matter will be further discussed at this meeting.

It is hoped that you or your company will have a representative at the meeting who may speak with authority as to company attitudes both as to well spacing and unitization.

Although this meeting primarily involves the subjects as they affect Federal leases, invitation to attend and to participate is extended to all operators and lessees interested and to State officials.

Very truly yours,

Director, U.S. Geological Survey  
Department of the Interior, Washington, D.C.

Tract No.	Description	No. of acres	Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest and Other Option Agreement, Operating Agreement or Assignment of Interest
52	The west 65.55 acres of the NE/4, SE/4 SW/4 except the west 100 ft. thereof and except 2 acres in the SW corner of NE/4 SW/4; and east 20 acres of the NE/4 SW/4 Sec. 13	120.15		Simon Velasquez, et ux	Standind		
54	3.4 acres out of the 1/2 NE/4 SW/4 and the west 100 ft. of the NE/4 SW/4 Sec. 13	0.0		Manuel S. Martinez, et al	Unleased		
55	2 acres in the SW corner of the NE/4 SW/4 Sec. 13	2		Tonita Martinez	Unleased		
56	The east 10.25 acres of the NE/4 Sec. 13	10.25		Ron Case	Standind		
57	East 61.15 acres of the 1/2 NE/4 and east 14.45 acres of the 1/2 NE/4 Sec. 13	75.60		Edward U. Long	Unleased		
58	Township 30 North, Range 7 West North 20 acres of the North 40 acres of Tract No 40, being in sections 6 and 7 North 20 acres of the South 40 acres of Tract 40, being in Section 7	40		H. B. Salmon and C. C. Culpepper	Unleased		

STANOLIND OIL AND GAS COMPANY  
Tulsa, Oklahoma

August 5, 1949

File: 100-4-117

Re: 100-8765  
Proposed Unit  
Northeast Blanco Pass  
San Juan and Rio Arriba Counties  
New Mexico

Supervisor of Oil and Gas Operations (a)  
United States Geological Survey  
Albuquerque, New Mexico

Commissioner of Public Lands  
State Land Office  
Santa Fe, New Mexico

Director, New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

Gentlemen:

By our letter of July 6, 1949 concerning the proposed oil and gas unit in the Northeast Blanco Pass, San Juan and Rio Arriba Counties, New Mexico, application was made for:

- (1) Designation of an area logically subject to unitization.
- (2) Approval of the drilling obligation of a test well to be drilled to a depth of 5500' in order to test all horizons down to and including the Mesa Verde formation.
- (3) Approval as to form of an attached Unit Agreement.

It has been called to our attention by Mr. Foster Correll, Supervisor of Oil and Gas Operations, United States Geological Survey, in a letter dated July 19, 1949, that the form of unit agreement as submitted under our letter of July 6 is essentially identical to the one submitted by the Shell Oil Company for the Huertano Area, San Juan County, New Mexico. Mr. Correll also points out that the Huertano Unit Agreement was recently modified in the Washington Office of the U. S. G. S. and suggests that the Northeast Blanco Unit Agreement be sent to conform to the Huertano Unit Agreement and resubmitted for further consideration. As to our application for (1) and (2) above we are advised that these matters have been

COPY

ILLEGIBLE



August 3, 1940

referred to Washington for action.

In accordance with Mr. Morrell's suggestion, the attached copy of Unit Agreement for the Northeast Blanco area has been modified to conform with the revised form of Huerfano Unit Agreement. The only section in the attached agreement which contains different language is Section 8 entitled "Drilling to Discovery". In view of your recent consideration of the form of Huerfano Agreement, we presume that processing of the attached agreement for approval as to form will be facilitated. Accordingly, your early response in this connection will be appreciated.

Yours very truly,

W.H.H.  
Attachment

---

ILLEGIBLE

UNIT AGREEMENT FOR THE DEVELOPMENT AND  
OPERATION OF THE NORTHEAST BLANCO UNIT AREA,  
COUNTIES OF SAN JUAN AND RIO ARriba  
STATE OF NEW MEXICO

1-Sec. No. \_\_\_\_\_

THIS AGREEMENT, entered into as of the \_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_,  
by and between the parties subscribing, ratifying, or consenting hereto, and  
herein referred to as the "parties hereto";

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty, or other  
oil or gas interests in the unit area subject to this agreement; and

WHEREAS, the term "working interest owner" as used herein and in other  
contracts between and among the parties relating to the subject lands shall mean  
and refer only to such an interest committed hereto as may be obligated to bear or  
share, either in cash or out of production (other than by permitting the use of  
unitized substances for development, production, repressuring or recycling purposes),  
a portion or all of the costs or expenses of development, equipping or operating any  
land within the Unit Area subject to this agreement. If the working interest in any  
tract is or shall hereafter be owned by more than one party, the term "working in-  
terest owner", when used with respect to such tract, shall refer to all such parties  
owning the working interest therein; and

WHEREAS, the act of February 25, 1920, 41 Stat. 437, 30 U.S.C. Sec. 181,  
et. seq., as amended by the act of August 8, 1946, 60 Stat. 950, authorizes Federal  
lessees and their representatives to unite with each other, or jointly or separately  
with others, in collectively adopting and operating under a cooperative or unit plan  
of development or operation of any oil or gas pool, field, or like area, or any part  
thereof, for the purpose of more properly conserving the natural resources thereof  
whenever determined and certified by the Secretary of the Interior to be necessary  
or advisable in the public interest; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is  
authorized by an Act of the Legislature (Chap. 88, Laws 1943) to consent to or  
approve this agreement on behalf of the State of New Mexico, insofar as it covers  
and includes lands and mineral interests of the State of New Mexico; and

WHEREAS, the Oil Conservation Commission of the State of New Mexico is  
authorized by an Act of the Legislature (Chap. 72, Laws 1935) to approve this agree-  
ment and the conservation provisions hereof;

WHEREAS, the parties hereto hold sufficient interests in the Northeast Blanco Unit Area to give reasonably effective control of operations therein; and

WHEREAS, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operation of the area subject to this agreement under the terms, conditions, and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the unit area and agree severally among themselves as follows:

1. ENABLING ACT AND REGULATIONS: The act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder or valid pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this agreement, and as to non-Federal land applicable State laws are accepted and made part of this agreement.

2. UNIT AREA: The following described land is hereby designated and recognized as constituting the unit area:

NEW MEXICO PRINCIPAL MERIDIAN

Township 31 North, Range 6 West

Sec. 6 - All  
Sec. 7 - All

Sec. 18 - All  
Sec. 19 - All

Sec. 20 - All  
Sec. 30 - All

Township 31 North, Range 7 West

Sec. 1 - All  
Sec. 9 - S $\frac{1}{2}$   
Sec. 10 - S $\frac{1}{2}$   
Sec. 11 - All  
Sec. 12 - All  
Sec. 13 - All  
Sec. 14 - All  
Sec. 15 - All  
Sec. 16 - All

Sec. 19 - All  
Sec. 20 - All  
Sec. 21 - All  
Sec. 22 - All  
Sec. 23 - All  
Sec. 24 - All  
Sec. 25 - All  
Sec. 26 - All  
Sec. 27 - All

Sec. 28 - All  
Sec. 29 - All  
Sec. 30 - All  
Sec. 31 - All  
Sec. 32 - All  
Sec. 33 - All  
Sec. 34 - All  
Sec. 35 - All  
Sec. 36 - All

Township 31 North, Range 8 West

Sec. 25 - All  
Sec. 36 - All

Township 30 North, Range 7 West

Sec. 2 - All  
Sec. 3 - All  
Sec. 4 - All  
Sec. 5 - All  
Sec. 6 - All

Sec. 7 - All  
Sec. 8 - All  
Sec. 9 - All  
Sec. 10 - All  
Sec. 16 - All

Sec. 17 - All  
Sec. 18 - All  
Sec. 19 - All  
Sec. 20 - All  
Sec. 21 - All  
Sec. 22 - N $\frac{1}{2}$ W $\frac{1}{2}$   
Sec. 29 - N $\frac{1}{2}$

Township 30 North, Range 8 West

Sec. 1 - All  
Sec. 12 - All

Sec. 13 - All  
Sec. 24 - All

Total Unit Area embraces 33,000 acres, more or less.

Exhibit "A" attached hereto is a map showing the unit area and the known ownership of all land and leases in said area. Exhibit "B" attached hereto is a schedule showing the percentage and kind of ownership of oil and gas interests in all land in the unit area. Exhibits "A" and "B" shall be revised by the Unit Operator whenever changes in the unit area or other changes render such revision necessary, but no such revision shall be retroactive. Not less than six copies of the revised exhibits shall be filed with the Oil and Gas Supervisor, hereinafter referred to as "Supervisor", and two copies with the Commissioner of Public Lands of the State of New Mexico, hereinafter referred to as "Commissioner".

The above-described unit area shall when practicable be expanded to include therein any additional tracts regarded as reasonably necessary or advisable for the purposes of this agreement, or shall be contracted to exclude lands not within any participating area whenever such expansion or contraction is necessary or advisable to conform with the purposes of this agreement. Such expansion or contraction shall be in the following manner: (a) Unit Operator, on its own motion or on demand of the Director of the Geological Survey, hereinafter referred to as "Director", or on demand of the Commissioner, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the unit area, the reasons therefor, and the proposed effective date thereof;

(b) Said notice shall be delivered to the Supervisor and Commissioner, and copies thereof mailed to the last known address of each working interest owner, lessee, and lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections;

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor and Commissioner evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator.

(d) After due consideration of all pertinent information, the Director and Commissioner shall approve in whole or in part or reject the proposed expansion or contraction. To the extent that it may be approved, such expansion or contraction shall become effective as of the date prescribed in the notice thereof.

All land committed to this agreement shall constitute land referred to herein as "unitized land" or "land subject to this agreement".

3. UNITIZED SUBSTANCES: All oil, gas, natural gasoline, and associated fluid hydrocarbons in any and all formations of the unitized land are unitized

under the terms of this agreement and herein are called "unitized substances".

4. UNIT OPERATOR: Stanolind Oil and Gas Company is hereby designated as Unit Operator and by signature hereto commits to this agreement all interests in unitized substances vested in it as set forth in Exhibit "B", and agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, and production of unitized substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as owner of interests in unitized substances.

The Unit Operator may resign as Unit Operator whenever not in default under this agreement, but no Unit Operator shall be relieved from the duties and obligations of Unit Operator for a period of six months after it has served notice of intention to resign on all owners of working interests subject hereto and the Director and Commissioner unless a new Unit Operator shall have been selected and approved and shall have assumed the duties and obligations of Unit Operator prior to the expiration of said six-month period. Unless a successor operator is to be selected and approved, and is to assume the duties and obligations of operator prior to the effective date of the retiring operator's relinquishment of duties, the retiring operator must place all wells drilled hereunder in a satisfactory condition for suspension or abandonment as may be required by the Supervisor and the Commissioner under applicable Federal and State oil and gas operating regulations. Upon default or failure in the performance of its duties or obligations under this agreement, the Unit Operator may be removed by a majority vote of owners of working interests determined in like manner as herein provided for the selection of a successor Unit Operator. Prior to the effective date of relinquishment by, or within six months after removal of Unit Operator, the duly qualified successor Unit Operator shall have an option to purchase on reasonable terms all or any part of the equipment, material, and appurtenances in or upon the land subject to this agreement, owned by the retiring Unit Operator and used in its capacity as such Operator, or if no qualified successor operator has been designated, the working interest owners may purchase such equipment, material, and appurtenances. At any time within the next ensuing three months any equipment, material, and appurtenances not purchased and not necessary for the preservation of wells may be removed by the retiring Unit Operator, but if not removed shall become the joint property of the owners of unitized working interests in the participating area or, if no participating area has been established, in the entire unit area. The termination of the rights as Unit Operator under this agreement shall not terminate the right, title, or interest of such Unit Operator in its separate capacity as owner of interests in unitized substances.

5. SUCCESSOR UNIT OPERATOR: Whenever the Unit Operator shall relinquish the right as Unit Operator or shall be removed, the owners of the unitized working interests in the participating area on an acreage basis, or in the unit area on an

acreage basis until a participating area shall have been established, shall select a new Unit Operator. A majority vote of the working interests qualified to vote shall be required to select a new Unit Operator; provided, that if a majority but less than 75 per cent of the working interests qualified to vote are owned by one party to this agreement, a concurring vote of at least one additional working interest owner shall be required to select a new Unit Operator. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall have been approved by the Director and Commissioner. If no successor Unit Operator is selected and qualified as herein provided, the Director and Commissioner at their election may declare this unit agreement terminated.

6. UNIT ACCOUNTING AGREEMENT: If the Unit Operator is not the sole owner of working interests, all costs and expenses incurred in conducting unit operations hereunder and the working interest benefits accruing hereunder shall be apportioned among the owners of unitized working interests in accordance with a unit accounting agreement by and between the Unit Operator and the other owners of such interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the working interest owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "Unit Accounting Agreement". No such agreement shall be deemed either to modify any of the terms and conditions of this unit agreement or to relieve the Unit Operator of any right or obligation established under this unit agreement, and in case of any inconsistency or conflict between this unit agreement and the unit accounting agreement, this unit agreement shall prevail. Three true copies of any unit accounting agreement executed pursuant to this section shall be filed with the Supervisor.

7. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR: Except as otherwise specifically provided herein, the exclusive right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, and storing the unitized substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Each working interest owner shall take in kind, or market individually or through an agent, its respective portion of the unitized substances and acting individually or through an agent shall pay all royalty, overriding royalty or other payments to which the portion of such working interest owner is subject. The right is hereby secured to the United States and the State of New Mexico under existing or future laws and regulations to elect to take its respective royalty shares in kind or value. Acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this agreement, shall constitute and define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer

title to any land or to any lease or operating agreement, it being understood that under this agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

The Unit Operator shall pay all costs and expenses of operation with respect to the unitized land; and no charge therefor shall be made against the royalty owners. If and when the Unit Operator is not the sole owner of all working interests, such costs shall be charged to the account of the owners of working interests, and the Unit Operator shall be reimbursed therefor by such owners and shall account to the working interest owners for their respective shares of the production derived from operations hereunder, all in the manner and to the extent provided in the unit accounting agreement. If the Unit Operator is the sole working interest owner, he shall bear all such costs and expenses. The Unit Operator shall render each month to the owners of unitized interests entitled thereto an accounting of the operations on unitized land during the previous calendar month, and shall pay in value or deliver in kind to each party entitled thereto a proportionate and allocated share of the benefits accruing hereunder in conformity with operating agreements, leases, or other independent contracts between the Unit Operator and the parties hereto either collectively or individually.

The development and operation of land subject to this agreement under the terms hereof shall be deemed full performance by the Unit Operator of all obligations for such development and operation with respect to each and every part or separately owned tract of land subject to this agreement, regardless of whether there is any development of any particular part or tract of the unit area, notwithstanding anything to the contrary in any lease, operating agreement, or other contract by and between the parties hereto or any of them.

8. TEST WELLS. It is agreed that the first well drilled under this agreement shall be a Mesa Verde test well, drilling of which shall be commenced within one year after the effective date hereof at a location approved by the Supervisor if such location is upon lands of the United States, and if upon State lands or patented lands such location shall be approved by the Oil Conservation Commission of the State of New Mexico, hereinafter referred to as "Commission". Thereafter drilling of said Mesa Verde test well shall be continued with diligence to a depth of 5500 feet, unless at a lesser depth unitized substances shall be encountered which can be produced in paying quantities or unless at a lesser depth the Mesa Verde formation has been adequately tested, or unless said formation is reasonably proved to be absent from the stratigraphic sequence, or unless the

Unit Operator shall at any time establish to the satisfaction of the Supervisor as to wells on Federal lands, or the Commission as to wells on State lands or patented lands, that further drilling of said well would not be warranted. If the first or any subsequent test well fails to result in the discovery of a deposit of unitized substances capable of being producing in paying quantities, this agreement shall terminate unless the Unit Operator shall continue drilling diligently one well at a time, allowing not more than six months between the completion of one well and the beginning of the next well, until a well capable of producing unitized substances in paying quantities is completed to the satisfaction of said Supervisor if on Federal land or the Commissioner if on State land or patented land, or until it is reasonably proved that the unitized land is incapable of producing unitized substances in paying quantities, or unless the time for the commencement of any such additional well is extended by the Director and Commissioner. The Director and Commissioner may modify the drilling requirements of this section by granting reasonable extensions of time when, in their opinion, such action is warranted. Upon failure to comply with the drilling provisions of this section, the Director and Commissioner may, after reasonable notice to the Unit Operator and each working interest owner, lessee and lessor at their last known addresses, declare this Unit Agreement terminated. The drilling of the said Mesa Verde test well to the depth and in the manner hereinabove specified by the Unit Operator shall satisfy the requirements set forth hereinabove for the drilling of such well notwithstanding that such well may have been commenced prior to the effective date of this agreement.

9. PLAN OF FURTHER DEVELOPMENT AND OPERATION: Within six months after completion of a well capable of producing unitized substances in paying quantities, the Unit Operator shall submit for the approval of the Supervisor, the Commissioner, and the Commission an acceptable plan of development and operation for the unitized land which, when approved by the Supervisor, the Commissioner, and the Commission, shall constitute the further drilling and operating obligations of the Unit Operator under this agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for the approval of the Supervisor, the Commissioner, and the Commission, a plan for an additional specified period for the development and operation of the unitized land. Any plan submitted pursuant to this section shall provide for exploration of the unitized area and for the determination of the commercially productive area thereof in each and every productive formation and shall be as complete and adequate as the Supervisor, the Commissioner, and the Commission may

determine to be necessary for timely development and proper conservation of the oil and gas resources of the unitized area and shall (a) specify the number and locations of any wells to be drilled and the proposed order and time for such drilling; and (b) to the extent practicable specify the operating practices regarded as necessary and advisable for proper conservation of natural resources. Separate plans may be submitted for separate productive zones, subject to the approval of the Supervisor, the Commissioner, and the Commission. Said plan or plans shall be modified or supplemented when necessary to meet changed conditions or to protect the interests of all parties to this agreement. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of development. The Supervisor and Commissioner are authorized to grant a reasonable extension of the six-month period herein prescribed for submission of an initial plan of development where such action is justified because of unusual conditions or circumstances. After completion hereunder of a well, capable of producing oil and gas in paying quantities no further wells except such as may be necessary to afford protection against operations not under this agreement or such as may be specifically approved by the Supervisor and the Commissioner shall be drilled except in accordance with a plan of development approved as herein provided.

10. PARTICIPATION AFTER DISCOVERY: Upon completion of a well pursuant to the provisions of Section 8 hereof capable of producing unitized substances in paying quantities or as soon thereafter as required by the Supervisor or the Commissioner, the Unit Operator shall submit for approval by the Director, the Commissioner, and the Commission a schedule, based on subdivisions of the public-land survey or aliquot parts thereof, of all unitized land then regarded as reasonably proved to be productive of unitized substances in paying quantities; all land in said schedule on approval of the Director, the Commissioner, and the Commission to constitute a participating area, effective as of the date of first production. Said schedule also shall set forth the percentage of unitized substances to be allocated as herein provided to each unitized tract in the participating area so established, and shall govern the allocation of production from and after the date the participating area becomes effective. A separate participating area shall be established in like manner for each separate pool or deposit of unitized substances or for any group thereof produced as a single pool or zone. The participating area or areas so established shall be revised from time to time, subject to like approval, whenever such action appears proper as a result of further drilling operations or otherwise, to include additional land then regarded as reasonably proved to be productive in paying quantities, and the percentage of allocation shall also be revised accordingly. The effective

date of any revision shall be the first of the month following the date of first authentic knowledge or information on which such revision is predicated, unless a more appropriate effective date is specified in the schedule. No land shall be excluded from a participating area on account of depletion of the unitized substances.

It is the intent of this section that a participating area shall represent the area known or reasonably estimated to be productive in paying quantities; but, regardless of any revision of the participating area, nothing herein contained shall be construed as requiring any retroactive apportionment of any sums accrued or paid for production obtained prior to the effective date of revision of the participating area.

In the absence of Agreement at any time between the Unit Operator and the Director, the Commissioner, and the Commission as to the proper definition or redefinition of a participating area, or until a participating area has, or areas have, been established as provided herein, the portion of all payments affected thereby may be impounded in a manner mutually acceptable to the owners of working interests, except royalties due the United States and the State of New Mexico which shall be determined by the Supervisor and the Commissioner and the amount thereof deposited with the district land office of the Bureau of Land Management and the Commissioner of Public Lands respectively to be held as unearned money until the participating area is finally approved and then applied as earned or returned in accordance with a determination of the sum due as Federal and State royalty on the basis of such approved participating area.

Whenever it is determined, subject to the approval of the Supervisor as to wells on Federal land, the Commissioner as to wells on State land, and the Commission as to patented land, that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall be allocated to the land on which the well is located so long as that well is not within a participating area established for the pool or deposit from which such production is obtained.

11. ALLOCATION OF PRODUCTION: All unitized substances produced from each participating area established under this agreement, except any part thereof used for production or development purposes hereunder, or unavoidably lost, shall be deemed to be produced equally on an acreage basis from the several tracts of unitized land of the participating area established for such production and, for the purpose of determining any benefits that accrue on an acreage basis, each such

tract shall have allocated to it such percentage of said production as its area bears to the said participating area. It is hereby agreed that production of unitized substances from a participating area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said participating area.

12. DEVELOPMENT OR OPERATION ON NON-PARTICIPATING LAND: Any party or parties hereto, other than the Unit Operator, owning or controlling a majority of the working interests in any unitized land not included in a participating area and having thereon a regular well location in accordance with a well-spacing pattern established under an approved plan of development and operation may drill a well at such location at his or their own expense, unless within 90 days of receipt of notice from said party or parties of intention to drill the well the Unit Operator elects and commences to drill such well in like manner as other wells are drilled by the Unit Operator under this agreement.

If such well, by whomsoever drilled, results in production such that the land upon which it is situated may properly be included in a participating area, such participating area shall be established or enlarged as provided in this agreement and the well shall thereafter be operated by the Unit Operator pursuant to the terms of this agreement as other wells within participating areas, and there shall be a financial adjustment between the parties who financed the well and the working interest owners in the participating area concerning their respective drilling and other investment cost, all as provided in the unit accounting agreement.

If any well, by whomsoever drilled, as provided in this section, obtains production insufficient to justify inclusion of the land on which said well is situated in a participating area, such well may be operated and produced by the party drilling the well. If the drilling of such well was financed by parties other than the working interest owners on the well tract, details of financial arrangements and operations as between such parties shall be provided for in the unit accounting agreement.

Wells drilled or produced at the sole expense and for the sole benefit of an owner of working interest other than the Unit Operator shall be operated and produced pursuant to the conservation requirements of this agreement. Royalties in amount or value of production from any such well shall be paid as specified in the underlying lease and agreement affected.

13. ROYALTIES AND RENTALS: Royalty on each unitized tract shall be paid or delivered by the parties obligated therefor as provided by existing leases,

contracts, laws, and regulations at the lease or contract rate upon the unitized substances allocated to the tract. Nothing herein contained shall operate to relieve the lessees of Federal or State lands from their obligations under the terms of their respective leases to pay rentals and royalties.

Royalty due the United States shall be computed as provided in the operating regulations and paid in value or delivered in kind as to all unitized substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the rates specified in the respective Federal leases or at such lower rate or rates as may be authorized by law or regulations; provided that for leases on which the royalty rate depends on the daily average production per well, said average production shall be determined in accordance with the operating regulations as though each participating area were a single consolidated lease.

Unitized substances produced from any participating area and used therein in conformance with good operating practice for drilling, operating, camp, or other production or development purposes or under an approved plan of operation for repressuring or cycling said participating area, or for development outside of such participating area if for the purposes of drilling exploratory wells or for camps or other purposes benefiting the unit as a whole, shall be free from any royalty or other charge except as to any products extracted from unitized substances so used. If Unit Operator introduces gas for which royalties have been paid into any participating area hereunder from sources other than such participating area for use in repressuring, stimulation of production, or increasing ultimate production in conformity with a plan first approved by the Supervisor, a like amount of gas may be sold without payment of royalty as to dry gas but not as to the products extracted therefrom; provided, that gas so introduced shall bear a proportionate and equitable share of plant fuel consumption and shrinkage in the total volume of gas processed from such participating area; and provided further, that such withdrawal shall be at such time as may be provided in the plan of operation or as may otherwise be consented to by the Supervisor as conforming to good petroleum engineering practice; provided, however, that said right of withdrawal royalty free shall terminate upon termination of the unit agreement.

Each working interest owner and lessee presently responsible for the payment of rentals, or his successor in interest, shall be responsible for and shall pay all rentals of whatsoever kind on his respective lease. Rental or minimum royalty for land of the United States subject to this agreement shall be paid at the rate specified in the respective Federal leases or such rental or minimum

royalty may be waived, suspended, or reduced to the extent authorized by law and applicable regulations. Rentals on State of New Mexico lands subject to this agreement shall be paid at the rates specified in the respective leases, or may be reduced and suspended upon the order of the Commissioner of Public Lands of the State of New Mexico pursuant to applicable laws and regulations.

14. CONSERVATION: Operations hereunder and production of unitized substances shall be conducted to provide for the most economical and efficient recovery of said substances, to the end that the maximum efficient yield may be obtained without waste, as defined by or pursuant to State or Federal law or regulation; and production of unitized substances shall be limited to such production as can be put to beneficial use with adequate realization of fuel and other values.

15. DRAINAGE: The Unit Operator shall take appropriate and adequate measures to prevent drainage of unitized substances from unitized land by wells on land not subject to this agreement, or pursuant to applicable regulations pay a fair and reasonable compensatory royalty as determined by the Supervisor for Federal land or as approved by the Commissioner as to State land. Unit Operator shall be reimbursed for the cost thereof by the working interest owners in the manner provided in the unit accounting agreement.

16. LEASES AND CONTRACTS CONFORMED TO AGREEMENT: The parties hereto holding interests in leases embracing unitized land of the United States or of the State of New Mexico consent that the Secretary of the Interior, hereinafter referred to as "Secretary", and the Commissioner, respectively, may, and said Secretary and Commissioner by their approval of this agreement do, establish, alter, change, or revoke the drilling, producing, rental, minimum royalty, and royalty requirements of such leases and the regulations in respect thereto, to conform said requirements to the provisions of this agreement, but otherwise the terms and conditions of said leases shall remain in full force and effect.

Said parties further consent and agree, and the Secretary, or his duly authorized representative and Commissioner by their respective approvals hereof determine, that during the effective life of this agreement, drilling and producing operations performed by the Unit Operator upon any unitized land will be accepted and deemed to be operations under and for the benefit of all unitized leases embracing land of the United States and of the State of New Mexico; that no such lease shall be deemed to expire by reason of failure to produce wells situated on land therein embraced; and that all leases or other contracts concerning such land, except as otherwise provided herein, shall be modified to conform to the provisions

of this agreement and shall be continued in force and effect beyond their respective terms during the life of this agreement. Any Federal lease for a term of 20 years or any renewal thereof or any part of such lease which is made subject to this agreement shall continue in force until the termination hereof. Any other Federal lease committed hereto shall continue in force as to the committed land so long as the lease remains committed hereto, provided a valuable deposit of unitized substances is discovered prior to the expiration date of the primary term of such lease. Authorized suspension of all operations and production on the unitized land shall be deemed to constitute authorized suspension with respect to each unitized lease.

The parties hereto holding interests in privately owned land within the unit area consent and agree, to the extent of their respective interests, that each such lease may be continued in effect beyond the primary term of such lease and during the term of this agreement, provided however that until some portion of the land in a privately owned lease is included in a participating area said lease may be kept in force only by the payment of the delay rentals in the time, manner and amount provided by said lease. Except as in this section otherwise provided, all leases or other contracts concerning such land shall be modified to conform to the provisions of this agreement and shall be continued in force and effect during the life of this agreement; that drilling and producing operations conducted on any tract of land committed to this agreement will be accepted and deemed to be performed on and for the benefit of each and every tract of such privately owned land committed hereto; that no lease affecting said privately owned land shall be deemed to expire by reason of failure to drill or to produce wells situated on such lands; and that authorized suspension of all operations and production on unitized land shall be deemed to constitute authorized suspension with respect to all unitized leases affecting privately owned lands.

17. COVENANTS RUN WITH LAND: The covenants herein shall be construed to be covenants running with the land with respect to the interests of the parties hereto and their successors in interest until this agreement terminates, and any grant, transfer, or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest, and as to State land shall be subject to approval by the Commissioner. No assignment or transfer of any working, royalty, or other interest shall be binding on the Unit Operator until the first day of the next calendar month after the Unit Operator is

furnished with the original or photostatic or certified copy of the instrument or transfer.

18. EFFECTIVE DATE AND TERM: This agreement shall become effective upon approval by the Secretary and the Commissioner and shall have a term of 5 years commencing as of said effective date, unless (a) the date of expiration is extended by the Director and the Commissioner, or (b) it is reasonably determined prior to the expiration of the fixed term or any extension thereof that the unitized land is incapable of production of unitized substances in paying quantities and after notice of intention to terminate the agreement on such ground is given by the Unit Operator to all parties in interest at their last known addresses, the agreement is terminated with the approval of the Director and the Commissioner, or (c) a valuable discovery of unitized substances has been made on unitized land during said initial term or any extension thereof, in which case the agreement shall remain in effect so long as unitized substances can be produced from the unitized land in paying quantities; or (d) it is terminated as provided in Section 5 or Section 8 hereof. This agreement may be terminated at any time by not less than 75 per centum, on an acreage basis, of the owners of working interest signatory hereto with the approval of the Director and the Commissioner.

19. RATE OF PROSPECTING, DEVELOPMENT, AND PRODUCTION: All production and the disposal thereof shall be in conformity with allocations, allotments, and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and within the limits made or fixed by the Commission to alter or modify the quantity and rate of production under this agreement, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification; provided further that no such alteration or modification shall be effective as to any land of the State of New Mexico as to the rate of prospecting and development in the absence of the specific written approval thereof by the Commissioner and as to any lands of the State of New Mexico or privately-owned lands subject to this agreement as to the quantity and rate of production in the absence of specific written approval thereof by the Commission.

20. CONFLICT OF SUPERVISION: Neither the Unit Operator nor the working interest owners nor any of them shall be subject to any forfeiture, termination, or expiration of any rights hereunder or under any leases or contracts subject

hereto, or to any penalty or liability for delay or failure in whole or in part to comply therewith to the extent that the said Unit Operator, working interest owners or any of them are hindered, delayed, or prevented from complying therewith by reason of failure of the Unit Operator to obtain with the exercise of due diligence the concurrence of the representative of the United States and the representatives of the State of New Mexico in and about any matters or thing concerning which it is required herein that such concurrence be obtained. The parties hereto, including the Commission, agree that all powers and authority vested in the Commission in and by any provisions of this contract are vested in the Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject to any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico.

21. UNAVOIDABLE DELAY: All obligations under this agreement requiring the Unit Operator to commence or continue drilling or to operate on or produce unitized substances from any of the lands covered by this agreement shall be suspended while, but only so long as, the Unit Operator despite the exercise of due care and diligence is prevented from complying with such obligations, in whole or in part, by strikes, lock-outs, acts of God, Federal, State, or municipal laws or agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

22. TAXES: The working interest owners shall render and pay for their account and the account of the royalty owners all valid taxes on or measured by the unitized substances in and under or that may be produced, gathered and sold from the land subject to this contract after the effective date of this agreement, or upon the proceeds or net proceeds derived therefrom. The working interest owners on each tract shall and may charge the proper proportion of said taxes to the royalty owners having interests in said tract, and may currently retain and deduct sufficient of the unitized substances or derivative products, or net proceeds thereof from the allocated share of each royalty owner to secure reimbursement for the taxes so paid. No such taxes shall be charged to the United States or the State of New Mexico or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

23. COUNTERPARTS AND SUBSEQUENT JOINDER: This agreement may be executed in any number of counterparts with the same force and effect as if all parties had signed the same document, or this agreement may be ratified with like force and

effect by a separate instrument in writing specifically referring hereto, and shall be binding upon all those parties who execute such a counterpart, ratification or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands affected hereby. Any owner of oil or gas interests in lands located within the unit area not subject hereto, may, with the consent of the Director, hereafter become a party hereto by subscribing to this agreement or ratifying or approving the same and, if such party is also a working interest owner, such party may be admitted and become a party to this agreement and his acreage become subject hereto by establishing his title to the operating rights to such land to the satisfaction of Unit Operator and by reaching an equitable agreement with the Unit Operator and the majority of the then working interest owners on the lands then subject to this agreement with respect to classification and participating interest of such new acreage and the sharing of the development and operating costs hereunder and by subscribing to this agreement or ratifying or approving the same and subscribing to or ratifying the unit accounting agreement and securing the execution of such consents as shall be necessary to make this agreement effective as to all parties owning any interest in said lands or in the production therefrom, it being understood that all rights of new parties or new acreage which may become subject hereto shall attach only from the date of their admission hereto and shall in no manner be retroactive. Any separate counterpart, consent, or ratification duly executed after approval hereof by the Secretary and the Commission shall be effective on the first day of the month next following the filing thereof with the Supervisor and the Commissioner, unless objection thereto is made by the Director or the Commissioner and notice of such objection is served upon the appropriate parties within 60 days after such filing.

24. FAIR EMPLOYMENT: The Unit Operator shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin, and an identical provision shall be incorporated in all subcontracts.

25. LOSS OF TITLE: In the event title to any tract of unitized land or substantial interest therein shall fail and the true owner cannot be induced to join this unit agreement, so that such tract is not committed to this unit agreement, there shall be such readjustment of participation as may be required on account of such failure of title. In the event of a dispute as to title or as to any interest in unitized land, the Unit Operator may withhold payment or delivery

on account thereof without liability for interest until the dispute is finally settled; provided, that, as to Federal and State land or leases, no payments of funds due the United States or the State of New Mexico shall be withheld, but such funds shall be deposited with the district land office of the Bureau of Land Management and the Commissioner of Public Lands of the State of New Mexico, respectively, to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

26. NO PARTNERSHIP: It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this agreement contained, expressed or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed and have set opposite their respective names the date of execution.

		<u>UNIT OPERATOR AND WORKING INTEREST OWNER</u> <u>STANOLIND OIL AND GAS COMPANY</u>
ATTEST:	DATE:	
_____	_____	By _____
Assistant Secretary		Vice-President
Address: _____		
		<u>WORKING INTEREST OWNERS</u>
ATTEST:	DATE:	
_____	_____	By _____
Assistant Secretary		Vice-President
Address: _____		
ATTEST:	DATE:	
_____	_____	By _____
Secretary		President
Address: _____		
ATTEST:	DATE:	
_____	_____	By _____
Secretary		President
Address: _____		
ATTEST:	DATE:	
_____	_____	By _____
Secretary		President
Address: _____		
ATTEST:	DATE:	
_____	_____	By _____
Secretary		President
Address: _____		

CERTIFICATION - DETERMINATION

Pursuant to the authority vested in the Secretary of the Interior, under the act approved February 25, 1920, 41 Stat. 437, 30 U.S.C. Secs. 181, et seq., as amended by the act of August 8, 1946, 60 Stat. 950, and delegated to the Director of the Geological Survey pursuant to Departmental Order No. 2365 of October 8, 1947, 43 C.F.R. sec. 4.611, 12 F.R. 6784, I do hereby:

A. Approve the attached Unit Agreement for the Development and Operations of the Northeast Blanco Unit Area, Counties of San Juan and Rio Arriba, State of New Mexico.

B. Certify and determine that the unit plan of development and operation contemplated in the attached Agreement is necessary and advisable in the public interest and is for the purpose of more properly conserving the natural resources.

C. Certify and determine that the drilling, producing, rental, minimum royalty, and royalty requirements of all Federal leases committed to said Agreement are hereby established, altered, changed or revoked to conform with the terms and conditions of this Agreement.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Director, United States Geological Survey

CERTIFICATE OF APPROVAL

STATE OF NEW MEXICO

The undersigned, Commissioner of Public Lands of the State of New Mexico, having this day examined an agreement for the cooperative or unit operation and development of a prospective oil or gas field or area, which agreement is entitled "Unit Agreement for the Development and Operation of the Northeast Blanco Unit Area, Counties of San Juan and Rio Arriba, New Mexico", entered into between Stanolind Oil and Gas Company, Unit Operator, and likewise subscribed by numerous Working Interest Owners and Royalty Owners, to which agreement this certificate is attached; and

WHEREAS, upon examination thereof, the Commissioner finds:

- a. That such agreement will tend to promote the conservation of oil and gas and the better utilization of reservoir energy in said field;
- b. That under the operations proposed, the State will receive its fair share of the recoverable oil or gas in place under its lands in the area affected;
- c. That the agreement is in other respects for the best interest of the state;
- d. That the agreement provides for the unit operation of the field, for the allocation of production, and the sharing of proceeds from a part of the area covered by the agreement on an acreage basis as specified in the agreement.

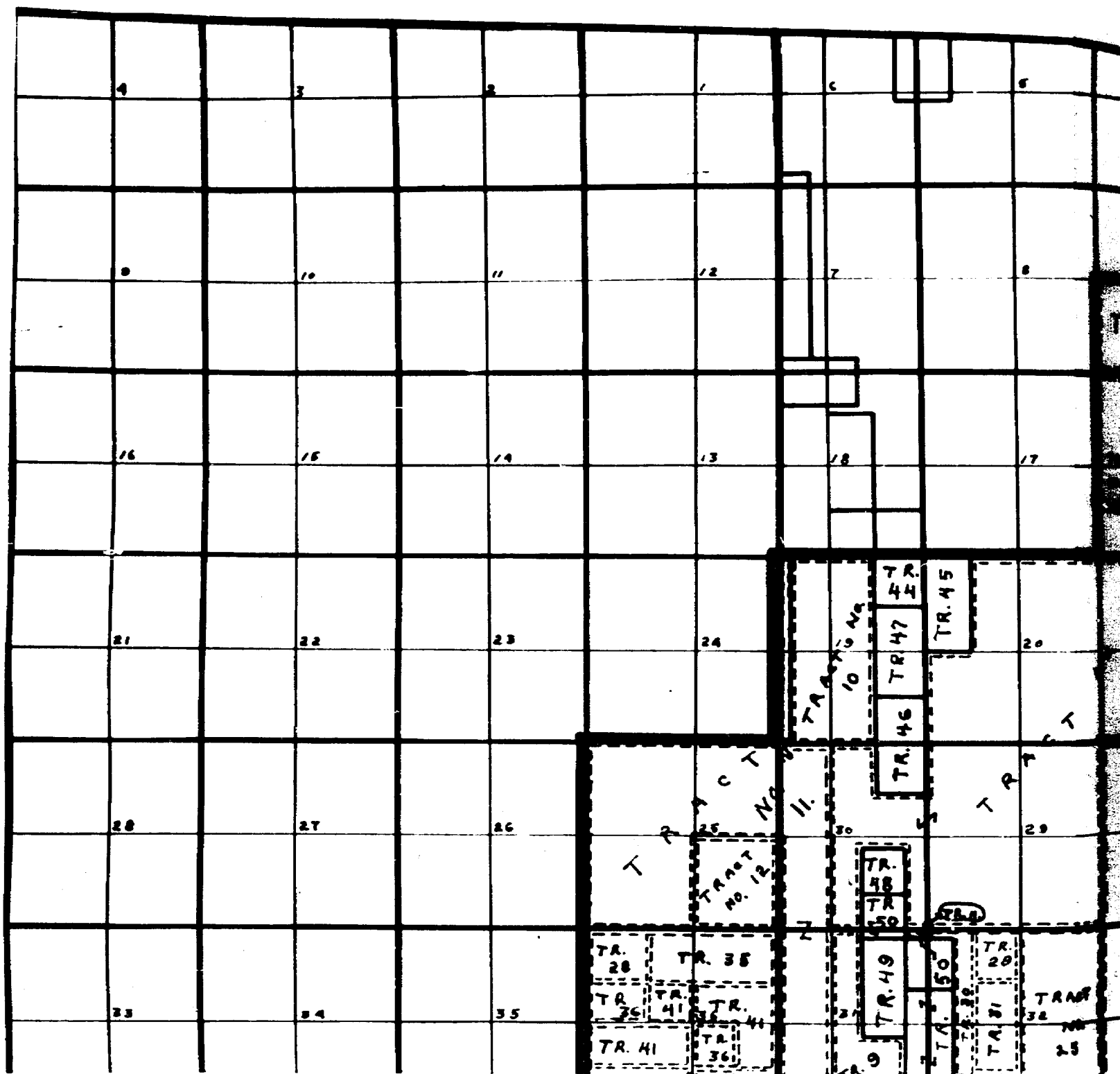
NOW, THEREFORE, by virtue of the authority conferred upon me by Chapter 88 of the Laws of the State of New Mexico, 1943, approved April 14, 1943, I, the undersigned, Commissioner of Public Lands of the State of New Mexico, for the purpose of more properly conserving the oil and gas resources of the State, do hereby consent to and approve the said agreement, as to the lands of the State of New Mexico included in said Unit Agreement, and subject to all the provisions of the aforesaid Chapter 88 of the Laws of the State of New Mexico, 1943.

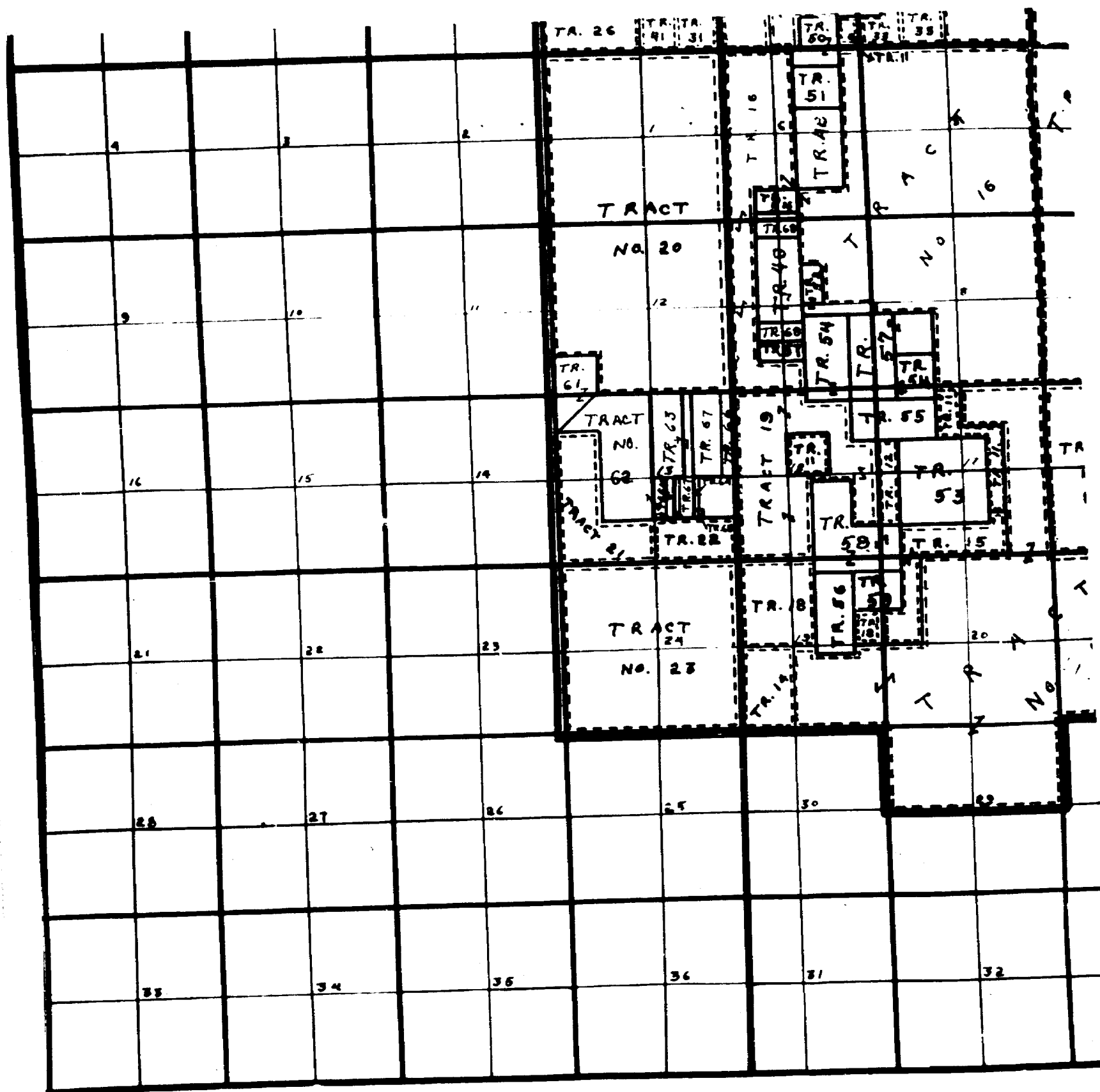
Executed this \_\_\_\_ day of \_\_\_\_\_, A.D. 1949.

---

Commissioner of Public Lands of  
the State of New Mexico

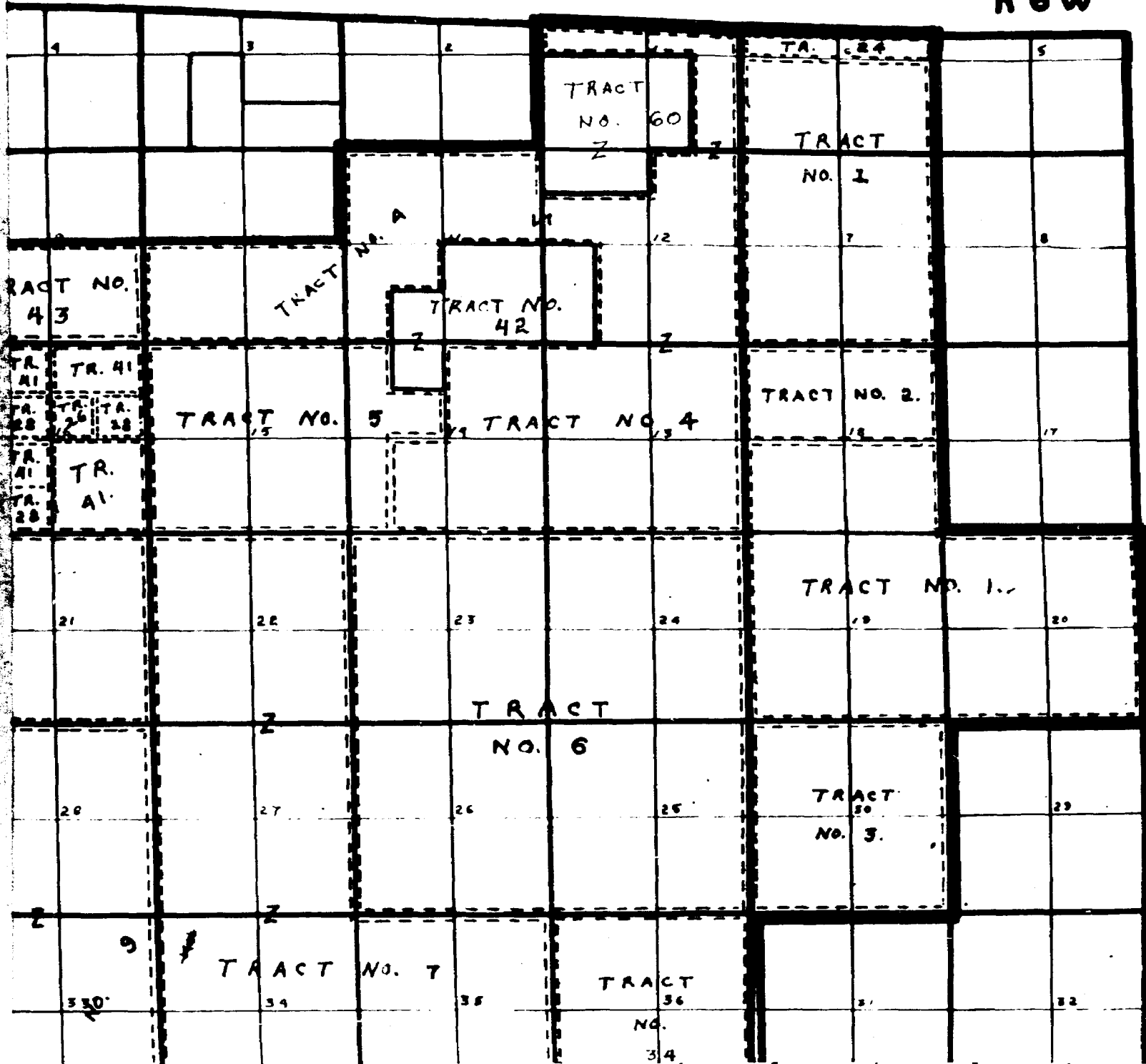
**R 8 W**





R 7 W

R 6 W



T  
31  
N



**"RIGHT TO"  
REGULATING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS  
IN THE LANDS IN THE FORECAST PLACED UNDER AGREEMENT**

Tract No.	Description	No. of Acres	Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Option Agreement, Operating Agreement or Assignment & Percentage of Interest
<u>Township 31 North, Range 7 West</u>							
1	S/2 Sec. 6; All Sec. 7; S/2 Sec. 10; All Secs. 13 & 20	2,500	070200	U.S.A. 12 1/2%	E. A. Childers	E. A. Childers 1%	Stanolind 36%
2	S/2 Sec. 10	320	070370	U.S.A. 12 1/2%	David L. Ellis	None	Stanolind 67%
3	All of Sec. 30	640	070335	U.S.A. 12 1/2%	C. S. Mayo, Jr.	None	
<u>Township 31 North, Range 7 West</u>							
4	Lots 5, 6, 7 & 8, S/2 Sec. 10; S/2 Sec. 11; S/4 Sec. 11; S/2, S/2 S/4, S/4 S/4 Sec. 11; S/2, S/2 S/4, S/2 S/4 Sec. 12; All Sec. 13; S/2, S/2 S/4 Sec. 14	2,407.03	070335	U.S.A. 12 1/2%	Katharine Martin	None	
<u>Township 31 North, Range 7 West</u>							
5	S/2, S/4 S/4 Sec. 14; All Sec. 15	340	070335	U.S.A. 12 1/2%	John E. Wells	None	
6	All of Secs. 23, 24, 25 & 26	2,500	073010	U.S.A. 12 1/2%	D. A. Macpherson	D. A. Macpherson 2 1/2%	Stanolind 35%
7	All of Secs. 22, 27, 34 & 35	2,560	073003	U.S.A. 12 1/2%	Patricia A. Seymour	Patricia A. Seymour 2 1/2%	Stanolind 35%

Tract No.	Description	No. of Acres	Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Option Agreement, Operating Agreement or Assignment & Percentage of Interest
8	E/2 NE/4, NW/4, S/2 Sec. 20; All Sec. 21; All Sec. 23; S/2 NE/4, SE/4 NW/4, Lots 7, 8, 11 & 12 Sec. 30	2,056.12	079045	U.S.A. 12 3/4%	Jack M. Alden	Jack M. Alden 2 1/2%	Stanolind 85%
9	Township 30 North, Range 7 West N/2, S/2 SW/4 Sec. 3; N/2 and SE/4 of Sec. 4	2,514.56	079045	U.S.A. 12 3/4%	Horace F. McKay	Horace F. McKay 2 1/2%	Stanolind 85%
10	Township 31 North, Range 7 West All of Secs. 28 & 33; Lots 6, 9 10 & 13; Sec. 31	320	090557	U.S.A. 12 3/4%	H. B. Collins	H. B. Collins 2 1/2%	Stanolind 85%
11	Township 31 North, Range 8 West N/2, SW/4 Sec. 25	1,022.45	079082	U.S.A. 12 3/4%	Eleanor B. Scott	Eleanor B. Scott 2 1/2%	Stanolind 85%
12	Township 30 North, Range 7 West SW/4 NE/4 Sec. 1; Lots 1, 3 & 4 Sec. 17	211.62	079082	U.S.A. 12 3/4%	Eleanor B. Scott		
13	Township 30 North, Range 7 West Lots 2 & 5, Sec. 17	1,277.38	079001	U.S.A. 12 3/4%	Patricia Seymour	Patricia Seymour 2 1/2%	* Wood River Oil & Refg. Co. 85%

Tract No.	Description	No. of Acres	Serial No.	Land Owner and Percentage Of Royalty	Record Owner Of Lease Or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Option Agreement, Operating Agreement or Assignment & Percentage Of Interest
<u>Township 30 North, Range 7 West</u>							
14	Lots 12 & 13; 1/2 SW/4 Sec. 19	103.60	073053	U.S.A. 12 3/4%	Harry C. Hagood		
15	Lots 6, 7 & 8 Sec. 17; Lots 1 & 2 Sec. 20; SW/4 SW/4 Sec. 22	173.12	073074	U.S.A. 12 3/4%	T. H. McElvain		
16	All Sec. 5; Lots 8 through 21, SW/4 NW/4, NW/4 SW/4 Sec. 6; Lots 5, 6, 7, 8, 9, 12, 13, 14, 15, 16, 1/2 NW/4 Sec. 7; W/2, NW/4, Lots 1, 2 & 3 Sec. 8	1,779.91	073042	U.S.A. 12 3/4%	Horace F. McKay	Horace F. McKay 2 1/2%	Stanolind 85%
17	SW/4, 1/2 SW/4 Sec. 9; W/2 NW/4 SW/4 NW/4, 1/2 SE/4 Sec. 17; Lots 10 & 11, 1/2 SW/4 Sec. 19; NW/4, 1/2 NW/4, 1/2 Sec. 20; All Sec. 21 W/2 NW/4, NW/4 SW/4 Sec. 22; 1/2 Sec. 23	2,231.44	073060	U.S.A. 12 3/4%	H. B. Collins	H. B. Collins 2 1/2%	Stanolind 85%
18	Lots 5, 6, 7, 8, 9, 1/2 NW/4 Sec. 19	166.76	08001	U.S.A. 12 3/4%	Charles B. Consales	Charles B. Consales 2 1/2%	Stanolind 85%
19	Lots 5 through 14 inclusive; 1/2 W/2 Sec. 18	371.07	079073	U.S.A. 12 3/4%	Charles B. Consales	Charles B. Consales 2 1/2%	Stanolind 85%
<u>Township 30 North, Range 8 West</u>							
20	All Sec. 1; W/2, SW/4, 1/2 SW/4, NW/4 SW/4 Sec. 12	1,264.40	078521	U.S.A. 12 3/4%	H. B. McKoon		
21	SW/4 NW/4, 1/2 SW/4, SW/4 SW/4 Sec. 13	160	079511	U.S.A. 12 3/4%	Hazel Bolack	Hazel Bolack 2%	*Florence Welling Co. 85%
22	1/2 SW/4 Sec. 13	30	078099	U.S.A. 12 3/4%	H. H. Phillips		

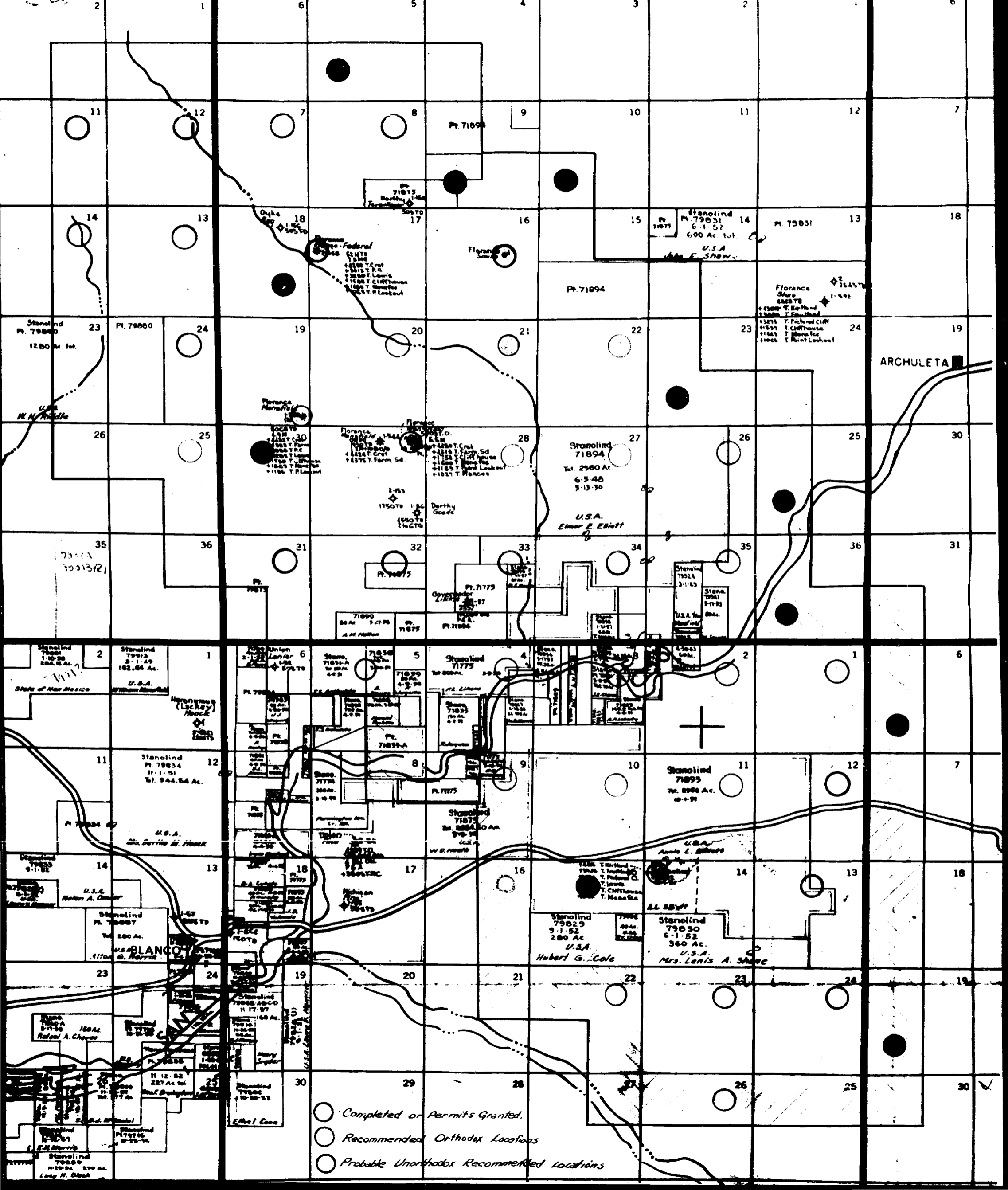
Tract No.	Description	No. of Acres	Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner under Option Agreement, Operating Agreement or Assignment & Percentage of Interest
23	All of Sec. 24	640	078615	U.S.A. 12 3/4%	F. J. Glyson		
24	Township 31 North, Range 6 West Lots 8, 9, 10 & 11, Sec. 6	31.89	078934	U.S.A. 12 3/4%	Katharine Martin		
* Lorraine Drilling Company and Wood River Oil & Refining Company have conveyed these lands, being a part of other holding owned by these Companies, to the Belth Oil Corporation and El Paso Natural Gas Company; however, there is nothing of record as to this change in ownership.							
<u>STATE LEASES</u>							
25	Township 30 North, Range 7 West 1/2 Sec. 16	800	Lease Date 2-13-45 B-178 (1)	State 12 3/4%	Stanford		
26	Township 31 North, Range 7 West 1/2 Sec. 32; 1/2 1/2 Sec. 16	120	7-5-40 B-3734 (16)	State 12 3/4%	Charles B. Conales		
27	Township 31 North, Range 8 West 1/2 NW/4 Sec. 32	100	3-8-48 B-10603 (13)	State 12 3/4%	Charles B. Conales		
28	Township 31 North, Range 7 West SW/4 NW/4, SE/4 NW/4, NE/4 SW/4 Sec. 16	160	7-5-40 B-3734 (7)	State 12 3/4%	J. C. Herbert Bryant		
	Township 31 North, Range 8 West NW/4 NW/4 Sec. 32						

Tract No.	Description	No. of Acres	Lease Date and Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner under Option Agreement, Operating Agreement or Assignment & Percentage of Interest
29	<u>Township 31 North, Range 7 West</u> <u>N/4 NW/4 Sec. 32</u>	40	7-22-40 B-8753 (20)	State 12 3/8%	Edward J. Hoeg, et al.		
30	<u>Township 31 North, Range 7 West</u> Lots 1, 2 & 3 Sec. 32	44.70	7-10-45 B-453 (2)	State 12 3/8%	Morgan G. Smith		
31	<u>N/4 NW/4, NW/4 E/4 Sec. 32</u>	120	5-2-45 B-232 (5)	State 12 3/8%	Francis L. Harvey		
32	<u>Township 31 North, Range 8 West</u> <u>SW/4 NW/4 Sec. 32</u>	330.00	5-2-45 B-230 (9)	State 12 3/8%	Francis L. Harvey		
33	<u>Township 31 North, Range 7 West</u> <u>SW/4 SW/4 or Lot 4, SW/4 NW/4</u> <u>Sec. 32</u>	68.32	3-21-44 B-11125 (12)	State 12 3/8%	Oran G. Lewin		
34	All of Sec. 36	640	8-21-45 B-505 (1)	State 12 3/8%	Hynd-Prosc, Inc.		
35	<u>Township 31 North, Range 8 West</u> <u>N/2 NW/4, NW/4 NW/4 Sec. 36</u>	120	7-5-40 B-8734 (6)	State 12 3/8%	Terry G. Campbell		
36	<u>SW/4 NW/4, NW/4 NW/4 Sec. 36</u>	30	7-5-40 B-8734 (13)	State 12 3/8%	Elias S. Comstock		
37	<u>Township 30 North, Range 7 West</u> <u>NW/4 Sec. 2</u>	153.74	5-2-45 B-289 (5)	State 12 3/8%	Southern Petroleum Exploration, Inc.		

Tract No.	Description	No. of Acres	Lease Date and Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Option Agreement, Operating Agreement or Assignment & Percentage of Interest
38	<u>Township 30 North, Range 7 West</u>						
	2/2 NW/4 Sec. 2	79.33	5-2-45 5-283 (C)	State 12 3/8%	Valco Refining Co.		
39	1/2 SE/4 Sec. 16	80	8-8-43 8-10003 (14)	State 12 3/8%	G. D. Stoops		
40	1/2 NW/4 Sec. 16	80	3-8-43 3-10003 (11)	State 12 3/8%	Oscar W. Chislar		
41	<u>Township 31 North, Range 7 West</u>						
	1/2 SE/4, 1/4 NW/4, 1/4 SW/4, 1/4 Sec. 17	600			Unleased		
	<u>Township 31 North, Range 8 West</u>						
	2/2 NW/4, NW/4 NW/4, 1/2 SW/4, 1/4 SW/4, NW/4 SW/4 Sec. 36						
	<u>Unleased Lands</u>						
42	<u>Township 31 North, Range 7 West</u>						
	1/2 NW/4 Sec. 12; SE/4, SE/4 SW/4 Sec. 11; NW/4 NW/4 Sec. 14	320		A. L. Harrington, et al.	Tom Scott		
43	S/2 Sec. 3	320		Paul Sidney Haa 12 3/8%	Stanolind		
44	NE/4 NW/4 Sec. 19	40		Ben Case	Stanolind		
45	1/2 NW/4 Sec. 20	80		Marcello D. Lucero	Stanolind		
46	SE/4 SE/4 Sec. 19; NW/4 NE/4 Sec. 30	80		Juan Leonardo Lucero	Stanolind		

Tract Description	No. of Acres	Lease Date and Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Option Agreement, Operating Agreement or Assignment of Percentage of Interest
47 Township 31 North, Range 7 West N 1/4, W 1/4, Section 13	90		Horace F. McKay, Jr.	Stanolind		
48 Township 30 North, Range 7 West North 10 acres of the North 120 acres of Tract No. 40, and being in Section 7. South 54 acres of Tract No. 59 in Section 6.	174		Leon H. Lucero	Stanolind		
<u>Township 31 North, Range 7 West</u>						
North 40 acres of Tract No. 40, Section 30						
49 West 70 acres of Tract No. 51 in Section 31.	70		Don Guss	Stanolind		
<u>Township 31 North, Range 7 West</u>						
50 North 40 acres of Tract No. 49 in Sections 30 and 31. East 30 acres of Tract No. 51 in Sections 21 and 32. All of Tract No. 50, being in Sections 31 and 32. All of Tract No. 52 in Section 31	225		E. J. Lucero	Stanolind		
<u>Township 30 North, Range 7 West</u>						
South 15 acres of the North 30 acres of Tract No. 59. North 16 acres of Tract No. 59 in Section C.						
<u>Township 30 North, Range 7 West</u>						
51 South 55 acres of the North 82 acres of Tract No. 59 in Section C.	55		Cedillo Martinez	Stanolind		

Fract No.	Description	No. of Acres	Lease Date and Serial No.	Land Owner and Percentage of Royalty	Record Owner of Lease or Application	Overriding Royalty Owner & Percentage	Working Interest Owner Under Section Agreement, Operating Agreement or Assignment & Percentage Interest
52	Lot 10 and 11, sec. 7	21.30		Manuel Jetocho Lucero	Stanolind		
53	Tracts no. 42 and no. 44 in section 17	100		Ramon H. Lucero	Stanolind		
54	North 20 acres of Tract no. 40, being in Section 6, east 50 acres of Tract 41, being in Section 7 and 12 South 40 acres of the North 50 acres of Tract No. 42, being in Section 8 and 17	140		Simon Velasquez	Stanolind		
55	South 20 acres of Tract no. 42, being in Section 17 and 18	60		Simon Velasquez	Stanolind		
56	Tract no. 40 in Section 19	80		Silvano H. Lucero	Stanolind		
57	South 20 acres of Tract no. 40, Sec. 7, east 50 acres of Tract no. 41, Secs. 7 & 8; North 40 acres of Tract no. 42, Sec. 8	140		Antilago Velasquez	Stanolind		
58	North 120 acres of Tract no. 45, being in sections 17, 18, 19 and 20	120		Saul A. Yager	Stanolind		
59	South 40 acres of Tract no. 45, being in Sections 19 and 20.	40		Saul A. Yager	Stanolind		
60	Township 31 North, Range 7 West N/4, E/2 S/4 Sec. 1; E/2 NE/4 Sec. 12	320		Orbit H. Miller	Stanolind		
61	Township 30 North, Range 8 West SW/4 Sec. 12; 20 acres in the NW corner of SW/4 NW/4 Sec. 13	60		Antonio Martinez, et al	Blanco Gas Co.		
62	E/2 NE/4, NE/4 SW/4 West 10 acres of NW/4 NE/4 and E. 4 acres out of E/2 NE/4 of NE/4 and E. 4 acres in SW/4 NE/4 and E. 4 acres in SW/4 NE/4	156.6		Elvin Lewis, et ux, 1/2 interest Doris Cox, et ux, 1/2 interest	Unleased		



- Completed or Permits Granted.
- Recommended Orthodox Locations
- Probable Unorthodox Recommended Locations

Case 163

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF  
STANOLIND OIL AND GAS COMPANY FOR  
THE ADOPTION OF REGULATIONS ESTAB-  
LISHING 640-ACRE SPACING IN THE  
BLANCO FIELD IN SAN JUAN COUNTY,  
NEW MEXICO:  
ESTABLISHING OF THE LOCATION OF THE  
INITIAL WELL ON EACH 640 ACRES;  
FIXING REGULATIONS AS TO THE SETTING  
OF PIPE; AND FOR BACK PRESSURE TESTS  
OF THE VARIOUS STRATA.

CASE NO. 163

AFFIDAVIT

In connection with the above styled and numbered case which is now pending before this Honorable Commission, we the undersigned, representing a majority in interest of the working interests in oil and gas leases covering what is now known as the Blanco Gas Field in San Juan County, New Mexico, and which is before this Honorable Commission for consideration in the subject case, do hereby respectfully request that this Commission adopt regulations governing the development of what is known as Mesaverde Gas Pay in the said field, as follows:

1. That a 320 acre spacing program be adopted until such time as reservoir characteristics are determined, the initial well to be located at the center of the NE $\frac{1}{4}$  and SW $\frac{1}{4}$  of each section, such location to be subject to a 330 foot tolerance in the Commission's discretion in instances where necessary to reduce drilling costs because of rugged terrain.
2. That surface pipe be set through at least 50 feet of the first hard rock formation, circulated to the top with cement, and installed in such a manner as to insure adequate protection against blow outs and cratering.
3. That the production string be set on top of the Cliff House pay, with a minimum of 100 sacks of cement, and that tests be made under the existing regulations of the Commission.
4. That all wells drilled through the Point Lookout pay be required to take separate back pressure tests of (a) the Cliff House pay, (b) the Point Lookout pay, and (c) both pays commingled, with a minimum of three points to each back pressure test. That wells in the Cliff House pay be required to take back pressure test, obtaining a minimum of three points, and that all tests be taken either in the process of completion, or by means of packer separation between the Point Lookout and Cliff House pays after completion, and that all tests be certified and filed with this Commission.

*and a greater  
tolerance*  
*[Signature]*

5. That annual back pressure tests be required, to be taken in June, July or August, for each completed well.

We believe that the foregoing rules will promote the conservation of gas and other hydrocarbon substances in the field, and will result in a greater ultimate recovery from the field, and will be fair to all interested parties, including the royalty owners.

OWNER

M. J. Florence

Wood River Oil & Refining  
Company

Delhi Oil Corporation

Byrd Frost and  
B. B. English

BX

TITLE

Attorney in fact  
vice President

STATE OF NEW MEXICO )  
COUNTY OF SANTA FE )

Subscribed and sworn to before me, by each of the above signed persons, this 29th day of October, 1942, A.D.

Notary Public

My Commission Expires July 9, 1949

(Afternoon session, hearing before the Oil Conservation Commission, October 28, 1948.)

COMMISSIONER SUMNER: Gentlemen, the Commission is again in session. Mr. Craham, will you read the call for the seventh and last case?

(Reads the notice of publication in Case 163.)

MR. SETH: Gentlemen, this is an application of Stanolind Oil and Gas Company involving the Blanco field or pool in San Juan County. The underlying idea is that inasmuch as the pool is in its very early stages of development that proper spacing rules and proper well patterns should be started so that--subject, of course, to changes--as further development may dictate, and always with the idea that possibly there might be a unitization of the field, and thereby unnecessary wells might be avoided. I made a mistake in preparing the petition in that paragraph No. 1 the tolerance should be 330 feet from the center of the 160 instead of 660 feet. I didn't know much about it and I put in the wrong figures. We would like to have Mr. Umbach sworn.

PAUL UMBACH, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. SETH:

Q. Please state your name.

A. Paul Umbach.

Q. What is your profession, Mr. Umbach?

A. District geologist for Stanolind Oil and Gas Company.

Q. And where are you located?

A. Albuquerque, New Mexico.

Q. You have testified before the Commission before, have you not?

A. I have.

MR. SETH: I will omit the qualifications.

COMMISSIONER SPURRIER: Surely.

Q. Are you familiar with the Blanco pool, so-called, in San Juan County, New Mexico?

A. I am familiar with it, yes, so far as it is developed.

Q. And that is, I believe up to the present time at least, a gas field?

A. It is.

Q. Now, have you a map--which I would like to have marked as Exhibit 1. What does that indicate, Mr. Umbach?

A. This exhibit indicates the--an outline of that--of the Blanco area, in which we think has possibilities of containing production.

Q. The boundaries of the field or pool have never been fixed by the Commission?

A. That's right.

Q. This map indicates your views as to the outline of the probably productive area?

A. Of course, we don't know the outline of the productive area, but as best we can tell right now that would be the outline that we would propose for unitization.

Q. That includes lands in Townships 29 and 30 North and 9 and 10 west?

A. That's right. 29 and 30 north, 9 and 10 west.

Q. Now, the east and west boundaries of the area you have shown here are indicated by wells drilled outside the area ....

A. .... outside the area ....

Q. .... and that were not ....

A. .... commercial wells. ....

Q. The north and south lines, are they just ....

A. They are not defined.

Q. The north and south lines, ....

A. .... Northwest and south lines, that is what you mean.

It is just a matter of extending the area approximately two miles or two and a half miles from that which is proven productive.

Q. Now, the coloration on the area you have outlined here. What does that indicate?

A. The brown indicates the patented acreage. The red indicates the state acreage, and the blue indicates government land.

Q. The area which predominates is government land?

A. Yes.

MR. SETH: We offer Exhibit 1 in evidence.

Q. I hand you Exhibit 2. What does that indicate, the map?

A. Exhibit 2 indicates the structural--indicates the structure of the Blanco area, as defined by subsurface data on the top of the Cliffhouse on top of the pay.

Q. That is, the contour lines run along the top of the pay as indicated?

A. That's right, and substrata.

MR. SETH: We offer Exhibit 2 in evidence. We will have him testify about it further.

Q. I hand you Exhibit 3. What does that indicate?

A. It is a similar outline as Exhibit 1. The same outline indicating the lease ownership in the area.

Q. Now, the white places, what are they?

A. Small individuals--small individual patented areas.

Government small ownerships which we did not define. It is too small to be subdivided.

Q. I hand you Exhibit 4 and ask you what it is?

A. This is a cross-section of the wells drilled in the Blanco area from Florance Pierce-Federal to Stanolind No. B-1 Elliott indicating the top of the formations and the pay horizons.

Q. It is the log of the wells?

A. That's right, the electric logs.

Q. Mr. Umbach, you are familiar with the geology of that area, at least as far as it is disclosed?

A. I am.

Q. How many wells altogether have been drilled there?

A. The number of producing wells or how many wells on that particular area?

Q. Yes.

A. I believe within the area outlined to the Cliffhouse there are four wells.

Q. What is the name of the pay in the area?

A. It is the Cliffhouse pay and Point Lookout pay.

Q. At what depth ordinarily is the Cliffhouse pay found?

A. Approximately 4,200 feet.

Q. And the other one?

A. About 4,700 or 4,800 feet. About 4,800 feet.

Q. And are both pays productive? I mean in the wells that have been drilled?

A. No, they probably are productive. Not placed for production. Stanolind B-1 Elliott has only been tested to the casing in the Point Lookout. We have taken drill stem tests however in the Cliffhouse.

Q. Which is the lower one?

A. Point Lookout.

Q. Is the gas from each formation substantially the same?

A. As far as we can tell.

Q. You know the pressures in each one? Have you any data?

A. I haven't any data available. It is approximately 1,300.

I do not have the exact data with me here.

Q. From the surface geology and what is shown in these wells, what is your view as to the entire area shown on these maps, Exhibits 1 particularly, as being substantially the same pool?

A. We have been unable through our work to define a structure in the area.

Q. What I am driving at is, the San Juan river runs through the area. Does that divide it into two parts underground, in your opinion?

A. It has no bearing on it whatever.

Q. What is there? A dome, or what is the structure?

A. It is a monocline, with no closed structure. In other words, it is a post stratigraphic trap due to cementation of the sands; the best we can tell at this time.

Q. Is there any disclosure on the surface of any importance?

A. Our surveys which we have correspond with the subsurface data which we presented to the Commission on the exhibit.

Q. Where is the Stanolind Oil and Gas Company well that you spoke of? Is that north or south of the San Juan?

A. South.

Q. And the Florance wells?

A. North of the San Juan River.

Q. Are any of them hooked onto any pipe line?

A. No, they are not.

Q. All closed in?

A. All closed in, with the exception of the well which now

furnishes Aztec, which is in Section 22. I believe it has been furnishing Aztec since 1929. It is an old well.

Q. Can you, by taking this exhibit or from any other source, give the thickness of the various sections involved here, Mr. Umbach?

A. The thickness of the sections from the top to the bottom?

Q. Yes, and particularly the pay.

A. Most of the wells in this particular area were spudded about on contact with the Puerco-Torrejon-Wasatch. The wells will have to be drilled to approximately 1,500 feet to penetrate the Puerco-Torrejon sedimentation, including the Ojo Alamo at the base. Kirtland has approximately 700 feet. Fruitland approximately 350. Pictured Cliffs would be approximately 75 feet. The Lewis shale would be approximately 1,700 feet. And the Cliffhouse approximately 150 feet. And the Menefee approximately 450 feet. And the Point Lookout approximately 150 feet. The two pays, the Cliffhouse, which has a total sand and shale thickness of 150 feet, and the Point Lookout has a sand and shale thickness of approximately 150 feet.

A. And they are, in your opinion, as far as present development indicates, entirely separate pays?

A. They are very probably separate, yes, due to the 450 feet of Menefee between them.

MR. SETH: That is all.

COMMISSIONER SPURRIER: Is there anyone who now wishes to cross-examine the witness? Very well, the witness is excused.

JOSEPH E. JENKINS, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. SETH:

Q. State your name, please.

A. Joseph B. Jenkins.

Q. What is your profession?

A. Petroleum engineer.

Q. By whom employed?

A. Stanolind Oil and Gas Company.

Q. And how many years have you been employed by them?

A. Since September, 1935.

Q. What professional training do you have?

A. B.S. in mechanical engineering.

Q. Where?

A. New Mexico A. & M.

Q. Are you familiar with this Blanco structure in San Juan County, New Mexico?

A. Yes, sir.

Q. And have you made an examination of the locations of the various wells, and the general situation in that area so far as present development permits?

A. Yes, sir.

Q. Have you also made a study of the testimony given by Mr. Michaels in the Kutz Canyon hearing, Case No. 126, on the well costs and similar matters?

A. Yes, sir.

Q. Have you made up a tabulation showing the drilling costs, depths, and well potentials, and the like, of the wells on the Blanco pool?

A. Yes, sir.

Q. Which wells on Blanco did you take into consideration?

A. Florance No. 1 Pierce Federal, Florance-Mansfield No. 2, And Stanolind-Elliott B-1.

Q. They are all wells completed but not hooked up for pro-

duction?

A. That is correct, sir.

Q. Now, take the average depth in the Blanco structure.

How deep would a well have to be drilled to produce from both pays? You are familiar with the two pays Mr. Umbach testified about?

A. Yes, sir.

Q. How deep would a well have to go to produce both pays?

A. To adequately test both pays, we believe that we would have to go to approximately 5,000 or 5,100 feet.

Q. And on this Exhibit 5, is that the first figure represented there under the heading of "Depth"?

A. That is correct. The column which is directly underneath the word "Blanco" represents the depth in feet for the wells-- is our well, which is drilled on the Blanco area.

Q. And in the other column "Kutz", what does that mean?

A. The column there represents in the length of the dark section at 2,100 feet an approximate average total depth for the wells in the Kutz Canyon field.

Q. The wells producing in that field average about 2,100 feet in depth?

A. Yes, sir.

Q. Take the next column "Drilling Cost". Do you know what the Stanolind well cost?

A. Our latest figures on the N. L. Elliott B-1 indicate that the cost will be slightly in excess of \$110,000.00.

Q. Is that a figure?

A. That is represented by the overall length of the column underneath the word "Blanco".

Q. Under "Drilling Cost".

A. Which is shown there in thousands of dollars.

Q. Why did that break above 80,000 dollars?

A. The break at approximately 80,000 dollars represents our estimate of what it would cost to drill, complete, and adequately test for full reservoir information a well in the Blanco field or pool.

Q. In other words, your first well cost more than you would anticipate other wells would?

A. Yes, sir, and it is quite possible that as additional experience is gained in drilling the wells that a considerable difference would of course be represented between what our initial expenditures amounted to.

Q. What was the average cost as shown by the testimony referred to in Kutz Canyon?

A. The present average cost of Kutz Canyon wells is approximately 20,000 dollars.

Q. Taking the next column "Development Cost" in dollars per acre unit, that is similarly a pictorial representation of what it would cost to develop a well in the Blanco--or a unit rather--in the Blanco field under three examples of density.

A. Yes, for example, the first column, which is labeled "160" at the top, and extends down to a point of 690, represents the development costs of a 110,000 dollar well if one well were drilled on 160 acres.

Q. It represents the cost per acre?

A. That is correct. It is, in effect then, a 110,000 dollar divided by 160 acres. The broken line in this series of columns under this one particular heading represents a similar calculation involving an estimated well cost of 80,000 dollars

divided by 160 acres in one instance, 320 acres in the next instance, and 640 acres in the next instance. It therefore portrays that if development in the Blanco field is carried on with one well to 160 acres, and the average well cost for purposes of illustration is 30,000 dollars, then the development cost per acre would be 500 dollars. Similarly, if the size of the drilling unit was 320 acres, the development cost per acre in the unit would be 250 dollars. A similar calculation gives us 125 dollars per acre if only one well is drilled on 640 acres.

Q. In Kutz Canyon, based on 160-acre spacing and an average cost of 20,000 dollars per well, what is the cost, development cost, per acre that ....

A. That would be 125 dollars per acre.

Q. Now, well potentials, the next column, what does that mean?

A. The block graph which is presented under this caption is labeled potential per well in millions of cu. ft. per day, and under the heading of "Blanco " we have illustrated there the available data for three different wells. The longest section of that staggered column there indicates that a potential of 3,300,000 cu. ft. per day was obtained by means of a back pressure test taken in accordance with the U.S. Bureau of Mines recommended standard pressure. The other two steps under the main heading of the graph for "Blanco " there represent a similar type test taken at the two Florence wells. Under the heading for Kutz, the data is taken from Bulletin 18, entitled the Oil and Gas Resources of New Mexico, 2d Edition, published in 1942. I believe the author was Robert L. Bates, geologist of the State Bureau of Mines and

Mineral Resources. There is no information indicated in the bulletin as to the exact manner in which these potentials were obtained. The bulletin indicates that the potentials varied from a low of 400,000 cu. ft. per day to a high of 4,000,000 cu. ft. per day.

Q. Now, taking the next column "Deliverability".

A. The next block under the caption "Deliverability" by M. C.F. per day represents under the heading Blanco the calculated deliverability of the two wells on which we have the most reliable data in the Blanco field, based on the Bureau of Mines type back pressure test, and on assumed delivery pressures. The assumed delivery pressure was 625 pounds per day.

Q. You mean per inch?

A. P.S.I. That is represented under the block heading under deliverability of 1,100,000 cu. ft. per day deliverability at the N. L. Elliott B-1, and a similar type test performed at Florence Pierce-Federal No. 1 well, indicating that the well should deliver against a similar line pressure 1,000,000 cu. ft. of gas per day. The hachured section of the graph immediately below is an estimate of what the deliverability of those two wells might be if the back pressure against which they were operating was in the neighborhood of that which is encountered at Kutz Canyon-Fulcher Basin. However, that hachured section has to be classified by further condition in that due to the absence of a sufficient number of accurately drilled plates for the critical prover in addition to those normally furnished with that, these points, as represented by the hachured sections are extrapolations. Under the Kutz Canyon block-headed up deliverability there is

shown there three steps. The step of shallowest indication there of approximately 250,000 cu. ft. per day is an average taken from the total production as reflected by the <sup>June</sup> reports of the Lea County Engineering Committee divided by the total number of wells which were indicated to be producing during that month; and similarly, the second step is an identical calculation performed from the same data sources for the month January 1948. And the longest step there shown under Kutz Canyon represents an estimate that the wells might deliver one-fourth of the maximum potential. In other words, the longest section on there is what the best well in Kutz Canyon might be reasonably expected to produce against the normal back pressure of the line.

Q. The next column "Delivery Pressure", is that what you referred to awhile ago?

A. Yes, sir. I believe that probably only one clarifying remark needs to be made with regard to the Kutz section. And that is that we have shown there a figure for summer pressure and one for a winter pressure. That data is taken from, I believe, bulletin 18, which indicated that the average winter delivery pressures were 200 P.S.I., and the average summer pressures were 350 P.S.I.

Q. Down at the bottom under the heading of "Porosity %", from what is that information obtained?

A. These are weighted averages of the porosity of the cores that were obtained at the N. L. Elliott No. 1 well in the Mesaverde section. The second step, the one that is farthest to the left and also the longest one, indicates that the weighted average porosity of the Point Lookout sand was approximately 11 per cent of that section in which cores were

recovered. The step indicates a similar figure for the Cliffhouse. For purposes of comparison, we have shown what the weighted average porosity was for the Pictured Cliffs sand in the N. L. Elliott No. 1, which as shown from this graph was approximately seven per cent. The data as listed there under Kutz and indicated to be 20 per cent is from the testimony of Mr. Earl Nichols in respect to Case No. 126, at which time it was indicated that the porosity was in the neighborhood of 20 per cent.

Q. Now, the next.

A. From the same cores which were obtained from the N. L. Elliott B-1 well, the weighted average connate water percentage for Point Lookout was found to be approximately 22. And for the Cliffhouse approximately 27. For purposes of comparison, the Pictured Cliffs data for the N. L. Elliott B-1 well is also shown there, and it was found to be approximately 30 per cent. I believe that the tests that we took in the Elliott B-1 in the Pictured Cliffs as well as the core data indicated that the particular sand, at least in that particular well, was probably non-commercial. From the same testimony in Case No. 126, it was indicated that the connate water at Kutz Canyon was in the neighborhood of 20 per cent.

Q. Now, next take up the column "Pay Thickness".

A. As in the previous examples, we have shown on the left a section for Blanco and on the right one for Kutz. The data for Blanco is taken from our core data in the N. L. Elliott B-1. And the data under Kutz is taken from the testimony in Case No. 126. Under the subheading of Blanco, we have attempted to indicate the gross pay as well as the net pay of the two sands, Point Lookout and Cliffhouse. It is believed

that there is approximately 42 to 43 per cent net pay in the Cliffhouse. And in the Point Lookout 53 per cent of the section which was cored was indicated to be net pay as based on the analyses of the cores which were recovered.

Q. What was the entire footage that you drilled and cored?

A. The over-all section of the Mesaverde was approximately 850 feet. Of that we cored 349 feet.

MR. MORRELL: Would you mind repeating both the gross net of the Point Lookout and Cliffhouse?

A. The net pay of the Cliffhouse was calculated to be approximately 42 per cent. Forty-two feet, pardon me. And of the Point Lookout, approximately 53 feet. We cored a total of 349 feet. We were not successful in our attempts to core the entire Point Look section.

Q. Why?

A. At approximately 4,905 to between there and 4,910--if I am incorrect on that, Mr. Umbach can make a correct statement--but it is approximately in there--we lost so much circulation due to reservoir conditions that we were unable to proceed with the rotary tools without undue hazards. At that point, it was therefore decided that in order to complete the well it would be necessary to cease rotary drilling and coring operations and convert to cable tools. We lost approximately 4,000 barrels of oil-emulsion-type mud in the interval from approximately 4,905 to 4,910 feet, which we believe indicated that in that lens at least an extremely high permeability and porosity or combination of both was present. And after we converted to cable tools for some considerable period of time we recovered large quantities of the mud back into the bore hole which had previously been lost in this interval.

Q. Now, the Kutz pay thickness, what data do you have on that?

A. That is based on the similar--these previously mentioned sources--and it has indicated that the net pay there was in the neighborhood of 40 feet and the gross at 100 feet.

Q. Now, the virgin or original pressure, Mr. Jenkins?

A. In the Blanco field we have found from the tests which we have taken that the virgin bottomhole pressure is in the neighborhood of 1,370 P.S.I.A. That is further substantiated, we believe, by the fact that the back pressure data tests plotted into a straight line function. Which indicated that the figure that we had obtained for the shut-in pressure at the Elliott B-1 was reasonably correct. In the Kutz Canyon the available literature indicates that the virgin bottomhole pressure there was slightly less than 600 P.S.I.A. We do not have any tests of our own to substantiate that data, and it may be very difficult to know positively just what the true formation virgin pressures were in Kutz Canyon since it was drilled so many years ago. And the accuracy of some of the tests and some of the equipment has been questioned.

Q. Now, the permeability.

A. Under Blanco we have shown a thin line there which shows that the permeability weighted average of that which we cored and recovered the cores was in the neighborhood of 1. We have estimated, based on experience in other fields and regions where we have had undue troubles due to lost circulation, that the permeability of at least one section in the Point Lookout is probably in excess of 20,000. For Kutz Canyon the data there is taken from the Case No. 126, which represented, I believe, that the minimum permeability was approximately 5 per cent,

and the maximum of any one section which was cored and recovered and analyzed was approximately 340.

Q. Now the estimated field area in acres?

A. For Blanco, as Mr. Umbach has testified, it is tentatively assumed that the field may cover in the neighborhood of 30,000 acres. And previously mentioned sources are quoted for the field, which is represented there for Kutz Canyon-Fulcher Basin being in the neighborhood of 15,000.

Q. Mr. Jenkins, you wouldn't regard the Blanco field as other than in the very earliest stages of development, would you?

A. No, sir.

Q. And from these figures--and we offer in evidence at this time this Exhibit 5--and your testimony--will you state to the Commission your views as to the advisability of 640-acre spacing at the initiation, at least, of the development?

A. As this chart has represented, we have a fair amount of data under one well only. We do not pretend to assume or to declare that the data for that one well is representative of the entire producing structure. I believe that anyone would hesitate to attempt to estimate the recovery from any field or any reservoir in which no field limits had been established, and in which no representative cores or core data had been obtained so that some reasonable basis for the void space calculations could be assumed. It is our idea that knowing as little as we do about the Blanco reservoir, that it would be most advantageous to everyone concerned to initially develop the field in such a manner so that in the event the initial spacing pattern wasn't found to be the most desirable one, that it could be ultimately adjusted without disrupting the spacing pattern or creating an undue number of unorthodox

locations and exceptions.

Q. Your idea is that if the 640-acre spacing should be adopted that as further developments might indicate it could be altered. And your idea of the spacing pattern, that is, one well in the NE $\frac{1}{4}$  would enable a reduction to, say, 320 acres, which could be made without any confusion or unorthodox well drilling?

A. That is correct.

Q. There is nothing peculiarly important as to the first well being located in the NE $\frac{1}{4}$  of the section, is there? It could be just as well in the NW or SW?

A. That is correct.

Q. But your idea is that one well to each 640 and all in the E $\frac{1}{2}$  would enable the W $\frac{1}{2}$  to be similarly developed when the future development so indicated?

A. That's right.

Q. Now, is there any likelihood, in your opinion, of an effort being made to unitize the field?

A. To the best of my knowledge, efforts are being made to bring a unitization of the Blanco reservoir to an ultimately satisfactory conclusion. However, I cannot positively state at this time just how far those steps have progressed.

Q. Would this uniform spacing pattern be of any value if the field should ultimately be unitized?

A. It would probably, I believe, permit earlier exploitation of the reservoir to its limits.

Q. It would enable the boundaries of the pay to be developed more rapidly?

A. And sooner. And it could very easily conserve the natural resources expended in the drilling of unnecessary wells in

the event it was found that one well would drain adequately 640 acres, or more or less.

Q. It would arrange the well pattern so that if additional wells were determined to be necessary, they would be more likely to be drilled?

A. And they could be drilled in a uniform pattern to some other density.

Q. Now, in connection with this petition, it was suggested that the initial well be in the center of the NE $\frac{1}{4}$  of each section. You stated, I believe, that it might just as well be in another quarter of the section so long as the pattern was uniform?

A. That is correct, sir.

Q. And the tolerance stated in the petition as ~~within~~ 660 feet of the center of the quarter section should be 330 feet?

A. That is actually what was meant. A 330 feet radius around the center of that particular quarter section. That tolerance being desirable because of the rough nature of the topography.

COMMISSIONER SPURRIER: As given, shall the record show that to amend the application?

MR. SETH: Please. Now, in our petition we have recommended that surface pipe should be set through the shallow water beds, with nothing less than 250 feet, with cement circulating to the surface. Tell us what your views are as to that, Mr. Jenkins.

A. In this region, it is believed desirable to protect the fresh water beds, and similarly, the rights of the land owners. And we believe it to be good operating practice to have a reasonably secure section of surface pipe in what can

be probably called, even at this date, more or less a wildcat area; in that we do not know just how much gas might be encountered in that particular well. And by means of, by having a good surface string we would have a better opportunity to control the well.

Q. Are the shallow water beds there generally fresh water?

A. I understand that they are. I haven't had a drink--I had a drink of water from one sand. It was all right. I don't know about the rest of them.

Q. But your idea is to absolutely protect that water from contamination so far as possible?

A. We believe it is desirable from both of those standpoints.

Q. Now, the production string, the setting of that?

A. In this field, it is believed that we can dispense with an intermediate string, and that only a surface string and a production string are necessary for the adequate control of the wells, and for the protection of all the commercial beds and water signs. It has been found that a minimum figure for the amount of cement to be set in a production string is a desirable feature in rules for a field so that there will be less likelihood of a well being cased with an insufficient quantity of cement to prevent charging of upper beds from the producing gas sands or oil sands. Therefore, we have suggested in this application that a minimum of 100 sacks of cement be used in connection with the setting of that production string.

Q. You think that will be sufficient?

A. It is our normal practice. Stanolind's normal practice. Principally in the interests of insurance to use a greater quantity of cement than that which is indicated in the petition.

Q. Now, the well probably will produce from the two **different** pays. What is your recommendation with reference to the pressure tests or the separation of the pays?

A. It is believed desirable in the interests of obtaining more and better reservoir data that adequate tests be made of the productive ability of the individual completed wells. Further, in the interests of the conservation of gas, it is believed desirable that in lieu of wide open potential tests, which are commonly known to waste considerable quantities of gas, that instead the back-pressure-type tests, which have been developed by the Bureau of Mines and outlined in considerable detail in their monograph published by the Department of the Interior, Bureau of Mines, and entitled "Back Pressure Data on Natural Gas wells and Their application to Production Practices"; as indicated in our petition, it is the intent of this monograph, in which you obtained a sufficient number of these back pressure tests on any individual well, so that its actual or its absolute open flow can be calculated without the necessity of wasting large potentials of gas, which are normally wasted in attempting to stabilize wells at wide open flow. For that reason, as well as to furnish information which will be of considerable value to any commercial purchaser of the gas, either pipe line, domestic or manufacturing, that in the process of developing the field, this data should be obtained. It is believed desirable from a standpoint of further investigation, to which we have previously referred, that these back pressure tests should be a requirement of wells in the field.

Q. Do you believe that separate tests of that nature should be taken for each pay?

A. We believe it will assist the operators as well as the U. S. Geological Survey and the Oil Conservation Commission in determining to a greater certainty than is possible now whether or not the two pays should be produced separately or be allowed to be commingled.

Q. Now, do you think that they should be retaken at various intervals?

A. It has been found advantageous, according to the authors of the monograph, to repeat these tests, usually annually, in order that the deliverability or productivity of any given reservoir could be more accurately ascertained as that data was needed. And in some states that is a requirement; that the tests be taken annually.

Q. Mr. Jenkins, have you anything further that you care to add that I may have overlooked?

A. I wonder if the Commission would be interested in receiving as evidence this back pressure data which was obtained on the Elliott B-1?

MR. SETH: We offer in evidence a photostatic copy of the gas test on that well B-1 in the Blanco area.

Q. This you know to be correct?

A. To the best of my knowledge that is correct.

MR. McCORMICK: Do you have a market for this gas, Mr. Jenkins?

A. At the moment, we do not have.

MR. McCORMICK: How close is the closest gas pipe line?

A. I am having to guess on this point. I would say approximately ten miles just by looking at the map. I do not know how much of a diverse route a pipe line would have to take in order to encircle surface obstructions.

MR. BARNES: Mr. Jenkins, under present economic conditions,

if we assume a good producing well, approximately how long will it take a well to repay the original investment in this area? Completed to the Mesaverde?

A. I cannot answer your question because we do not have any data on which to estimate a return price for the gas.

MR. BARNES: Do you have an idea about what the abandonment pressure would be in that field?

A. That question could only be answered by the people who put in the pipe line or a gasoline plant. By that, I mean that the circumstances under which those plants or pipe lines are operated determine, are the principal determining factor, as well as the recovery, as to what the abandonment pressure of the formation would be.

MR. BARNES: In other words, the abandonment pressure at the present time and the time of the return are still imponderables that increase the risk of drilling in the field. Is that right?

A. That's right.

COMMISSIONER SPURMER: Are there any further questions of the witness?

MR. SCHULTZ: Mr. Jenkins, is the theory behind this 640-acre spacing that you want with a minimum amount of effort to determine the limit of the producing area?

A. That is part of the applicant's petition.

MR. SCHULTZ: I believe I missed the other part. Would you explain again the size of that and the reasons?

A. Yes. In the event that the data as it is eventually accumulated indicates that one well will drain 640 acres adequately, then of course, there would be no reason for any additional density development. At the same time, the

tentative spacing which we have asked for would permit a greater density development in the event the accumulated data indicates that such additional drilling would be warranted. I do not believe that any one of us now can say that this field should be drilled on the same density as the Hugoton gas field, which is principally one well to a section, nor can we say conversely that it should be one well to 160 acres, because we have a paucity of data.

MR. SCHULTZ: Would you agree that neither Stanolind nor the other operators have data at this time for proper spacing regulations? Is that right?

A. I don't like the wording of your question. Would you mind clarifying that a bit?

MR. SCHULTZ: Well, did you testify just now that you don't have the adequate data to ask for a permanent spacing?

A. That is correct. We are not asking for a permanent spacing.

MR. SCHULTZ: If the spacing program, other than a 640, were decided upon by the Commission, there is nothing that would keep the Stanolind from stepping out and determining the limits of the producing area by extension wells. Is that right?

A. There is nothing physically in the road. However, we are not sufficiently impressed with the economics of this field that we would--that we are anxious to go into an extensive development program until such time as we know more about it.

MR. SCHULTZ: Where did you lose mud? In what zone?

A. The principal loss was in the Point Lookout.

Q. Would you say that that had anything to do with the net

open flow potential of that well?

A. We do not believe so, because we recovered a very large quantity of that mud in our continued progress with cable tools; by baling the hole and scraping it. And in addition, the tests that were taken after--as the well was completed, did not indicate that the hole was filling with mud any more.

MR. SCHULTZ: How much mud did you lose in it originally?

A. In the neighborhood of 4,000 barrels.

MR. SCHULTZ: How much did you recover approximately?

A. Approximately a good--a grand total, we believe, in excess of 3,000 barrels. Now, part of that we know was lost behind the pipe because we ran the production string with the rotary tools. The hole, of course, is still loaded with mud. It was necessary to set a cement plug in the formation above this lost circulation point in order to have a mud column during the period of running the casing.

MR. SCHULTZ: Don't you feel--let me ask it this way. Do you feel that mud in the formation would restrict the flow of gas into the bore hole?

A. It is normally figured that that is true.

Q. If you lost 1,000 barrels--that is what you figure you didn't recover--don't you feel that will substantially reduce the open flow capacity of that well?

A. The thousand figure is a rough approximation.

MR. SCHULTZ: I appreciate that.

A. In the second place, there is some considerable portion of that which is behind the pipe. How much is back there, I don't know. How much of that variation is due to an indeterminate error because of carrying across the country and not being gauged in tanks, and so forth; those are

factors which make it almost impossible for me to say how much is in there.

MR. SCHULTZ: Do you think that any mud in the formation of a low pressure gas area would restrict the open flow and deliverability of the well?

A. I believe that that is the normal condition. How much it affects that, however, I don't know that anyone--at least, I wouldn't feel free to estimate it.

MR. SCHULTZ: Would you drill another well in the area the way you did this Elliott B-1?

A. I do not believe that we would.

MR. SCHULTZ: Do you believe if you completed the well with cable tools it would increase the open flow considerably?

A. We have no concrete data on which to base such an assumption. As I understand it, the only well which was cable tooled to the Mesaverde was apparently in a poor section of the field. I do not know for sure about that. In other words, I am not quoting from my own knowledge on that. So, if that is true, we only have one cable tool completion on which to base some sort of an estimate. Perhaps the operator who drilled the well could make a statement to that effect. I am not prepared to.

MR. SCHULTZ: Mr. Jenkins, do you know anything about the cost of drilling the Florance wells?

A. No, I do not. I imagine that the Florance people could testify as to that.

MR. SCHULTZ: That is all I have.

MR. MODRALL: Representing the Brookhaven Oil Company. Mr. Jenkins, you are familiar in a general way with the ownership of the mineral rights in this proposed area that is repre-

sented on the plate that you have presented?

A. In a general way, yes, sir.

MR. MODRALL: The area down through the center along toward the San Juan River is indicated on your plate as patented land? In brown?

A. This map here?

MR. MODRALL: Yes, that is what I had referred to. The brown coloring is patented land?

A. That represents patented land.

MR. MODRALL: And that area is held generally in comparatively small blocks as far as mineral interests are concerned?

A. If you will recall, I did not testify on the preparation of this map.

MR. SETH: Mr. Umbach did.

A. To the best of my knowledge, what you say is true.

MR. MODRALL: But you are familiar in a general way with the ownership in through there?

A. Yes.

MR. MODRALL: And the pink area is state-owned lands?

A. Yes.

MR. MODRALL: I think that is all, Mr. Jenkins, you can lay the map down. You are also familiar with the fact that state-owned land, as far as state leases are concerned, are held in comparatively small blocks of 40 and 80 acres?

A. That is what I understand.

MR. MODRALL: If the Commission should adopt this proposed 640-acre spacing, how do you think that would affect the holders of these small acreages as far as developing their holdings?

A. They are permitted under a statute of the State of New

Mexico to pool their lands and their interests until they have a sufficient amount of acreage to make up the minimum size drilling unit as established by the Commission.

MR. MODRALL: Isn't it a fact, Mr. Jenkins, that where you have anywhere from six to ten ownership, or possibly more, in a drilling unit that from a practical standpoint it greatly increases the difficulty of getting such a drilling unit together and a unitization plan on that unit?

A. Well, that is an obvious question there. Any time you have to consult with more than yourself on whether you want to do this or not do this you have more difficulty than if you are the sole possessor of that piece of property.

MR. MODRALL: That would obviously increase the difficulty of any of the small owners of mineral interests in there in developing their own property, would it not?

A. Well, to some small extent, I imagine it would.

MR. MODRALL: And to what extent you are not prepared to say?

A. That is correct.

MR. MODRALL: But it obviously would facilitate the development of large acreages like Stanolind's, whereas it would make it more difficult the development of acreages held in small leases, would it not?

A. It if please the Commission, I would like to display on the map here--if you will note the yellow color on here, not the orange but the yellow, represents Stanolind's acreage. You can see on that that we only have a total of five solid blocks about which we would not have to consult with anybody else if a 640-acre drilling unit was adopted. We are in a better position than anybody else would be as far as having difficulty with royalty owners or other lease owners to

communitize with other operators to form a drilling unit.

MR. MODRALL: If the spacing requirement for the area was adopted as proposed on your exhibits, Mr. Jenkins, how would you suggest that they handle some of these areas where you haven't followed the section lines necessarily? You have a split down through some of the sections, have you not?

A. That is correct. The tentative boundaries--and recall that they are tentative boundaries--do run down through the centers of some sections. There is no reason why those boundaries shouldn't be either increased or decreased to follow some section line, or, similarly, if it is felt that these are the final field boundaries, that the owners of these two half sections here-- in this particular instance here, whoever owns this can drill a well without consulting anybody because it is a 640-acre job.

MR. MODRALL: You are specifying a location in a particular quarter section. They would obviously have to get a spacing ruling from the Commission in order to follow out your spacing plan if the Commission should adopt this spacing plan as you recommend it.

A. That is correct. We do not intend to--in the event that somebody finds the N E $\frac{1}{4}$  of a section to be an untenable location, they could, for example, switch to the SW $\frac{1}{4}$  or some other system of alternatives, which perhaps could be incorporated in the Commission's initial order, or, on the other hand, it could be handled by means of a hardship case hearing or unorthodox location hearing.

MR. MODRALL: Mr. Jenkins, I think you testified on direct examination that you believed that there was some talk of a plan to unitize the proposed area here in its entirety.

A. I said that I believed that was my understanding, that we were in the process of attempting to push steps towards final unitization.

MR. MODRALL: Isn't it a fact that once a unitization plan had been adopted for the area, then it would be--the interests of all owners would be better preserved to have a spacing order entered by the Commission after that was done rather than before?

A. The difficulty in waiting for the unitization is that since there is some small portion of owners scattered through there which have not been located nor leased to operators, that in the interim period before those owners could be contacted for unitization, that a considerable number of wells could very conceivably be drilled on a haphazard spacing arrangement which might ultimately be found not to be to the best interests of all concerned.

MR. MODRALL: On the other hand, holding up development, or possible development, by small owners would be postponed if the Commission adopted the 640 spacing pattern at the present time, would it not?

A. Well, I don't understand why. I mean they would have no more difficulties than any other operator who might own, for example, 600 acres out of 640. And might have--would have to communitize a drilling site, a tract, in order to get a permit.

MR. MODRALL: But it is true, though, that the larger your spacing pattern the difficulty increases as a matter of degree in getting unitized drilling areas.

A. Yes.

MR. MODRALL: How did you arrive at the 640 spacing area you

are asking for?

A. There are 30,000 acres estimated to be in the productive area; the tentative number. That means, for example, if just one well is drilled on a section, that 50 wells would have to be drilled, entailing an outlay of somewhere between four and five million dollars before the field limits could be ascertained and adequate reservoir data similarly developed. Naturally, the greater the density of well drilling, the longer it would take to develop the field limits; and the greater amount of investment that would be required to initially cover the area. At the same time, you are confronted with a lack of a market, which has a tendency, well, to not encourage extension drilling.

MR. MODRALL: You don't think then that the field is going to be over-drilled until you would get a market, do you?

A. Well, I couldn't estimate what all the operators are going to do.

MR. MODRALL: There is going to be a potential market there or there is not going to be very many wells drilled.

A. I believe that is correct.

MR. MODRALL: You gave some figures, represented on this graph I think here, as to your potential production of the Blanco wells as compared to the Kutz Canyon wells. I think you were basing your figures of Blanco on the Elliott well.

A. Those potential figures were taken from tests at the Elliott and the Pierce No. 1.

MR. MODRALL: Which is on the Blanco structure.

A. Yes, sir.

MR. MODRALL: In working up your figures, did you attempt to, or could you give us a pretty fair estimate as to the recover-

able reserves per acre, or any way you care to, on the various spacings, 160, 320, 640? You gave some figures on development costs along that line.

A. I don't believe I am prepared at this time to testify along that line.

MR. MODRALL: You haven't made any figures on that?

A. I have, but I do not feel that I have conclusive information.

MR. MODRALL: Well, the figures you have made, would they or would they not indicate that you would have greater recoverable reserves on a 160-acre spacing, we will say?

A. Greater recoverable reserves on a 160-acre spacing?

MR. MODRALL: If you had it on 160 rather than on 640?

A. I am not sure that I got your question just right, but let me say this. That in the absence of any interference tests, or production decline data, that I myself would not want to make any estimates as to what the recovery comparison would be. I believe it, under the circumstances, to be too recent.

MR. MODRALL: You have definitely good quality sands there, pay sands. I think you testified 42 net in one pay and another one 53. That is considered a good character sand and good reserves, is it not?

A. Qualified, of course, by the degree of porosity, permeability, and connate water.

MR. MODRELL: And with that thickness of sands in this area, and the data that you do have, wouldn't you agree that probably you would recover a greater amount of gas with spacing less than 640?

A. No, I couldn't say yes and I couldn't say no at this time.

MR. MODRALL: Well, Mr. Jenkins, isn't it a fact that as little as is known about the Blanco area that the main object of getting a 640 spacing at this time is simply to save you a good deal of possible cost in development?

A. You have made a rather direct statement there ....

MR. MODRALL: .... well, I was just asking whether or not that is not the reason for the request for this spacing?

A. As I previously stated, we believe that it is desirable to first find out in once sense just how much money you have in the bank before we start loaning it out, so to speak. In this respect here, before we, or anyone else, would attempt large expenditures in this region, we would have to know just how good is the investment. Just how much return are we going to get on each dollar we put in.

MR. MODRALL: And you are not prepared to say at this time that your request for 640-acre spacing is necessary to prevent waste in that field are you?

A. The 640, as I said, was a suggested drilling site size. Even that involves the drilling of 50 wells to adequately determine the extent of the reservoir without an undue amount of so-called semi-wildcatting. And it was felt that if a 640-acre drilling size unit was established, that there would be a tendency to do more gradual stepping out rather than a development of a more intensified nature around a semi-proven area.

MR. MODRALL: I think that is all.

MR. McLEAN: I believe you testified a minute ago that you estimated that the probable cost per well in the Blanco Field would be around \$110,000.00?

A. No, sir. I testified that the cost in the N. L. Elliott

B-1 as of the last accounting had run to \$110,000.00.

MR. McLEAN: And do you have reason to believe that your cost in drilling any future wells will be less than that?

A. We certainly think so and hope so.

MR. McLEAN: But you don't know?

A. Well, that is not until we have the experience.

MR. McLEAN: And I believe you also testified that you knew of no market at the present time for the gas.

A. That is correct, as far as I know we have no market.

MR. McLEAN: Well, do you know the approximate number of acres in which Stanolind has an interest in the minerals in this field?

A. No, I do not know that myself.

MR. McLEAN: Do you know approximately the percentage of the acreage in the field in which Stanolind has an interest in the oil and gas and other minerals? Do any of your maps show that? On any of your exhibits?

COMMISSIONER SPURRIER: Mr. McLean, Mr. Umbach is prepared to answer that.

MR. UMBACH: I am not prepared to give the exact figures. However, the plat there, if you want to take the time and add up the acreage ....

MR. McLEAN: Could you give us an approximation?

MR. UMBACH: No.

MR. McLEAN: Well, your company does own a very large amount of acreage as shown on the plat. You don't know what percentage of the field?

MR. UMBACH: I haven't figured it out. That is up to the land department.

MR. McLEAN: Mr. Jenkins, if there were tracts to be unitized

and a number of different owners of acreage in each unit, it would be necessary for all of those owners to agree upon the plan for developing that unit, isn't that right?

A. I would prefer to refer that question to the Commission's lawyer, who is more properly qualified to state along that line, if it please the Commission, because there is a statute covering that as I understand it.

COMMISSIONER SPURRIER: Mr. Graham, are you prepared to answer the gentleman's question?

MR. GRAHAM: We require a majority of the owners.

MR. McLEAN: A majority of the owners on an acreage basis?

MR. GRAHAM: Yes, sir.

MR. McLEAN: In other words, if one or more owners control 50 percent of one unit, then they would have the right to say whether or not that unit was ....

MR. GRAHAM: .... it is on an ownership basis. The individual can try to get as near 100 percent of the owners as possible. But if a single individual doesn't wish to get in, he doesn't have to come in.

MR. SETH: Isn't there a statute by which the Commission can cause the pooling of tracts of small units?

COMMISSIONER SPURRIER: It has been twice exercised, Judge.

MR. McLEAN: In the proposed development of the plan, Mr. Jenkins, isn't it true that Stanolind either owns all of a number of the units, or the majority of the acreage in a number of the proposed units?

A. We own all of the acreage in six units. And from the appearance of this plat here, we own slightly in excess of 50 percent of the acreage in perhaps nine units. That would be fourteen out of fifty, roughly.

MR. McLEAN: Now, you have fifty units set up there on your exhibit, but isn't it true that at the present time it isn't known whether the Blanco field covers that entire area?

A. Well, that is not certain.

MR. McLEAN: That is true, isn't it?

A. Yes.

MR. McLEAN: Isn't it also true that if one company controlling a number of drilling units did not deem it economically practicable to further develop a field, that that might seriously impede the development of that field?

A. In speaking in generalities, what you say is true, but it doesn't apply as I see it in this particular case because we are not the majority owner.

MR. McLEAN: But you are the majority owner of about fourteen or fifteen of those 640 acre proposed units? Isn't that right?

COMMISSIONER SPURRIER: Mr. McLean, I am just asking this because I don't know what you are driving at. Do you mean to say that fifteen wells could be drilled here and then you could stop and the limits of the pool would not be known, and yet you could just stop drilling?

MR. McLEAN: The point I was making was that if one company or person owns a large number of the proposed drilling units, and if that particular company or individual believes there is no market for the gas, and believes that the cost of drilling is very high, and believes that the ultimate recovery is very low, then maybe the field will not be developed. Whereas if there is some other persons who believe they can economically drill wells, they might be prevented from doing so because of the large 640-acre blocks.

COMMISSIONER SPURRIER: Mr. Morrell, doesn't your department require offset drilling until the limits of the field are determined within reason?

MR. MORRELL: That is true.

COMMISSIONER SPURRIER: Does that make any difference to what you are saying, Mr. McLean?

MR. McLEAN: That is true to some extent. But isn't this true, Mr. Morrell? In order for an offset well to be drilled, if you had a 640-acre unit with a number of different owners, it would be necessary to get a substantial percentage of those owners to agree upon some method of development and who would be the operator and how to do it.

COMMISSIONER SPURRIER: Let's go one step farther. Mr. Morrell, they either drill the well or you force the payment of compensatory royalty without regard to who the owners are. I am not trying to make a point in favor of anybody. I am trying to show--what percent is Federal, Mr. Morrell?

MR. MORRELL: Roughly 85 per cent.

COMMISSIONER SPURRIER: You said drill three or four wells and stop.

MR. SCHULTZ: Do you require offset drilling where Government acreage is offset?

MR. MORRELL: That is a point I want to qualify. In this particular area the royalty rate to the United States is the same, so, as between Government tracts, there would be no offset requirement. If the well were drilled on state land, it would.

MR. SCHULTZ: Most of this is Government acreage.

MR. MORRELL: The majority is Government acreage. However, the distribution of the acreage owned by the state and the

patented land is the key to this whole problem, and is what has instigated preliminary meetings and the request for this hearing.

MR. ENGLISH: If somebody owned the royalty and he demanded that you drill it--it is Government land and the acreage belongs to someone else, and he says I want my royalty, how can you keep him from it?

MR. MORRELL: By going before the Commission and getting it thrashed out. I believe that answers it.

MR. McLEAN: Mr. Jenkins, I believe you testified a few minutes ago that you were unable to testify how long it would take to--take for each well in the Blanco field to pay out because you had no figures as to the price that could be obtained for the gas?

A. That is correct.

MR. McLEAN: Are you familiar with the general price that is paid for gas in that same area in other fields?

A. How do you mean in your statement about the same area?

MR. McLEAN: Are you acquainted with the general levels of prices of this gas in other fields in the same general area?

A. Yes.

MR. McLEAN: This gas in the Blanco field is sweet gas, isn't it?

A. Yes.

MR. McLEAN: Now, if there should be a market for this gas at the well head, could you say what would be the probable price of the gas, considering what is being paid in other fields in the same general area?

A. No, I couldn't. I can tell you why. I have absolutely nothing to do with what we agree to accept for our production.

That is a matter for our management to decide. I couldn't answer your question.

MR. McLEAN: If you were to assume that the price would be approximately 7¢ per thousand cu. ft., could you tell then what it would be--what would be the approximate pay out period for those wells?

A. You would have to carry it still further to what would be the take per day, or what would be the various clauses in the contracts and whether there is any escalator phrases, and so forth.

MR. McLEAN: I believe you said you were unfamiliar with the cost figures of drilling wells other than your own?

A. That is correct.

MR. McLEAN: Were you present or did you have a representative present when these other wells in the Blanco field were being drilled?

A. I believe we had a representative present when some of the wells were drilled.

MR. McLEAN: Do you know which ones they were?

A. The No. 1 Shaw. I know that we had a representative there during a portion of the drilling of that well. As far as the rest of them are concerned, I do not know.

MR. McLEAN: I believe that is all. Thank you.

MR. McCORMICK: I would like to ask Mr. McLean something. How much is paid for gas in the Kutz Canyon field?

MR. McLEAN: I believe Mr. Jim Cole can answer these questions better than I could.

COMMISSIONER SPURMER: We will recess for five minutes.

(Recess)

COMMISSIONER SPURKLER: Gentlemen in the interests of time, let's let the record show that the going price--the only price, I guess, in the Kutz Canyon field-Fulcher Basin area gas pool--is 5¢ a thousand. If I am not correct--Mr. Cole says I am. Mr. Morgan, you have a question?

MR. MORGAN: Of the Wood River Oil & Refining Co. Mr. Jenkins, your employees, and I suppose they are under your direction, made some tests on Mr. Florance's wells. Is it true that the static shut-in gas pressure on the Jane Mansfield was 1,095, and on the J. A. Pierce was 1,120? Determined by dead weight testing methods. Substantially around 1,100 pounds?

A. No, I cannot confirm ....

MR. MORGAN: You offered an exhibit to the state showing critical flow data on one of the Florance wells.

A. But you quoted some wells that I don't know the names of.

MR. MORGAN: The Mansfield or J. Pierce.

A. One of the Pierce wells?

MR. MORGAN: There is only one Pierce well, so what is the static on the shut-in, the gauge pressure on the Pierce well?

MR. McCORMICK: You may refer to these exhibits, if you like.

A. I imagine that broken down separately ....

MR. MORGAN: Will you agree for the record that it was approximately 1,100 pounds?

A. No, I wouldn't.

MR. MORGAN: Would you recognize this photostat as your own work sheet and your own engineer showing the Pierce shut-in pressure?

A. Something here I recognize.

MR. MORGAN: These are the work sheets that that critical flow was taken from? Mr. Elkins furnished it.

A. Let me see this here. I recognize this. And I recognize this. Now, you have the data sheet ....

MR. MORGAN: Here is the work sheet. Your own engineers, the photostat of it.

A. Now, according to this it shows it is 1,300.

MR. MORGAN: That is at the base of the sand. But what is the gauge from which that is calculated?

A. I don't know.

MR. MORGAN: The record shows 1,095 ....

A. Shut-in tube pressures.

MR. MORGAN: Yes, sir.

A. However, the circumstances under which that collection of data was obtained on that particular page, I don't know what they are. Whether twelve-hour shut-in or twenty-four, or what.

MR. MORGAN: But it is the data in static pressure on which you based your critical flow or study of the Pierce well, is that correct?

A. I believe that data was taken in connection with it, but just what the circumstances were of that particular data sheet with relation to the well, of course, I do not know.

MR. MORGAN: What is the gauge pressure at the present time, shut-in, on the Elliott B. No. 1?

A. 1,212.

MR. MORGAN: In other words, approximately 100 pounds different from the Florance wells?

A. If you say the Florance wells are 1,100 something, that is correct.

MR. MORGAN: For the record, that will be satisfactory. Do you believe this is the area-- Mr. Jenkins, do you believe the area around the Elliott well, and the area around the Florance wells are one and the same field and one and the

same reservoir in the Mesaverde formation?

A. I don't believe that anywhere in my testimony I said one way or the other.

MR. MORGAN: I am asking you.

A. I have left that up to people who have made a much greater study of it than myself. And Mr. Umbach testified that in his opinion it was all one reservoir. And I feel that since he has made more of a study of the section than I have I am willing to take his word for it for the time being.

MR. MORGAN: As an engineer, Mr. Jenkins, how do you account for the discrepancy in the pressures. The difference in the pressures of the one group of wells, if they are all in the same reservoir?

A. I don't recognize that there is a great discrepancy from what I have heard so far. If you are attempting to get some explanation as to why there is 100 pounds difference in shut-in gas pressures, there could be a multitude of reasons to account for that difference. I certainly couldn't say what they are. Because I do not know the conditions in Florance's wells.

MR. MORGAN: May I ask another question. Do you think that it would be possible to drill a non-producing well between the Florance wells and the Elliott well?

A. I would just say I would certainly be surprised.

MR. MORGAN: I believe that is all. Thank you.

COMMISSIONER SPURRIER: Does anyone else desire to cross-examine this witness?

MR. McCORMICK: I would like to ask the witness one question. You have introduced Exhibit 5 here which shows many things, but did tend to show, I think, physical waste might occur from

a conservation standpoint if you had proration units of smaller size than 640 acres. What about economic waste?

A. I am not sure if I know what you mean by economic waste? Do you mean what materials are involved in drilling the well?

MR. McCORMICK: Yes. In your opinion, is it economically feasible to develop this field on the basis of 160-acre spacing from what you know of it?

A. Not from what we know of it now.

MR. McCORMICK: Do you think it is feasible on the basis of 640-acre spacing?

A. We think it has a better chance of being an economic venture then.

MR. McCORMICK: That is all.

COMMISSIONER SPURRIER: I might add that economics are always tied in with waste. They usually are in one way or another. And while this Commission deals primarily with conservation of oil and gas, economics have such a direct bearing on it that it is certainly not improper to discuss economics before this Commission. It has been done many times. Does anyone else have any more questions of this witness?

MR. SCHULTZ: I would like to ask one more question. Mr. Jenkins, does the Stanolind contemplate--I understand from your testimony that you have fourteen units on which you have total or partial control? Is that right?

A. Yes, that is right.

MR. SCHULTZ: Does the Stanolind contemplate going in and drilling fourteen wells?

A. How soon?

MR. SCHULTZ: Well, reasonable development.

A. Do you mind if I answer that question my way?

MR. SCHULTZ: Sure.

A. We are considering a steady development in that field after we can see that we can get some money for what we are putting in. By that I mean that we do not have in mind the drastic extent of a boom, neither do we have in mind drilling, starting in one well and maybe not drill another one for four years. It will be entirely dependent. Our rate of development will be entirely dependent upon the progress on unitization as well as what the economic picture appears to be at the time the program for development is considered. In other words, it is quite likely or possible that we would put in a rig in that field and drill as many locations as we could with that one rig in one year as the circumstances warranted, which might be--in other words it-- just speaking my personal opinion in this. I have not consulted with the people that spend the money--I would think it would be quite likely that next year we would drill in the neighborhood of five wells, or maybe just one, maybe none.

MR. SCHULTZ: Do you contemplate that the well you have drilled now, and wells that you will drill in the future, that you will sell that gas to existing pipe lines in the San Juan Basin now?

A. Well, as I answered some other questioner, that would depend upon the terms at which the gas was offered.

MR. SCHULTZ: Do you favor unitization of the area?

A. I believe--yes, I personally favor it.

MR. SCHULTZ: Does the Stanolind Oil and Gas Company favor it?

A. I believe that we do, otherwise we wouldn't be spending time and money in the efforts to unitize.

MR. SCHULTZ: If a majority of operators in a proposed unit

area elect an operator other than Stanolind, would the Stanolind Oil and Gas Company still favor unitization?

A. I feel reasonably sure that we would, because we are involved in several unitizations where we are not operators. And I could give you some examples.

MR. SCHULTZ: That is all.

MR. BARNES: Mr. Jenkins, this deals indirectly with the further development of the area. How do you think this 640-acre spacing would affect drilling? For example, if a couple of operators had taken considerable acreage in the area with drilling commitments and this 640-acre spacing went through, that would relieve them of the necessity of drilling a lot of those locations. Don't you think so?

A. I would prefer to refer that question to our legal talent. I don't profess to be able to answer that question. I know-- I don't know the answer myself. I was just wondering. Could you answer that Paul? Or Judge Seth?

MR. SETH: I would imagine it would relieve them.

MR. MODRALL: Depending upon the contract, wouldn't it, Mr. Seth?

MR. SETH: That's right.

COMMISSIONER SPURRIER: Does anyone else have anything further of this witness? If not, Mr. Jenkins, you are excused. Does anyone else have any comments to make in this case? Or evidence to present?

MR. McLEAN: I would like to present some evidence, please.

CASWELL SILVER, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McLEAN:

Q. Will you state your name, please, sir.?

A. Caswell Silver.

Q. Where do you live, Mr. Silver?

A. Aztec, New Mexico.

Q. What is your occupation?

A. Geologist.

Q. And with whom are you connected?

A. M. J. Florance.

Q. President of the Florance Drilling Company?

A. Yes.

Q. What is your educational background as a geologist, Mr. Silver?

A. I have a bachelors and masters degree in geology and engineering.

Q. From what university?

A. University of New Mexico.

Q. Would you explain to the Commission briefly the nature and extent of the experience you have had since your educational period?

A. Well, approximately six years working in geology with the United States Geological Survey and the United States Coast and Geodetic Survey. The University of New Mexico and four years in the Navy as a geologist of the Navy.

Q. Are you acquainted with the Blanco field?

A. Yes.

Q. Done any work in that field?

A. Yes.

Q. Has the Florance Drilling Company drilled any wells there?

A. Yes.

Q. How many?

A. Approximately five wells in the field--six wells in the

field, if I may correct that.

Q. How many of them have been productive?

A. Three

Q. Three were dry holes?

A. No, two were dry holes, and the third of the non-productive wells was productive and it was decided to abandon the well temporarily. Shut in.

Q. Not productive in commercial quantities?

A. Yes.

MR. McLEAN: Is the Commission satisfied with Mr. Silver's professional requirements?

COMMISSIONER SPURRIER: Yes.

Q. Mr. Silver, could you tell us what the approximate cost of drilling the wells you mentioned by the Florance Drilling Company in the Blanco field have been?

A. The approximate cost of drilling the Mesaverde wells; that is, drilled right to the Mesaverde section with rotary tools, including all testing costs, pipe and completion costs, was \$63,000.00 approximate average of the wells.

Q. What about the other wells?

A. One well was drilled to the Pictured Cliffs with approximate cost of \$12,000.00. Another well was drilled to the Farmington sand. I wouldn't be able to tell you the approximate cost on that. Mr. Florance could probably do that.

Q. Is the Florance Drilling Company planning to drill any other well or wells in the near future?

A. As a contractor, it is planning to drill some wells immediately, with the permission of the Commission, under contract for the Delhi Oil Company.

Q. And to what formation is it contemplated that those wells will be drilled?

A. To the top of the Mesaverde.

Q. And could you tell us what the estimated cost of those wells will be?

A. We estimate that the wells will be completed for \$45,000.00.

Q. Could you tell us something about the character of the gas in the Blanco field? Something about its composition?

A. I have before me the composition. Tests were run on four wells owned by M. J. Florance and Wood River jointly. The William Mansfield No. 4 in Section 29 ....

Q. .... now, Mr. Silver, this instrument that you are testifying from is marked Delhi Oil Company Exhibit 1. Is that right?

A. Yes. This instrument shows the composition of four wells drilled in the Blanco field, three of which were drilled by M. J. Florance on his own account and one drilled in 1927 to 1928 by the Huntington Park Oil Co. The composition shown on this sheet--I would like to read from the sheet the calculations which I am about to give. The average composition is based upon a CO<sub>2</sub> free sample as CO<sub>2</sub> is so low the calculated values are as good as would be those corrected for CO<sub>2</sub> content. I might add that the Huntington Park Wm Mansfield No. 1 which has been producing for twenty years is included in this average. Its composition is markedly lower than the other wells. These analyses represent the analysis of the gas taken at the stabilized flowing pressure of 350 pounds, which was deemed to be close to the desirable operating pressure of a gasoline absorption plant. The following procedure was used for sampling these wells: the wells

were all open to the atmosphere, and blown down for a twenty-four-hour period preceding the sample. Each well was then partially shut in by three inch valve until there was a stabilized flowing pressure of 350 pounds. The sample vessels were purged under this 350-pound flowing pressure four times before the final sample was taken. The average composition shows nitrogen .47 of one per cent, methane 85.51 per cent, ethane 8.76 per cent, propane 3.27 per cent, isobutane .39 of one per cent, N butane .80 of one per cent, pentane S plus .78 of one per cent. I might add that roughly calculated on the basis of the composition just given that there would be approximately one and one-tenth gallons--and this testimony is from memory since I have the data in my brief case, but I think I can give it very close, and it can be check from this exhibit by any engineer--roughly one and one-tenth gallons per thousand cu. ft. of propane, .45 of one gallon per thousand cu. ft. of butane--that is a combination of isobutane and normal butane--and approximately .40 of one per cent--pardon me--.40 of one gallon of pentane plus. The economic value of these products has considerable bearing on the value of the gas in the field.

Q. Well, now, does the presence of these other liquids that you mention in the gas increase the value or decrease the value?

A. They increase the value.

Q. And does this gas in the Blanco field become more valuable or less valuable than gas with a high hydro-sulfide content?

A. More valuable.

Q. And more or less than gas with a high carbon dioxide content?

A. More valuable.

Q. Can you tell us whether or not it would be necessary to put this gas through a treating process in order that the gas would be suitable for sale to the general public for domestic consumption?

A. It would not be necessary to treat this gas in any way.

Q. In other words, as compared to sour gas this gas would be more valuable because you would save the cost of treating it?

A. Yes, sir.

Q. Do you know approximately what percentage of the acreage in the Blanco field the Florance Drilling Company has an interest in?

A. I am speaking from memory. The figures I have in mind were delivered by Mr. Foster Morrell or Jack Frost at a preliminary hearing to this hearing, and I believe that they said that Wood River Oil and Refining Company and M. J. Florance jointly had a forty-three per cent interest. Is that right, Mr. Morrell? Forty-three per cent interest in the area shown or entered as an exhibit by Stanolind.

Q. You and Wood River Oil and Refining Company jointly own that acreage?

A. Yes.

Q. Is all that in 640 acre tracts or is there some smaller units?

A. There are some smaller tracts.

Q. So if the 640-acre spacing were set up, it would be necessary for your company to join with other companies in order to develop the tracts in which you own an interest?

A. Yes.

Q. Do you know whether or not your company would be interested in entering into an operating agreement for the development

of any unit in the Blanco field if the operator represented to you that it was going to cost over one hundred thousand dollars to drill a well?

A. I can answer that definitely. We would not participate in any plan where the cost was one hundred thousand dollars, or even fifty thousand dollars, since we believe that wells can be completed under a figure of fifty thousand dollars.

Q. In other words, you can drill them for considerably less than that?

A. Yes.

Q. And have drilled them for considerably less?

A. I cannot go with you on that final statement. To date we have not drilled one for considerably less than that. But our drilling experience has shown that under the completion practice recommended by the Geological Survey that drilling a well to the top of the Mesaverde would be considerably cheaper than any heretofore drilled.

Q. You have not drilled any that cost less--cost anywhere near one hundred thousand dollars?

A. No, we have not.

Q. Can you tell us something about the nature and character of the topography in the general area of the Blanco field?

A. The description of the topography is always general. I would describe the topography on the Blanco field as varying from flat to moderately hilly to extremely rough. There are many dry washes that become impassable in flash floods, and numerous high cliffs of sandstone exceeding 500 feet in height, so that in many areas it is difficult to go between two points a mile apart without traversing four or five miles.

Q. If it were necessary to drill a well within a few hundred

feet of a designated location, and that point happened to be in a very irregular terrain, do you have any idea as to how much it would cost to drill such a well because of the nature of the topography?

A. That would depend entirely upon the particular location involved.

Q. It would be considerably an extra cost in any event, wouldn't it?

A. Yes, it would.

Q. Now, as to the market for gas. There isn't any gas being produced and sold from this field at the present time?

A. Yes, there is.

Q. Could you tell us what that is?

A. One well, the Huntington Park No. 1, which has been producing gas for twenty years, delivers gas to Aztec, N. M. through approximately a ten-mile pipe line.

Q. And do you have any geological data obtained from the drilling of that well?

A. Records on that well were very poor. We have some old logs which we consider unreliable.

Q. But as to all wells that have been drilled since that well there is no actual gas production at the present time?

A. No, there is not.

Q. Do you know whether or not in the foreseeable future there will be a market for gas in that field other than the market to Aztec which you have already mentioned?

A. I have no positive assurance in the form of a written agreement, but I have had verbal assurance that there will be a pipe line constructed to the area within the next few months. A fourteen-inch pipe line.

Q. Based upon your experience as to costs of drilling these wells, do you think that it will be profitable for your company to drill wells and develop this field if there is a line laid to the field so that there would be a market for the gas?

A. I do.

Q. Do you think that wells would pay out if there were such a line laid to the field?

A. At this point I would say, I would agree with Stanolind that the amount of information in the field is rather poor. There is no way of telling at the present time exactly what the pay out would be in this field. However, based upon figures given in testimony by Mr. Jenkins today on that field, taking his thickness of effective pay, his bottomhole pressures, his porosity, his percent connate water, and roughly estimating the amount of recoverable gas in the area, I would say that if the formations were uniformly to average the effective thickness that he indicated in the Elliott well, that the reserves in the Blanco field would exceed 20,000,000 cu. ft. per acre in the Mesaverde formation. That can be checked by merely using the figures given in testimony today. That is based upon a 200-pound abandonment pressure.

Q. Now, Mr. Silver, from your experience in this field, would you say that you have had enough reliable engineering and geological data from which you could determine the extent of this field?

A. No.

COMMISSIONER SPURRIER: Mr. McLean, does the record show the number of acres you are speaking of when you say a well will pay out?

MR. McLEAN: No, it doesn't.

Q. When you were testifying a moment ago as to whether or not wells would pay out, could you tell us how many acres would be necessary to be included in that well unit in order for the well to pay out?

A. That is a question of economics extending over a long period of time. It varies with the variable interest rates. Also varies with the production history of those wells. It would be impossible at the present time to tell how much acreage would be necessary to make a well pay out.

Q. Do you think there is considerable--enough--data available at the present time so that a fair comparison could be made between the Blanco field and the Kutz Canyon field, thereby using data obtained from the Kutz Canyon field as a guide for what will take place in the Blanco field?

A. No, I do not.

Q. In other words, it would not be a reliable way of trying to determine what will be encountered in the Blanco field?

A. It would not. In my opinion, of course.

Q. Do you think there is enough data available so that it could be determined at the present time whether or not one well in the Blanco field would drain 640 acres?

A. No, there is not enough data at the present time.

Q. And as to the cost of the wells per acre, Mr. Jenkins testified to that a moment ago. I believe he testified that if one well were drilled for every 640 acres, then that would be just one-fourth the cost per acre as if one well were drilled per 160 acres. That would be true only in the event that the one well drained the entire 640-acre-tract?

A. That is true.

Q. In your opinion, Mr. Silver, would a 640-acre spacing rule allow sufficient flexibility of development of the Blanco field so that there would be an optimum recovery of gas from it?

A. No; that is, if I may qualify that no. So little is known concerning the reservoir characteristics in the Blanco field, that it would be impossible to predict at the present time the effective radius of the drainage of any well in the field.

Q. What, in your opinion, would be the most practicable way of obtaining the most economical and practicable exploitation of this gas? Would it be to have no spacing requirements or would it be to have less than 640-acre units or what?

A. As there--this field appears to be a marginal gas field. It could become overdeveloped in a little area so that some of the wells would not pay out in the preliminary stages. However, it is my opinion that more would be learned about the reservoir characteristics from a few wells closer together; that is, more would be learned in a shorter length of time, than from the same number of wells spaced on 640-acres.

Too, I will say that one might refer to simple geometry, which says that effective area drained is proportional to the square of the radius that well drains. If you have wells 640 acres apart versus wells 320 acres, which would be a half mile apart, simple geometry would say that it would take four times as much, presuming you had a uniform reservoir through--to decrease interference between the wells. If you had uniform reservoir and uniform communication. That is something we don't know about that reservoir. What the communication will be and whether there will be interference.

COMMISSIONER SPURRIER: Mr. McLean, how much longer do you anticipate it will take you here?

MR. McLEAN: I can finish my part in just a few minutes.

COMMISSIONER SPURRIER: Judge Seth, do you have a rebuttal?

MR. SETH: I just want to ask a few questions.

COMMISSIONER SPURRIER: Does anyone else have any lengthy comments to add? If we can finish in fifteen minutes, that is all right. Otherwise, we will shut down until tomorrow morning at ten o'clock.

MR. McLEAN: It will probably take more than fifteen minutes.

COMMISSIONER SPURRIER: That is the way I feel. I am inclined to call the meeting to a halt. Do you have any preference as to the time we shall meet in the morning?

(Discussion omitted)

COMMISSIONER SPURRIER: I guess nine o'clock will be fine.

This meeting is recessed until that time.

(Hearing resumed at nine o'clock A. M. Oct. 29, 1948.)

COMMISSIONER SPURRIER: Gentlemen, let's get started. Mr. McLean, we will remind Mr. Silver that he was sworn yesterday.

Q. Mr. Silver, in the petition which was filed in this case the Commission was asked to impose a rule requiring the setting of surface pipe through the shallow water beds in the Blanco field, and in any event to a depth of 250 feet, I believe. What, in your opinion, would be a fair, reasonable, and practical requirement for the setting of surface pipe?

A. I believe that the purpose for which surface pipe is used would be best served by setting the surface pipe a sufficient depth into a hard rock formation and circulating cement to the surface to insure that proper control and prevention of blow out could be prevented. In some areas where there was

considerable fill, alluvial fill, they might want as much as four or five hundred feet of surface pipe. Other areas where hard sandstone occurs immediately at the surface, some fifty feet of surface pipe would be entirely adequate. Any requirement such as is proposed in the petition presented by Stanolind to the Oil and Gas Commission would increase the expense of the well markedly. And since we are dealing with an area in which the economics of the situation, the cost of drilling, is a large factor, it is in the interests of conservation and development of the area that costs be kept down.

Q. In the wells that your company has already drilled in the field, how was the surface pipe set, and to what depth was it set?

A. I am giving approximate depths of surface pipe. We set, I believe, 800 feet down the first well. Thereafter, reduced it to some 350 feet, and then further reduced it to some 220 feet. And since that time we have started the practice of drilling some fifty feet into a hard, firm subsurface rock and circulating cement to the surface. And in some cases put in 100 feet, and in some cases 70 feet, and in some cases 130 feet, depending upon the merits of the situation as determined by the drilling.

Q. How deep were the shallow water beds usually?

A. We have found in the area that water is present at variable depths in the tertiary formations. In the wells which we have drilled in the field, the largest flow of water has been encountered in the low part of the Animas formation and in the Ojo Alamo sandstone, where we have encountered sufficient quantities of water to come to the surface if left uncontrolled.

Q. About how deep were those formations just mentioned?

A. In the average over the block we have encountered strong flows of water at seven, eight, and nine hundred feet, and eleven hundred feet. That is approximate.

Q. Could you tell us something about the physical characteristics of this water you have encountered?

A. Well, very little is known about the physical characteristics of the water, except that--I say very little is known in that no accurate chemical analysis has ever been made--however, some of the surface--some of the formation waters do seep to the surface in the area. In Section 29 in Township 30 North, 9 West, immediately back of the house on the M. J. Florance-Wood River Mansfield wells there is a natural seep occurring in the formation which is sulphurous and poisonous to animals, which has been the subject of difficulty to local ranchers. In the Goede No. 1 we encountered a strong flow of water at 760 feet, which by cursory examination and taste appeared to be the same type of water that occurred in surface seepage, sulphurous and unpalatable and probably poisonous to stock, although that is not known.

Q. Well, from your experience in the field, would you say that the proposed rule as stated in Stanolind's petition in this case would be unnecessary?

A. Yes. I think in some cases it would so markedly increase the cost of drilling the well as to make it difficult for some small operators to obtain the necessary large size surface pipe and go to the additional expense of carrying a well to the depth indicated in the petition. In my opinion, such a depth would be unnecessary in many cases.

Q. You think that setting at least fifty feet in the first

hard rock formation would be sufficient?

A. Yes, I do.

Q. Now, you gave quite a bit of testimony yesterday, Mr. Silver. Considering all your testimony and experience, would you say--are you in a position to state--what sort of spacing requirements would, in your opinion, be practical and fair to all interested parties in the Blanco field?

A. It would appear to me that 320-acre spacing would be a fair preliminary spacing in the Blanco field, subject to the further determination of the reservoir characteristics through production and pressure decline, at which later date the proper spacing in the field could be more adequately determined.

Q. Just so that the Commission might have a brief summary of some of the reasons that you gave yesterday--the testimony was somewhat lengthy--let me ask you if this is substantially a correct summary of some of the reasons which you gave for that opinion. First, that a 320-acre spacing requirement would encourage the development of the Blanco field more than a 640-acre spacing requirement. Is that correct?

A. Yes.

Q. Second, that it would allow more flexibility of development. Is that correct?

A. Yes, in so far as small interest owners would be enabled to get together with greater facility.

Q. You might say then that it would make it easier for some of the smaller owners not owning 640-acre blocks to unitize and communitize their interests and be in a better position to develop their tract. Is that right?

A. Yes.

MR. McLEAN: I believe that is all.

COMMISSIONER SPURRIER: Does anyone care to cross-examine the witness further?

MR. SETH: May I ask a few questions?

COMMISSIONER SPURRIER: Judge Seth.

BY MR. SETH:

Q. Mr. Silver, how many 640-acre tracts does your company own? Use that map.

A. Thank you. On closer examination, I would say that we owned eight full 640-acre tracts.

COMMISSIONER SPURRIER: Who is "we", Mr. Silver? Florance Drilling Company?

A. We stands for M. J. Florance and Wood River in a ratio of 50-50.

Q. There are a lot of fractional tracts?

A. Yes, there is.

Q. How many wells have you drilled in this area?

A. In the area shown in color on this map, we have drilled four wells, one of which is not completed and not shown on that map.

Q. Now, the proposed special regulations--I mean spacing regulations-- would enable your company to drill some six more wells right away, would they not?

A. If they so desired, yes.

Q. And the eight you refer to are cases where you own 100 per cent of the section?

A. Yes. And I did not take into account those which might have already been drilled.

Q. Then you could go ahead and drill on at least six more of

of those full sections if you wanted to?

A. Yes.

Q. Now, you say that this closer spacing would tend to more rapidly develop the area?

A. If I may answer that question in my own way, there is some question as to the definition of rapid development.

Do you mean rapid development from the point of view of the number of wells drilled or amount of area to be proven up?

Q. I mean to determine, you might say, the reserves.

A. On the point of view of determining the reserves that would be entirely dependent under either program, whether 320 or 640, on where the wells were drilled and who drilled. So, I don't feel that I can adequately ....

Q. Wouldn't the 640-acre spacing tend to determine the boundaries of the pool earlier than the 320-acre spacing?

A. For a given number of well, yes.

Q. Well, isn't the determination of the boundaries of the pool quite an important matter?

A. If I may answer that question in my own way ....?

Q. That is all I want.

A. The determination of the boundaries of the pool and the amount of reserves in the pool would be extremely important were there no ~~contemplative~~ market available and it were necessary to bring a pipe line into the area and to show a large reserve so as to induce a market. However, I believe we will hear some testimony this morning which I am not familiar with myself which will tend to show that there will be an immediate market in a very short time, and, therefore, the determination of the boundaries of the field is not so important to the individual operators involved.

Q. Wouldn't these widely scattered wells more accurately determine the whole geological situation underground?

A. It is always true that the more wells you drill the more information you have.

Q. And the wider they are apart the better information you would get?

A. That is not necessarily true, that the wider apart they are.

Q. Aren't these wells that you have there now close enough for you to determine interference?

A. I don't believe it is possible to answer that question. At the present time we don't know how close wells would have to be to determine interference.

Q. Have you tried to determine interference?

A. No, we have not since no production has been taken from the field. Without the waste of considerable quantities of gas, in the interests of conservation we have never attempted to determine interference.

Q. Your wells are spaced now as closely as they would be on a 320-acre spacing pattern, are they not?

A. In part they are.

Q. And if not more--and even more closely spaced in some instances?

A. I believe in one instance possibly.

Q. And it is your idea that you would drill unnecessary wells in order to determine interference?

A. No, not necessarily. We hope through production in the field and pressure decline to be able to determine the characteristics of the field and the amount of communication in the field over a period of extended production.

Q. Well, isn't it important that the wells be so spaced as to

prevent interference, if possible?

A. That would depend entirely upon the characteristics of the reservoir.

Q. Well, assuming that they should be spaced far enough apart, wouldn't it be better to make wide spacing, and then later on bring them closer together in a drilling pattern?

A. We think that the question of wide then comes into being. It is my opinion that 320-acre is sufficiently wide.

Q. Wouldn't it be better--there will be only a certain number of wells drilled in the field in all probability in the course of several years. Isn't that the situation in all probability?

A. Yes.

Q. Wouldn't you get more information about the reservoir, its characteristics, and the average over the reservoir of the producing pay, by wide spacing than by close spacing?

A. Well, I find it difficult to answer your question using such an indefinite term as wide and narrow. Could you be more specific?

Q. Wouldn't 640-acre spacing be--more readily--determine the character of the whole reservoir and its reserves than the 320-acre spacing?

A. On the contrary, it is highly possible that with 640-acre spacing it may take a much longer period of time to determine the reservoir characteristics.

Q. Why?

A. Because the distance between wells is greater and wells drain an area laterally from the well bore. The size of that area varies directly as the square of the radius of the area drained. A well a mile apart from the other wells would

take four times as long to drain an area and show communication as a well a half mile apart.

Q. Now, we all know that ....

A. .... presuming, I might add, that you have a uniform reservoir with uniform porosity and optimum reservoir conditions.

Q. Assuming that only a limited number of wells will be drilled, which, of course, is the case, wouldn't you get more information by having them spread out on 640-acre spacing than on 320-acre spacing?

A. That is a matter of opinion. I am inclined to the opinion that possibly 320-acre spacing would give you more information. Not as to reserves but as to reservoir conditions.

Q. You testified yesterday, I believe, about this being a marginal pool. Is that your idea?

A. Yes.

Q. What do you mean by that?

A. I mean it is a field in which the future development is closely tied to the economics. That is, the cost of drilling and the cost of development as to the market price of gas.

Q. There isn't a great deal of margin to be hoped for? I mean cost of production and cost of drilling?

A. On the contrary, our company is of the opinion that these wells will have a very good pay out because of the rich, moderately sweet nature of the gas, and the deliverability of the wells.

Q. By marginal pool you meant one concerning which there is some doubt. Is that what you mean by marginal pool?

A. No, I meant one in which costs have to be very carefully controlled.

Q. And for that very reason isn't the number of wells a very important factor?

A. Yes, it is.

Q. You might drill wells so close that none would pay out?

A. That is always possible in any field.

Q. And particularly in a gas field?

A. Well, it follows.

Q. What is the market price of gas up there now?

A. To my knowledge, the only purchaser of gas is Southern Union Production Company, which is paying a fair price of 5¢ a thousand.

Q. Is there any other purchaser immediately available?

A. Yes, we have been assured of another purchaser. I think you will hear about it in testimony this morning.

Q. That will be several years off?

A. No. I am not familiar enough with the details, I would rather leave that to the testimony of the later witness.

Q. In giving your cost of the well, I believe you said forty-five to fifty thousand dollars to the top of the Mesaverde?

A. Well, I meant a completed cost of forty-five or fifty thousand dollars.

Q. You said to the top of the Mesaverde several times. What do you mean by that?

A. I meant that I would drill with rotary tools to the top of the Mesaverde, set pipe on the top of the Mesaverde, and set standard tools and drill through the pays.

Q. Did you add the cost of the cable tools?

A. Yes.

Q. How much coring did you do on those wells?

A. In the case of the wells already completed?

Q. Yes.

A. I am not sure of the exact amount of coring that was done in those wells. But no records were kept of the cores at the time. I wasn't employed by the company.

Q. Did you core with cable tools?

A. Yes, we do.

Q. In other words, there is no information prepared on the coring available?

A. That is correct.

Q. And your figures that you gave here yesterday are all based on the assumption that the Stanolind's coring is correct?

A. Did what?

Q. Based on the data that Stanolind obtained from its coring?

A. Not all information. What information specifically did you refer to?

Q. I mean the thickness of the pay, and so forth.

Q. Well, I have my own opinion as to the net pay and thickness of the pay, which I, by virtue of examination of our electric logs ....

Q. .... but you testified yesterday several times, assuming that you were basing your statements on Stanolind's data.

Q. Only basing the amount of recoverable gas per acre on Stanolind's data. It, incidentally, coincides very closely with the data we had postulated from the electric logs.

Q. This forty-five to fifty thousand dollar cost which you gave doesn't include that coring?

A. Not more than one core.

Q. And how much coring would that be proportionally? How thick is the pay from the top of the Mesaverde to the bottom

of the pay?

A. The total Mesaverda section is of some 650 to 800 feet, and the net pay in that whole section might be a total of 150 feet.

Q. What do you mean by one core?

A. Well, the amount of core that would be cut by one trip with the standard core barrel type J core barrel with one cutter head. Usually about eighteen to twenty feet.

Q. What was the cost per foot on those wells?

A. I don't have the figures.

Q. Florance is engaged in the drilling business for other people, is it not?

A. Yes.

Q. Has a contract with Delhi Oil right now?

A. Yes.

Q. What is the cost per foot?

A. Eight and a half dollars per foot.

Q. That doesn't include any furnishing of materials?

A. We furnish everything but the pipe and cement.

Q. And, of course, Delhi furnishes all the other materials for the completion of the well?

A. Yes.

Q. Then what material do you furnish? Just the drilling?

A. We set the pipe.

Q. You do the work and they furnish the materials, is that right?

A. They just furnish the pipe and cement. As to water, mud, and other materials, we furnish them all.

Q. Is there any other consideration in the contract?

A. No other consideration whatever. I believe that figures

to \$34,500.00 to the top of the Mesaverde based on a 4,200 foot well.

Q. After getting to the top of the Mesaverde, what is the cost?

A. Generally, \$250.00 to \$275.00 a day for standard tools.

Q. And they still furnish all the materials?

A. No. That is, in the event of standard tools there is no material that need be furnished.

Q. They furnish the pipe?

A. There is no further need of pipe.

Q. Tubing?

A. Well, tubing, yes.

Q. They furnish the tubing?

A. Yes.

Q. How many feet do you make a day?

A. Using our experience in the area, from individual contractors that we have compared, indicates that standard tools can drill in that area 100 feet a day.

Q. Do you have any trouble with losing circulation in that drilling of those wells?

A. We have never had any trouble with losing circulation down to the point contracted with Delhi Oil Company.

Q. That is the top of the Mesaverde. But I--but when you get down to the pay, do you keep circulation down there?

A. We have lost circulation down in the pay, yes. But in the approved drilling and completion practice, which we now contemplate, that possibility of losing circulation is avoided.

Q. Isn't it good drilling practice or good practice for any oil operator to do considerable coring to find out what is underground?

A. If the needs of the situation require it, yes.

Q. And in a new field, don't the needs of the situation require it?

A. Sometimes they do and sometimes they don't. In outpost wells it is desirable, but perhaps in inside wells there is considerable saving involved, and most operators attempt to save as much money as they can on a job.

Q. Don't they need geological data?

A. Yes.

Q. How do they get it?

A. Well, they can get it by performance characteristics of the wells after completion.

Q. But where you are trying to spread out and find out the characteristics of a new pool, isn't it almost essential that coring be done?

A. Well, not necessarily. Some methods today of reconstructing cores--electric logs, extrapolation of electric logs--succeed in giving much of the information at cheaper cost than coring.

Q. Were you in charge of drilling the Florance wells already drilled?

A. No. I was geologist on Shaw No. 1 and Shaw No. 2, which are non-productive wells. I wasn't present when the other wells were drilled.

Q. Did you take any cores in the ones you drilled?

A. Yes, sir.

Q. They were dry holes?

A. Yes. May I add at this point some testimony? If we had not cored and had set pipe at the top of the Mesaverde, as presently prepared, and then using standard tools, in all

probability we would have had much more accurate information about what the well would produce in quantities of gas than by coring. Because when you core with rotary tools in fine grain sandstone you harm and hurt the pay to such an extent that it is difficult thereafter to determine what that pay would do if given a chance without mud and water. So that in this particular field it may be advantageous, and in fact desirable, not to core through the Mesaverde.

Q. You recommend that?

A. Yes, I recommend keeping mud and water off the pay.

Q. You think the field can be developed and its characteristics learned without any more coring?

A. Yes, I do.

Q. How much more would it cost to set 250 feet of surface pipe then to set fifty?

A. At the present time I am not familiar with the market price of steel, but I do know what we are paying for pipe of the size necessary for surface pipe in the area. We are paying from five to six dollars a foot for ten-inch pipe which we use for surface pipe.

Q. That would add from a thousand to twelve hundred dollars to the cost of the well. That setting is not much of a problem?

A. That would add that much to the cost of the well where the minimum of pipe is used. But in the case of setting pipe to the shallow water beds that would entail the setting of 1,100 feet of pipe.

Q. Would you call that shallow water beds?

A. Yes, that is considered shallow.

Q. In arriving at the cost of these wells, would the Florance

Drilling Company use its own equipment?

A. In part.

Q. Would it take into consideration the cost of depreciation on its equipment?

A. Yes.

Q. How many wells has Florance drilled outside the Blanco pool?

A. Oh, in the San Juan Basin about seven.

Q. About seven. In Kutz Canyon?

A. He has drilled some in Kutz Canyon.

Q. They are all drilled without coring?

A. Yes, with the exception of one in the El Hurfano area.

MR. SETH: That is all.

MR. McCORMICK: I would like to ask Mr. Silver some questions.

BY MR. McCORMICK:

Q. I presume you are expressing the views of the Florance Drilling Company in your testimony?

A. Yes.

Q. That is not a corporation is it?

A. No, I am really expressing the views of M. J. Florance.

Q. And Mr. Florance is an equal partner with the Wood River Oil & Refining Company?

A. Yes.

Q. Are you also expressing the views of the Wood River Oil & Refining Company?

A. In this case, yes.

Q. Does the Florance Drilling Company have any drilling contracts with the Delhi Oil Company now?

A. Yes.

Do you know whether or not Delhi Oil Company is affiliated

with the Southern Union Gas Company?

A. I don't know their affiliation.

Q. Would the attitude of the Florance Drilling Company be influenced by its business relations with the Delhi Oil Company?

A. Absolutely not. The interests of the Florance Drilling Company, as any independent operator in the area, is the rapid development of the field and the marketing of the gas, and the immediate possibility of income. We are influenced by the possibility of getting an immediate market for our gas and getting a return on our investment in the area which exceeds a quarter million dollars.

BY MR. BARNES:

Q. Mr. Silver, this is a question I don't think you can give an exact figure to, but I think it is important for the record. Under present conditions with the present spacing regulations, and so forth, could you approximate how many wells the Florance Drilling Company would plan to drill for future development under present spacing regulations?

A. Of course, that is a decision of management. I do not know. Mr. Florance has brought up the subject of drilling two more wells almost immediately when we get our equipment available.

Q. What I mean is in the course of developing the acreage you hold in the area. Approximately how many wells do you think you will drill to develop your acreage?

A. That will, of course, depend upon the available market. At the present time, I understand there will be an immediate market for ten million cu. ft. Of course, that also involves the deliverability of wells as allowed by the United States

Geological Survey. That will all have to be worked out between the open flow potential of the wells and the Geological Survey and operators involved.

Q. Well, if you had 320-acre spacing, would you drill the same number of wells that you now contemplate? Let's put it that way, without any actual figures. Do you think you would drill the same number of 320-acre spacing wells as you would drill under present spacing regulations?

A. There is a possibility that we would drill more since our drilling would be facilitated by 320 instead of 640.

Q. Under 640 do you--would you--still drill the same number of wells?

A. We might not be able to drill the same number of wells under 640.

Q. In other words, you feel under 320-acre spacing you would probably drill more wells and drill them sooner?

A. Yes.

MR. BARNES: That is all.

BY MR. McCORMICK:

Q. Does your concern have any contract with a purchaser up there to sell your gas?

A. I don't have knowledge of it if there is such a contract.

Q. Is there one being negotiated?

A. I think there is.

Q. That is with Southern Union?

A. Southern Union and Delhi both.

Q. Are negotiating to purchase from Florance?

A. Each separately are negotiating at the present time.

Q. Have either Delhi or Southern Union indicated to your company that it would purchase gas more readily on one drilling

pattern than another?

A. No.

Q. From the standpoint of one company purchasing gas, what difference would it make to them about the drilling pattern?

A. Only this, that if we had a finite area, a definitely bounded area, which had gas that you could get more gas at any one time out of that area with a smaller pattern than you could with a larger pattern, and if the company were interested in getting larger amounts of gas, it would be more interested in the smaller pattern. That is, if all wells drilled in with approximately the same deliverability you would get more gas out of ten than five.

Q. Assuming that within the next twelve months ten wells would be drilled in this field. Which drilling pattern would tend to prove the reserves more, the 640 or 320 or 160?

A. Well, that would depend, of course, on who drilled them and where.

Q. Well?

A. But possibly greater reserves would be proven by the 640-acre spacing.

MR. McCORMICK: That is all I have.

BY COMMISSIONER SPURRIER:

Q. How many wells would you contemplate, Mr. Silver, for your market of ten million cu. ft. per day?

A. Well, as I said, that would depend upon the allowable. That is, deliverability allowed by the United States Geological Survey, which regulates the production of oil and gas from Federally owned acreage. In general, they like to see a well produced in such a manner that it would get the greatest ultimate return with the greatest conservation. And in best

keeping with reservoir characteristics. That is not an open and shut rule, but as a matter of form, if I may speak for Mr. Morrell, I think it is twenty-five you like to keep it under.

MR. MORRELL: That's right.

Q. In other words, you don't know that at this time?

A. We know, based upon the deliverability of present wells, how much gas they will produce.

Q. And the wells that are now drilled are the only things you have to anticipate upon?

A. There is an immediate drilling program of the Delhi Oil Company for three more producers. I can't speak for our management, but they contemplate some drilling.

COMMISSIONER SPURRIER: Does anyone care to examine the witness further?

BY MR. MORRELL:

Q. Merely for clarification, and to repeat your testimony, I think you stated that you found artesian water between seven and eleven hundred feet in depth. Did you find any water above in the Pictured Cliffs formations in the Mesaverde area in the Blanco area?

A. We have always kept the well bore full of mud in drilling and kept our hole in such shape that we have never determined any water. We have kept free circulation of water out of the well bore. But from coring some of the sands up above, we have found mildly salt water in some of the Farmington sands and in the upper Farmington sands particularly.

MR. MORRELL: That is all.

BY MR. McLEAN:

Q. You said a moment ago, Mr. Silver, I believe, that 640-acre spacing might prove reserves better than 320 or 160-acre

spacing. That would be true only in the event that you assume that the same number of wells were drilled on the different patterns?

A. Yes. And I might correct that statement. If I said better, I was in error. It might prove more, but not better.

Q. And if a 640-acre spacing pattern would tend to discourage drilling operations, then your testimony would not be true because there wouldn't be the same number of wells drilled in each case?

A. Exactly right. In my opinion, 640-acre spacing would discourage drilling and make it difficult for more blocks to be gotten together for drilling purposes.

MR. McLEAN: Thank you.

COMMISSIONER SPURRIER: Does anyone care to examine the witness further? Then the witness is excused. Does anyone have anything further in this case?

MR. McLEAN: I would like to call Mr. Schultz.

FRANK SCHULTZ, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McLEAN:

Q. Would you state your name, please?

A. Frank Schultz.

Q. Where do you live, Mr. Schultz?

A. Dallas, Texas.

Q. What is your profession?

A. Geologist.

Q. And with what company are you connected?

A. Delhi Oil Corporation.

Q. And you are also the vice-president of that corporation?

A. That's right.

Q. You are a professional geologist?

A. That's right.

COMMISSIONER SPURRIER: Let's waive the qualifications.

MR. McLEAN: You are satisfied?

COMMISSIONER SPURRIER: Certainly.

Q. Have you had any work in or made any study of the Blanco gas field?

A. I have.

Q. Have you studied some of the geological and engineering data compiled from that field?

A. I have.

Q. Based upon your study of that data and your experience and educational background, is it your opinion that 640-acre spacing patterns in that field would be practical and fair to all interested parties?

A. No, I don't think it would be fair. We feel 320-acre spacing ....

Q. Why do you think 320-acre spacing would be fairer?

A. Well, we don't look upon the field as a marginal proposition. We feel like there is considerable gas and condensate to be recovered, and with a 320--and we think 320 is a maximum spacing program. Actually, with drilling and producing the wells, it is entirely possible that a lesser spacing pattern, a smaller spacing pattern, would be proper. But we feel like in any event that 320 ought to be a maximum. We appreciate that it is important to prove up reserves, prove up the producing size of the field. However, there is nothing to prevent any company that wants to step out and prove reserves from doing it. In our own experience in the

Barker Dome field when we wanted to prove up dome reserves, we have stepped out a mile or two miles and dug a well. If the Stanolind Oil and Gas Company, or other operators in the field, are primarily interested in proving a sizable area, then I believe that it is entirely possible they could step out a mile or two or three and take their chance and drill a well.

Q. In your opinion, would 640-acre spacing pattern tend to encourage or discourage rapid development of the field?

A. Well, I certainly don't think it would encourage development because it puts control into the large acreage holders, and the small acreage holders, of which Delhi is one, could very easily be prevented from proving up their own reserves.

Q. How much acreage does Delhi hold in this field?

A. 1,140 acres. That is approximately four per cent of the proposed unit.

Q. The proposed entire unitized field?

A. Yes.

Q. Does Delhi own any tract as large as 640 acres?

A. They do not.

Q. What is the largest tract that Delhi does own?

A. We own a 480-acre tract. That is the largest.

Q. Then, of course, if 640-acre spacing were adopted, Delhi could not drill any well unless it unitized the 640-acre tract?

A. That's right. I don't know the legal aspects, but I think it is quite possible that the small leaseholders could be prevented from developing their properties.

Q. Does Delhi have any present plan for going ahead with drilling operations by itself in the event that 640-acre

is not granted?

A. We do. Delhi is a small company. We are primarily interested in getting something done. We want to drill the wells and sell the gas. We are not interested in saving reserves for fifteen years from now. If the 320-acre spacing pattern is granted by the Commission, Delhi will drill three wells and proceed to sell the gas. Thereby, protecting our overriding royalty holders, and I think that is important.

Q. In other words, Delhi is interested not only in producing gas in this field, but also in marketing it?

A. That's right.

Q. And is it interested in marketing not only gas produced by Delhi, itself, but gas produced from others who might produce in the field? Which it might purchase?

A. That's right. Our long range plans call for us to participate in a pipe line to California. That line is scheduled to be completed, if the various Commissions grant the certificate, January 1, 1951. Any gas that is produced in the Blanco field would be welcomed by the San Juan Pipe Line Company.

Q. How much gas are you committed to deliver if everything goes through?

A. Committed to deliver a minimum of 100,000,000 and a maximum of 125,000,000. a day.

Q. Cubit feet?

A. That's right.

Q. I believe that is all.

BY MR. SETH:

Q. Who owns Delhi Oil Company?

A. It owned by 2,500 stockholders.

Q. Southern Union own any stock?

A. Southern Union has no stock in Delhi.

Q. Does the El Paso Natural Gas have any stock?

A. No.

Q. Who owns the San Juan Pipe Line Company?

A. It is owned fifty per cent by the El Paso Natural and fifty per cent by Delhi. El Paso Natural Gas has the operation and control.

Q. Does Southern Union own any portion of the San Juan?

A. No.

Q. These 2,500 stockholders, who is the largest stockholder?

A. C. W. Murchison, Wofford Cain, and Lee C. Moore are principal stockholders.

Q. And they are officers of the Southern Union are they not?

A. Mr. Cain is an officer of the Southern Union.

Q. Mr. Moore is a large stockholder?

A. He owns stock.

Q. A large stockholder?

A. He doesn't have control.

Q. How about Murchison?

A. He owns stock in the Southern Union.

Q. If you had to join with someone else to get a section of your holdings, who would it be?

A. I would have to refer to the map.

Q. It would be Florance Drilling Company and Wood River.

A. Florance and Wood River, that's right.

Q. Did you get your acreage from them?

A. No, we did not.

Q. Who did you get it from?

A. Mr. H. K. Riddle in Albuquerque.

MR. SETH: That is all.

COMMISSIONER SPURRIER: Mr. Schultz, this is nothing but to straighten the record. It seems to me that you have gotten one tract that you would unitize with Byrd-Frost.

A. We have? I am sorry, I didn't realize. Yes, that's right.

BY MR. McCORMICK:

Q. Mr. Schultz, are any of the officers of Delhi also officers of Southern Union?

A. None. Oh, let's see. Mr. Wofford Cain is Chairman of the Board of both companies.

Q. Delhi was formed originally by the officers of Southern Union, wasn't it? As an operating company?

A. I am not--Delhi originally had the same officers as Southern Union.

Q. At the time it was formed it had the same officers?

A. That's right.

Q. Wasn't there some stock purchase arrangement whereby the officers and stockholders of Southern Union were given an option to purchase Delhi stock?

A. That's right.

Q. I notice here on the west edge of Range 9 West all the sections appear to be fractional, less than 640 acres. Some of them appear to be as small as about 400 acres. If you had 320 acre spacing, what would you suggest to take care of that situation?

A. Well, regardless of how we would go, it will have to be a matter for unitizing tracts. There are smaller interests

than 320 all over the proposed unit area.

Q. Well, would you treat those fractional sections as the equivalent of 2-320-acre tracts?

A. I am not entirely sure of the question. Are you asking if we would be willing to unitize this with that (indicating on the map)?

Q. No. For instance, on these fractional sections, would you consider the north half as a drilling unit and the south half as a drilling unit? They appear to be from four to five hundred acres.

A. I don't feel like I am qualified to answer. I don't know the legal aspects of smaller than--it creates a problem I will agree with you there.

Q. If 320-acre spacing were ordered, what would you suggest for the drilling pattern?

A. Oh, generally NE $\frac{1}{4}$  and SW $\frac{1}{4}$ .

Q. The center of those subdivisions?

A. It wouldn't make any difference to us actually. Whatever the Commission rules would be fine.

Q. Have you made any preliminary contracts or negotiations with any of your offsetting owners as to unitization?

A. No, we have not. We made a location on that 480-acre tract. That is to be our first well. That location was approved by the United States Geological Survey.

Q. Do you have any commitments from any purchaser up there to purchase any gas which you might produce?

A. Orally, yes.

Q. Which purchaser?

A. Southern Union.

Q. At what price?

A. We have not discussed price. We have an oral commitment from them that they are ready, willing, and able to lay a line in and will as soon as we drill our wells.

Q. Have you given any thought to the situation which would exist if uniform spacing were required, but yet the Commission had no jurisdiction to enforce proration or rate of taking?

A. Well, I understand that the United States Geological Survey, since most of it is Government acreage, in talking to Mr. Morrell that he would force a rateable take.

MR. MORRELL: So far as the Government is concerned, that is correct.

A. That constitutes about ninety per cent of it?

Q. All of your holdings are on Government land?

A. That's right.

Q. You have no state land?

A. Not in the proposed unit that I know of. I think our holdings are 1,120 acres of Federal land.

BY MR. GRAHAM:

Q. Mr. Schultz, as a geologist and without reference to these various rights, in your opinion, what is the best pattern to develop that entire pool, assuming that Delhi owned it all? What is the best pattern?

A. If we owned the whole thing, I still believe that 320 spacing should be maximum for the reason that there is considerable lenticularity in the sands and it is not particularly a high pressure area, and to get the maximum amount of hydrocarbons out of the Mesaverde, it just seems logical to me that it would have to be a fairly close spacing pattern.

Q. Should it be developed as a unit or should you come right on down?

A. If we owned the whole thing, we would step out and drill some wildcats. Two or three miles. As we have done in Barker Dome.

BY MR. SETH:

Q. Did you state the probable market at 10,000,000 cu. ft.?

A. I don't know exactly where the 10,000,000 figure came from. We wouldn't be the immediate purchaser.

Q. Didn't you state 10,000,000?

MR. McCORMICK: I think it was Mr. Silver that mentioned 10,000,000.

A. We are not in a position to quote on any probable demand for the immediate future.

Q. If you had 10,000,000 outlet and fifty wells, that would be only 200,000 from a well a day, wouldn't it?

A. That is pretty good arithmetic. However, I am not entirely sure where the 10,000,000 a day came from.

COMMISSIONER SPURRIER: Mr. English, do you have a question?

MR. ENGLISH: I would like to make a statement.

BY MR. McCORMICK:

Q. Would you have any particular problems on overriding royalty under 320 spacing?

A. To the best of my knowledge, I don't know of any.

Q. For instance, your company owns all of Section 21, Township 30 North, Range 9 West, except the SW $\frac{1}{4}$ . Now, I assume that this is under one basic Federal lease, what you have in 21. Wood River owns the SW $\frac{1}{4}$ . Suppose that you made a unitization agreement with Wood River so that a well was drilled in the SW $\frac{1}{4}$ . Would overriding royalty from that well be paid only to the owners of overriding royalty under that one quarter section, or would it be paid to owners of overriding

royalty under the south half?

A. I don't know if I am qualified to answer that or not. That is a pretty involved question. I don't feel like I am qualified to answer it. It looks to me like it is a simple matter of mathematics to figure out the overriding royalty.

MR. MORRELL: Mr. McCormick, possibly I could give you some direct information on your question to Mr. Schultz. According to my records on property held by Delhi, they would have on the same basic lease a 320-acre unit for the E $\frac{1}{2}$  of Section 21, to which you refer. Mr. Schultz testified that he was interested in drilling three wells on their property. His lease holdings for the remainder of his acreage would require communitization for 320-acre drilling site for the other two wells because there are two different basic leases involved.

Q. That also requires the voluntary approval by the owners of overriding royalties, doesn't it, in order to effect their interest?

MR. SETH: No.

MR. MORRELL: That is a matter for the order of the Commission. It is essentially the requirement of the state law.

Q. If that is--if gas is purchased from a well located in one quarter section, and one person owns all of the overriding royalty under that one quarter section, he can't be forced to divide that overriding royalty with the owner under some other quarter section unless he accedes to it.

MR. MORRELL: Again by state law. It has been upheld by the Supreme Court of the State and the Supreme Court of the United States under the police power of the state.

Q. He can be compelled to unitize, in your view, his overriding royalty?

MR. MORRELL: That is correct.

MR. McCORMICK: That is all.

COMMISSIONER SPURRIER: Would there be one or two wells contemplated in Section 21? On 320-acre spacing?

A. Well, we haven't gotten down to this point of making a second location, and didn't intend to do it until the first well was completed.

MR. McCORMICK: Have you made a location for your first well?

A. Yes.

MR. McCORMICK: Where?

A. It is 1,620 from the north line and 1,230 from the east. Those are approximate.

MR. McCORMICK: Those are--it is in the NE $\frac{1}{4}$ .

A. In the NE $\frac{1}{4}$ , yes, sir, of that section.

MR. McCORMICK: That is all.

COMMISSIONER SPURRIER: Does anyone else have any further question of this witness?

BY MR. MORRELL:

Q. I would like to ask Mr. Schultz for a little further clarification on this matter of marketing. Is there any definite assurance or time set as to when a pipe line could be laid to the Blanco area?

A. Mr. Morrell, I believe that the Southern Union people are best qualified to answer that. And I understand Mr. Cole will offer some testimony on that.

Q. One further question pending that answer by Mr. Cole. Southern Union would be the pipe line operator and purchaser?

A. Yes, sir.

Q. Delhi would be a purchaser?

A. No, sir, we wouldn't be a purchaser.

BY MR. BARNES:

Q. Mr. Schultz, there has been some rumors that this San Juan Basin-California pipe line where it passes close to Farmington that they might build a branch line to Blanco. Suppose it were true, would this Southern Union line be competitive?

A. The Delhi Oil Company has no say so in the management of the San Juan Pipe Line Company. And I am not prepared to say on the supposition that they will build a line into Blanco. I doubt even that they would try to.

Q. Do you believe it would be possible to have two competing lines into the basin, that is, into Blanco, if this other company contemplated a branch line?

A. It comes to this. That when the San Juan Pipe Line Company is in operation there will be two pipe line companies trying to buy gas. I assume that they will be in competition with each other.

Q. You mean Southern Union and El Paso Natural Gas?

A. Yes.

BY MR. McLEAN:

Q. You don't know of any affiliation or joint stock ownership or joint control that exists, or has existed, between Southern Union and El Paso Natrual Gas, do you?

A. No, there is none. I talked to Mr. Paul Kaiser, president of El Paso Natural Gas, a few days ago in Washington, and he reiterated before the Federal Power Commission that El Paso Natural Gas doesn't own one share of Southern Union stock and Southern Union doesn't own any El Paso Natural Gas stock.

Q. So that in the event that both of those two companies should have a line to the Blanco field, so far as you know they would be in competition with each other?

A. I would certainly think that.

BY MR. McCORMICK:

Q. Did you state the stock ownership of the San Juan Pipe Line Company?

A. I beg your pardon?

Q. Did you state who owned ....

A. Yes.

Q. Who does own it?

A. The El Paso Natural Gas owns fifty per cent with the management, and Delhi owns fifty per cent.

COMMISSIONER SPURRIER: Does anyone have any further questions?

MR. McLEAN: May I clarify a point? Is it your testimony now that El Paso Natural Gas has the right to control the San Juan Pipe Line Company? Delhi owns some stock?

A. El Paso Natural Gas owns fifty per cent of the stock and three of the five directors and has the active management.

MR. McCORMICK: And Delhi owns fifty per cent?

A. Yes.

COMMISSIONER SPURRIER: The witness may be excused.

MR. ENGLISH: I have been over here two times trying to find out why they wanted 640-acre spacing, and I think I know now.

The first thing is that Stanolind has gotten so big that they can't operate as cheaply as us little fellows. They have just gotten too big. I drilled a well for less than fifty thousand dollard, and Florance has drilled three or four wells for less than that amount. So, they can't operate as cheaply as we can, so they have to have more gas out of their wells. The second is that they are trying to prove up some subsurface geology, and trying to force everybody else to join in so that they can prove up that subsurface reservoir.

Mr. Se th has been driving all morning to the effect that don't you think that as you moved over you could prove up this structure. It looks like we are trying to prove a subsurface geological structure instead of trying to get something economical to work on. That is my statement.

COMMISSIONER SPURRIER: Now, Mr. McLean, you had something further?

MR. McLEAN: I would like to call Mr. Cole, please.

J. R. COLE, having been first duly sworn, testified as follows:

DIRECT EXAMINATION BY MR. McLEAN:

Q. Your name is J. R. Cole?

A. Yes, sir.

Q. And you are vice-president of the Southern Union Gas Company?

A. That's right.

Q. You reside here in Santa Fe, New Mexico?

A. Santa Fe, New Mexico.

Q. Mr. Cole, do you know whether or not Southern Union is planning to build any kind of a gas transmission line to the Blanco field?

A. Yes, sir. We are ready, able and willing to build a pipe line immediately as quickly as we can get the pipe to do it.

Q. Do you have any idea as to the quantities of gas you might be willing to purchase from that field?

A. No, I don't know. Of course, that is variable by shutting down our own production.

Q. What would you do with that gas?

A. We sell it to our customers here in Santa Fe and Albuquerque and Belen.

Q. Your company is a public utility engaged in the purchase and transporting and distributing of gas to the general public for domestic, commercial, and industrial purposes?

A. That's right.

Q. And that is what the gas would be used for if you bought it from the Blanco field?

A. That's right.

Q. And you think you would be in a position to buy some gas if offered for sale?

A. Yes, sir.

MR. McLEAN: I believe that is all.

COMMISSIONER SPURRIER: Does anyone care to cross-examine the witness?

BY MR. SETH:

Q. How much would you take?

A. That is variable. I have heard this 10,000,000 just now. I don't know anything about that. We can go up or down of that figure by controlling our own production.

Q. So long as gas is produced you don't care about the well spacing?

A. No. But if we had a pipe line up there, we want the gas to justify the pipe line.

MR. GRAHAM: Not only immediately, but in the future?

A. Yes, sir.

COMMISSIONER SPURRIER: Mr. Cole, if you are ready, able, and willing to lay the pipe line into the field, you feel that the reserve is there and the pipe line would pay?

A. Yes, sir.

MR. BARNES: Mr. Cole, you are interested in not only a spacing pattern, but the gas. You would like to see the field

built up?

A. That's right. We want the gas now. We need it.

MR. GRAHAM: If the gas failed sometime in the future you would want to know it far enough ahead to arrange for other sources?

A. That's right.

MR. SCHULTZ: Has it been the policy of Southern Union to cut back their own production to take from the other operators?

A. We have always protected the other operator. Always taken all the gas they wanted to sell to us.

MR. SCHULTZ: In other words, your position would be to take all the gas you could from the Blanco area?

A. Yes. That is the general practice of other pipe line companies. I believe the El Paso Natural Gas made a statement to this Commission one time that they were taking less than eight per cent of their own.

MR. McLEAN: Isn't it true that if you did take it from other operators you would be saving your own reserves?

A. Yes.

MR. SETH: Have you fixed the price?

A. We would pay the field price, Judge. At the present time it is 5¢. I don't know what it will be five or ten years from now. We will pay the field price.

MR. SETH: Your company sets the price?

A. Well, yes. We raised it the last time ourselves. However, with two pipeline companies up there in the future, that may not be so easy.

MR. GRAHAM: Mr. Cole, in fields where you have your own wells, do you not prefer the wider spacing?

A. That's right. You don't like your wells to be drained by

others. However, we want to get all the gas we should out of them. So, I think every field has to stand on its own.

MR. GRAHAM: When you buy gas from others and hold back your own wells for reserves and emergencies, you wouldn't want those to be drained out?

A. No.

MR. GRAHAM: You would prefer, as a general proposition, a reasonably wide spacing?

A. That's right. A reasonably wide spacing.

BY MR. McCORMICK:

Q. From what different fields in the entire San Juan Basin are you now purchasing gas?

A. From the Fulcher Basin. From the Barker Dome, Ute and Kutz Canyon area.

Q. Does your own company have production in any of these fields?

A. In all of them.

Q. In all of them?

A. Yes, sir.

Q. You have no acreage in Blanco?

A. None that I know of at this time.

Q. Tell the Commission what the spacing pattern is in those other fields.

A. I am not too much up on that, on the spacing of these fields. I have nothing to do with that part of the operation. I think--I just don't know.

Q. Do you know what it is in the Barker Dome?

A. I believe it is mile spacing.

MR. SCHULTZ: There is no spacing at Barker

Q. Do you know what the actual pattern is up there that has

been practiced?

A. A Well to a 640.

MR. MORRELL: Mr. Schultz, your statement should be qualified.

MR. SCHULTZ: That is what we would like to have.

MR. MORRELL: In the Barker Dome you have a 160-acre spacing in the shallow Dakota formation and a 640-acre spacing, as arranged with the Geological Survey, for your Paradox production, which is found at a depth of approximately 9,000 feet.

BY MR. McCORMICK:

Q. How much gas is your company presently buying on the average per day from the San Juan Basin?

A. Well, we have already had a 32,000,000 peak day this year. Now, I don't know what it will run, but we will run close to 60,000,000 this year.

Q. Average daily?

A. Not average, but that will be our peak. It has been governed a whole lot up to now by pipe line capacity. I think we are getting out of that difficulty now.

Q. Would you say the average would be as much as 40,000,000 a day in the winter months?

A. Yes.

Q. Over the year?

A. Yes, I think it probably will average 40,000,000.

Q. Is there any other pipe line, is there any other purchaser of gas in the San Juan Basin besides your company at the present time?

A. Yes, there is some gas bought for Aztec and Durango, Colorado. There is a little going up there.

Q. To serve those towns?

A. Yes.

BY MR. BARNES:

Q. Mr. Cole, do you feel that the demand or need for gas at the present time like the need for oil is increasing to the point where it is unable to prove up reserves and get the gas into the market as fast as possible? Do you believe the demand is in some cases exceeding the supply?

A. Yes, I think the demand is exceeding the supply, especially here. Of course, the supply is all right, but the pipe line capacity is too small. Has been up to now.

COMMISSIONER SPURRIER: Does anyone have any further question of Mr. Cole?

BY MR. MORRELL: I would like to ask Mr. Cole a question. On this market situation, you state that you are ready, willing, and able to lay a pipe line into the Blanco area?

A. Yes, sir.

Q. For the record, do you consider that the presently drilled and completed wells, and the presently developed production, is sufficient to warrant a pipe line at this time?

A. Well, I feel that it is.

Q. So that your laying the pipe line will be dependent only upon availability of the pipe?

A. Yes, sir.

COMMISSIONER SPURRIER: Mr. Cole, do you think that with proper spacing that proration will actually be affected in the Blanco field?

A. I couldn't answer that question. I haven't checked into that. Others have in my company, but I haven't.

COMMISSIONER SPURRIER: Well, you have said, I think, that your company does take prorata even to the point of shutting down your own wells, and you wouldn't vary from that scheme

at Blanco?

A. No, we would do that.

MR. MCCORMICK: Would it make any difference to your company whether it was 640 or 320 spacing?

A. Well, it would make this difference, Don. Of course, we want enough gas to give us a supply through that pipe line always. In other words, we want to justify the pipe line.

COMMISSIONER SPURRIER: You feel the gas is there and you just want the spacing that will get it for you?

A. That's right.

MR. GRAHAM: And you want it to last a long, long time?

A. (No response)

MR. McLEAN: If 640-acre spacing would tend to discourage wells being drilled in that area, then you mean to say that you would not favor 640-acre spacing?

A. Well, if it tended to cut down production where we couldn't take it all--if it tended to cut down production where we need more gas, we would be against 640-acre spacing. We want the gas. We want the wells drilled to supply us with enough gas to meet our demand from the field.

MR. McLEAN: In other words, a 640-acre spacing rule would keep some of the owners from drilling in tracts, and you would not be in favor of that spacing?

A. That's right.

COMMISSIONER SPURRIER: M r. Cole, we are getting pretty hypothetical now. Suppose that by 320-acre apacing you weren't getting the gas that you wanted, could you conceive of dropping back to 160-acre spacing or even 40-acre spacing?

A. Well, I tell you, you are getting into an operation of the field there that I, at the present time, would not be

interested in except to take the gas. Of course, if we need more gas, regardless of what it might do to the field, I am in favor of getting gas. I am the pipe line company. That is what you are asking.

COMMISSIONER SPURRIER: That's right. Does anyone have anything further?

MR. McLEAN: I would like to request the Commission to declare a ten minute recess.

COMMISSIONER SPURRIER: The Commission will grant a ten minute recess. Exactly ten minutes. And when we come back, let's be prepared to wind this thing up if we possibly can.

MR. McLEAN: We just have one further thing to offer.

(Recess)

COMMISSIONER SPURRIER: All right, Mr. McLean.

MR. McLEAN: I have an affidavit here, if the Commission please, which I would like to introduce in evidence as Delhi Oil Company Exhibit 2. I can have a witness identify it under oath if you care to. If you don't, I will just explain what it is.

COMMISSIONER SPURRIER: Go ahead.

MR. McLEAN: It is an affidavit signed by representatives of holders of a majority in interest of the working interests in oil and gas leases covering the Blanco field, stating their positions, and recommending a 320-acre spacing pattern, recommending the setting of surface pipe through at least fifty feet of the first hard rock formation, circulated to the top with cement, and installed in such a manner as to insure adequate protection against blowouts and cratering. Then, there are other recommendations in accordance with, I believe, numbers 3, 4, and 5 in the petition filed by Stanolind Oil

and Gas Company in this case.

COMMISSIONER SPURRIER: What is the basis for 320-acre spacing in this affidavit, Mr. McLean?

MR. McLEAN: All of the testimony that Delhio Oil Corporation has presented. We think it would be--it would promote the development of the field. We think it would be easier to establish 320-acre units than 640-acre units. We think it would be fair to all interested parties.

MR. McCORMICK: All of the persons who filed this affidavit are present, are they not?

MR. McLEAN: Yes.

MR. McCORMICK: I don't think the affidavit can properly be received unless other interested parties would waive its being received by the Commission because they have the right to cross-examine.

MR. SETH: Everybody signing it has testified?

MR. McCORMICK: Not everybody.

MR. SETH: Well, Mr. Florance has been testified for. If they can get together on an affidavit of this kind, they can get together on a unit agreement.

MR. McCORMICK: Do you object to this affidavit being received in evidence, Mr. Seth?

MR. SETH: We don't object, and we really don't think it amounts to anything.

MR. MORRELL: Would the Commission read the signatures on the affidavit for the general information of those present?

(Mr. McCormick reads the signatures on the affidavit.)

COMMISSIONER SPURRIER: In view of the fact that Mr. Seth for Stanolind Oil and Gas Company does not object, the Commission will accept the affidavit as presented. Now, is there anyone

else to be heard in this case? Mr. Morrell, it would be a strange case if you didn't have a few words to present.

MR. MORRELL: Well, I would like to present a few remarks as a friend of the court.

COMMISSIONER SPURRIER: I am not being facetious, Mr. Morrell, except for a little humor.

MR. MORRELL: It is good to inject a little humor into these meetings.

COMMISSIONER SPURRIER: I think so.

MR. MORRELL: I would like to enter into the record of this case excerpts from a letter dated September 17, 1948, addressed to the operators of the Blanco area. I will enter a copy, of which you have received one as the Secretary of the Commission. (Marked as Morrell's Exhibit A) By this letter I called a meeting in the office of the Oil Conservation Commission in Santa Fe on October 1 to discuss the subject of establishing a uniform spacing of wells in the Blanco area. In that letter I stated that consideration should be given to a wide spacing pattern initially so that the extent of the reservoir may be more readily determined. At the same time, provision could be made for a closer spacing pattern as may be needed as essential reservoir data is obtained. The letter also referred to the fact that several parties had informally reviewed with me the possibility of formulating a unit plan for the development and operation of the Blanco area. At that particular meeting the majority of the operating interests of the area who were represented were in favor of the 640-acre spacing. Since that time, there has been a change of minds, as expressed by the testimony presented before the Commission. I would like to state this: so far as

the policy of the Geological Survey is concerned, inasmuch as approximately eighty-five per cent of the area under discussion is Federal lands, that we encourage the greatest and quickest development of this area. That is true for both oil and gas. Now, the determination of what is economical is a matter of discussion, and is primarily the subject being discussed before this Commission. So far as this office is concerned, we were wondering as to whether or not some operator would start a 160-acre spacing in this area, and in order to forestall such a spacing pattern until the reservoir was demonstrated capable of that spacing, we called the meeting of October 1. At which time, no definite commitment or agreement among the operators could be obtained; and it was suggested and requested that they present the matter to the Commission for an order under state law. We could control the spacing on the Federal acreage, but we could not on the state and fee acreage. Consequently, although the state and fee acreage were a minority, they held the key to the situation. No testimony has been given for 160-acre spacing. In view of the few facts known now of the production at depths of approximately 5,000 feet with additional open flows in the neighborhood of four million per well. We recognize considerable merit to the various contentions made before the Commission. There are advantages both for the 640 and 320-acre spacing. As to the merits of each, the Survey endeavors to recognize the rights of all parties. Both the individual operators as well as the large companies. And we endeavor and are in favor of working out a spacing pattern as well as all other matters concerned with this that is most mutually beneficial to all parties. The structure at Blanco as given in

the testimony is a monocline. The Mesaverde is essentially conformable to the Pictured Cliffs. To some degree there is a marked similarity to conditions in the Fulcher Basin and Kutz Canyon. And the testimony has made comparable reference-- reference to comparable data. In the Fulcher Basin and Kutz Canyon we had the problem a year ago of 40-acre spacing. On the basis of an application and testimony by Southern Union Gas Company a well spacing pattern was fixed by the Commission for 160 acres, and we were dealing with depths of 2,100 feet and initial productions according to the testimony, to the best of my knowledge, ranging from approximately 400,000 to a million and a half a day. On that basis, I would tend to compare 40-acre spacing in Fulcher Basin and Kutz Canyon to 160-acre spacing in the Blanco area. A considerable bit of testimony has been given as to the difficulties of communitization. As I brought out in a question to Mr. Schultz that regardless of 320 or 640 there is going to be considerable communitization required. There are very few locations that are on the same basic lease that would fall within these spacing patterns. While I am on the subject of spacing patterns, whatever is established, should be set up by the Commission, in my opinion, by a plat, showing the exact outline of the drilling units, and their exact location on the ground with the exact location of the well. In either a 320 or 640 spacing, the Survey would concur in the position expressed by Stanolind in allowing a leeway of 330 feet from the center of a 160-acre legal subdivision. The necessity for such a plat was demonstrated in the case of the Mid-continent Petroleum Company in the Crossroads pool on which the Commission has established an order for 80-acre spacing

for the development of oil. That plat showed the location of the 80-acre drilling units, together with the location of each well. Such a plat would be necessary on either type of spacing the Commission might set. A 640 has an advantage of being square in shape. It is easier to describe and from a legal standpoint can be more readily accepted as to equidistant offsets. The equidistant offset feature might sound a little odd in view of the fact that the proposed location would be in the center of the NE $\frac{1}{4}$  of the section. However, cases before the state Supreme Court of Oklahoma and the United States Supreme Court have upheld the right of the states to exercise the police power and to state a location which in their opinion for that purpose would be acceptable for equidistant offset purposes. Communitization will require the signature of operating interests so far as public lands are concerned. Overriding royalty interests may sign if they so desire, but the department holds that that is a matter of relationship between the lessee and his overriding royalty interests. It is true that in a 640 you would have more interests to be signed up than in a 320, but you don't eliminate that objection by a 320. You do tend to reduce the number involved for each well. I would like to interpose a serious objection to the less than minimum surface casing requirement testified to by Mr. Silver and incorporated in the affidavit submitted to the Commission. The obligation of the operator for development of oil and gas is not only for the convenience to him to reduce his expenditures in the drilling operation, but he also has the legal obligation to protect the other parties who might be directly or indirectly affected. Certainly, in the arid and semi-arid regions of New Mexico

everything should be done for the protection of water. If we have artesian water in this area in depths of from seven to 1,100 feet over the general area, and we may not find water sands carrying water at depths of 50, 100 or 150 feet, those shallow sands nevertheless are potential pollution sources. If the artesian waters are not sealed in such a manner that definite assurance is given for permanent separation. To that extent, I would favor a surface casing requirement more similar to that presented by Stanolind. That is merely a minimum requirement and doesn't prevent the operator from setting more if it necessary or desirable. The situation, too, with respect to well spacing as between 320 and 640 comes back to the question of limited market, a situation which we had in the Fulcher Basin and Kutz Canyon, and also tended to bring about a well spacing program. If we drill on a 320-acre spacing and have ten wells, which the testimony presented before this Commission indicated approximately one million a day available for sale, that would supply a ten million market. If the market wasn't increased, there is no further encouragement to drill additional wells. If additional wells were drilled and the market wasn't increased, you immediately get into a situation of having to divide that limited market to a greater number of wells so that the revenue obtained from each of them is reduced. We do have hopes, as Mr. Schultz has testified and of which all of us is aware, that with the construction of the San Juan Pipe Line Company line to California our market situation in the San Juan Basin area may change from one of limited market to one of almost unlimited market. There is another interesting point that Mr. Cole likewise touched on that might be taken into

consideration by the Commission in determining 320 versus 640. That we know from experience in connection with the transmission of gas for peak loads, the greatest number of outlets is desirable. By that I mean the greatest number of wells available for production. Because you cannot continue to increase the withdrawal from individual wells beyond a certain reasonable percentage regardless of any arbitrary 25 per cent that is put on for general conservation purposes. And in the Barker Dome the Southern Union and Delhi are putting back gas into the shallow formations so that they will have a greater number of outlets from which to take during peak loads.

MR. SCHULTZ: Just for the record, Delhi is producing no gas at all. All our wells are shut down.

MR. MORRELL: They are only taking from Southern Union wells at present. That is about the summation of my remarks. We will take no fixed opinion as to either 640 or 320. Taking the practical thing, we were inclined at first to favor the 640. We have got two opposing trends of thought. The main thing is to get development and get a market and put it on production. Whichever will accomplish that result, we are in favor of.

COMMISSIONER SPURRIER: Thank you very much, Mr. Morrell. I am sure that those remarks will help the Commission when they have to write this order.

MR. SILVER: I would like to ask Mr. Morrell some questions.

BY MR. SILVER:

Q. Mr. Morrell, when pipe is set and cemented at the top of the Mesaverde pay with rotary tools and mud back of the pipe, is there any circulation back of the pipe between the

formation?

A. So long as your mud remains at a level to hold back pressures. Good quality mud fluid in the laboratory will stay in suspension indefinitely in test tubes. But in a well bore we have formations that are very absorbent of water. Consequently you will have settling of mud behind the pipe unless you add additional mud every day. The point might be answered this way. That if the mudding job is perfect, there should not be, but if some rancher in the area should have some difficulties with water, and you had a well that didn't have surface casing to that zone, he is going to put his finger on you. It is a matter more of protection of your own interests as well as the others.

MR. SCHULTZ: If you are going to say 250, why not say 500?

A. We don't know what those zones are. I don't see the difference between fifty and 250.

Q. If you have got your surface pipe tied into a hard subsurface zone formation, I don't understand the logic of why we should set on the side of 250.

A. I don't hold with the exact footage of 250, but I believe fifty feet is not sufficient.

Q. We set fifty feet into a hard formation. That might require 500 feet.

A. You might have fifty feet into a hard formation, but below that loose sand.

Q. You subscribe to a minimum stipulation of 100 feet of surface pipe?

A. I couldn't personally at this time subscribe to less than 150 feet, and I think that should be the subject of some further study.

MR. ENGLISH: May I say something there? Couldn't we cement the production string clear to the top? Wouldn't that do the job? Instead of running the other?

A. That doesn't answer the question Mr. Silver presented. His point is to save pipe. Your point would be to use pipe.

MR. ENGLISH: If you are going to have a production string, why couldn't you cement your production string from top to bottom and do away with the other pipe?

MR. SILVER: Cement is as hard to get as pipe.

A. In some areas you may find gas in the Pictured Cliffs of sufficient volume to warrant marketing by bringing connections to the surface. You should have sufficient surface pipe so that you could adequately control anything that you might meet, bore water and gas and other production, through surface connections. If you have adequate surface pipe, you might then come before the Commission and get permission to dually complete your well. If you don't prepare for those things in advance, you oft times lose them.

MR. MORGAN: On the use of surface pipe. The amount you set and amount you run is primarily for the protection of surface water. Secondly, it is to insure the contractor who is drilling the well to be able to drill his hole to the depth to which drilling is desired. And the use of any given amount of surface pipe outside of protecting the surface water should be at the discretion of the drilling contractor who is handling the hole.

COMMISSIONER SPURRIER: Does anyone else have anything in the case? Well, now, gentlemen, you are all looking at your watches but I am going to hold you about five minutes more because I have a few words to say. We have an awful lot of

record to review when the Commission meets to write an order in this case. In the first place, I want to thank each and every one of you for your diligence in the work that you have gone through, and I want to give you a chance to do a little more work. You may submit to the Commission a proposed order in this case. It hasn't always been done in the past, but the Commission is always glad to welcome a proposed order. Now, I would like to mention another point. The Oil Conservation Commission is not sitting at any time to take a poll. We are not interested in ballots being cast. If we were, Southern Union would still have 40-acre spacing in Kutz Canyon. On the contrary, Southern Union presented evidence to us which we felt was proof that it wasn't economical in dollars and cents to drill wells on 40-acre tracts in Kutz Canyon. And the order that the Commission issues in this case will not necessarily be a poll of all your people who are interested. I hate to mention names, but Brookhaven Oil Company was at the outset of these discussions very much worried about the protection of what you might call correlative rights. Our statutes respect not the rule of capture, but the rule that you are entitled to what is under your particular bit of land. And I think that Brookhaven now feels that their correlative rights will be protected, and I could have told them that in the first place. Now, in this matter of protecting artesian water, we sometimes get ahead of the State Engineer, whose prerogative that is. Because we find it out first from you people who are drilling for oil and gas. And believe me we intend to protect that water in whatever measure is necessary to protect it. And if some of you people who operate in the San Juan Basin just look in the basin

around Artesia and around Hobbs and on up through Roswell, you will see we are very particular down there about our casing program through the artesian strata. I think that is about all I have. Again, I want to thank you and remind you that there is no decision to be made here. Every case that was heard this time will be taken under advisement until the rest of the Commission can review the testimony. I should like to request that all of you folks who have drilled and have any information from wells drilled in this proposed area insofar as you can submit that information to the Commission, without divulging what you might consider secret geological information. I wish you would send it to the Commission because I think it will be helpful to us when we write the order. Now, if no one has anything further?

MR. ENGLISH: This artesian water we are talking about in the San Juan Basin is salt water.

COMMISSIONER SPURRIER: It is salt water?

MR. ENGLISH: Yes. It isn't the same as the artesian water at Roswell. You are trying to protect the fresh water, isn't that it?

MR. MORRELL: With enough surface pipe you could squeeze cement or add mud under pressure to prevent that water from going down into the Pictured Cliffs.

MR. ENGLISH: Or from coming up.

COMMISSIONER SPURRIER: Thank you, Mr. English. If no one has anything further, the hearing is over.

STATE OF NEW MEXICO)  
: ss  
COUNTY OF SANTA FE)

I, E. E. Greeson, Notary Public, hereby certify that the foregoing and attached transcript of the hearing before the Oil Conservation Commission of the State of New Mexico

is a true record of such hearing to the best of my knowledge,  
skill, and ability.

I further certify that I am the Official Reporter for  
the United States District Court for the District of New  
Mexico.

Dated at Santa Fe November 17, 1948.

E. E. Jallison  
notary Public

My Commission Expires Aug. 4, 1952.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF  
STANOLIND OIL AND GAS COMPANY FOR THE  
ADOPTION OF REGULATIONS ESTABLISHING  
UNIFORM SPACING IN THE BLANCO POOL  
IN SAN JUAN COUNTY, NEW MEXICO;  
ESTABLISHING THE LOCATION OF THE INI-  
TIAL WELL ON EACH 320 ACRES; FIXING  
REGULATIONS AS TO THE SETTING OF PIPE;  
AND FOR BACK PRESSURE TESTS OF THE  
VARIOUS STRATA.

CASE NO. 163

ORDER NO. 799

ORDER OF THE COMMISSION

BY THE COMMISSION:

WHEREAS, after due notice as required by law the Commission held a public hearing in Santa Fe on October 28, 1948, to consider the petition of Stanolind Oil and Gas Company for the adoption of an order fixing the spacing of wells and other field rules for wells hereafter drilled in the Blanco (Mesaverde) Gas Pool, San Juan County, New Mexico, and related matters; and

WHEREAS, the Commission having considered the evidence adduced at such hearing, pertinent information otherwise available in the Commission's records, the statements made and viewpoints expressed by interested parties at or in connection with such hearing,

FINDS, from the evidence adduced:

A. That in order to eliminate waste of natural resources, protect correlative rights, protect potable water supplies, and encourage development in the Blanco (Mesaverde) Gas Pool, San Juan County, New Mexico;

B. That such pool has produced natural gas from the Mesaverde formation for approximately 20 years, the entire gas production being from one well;

C. That by reason of the undeveloped nature of the pool and of the general practices of certain operators, a fairly uniform spacing of one well to each 640 acres has heretofore prevailed throughout the pool;

D. That in view of present evidence and development it is not economically feasible to drill more than two wells to each 640 acre section, and accordingly, that more dense spacing may be conducive to waste and will unnecessarily increase the cost of development and production.

E. That for wells hereafter drilled, a general spacing pattern of one well on a unit of 320 acres, substantially in the shape of a rectangle, is required to protect the equities of those having interests in wells heretofore drilled on 320 or 640 acre tracts, for which general spacing pattern the pooling of properties should be encouraged when necessary;

F. That gas production and the gas productive area of the pool is likely to be substantially more extensive than the presently developed position thereof;

G. That waste, will result in drilling of wells in the pool, unless special rules and regulations are adopted for the prevention thereof;

H. That all evidence indicates that the size, outline, trend and reservoir conditions of the pool is not exactly known, and substantial revision of all present data may become necessary as development proceeds, necessitating future revision of certain parts of this order;

I. That in view of the very incomplete knowledge of the pool, it is necessary to require all operators to make complete core analysis and other special tests of the Mesaverde formation until the pool is more completely developed; and

J. That, while the Blanco-Mesaverde gas pool has been commercially productive for approximately 20 years, it has not heretofore been subject to cooperative action representative of the common interest of all operators or lease holders within the area, and there are an undetermined number of small landowners or lease-holders whose total holdings are either less than 320 acres or includes portions of 320 acre tracts.

THEREFORE, IT IS ORDERED that, effective on the date of this order, the following rules and regulations shall apply to wells hereafter drilled or completed or re-completed to the Mesaverde pool in the Blanco area, defined below, in addition to the Commission's applicable rules, regulations and orders heretofore or hereafter adopted to the extent not in conflict herewith:

Section 1. No well shall be drilled or completed or recompleted, and no Notice of Intention to Drill or drilling permit shall be approved, unless

- (a) such well be located on a designated drilling unit of not less than three hundred twenty (320) acres of land, more or less, according to legal subdivisions of the United States Land Surveys, in which unit all the interests are consolidated by pooling agreement or otherwise and on which no other well is completed, or approved for completion, in the pool;
- (b) such drilling unit be in the shape of a rectangle except for normal variations in legal subdivisions of the United States Lands Surveys, the north half, south half, east half or west half of each section of land constituting a drilling unit;
- (c) such well shall be located 330 feet from the center of either the northeast or southwest quarter of the section subject to variation of 200 feet for topographic conditions. Further tolerance shall be allowed by the Commission only in cases of extremely rough terrain where compliance would necessarily increase drilling costs.

Section 2. The special rules and regulations for the Blanco (Mesaverde) pool contained herein shall be limited in their application to the present 4200-5100 foot productive horizon where the productive sands are contained between the top of the Cliff House Sand and the base of the Point Lookout Sand of the Mesaverde.

Section 3. Proration Units: The proration unit shall consist of 320 acres or (a) a legal U. S. General Land Office Survey half-section and (b) the approximate 320 acre unit shall follow the usual legal sub-divisions of the General Land Office Section Surveys and (c) where proration units lie along the edge of field boundaries described in Section 1 above, exceptions shall be permissible in that contiguous tracts of approximately 320 acres, following regular U.S.G.L.O. sub-divisions, may be classed as proration units.

- A. The pooling of properties or parts thereof shall be permitted, and, if not agreed upon may be required in any case when and to the extent that the smallness or shape of a separately owned tract would, under the enforcement of the uniform spacing plan of proration units, otherwise deprive or tend to deprive the owner of such tract of the opportunity to recover his just and equitable share of the crude petroleum oil and natural gas in the pool; provided, that the owner of any tract that is smaller than the drilling unit established for the field, shall not be deprived of the right to drill on and produce from such tract if same can be done without waste; but in such case the allowable production from such tract, as compared with the allowable production therefrom if such tract were a

full unit, shall be in the ratio of the area of such tract to the area of a full unit of 320 acres.

**Section 4. Casing and Cementing Program:**

**A. Surface Pipe**

The surface pipe shall be set through the shallow potable water bearing beds to a minimum depth of 250 feet and a sufficient amount of cement shall be used to circulate the cement behind the pipe to the bottom of the cellar. This surface casing shall stand cemented for at least 24 hours before drilling plug or initiating tests. The surface casing shall be tested after drilling plug by bailing the hole dry. The hole shall remain dry for one hour to constitute satisfactory proof of a water shut-off. In lieu of the foregoing test the cement job shall be tested by building up pressure of 1,000 psi, closing the valves, and allowing to stand thirty minutes. If the pressure does not drop more than 100 lbs. during that period, the test shall be considered satisfactory. This test shall be made both before and after drilling the plug. In this regard all fresh waters and waters of present or probable future value for domestic, commercial or stock purposes shall be confined to their respective strata and shall be adequately protected by methods approved by the Commission. Special precaution shall be taken in drilling and abandoning wells to guard against any loss of artesian potable water from the strata in which it occurs and the contamination of artesian potable water by objectionable water, oil or gas. The Commission shall be notified at least 24 hours prior to the conducting of any test.

**B. Production String**

The production string shall be set on top of the Cliff House Sand with a minimum of 100 sacks of cement and shall stand cemented not less than 36 hours before testing the casing. This test shall be made by building up a pressure of 1,000 psi, closing the valves, and allowing to stand thirty minutes. If the pressure does not drop more than 100 lbs. during that period, the test shall be considered satisfactory.

**C. General**

All cementing shall be done by the pump and plug method. Bailing tests may be used on all casing and cement tests, and drill stem tests may be used on cement tests in lieu of pressure tests. In making bailing test, the well shall be bailed dry and remain approximately dry for thirty minutes. If any string of casing fails while being tested by pressure or by bailing tests herein required, it shall be re-cemented and re-tested or an additional string of casing should be run and cemented. If an additional string is used the same test shall be made as outlined for the original string. In submitting Form C-101, "Notice of Intention to Drill", the number of sacks of cement to be used on each string of casing shall be stated.

Rules 6, 8, 9, 10, 11, 12 and 14 of Order No. 4 of the Commission, effective 8/12/35, should be followed.

**Section 5. Tubing:** Any completed well which produces any oil shall be tubed. This tubing shall be set as near the bottom of the hole as practicable, but in no case shall tubing perforations be more than 250 feet from the bottom. The bottom of the tubing shall be restricted to an opening of less than 1" or bull-plugged in order to prevent the loss of pressure bombs or other measuring devices.

**Section 6. Special Equipment:** Any well which produces oil shall be equipped with a meter setting of adequate size to measure efficiently the gas, with this meter setting to be installed on the gas vent or discharge line. Well-Head equipment for all wells shall be installed and maintained in first class condition, so that static, bottom hole pressures and surface pressures may be obtained at any time by a duly authorized agent of the Commission. Valves shall be installed so that pressures may be readily obtained on the casing and also

on the tubing, wherever tubing is installed. All connections subject to well pressure and all well-head fittings shall be of first class material, rated at 2,000 psi working pressure and maintained in gas tight condition. Bradenheads rated at 2,000 psi shall be installed on all production string and bradenhead connections maintained in gas tight condition. There shall be at least one valve on each bradenhead. Operators shall be responsible for maintaining all equipment in first class condition and shall repair or replace equipment where gas leakage occurs.

**Section 7. Safety Requirements:** Drilling boilers shall not be set closer than 200 feet to any well or tank battery. All electrical equipment shall be in first class condition and properly installed.

**Section 8. Shooting of Wells:** Wells shall not be shot or chemically treated until the permission of the Commission is obtained. Each well shall be shot or treated in such manner as will not cause injury to the sand or result in water entering the oil or gas sand, and necessary precautions shall be taken to prevent injury to the casing. If shooting or chemical treating results in irreparable injury to the well or to the oil or gas sand, the well shall be properly plugged and abandoned. (See Rule 42 Order No. 4, Effective 8/12/35)

**Section 9. Testing of Pays:** All wells drilled through the Point Lookout Pay will be tested by means of separate back pressure tests in accordance with the methods adopted by the U. S. Bureau of Mines (Monograph 7) of (a) the Cliff House Pay (b) the Point Lookout Pay (c) both pays commingled with a minimum of three stabilized readings from a total minimum of three different sized orifices.

- A. Wells which penetrated the Cliff House pay only will take minimum of three stabilized tests covering a total of three different sized orifices.
- B. The foregoing tests shall be taken either in the process of completion, or in drilling, or by means of packer separations between the Point Lookout and Cliff House pays after completion. All tests should be certified and filed with the Commission, and the Commission shall be notified at least 24 hours prior to conducting any test.
- C. Annual back pressure tests, using total of three different sized orifices, shall be taken in June, July or August on each completed well. Each test must be stabilized and plotted as a straight line function on logarithmic paper as outlined in U. S. Bureau of Mines Monograph 7.
- D. Within six months of the effective date of this order, and every six months thereafter, there shall be a meeting of all operators within the Blanco-Mesaverde pool in the Commission offices in Santa Fe, New Mexico, to present and discuss new information and data gathered subsequent to the effective date of this order. The Commission may discontinue these meetings when in its opinion, the pool has reached a stage of development where such meetings are unnecessary.

**Section 10. Protection of Mineral Deposits:** Since the Menefee coal beds bear some gas and since these coal beds are of non-commercial value, Rule 20, Order No. 4 of the Commission dated 8/12/35 shall not apply to this field.

**Section 11. Gas Wastage:** Mesaverde gas shall not be flared since this is principally a gas reservoir and any well not connected to a commercial or domestic taker shall be shut-in until such market is obtained. Wells in this field shall be permitted to produce and market gas, as long as such can be done without waste, equitably between proration units for the field.

**Section 12. Bradenhead Gas:** Bradenhead gas shall not be used either directly or expansively in engines, pumps or torches, or otherwise wasted. It may be used for lease and development purposes and for the development of near-by leases, except as prohibited above. Wells shall not be completed as Braden-

head gas wells unless special permission is obtained from the Commission.

Section 13. Any provision herein to the contrary notwithstanding, the Commission may, and in proper cases will, on petition or on its own motion, by order entered after notice and hearing to the extent required by law, grant exceptions and permit drilling locations to become effective, thereby authorizing the drilling or completion of wells in the pool not conforming to the requirements of Sections 1 through 12 above if the Commission shall find that the property sought to be drilled would be deprived of an opportunity to produce gas from the pool in the absence of such exception, or irrespective of such findings, if the Commission shall find that by reason of all circumstances an exception is proper in the prevention of waste, or undue drainage between properties, or otherwise in the exercise by the Commission of its jurisdiction over the spacing of wells or its other powers conferred by law, express or implied.

IT IS FURTHER ORDERED that, in accordance with recommendations of the Northwestern New Mexico Nomenclature Committee approved and adopted by this Commission, the Mesaverde gas producing pool in the Blanco area, to which this order applies, is defined to include the following described land in San Juan County, New Mexico:

Township 29 North, Range 9 West

All of sections 3, 4, 5, 10, 11, 14 and 15.

Township 30 North, Range 9 West

Sec. 7, S/2; Sec. 8, S/2; all of sections 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 32, 33 and 34.

All additional lands located within one-half (1/2) mile of any land in the pool as defined or as it may be extended shall conform to these rules and regulations; provided, however, that such pool shall in no event be extended so as to include any lands now or hereafter included by the Commission in some other producing area formally designated as an oil or gas pool in the Mesaverde, provided, further, by order of this Commission the pool may be redesignated from time to time so as to embrace other lands in the vicinity which are believed, on the basis of additional developments, to be capable of producing gas from the Blanco pool, whether or not such other lands shall have been at one time included in another designated field or pool producing from Mesaverde.

Entered and adopted by the Oil Conservation Commission this 25 day of February, 1949.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

  
THOMAS J. MABRY, CHAIRMAN

  
GUY SHEPARD, MEMBER

  
R. R. SPURRER, SECRETARY

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF  
STANOLIND OIL AND GAS COMPANY FOR THE  
ADOPTION OF REGULATIONS ESTABLISHING  
640-ACRE SPACING IN THE BLANCO FIELD  
IN SAN JUAN COUNTY, NEW MEXICO;  
ESTABLISHING THE LOCATION OF THE INITIAL WELL ON EACH 640 ACRES; FIXING  
REGULATIONS AS TO THE SETTING OF PIPE;  
AND FOR BACK PRESSURE TESTS OF THE  
VARIOUS STRATA.

*file*

CASE NO. 163

ORDER OF THE COMMISSION

BY THE COMMISSION:

WHEREAS, after due notice as required by law the Commission held a public hearing in Santa Fe on October 28, 1948, to consider the petition of Stanolind Oil and Gas Company for the adoption of an order fixing the spacing of wells and other field rules for wells hereafter drilled in the Blanco (Mesa Verde) Gas Field, San Juan County, New Mexico, and related matters; and

WHEREAS, the Commission having considered the evidence adduced at such hearing, pertinent information otherwise available in the Commission's records, the statements made and viewpoints expressed by interested parties at or in connection with such hearing,

FINDS, from the evidence adduced:

A. That in order to eliminate waste of natural resources, protect correlative rights, protect potable water supplies, and encourage development in the Blanco (Mesa Verde) Gas Field, San Juan County, New Mexico;

B. Etc.

CASE NO. 163 (CONT'D.)

THEREFORE, IT IS ORDERED that, effective on the date of this order, the following rules and regulations shall apply to wells hereafter drilled or completed or re-completed to the Mesa Verde Section in the Blanco (Mesa Verde) Gas Field, defined below, in addition to the Commission's applicable rules, regulations and orders heretofore or hereafter adopted to the extent not in conflict herewith;

1. The field limits are defined as follows: Starting at a point in the center of Section 2 T-30-N R-9-W NWPM easterly to the center of Section 4 T-30-N R-9-W; south to center of Section 9 T-30-N R-9-W; east to center of Section 10 T-30-N R-9-W; south to center of Section 15 T-30-N R-9-W; east to center of Section 14 T-30-N R-9-W; south to Section 23 T-30-N R-9-W; east to center of Section 24 T-30-N R-9-W; south to Section 36 T-30-N R-9-W; east to center of Section 31 T-30-N R-9-W; south to center of Section 30 T-29-N R-8-W; west to center of Section 27 T-29-N R-9-W; north to center of Section 22 T-29-N R-9-W; west to center of Section 21 T-29-N R-9-W; north to center of Section 9 T-29-N R-9-W; west to center of Section 8 T-29-N R-9-W; north to center of Section 5 T-29-N R-9-W; west to center of Section 6 T-29-N R-9-W; north to Section 31 T-30-N R-9-W; west to center of Section 36 T-30-N R-10-W; north to center of Section 25 T-30-N R-10-W; west to center of Section 26 T-30-N R-10-W; north to point of beginning embracing approximately 31,840 acres.

2. The special rules and regulations for the Blanco (Less Verde) field contained herein shall be limited in their application to the present 4200-5100 foot productive horizon where the productive sands are contained between the top of the Cliff House Sand and the base of the Point Lookout Sand of the Less Verde.

3. Proration Units: The proration unit shall consist of 640 acres or (a) a legal U. S. General Land Office survey section and (b) the approximate 640 acre unit shall follow the usual legal sub-divisions of the General Land Office section surveys and (c) where proration units lie along the edge of field boundaries described in Section 1 above, exceptions shall be permissible in that contiguous tracts of approximately 640 acres, following regular U.S.G.L.O. sub-divisions, may be classed as proration units.

A. The pooling of properties or parts thereof shall be permitted, and, if not agreed upon may be required in any case when and to the extent that the smallness or shape of a separately owned tract would, under the enforcement of the uniform spacing plan of proration units, otherwise deprive or tend to deprive the owner of such tract of the opportunity to recover his just and equitable share of the crude petroleum oil and natural gas in the pool; provided, that the owner of any tract that is smaller than the drilling unit established for the field, shall not be deprived of the right to drill on and produce from such tract if same can be done without waste; but in such case the allowable production from such tract, as compared with the allowable production therefrom if such tract were a full unit, shall be in the ratio of the area of such tract to the area of a full unit.

4. Spacing Location of Wells: Initially, each permit to drill shall be restricted to a location at the center of the 16/4 of each section, based on the usual legal sub-divisions of the U.S.G.L.O. surveys with a tolerance of 330 feet in any direction from the center of the quarter section.

A. When any well is to be drilled on a proration unit which is on an irregularly shaped tract and the unit borders the field limits as hereinbefore outlined, an alternate location may be chosen in the center of the 16/4 of the usual U.S.G.L.O. Survey sub-divisions with a 330 foot tolerance.

5. Casing and Cementing Program:

A. Surface Pipe

The surface pipe shall be set through the shallow potable water bearing beds to a minimum depth of 250 feet and a sufficient amount of cement shall be used to circulate the cement behind the pipe to the bottom of the cellar. The surface casing shall be tested after drilling plug by bailing the hole dry. The hole shall remain dry for one hour to constitute satisfactory proof of a water shut-off. This surface casing shall stand cemented for at least 24 hours before drilling plug or in lieu of the foregoing test. The cement job shall be tested by building up a pressure of 1,000 lbs., closing the valves, and allowing to stand thirty minutes. If the pressure does not drop more than 100 lbs. during that period, the test shall be considered satisfactory. This test shall be made both before and after drilling the plug. In this regard all fresh waters and waters of present or probable future value for domestic, commercial or stock purposes shall be confined to their

respective strata and shall be adequately protected by methods approved by the Commission. Special precaution shall be taken in drilling and abandoning wells to guard against any loss of artesian potable water from the strata in which it occurs and the contamination of artesian potable water by objectionable water, oil or gas.

**B. Production String**

The production string shall be set on top of the Cliff House sand with a minimum of 100 sacks of cement and shall stand cemented not less than 36 hours before testing the casing. This test shall be made by building up a pressure of 1,000 psi, closing the valves, and allowing to stand thirty minutes. If the pressure does not drop more than 100 lbs. during that period, the test shall be considered satisfactory.

**C. General**

All cementing shall be done by the pump and plug method. Bailing tests may be used on all casing and cement tests, and drill stem tests may be used on cement tests in lieu of pressure tests. In making bailing test, the well shall be bailed dry and remain approximately dry for thirty minutes. If any string of casing fails while being tested by pressure or by bailing tests herein required, it shall be re-cemented and re-tested or an additional string of casing should be run and cemented. If an additional string is used the same test shall be made as outlined for the original string. In submitting Form C-101, "Notice of Intention to Drill", the number of sacks of cement to be used on each string of casing shall be stated.

Rules 6, 8, 9, 10, 11, 12 and 14 of Order No. 4 of the Commission, effective 8/12/35, should be followed.

**6. Tubing:** Any completed well which produces any oil shall be tubed. This tubing shall be set as near the bottom of the hole as practicable, but in no case shall tubing perforations be more than 250 feet from the bottom. The bottom of the tubing shall be restricted to an opening of less than 1" or bull-plugged in order to prevent the loss of pressure bombs or other measuring devices.

**7. Special Equipment:** Any well which produces oil shall be equipped with a meter setting of adequate size to measure efficiently the gas, with this meter setting to be installed on the gas vent or discharge line. Well-head equipment for all wells shall be installed and maintained in first class condition, so that static, bottom hole pressures and surface pressures may be obtained at any time by a duly authorized agent of the Commission. Valves shall be installed so that pressures may be readily obtained on the casing and also on the tubing, wherever tubing is installed. All connections subject to well pressure and all well-head fittings shall be of first class material, rated at 2,000 psi working pressure and maintained in gas tight condition. Bradenheads rated at 2,000 psi shall be installed on all production string and bradenhead connections maintained in gas tight condition. There shall be at least one valve on each bradenhead.

**8. Safety Requirements:** Drilling boilers shall not be set closer than 100 feet to any well or tank battery. All electrical equipment shall be in first class condition and properly installed.

9. Shooting of wells: Wells shall not be shot or chemically treated until the permission of the Commission is obtained. Each well shall be shot or treated in such manner as will not cause injury to the sand or result in water entering the oil or gas sand, and necessary precautions shall be taken to prevent injury to the casing. If shooting or chemical treating results in irreparable injury to the well or to the oil or gas sand, the well shall be properly plugged and abandoned. (See Rule 42 Order No. 4, Effective 8/12/35)

10. Testing of pays: All wells drilled through the Point Lookout Pay will be tested by means of separate back pressure tests in accordance with the methods adopted by the U. S. Bureau of Mines (Monograph 7) of (a) the Cliff House Pay (b) the Point Lookout Pay (c) both pays commingled with a minimum of three stabilized readings from a total minimum of three different sized orifices.

- A. Wells which penetrated the Cliff House pay only will take minimum of three stabilized tests covering a total of three different sized orifices.
- B. The foregoing tests shall be taken either in the process of completion, or in drilling, or by means of packer separations between the Point Lookout and Cliff House pays after completion. All tests should be certified and filed with the Commission.
- C. Annual back pressure tests, using total of three different sized orifices, shall be taken in June, July or August on each completed well. Each test must be stabilized and plot as a straight line function on logarithmic paper as outlined in U. S. Bureau of Mines Monograph 7.

11. Protection of Mineral Deposits: Since the Menefee coal beds bear some gas and since these coal beds are of non-commercial value, Rule 20, Order No. 4 of the Commission dated 8/12/35 shall not apply to this field.

12. Gas Wastage: Mesa Verde gas shall not be flared since this is principally a gas reservoir and any well not connected to a commercial or domestic taker shall be shut-in until such market is obtained. Wells in this field shall be permitted to produce and market gas, as long as such can be done without waste, equitably between proration units for the field.

13. Bradenhead Gas: Bradenhead gas shall not be used either directly or expansively in engines, pumps or torches, or otherwise wasted. It may be used for lease and development purposes and for the development of nearby leases, except as prohibited above. Wells shall not be completed as Bradenhead gas wells unless special permission is obtained from the Commission.

This order shall become effective on the first day of the proration month next succeeding the month in which said order is adopted.

AND IT IS FURTHER ORDERED: That this case remain open on the docket for such further changes or corrections in the San Juan County rules as may present.

DONE at Santa Fe, New Mexico on the day and year hereinafter designated.

State of New Mexico  
Oil Conservation Commission

Member  
Secretary

10/1/48

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

CASE NO. 163  
ORDER NO. \_\_\_\_\_

IN THE MATTER OF THE PETITION OF  
STANOLIND OIL AND GAS COMPANY FOR THE  
ADOPTION OF REGULATIONS ESTABLISHING  
640-ACRE SPACING IN THE BLANCO FIELD  
IN SAN JUAN COUNTY, NEW MEXICO;  
ESTABLISHING THE LOCATION OF THE  
INITIAL WELL ON EACH 640 ACRES;  
FIXING REGULATIONS AS TO THE SETTING  
OF PIPE; AND FOR BACK PRESSURE TESTS  
OF THE VARIOUS STRATA.

ORDER OF THE COMMISSION

WHEREAS, after due notice as required by law the  
Commission held a public hearing in Santa Fe, New Mexico on  
October 28, 1948, to consider the petition of Stanolind Oil and  
Gas Company for the adoption of an order fixing the spacing  
of wells hereafter drilled in the Blanco Gas Field, San Juan  
County, New Mexico, and related matters; and,

WHEREAS, the Commission has received and considered  
the evidence adduced at such hearing, pertinent information  
otherwise available in the Commission's records, the statements  
made and viewpoints expressed by interested parties at or in  
connection with such hearing;

The Commission FINDS from the foregoing the following  
facts:

1. That the Blanco Gas Field is productive of natural  
gas from the Mesaverde formation.
2. That at the present time there is available to  
the Commission insufficient information to determine accurately  
the extent of the said field, the amount of gas reserves con-  
tained therein, and whether all wells drilled therein are located  
in the same gas pool.

3. That temporary uniform well spacing on units of 320 acres each would enable more rapid determination of the boundaries of the field than existing regulations, would encourage development of the field, would promote conservation of materials, equipment, gas and other hydrocarbon substances in the field, would enable greater ultimate gas recovery from the field, and would be fair and equitable to all interested parties.

4. That more dense well spacing in such field at the present time might be conducive to waste and might unnecessarily increase the costs of development and production.

5. That for wells hereafter drilled a general spacing pattern of one well on each unit of 320 acres should be encouraged, such wells to be located at or near the center of the Northeast and the Southwest quarters of each section of land according to the United States Land Surveys and such units conforming as nearly as possible to the North and South halves of the sections according to such Surveys.

6. That the gas productive area of the said pool is likely to be substantially more extensive than the presently developed portion thereof.

7. That waste will result in the drilling and operation of wells in the said field unless special rules and regulations are adopted for the prevention thereof.

THEREFORE, it is hereby ORDERED that effective on the date of this order the following rules and regulations shall apply to all wells which may be hereafter drilled, completed or recompleted to the Mesaverde formation in the Blanco Gas Field, defined below, in addition to the applicable rules, regulations and orders of the Commission heretofore or hereafter adopted to the extent not in conflict herewith:

Section 1. No well shall be drilled, completed or recompleted and no notice of intention to drill or drilling permit shall be approved unless

(a) such well be located on a designated drilling unit of not less than 320 acres of land, more or less, according to legal subdivisions of the United States Land Surveys, in which unit all the interests are consolidated by pooling agreement or otherwise and on which no other well is completed or approved for completion in the pool;

(b) such drilling unit be in the shape of a rectangle except for normal variations in legal subdivisions of the United States Land Surveys, the North 1/2 and the South 1/2 of each section of land constituting respectively a drilling unit; and

(c) such well be located in the center of the Northeast 1/4 or the Southwest 1/4 of a section, as the case may be, such location to be subject to a 330 foot tolerance and a greater tolerance in the Commission's discretion in instances where necessary to reduce drilling costs because of rugged terrain.

Section 2. In connection with all wells covered by this order surface pipe shall be set through at least 50 feet of the first hard rock formation, circulated to the top with cement, and installed in such a manner as to insure adequate protection against blow-outs and cratering.

Section 3. In connection with all wells covered by this order, the production string shall be set on top of the Cliff House pay with a minimum of 100 sacks of cement, and tests shall be made under the existing regulations of the Commission.

Section 4. Annual back pressure tests shall be required to be taken in June, July or August for each completed well.

Section 5. Any provision herein to the contrary notwithstanding, the Commission may, on petition or on its own motion, by order entered after notice and hearing to the extent required by law, grant exceptions authorizing the drilling, completion or recompletion of wells covered by this order not conforming to Section 1 above if the Commission shall find that by reason of all circumstances such an exception is proper in the prevention of waste or otherwise in the exercise by the Commission of its jurisdiction over the spacing of wells or its other powers conferred by law, express or implied. The Commission may likewise under similar conditions and prerequisites grant exceptions to the requirements of Sections 2, 3 and 4 above.

Section 6. In accordance with the recommendations of the Northwest New Mexico Nomenclature Committee approved and adopted by this Commission, the Blanco Gas Field to which this order applies is defined to include and to be limited to the following described land in San Juan County, New Mexico:

(here insert description)

By order of the Commission the Blanco Gas Field may be redefined and re-designated from time to time so as to embrace other lands in the vicinity which are believed by the Commission on the basis of additional developments and evidence to be capable of producing gas from the same gas pool.

Section 7. The rules and regulations provided for herein are intended to be temporary only, any and all such regulations being subject to change at any time by the Commission on petition or on its own motion by order entered after notice and hearing to the extent required by law and after

additional information as to the reservoir characteristics may  
become available.

STATE OF NEW MEXICO OIL  
CONSERVATION COMMISSION

By \_\_\_\_\_  
Chairman

\_\_\_\_\_  
Member

\_\_\_\_\_  
Secretary

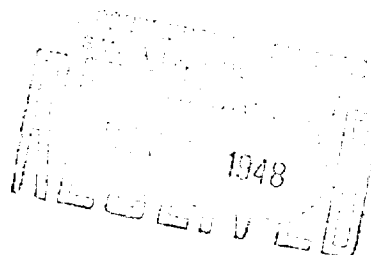
JOHN F. SIMMS  
J. R. MODRALL  
A. T. SEYMOUR  
JOHN F. SIMMS, JR.

JAMES E. SPERLING  
JOSEPH E. ROEHL  
JOHN B. MC MANUS, JR.

SIMMS, MODRALL, SEYMOUR & SIMMS  
ATTORNEYS AT LAW  
ALBUQUERQUE, NEW MEXICO

November 4, 1948

P. O. BOX 466



Oil Conservation Commission of N.M.  
408 Galisteo Street  
Santa Fe, New Mexico

Attention Mr. R. R. Spurrier

Gentlemen:

*file* → We enclose herewith statement of  
Objection to Petition of Stanolind Oil and Gas  
Company in Case No. 163 which was heard before  
your Commission several days ago, and in which  
hearing we appeared on behalf of Brookhaven Oil  
Company.

We will appreciate your filing the Ob-  
jection of our client in the record of this case,  
and having the same considered by the Commission  
when it considers the testimony and objections in  
connection with this hearing.

Very truly yours.

SIMMS, MODRALL, SEYMOUR & SIMMS

By

*J. R. Modrall*

JRM/ch  
Enclosure

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF  
STANOLIND OIL AND GAS COMPANY FOR THE  
ADOPTION OF REGULATIONS ESTABLISHING CASE NO. 163  
640-ACRE SPACING IN THE BLANCO FIELD  
IN SAN JUAN COUNTY, NEW MEXICO:  
ESTABLISHING THE LOCATION OF THE INITIAL  
WELL ON EACH 640 ACRES: FIXING REGULATIONS  
AS TO THE SETTING OR PIPE: AND FOR BACK  
PRESSURE TESTS OF THE VARIOUS STRATA.

OBJECTION TO PETITION OF STANOLIND  
OIL AND GAS COMPANY

BROOKHAVEN OIL COMPANY, a Delaware  
corporation authorized to do business in the  
State of New Mexico, by its President, Thomas  
B. Scott, Jr. and its attorneys, Simms, Modrall,  
Seymour & Simms of Albuquerque, New Mexico,  
hereby objects to the petition in the above  
matter and, as grounds for its objection,  
states:

1. That Brookhaven Oil Company, by  
and through its President and attorneys as  
above mentioned, appeared personally before  
the Commission upon its hearing on the above  
entitled case, and obtained permission of  
the Commission to file its written objection  
as herein set forth.

2. Brookhaven Oil Company is the owner  
of an oil and gas lease on land owned by the  
State of New Mexico and leased by the State to

Brookhaven Oil Company within the prospective area covered by the petition. The company also owns two leases on patented land of forty acres and twenty acres respectively, and further owns certain comparatively small mineral interests in the form of royalties on patented land within the prospective area, and is therefore an interested party which will be affected by any spacing order for the area designated as the Blanco area in San Juan County, New Mexico.

3. Brookhaven Oil Company is a small independent corporation having leases and royalties for oil and gas in Illinois, Indiana, Arkansas, Oklahoma, Texas, New Mexico, and Colorado. Its President Thomas B. Scott, Jr. has been in the oil and gas producing and pipeline business most of his adult business life.

4. The position of Brookhaven Oil Company in connection with the Petition of Stanolind Oil Company for a spacing program designating single drilling areas of 640 acres in the Blanco area, is that such a spacing order at this time is wholly unwarranted and may even prove harmful,

(a) by reason of the fact that so little is known as to the productive characteristics of the proposed Blanco pool, as to make it impractical to set up any

2  
0

specific spacing program at this time; and

(b) that any spacing order for drilling attempted to be promulgated by the Commission at this time should be preceded first by a lease unitization program as to the entire area of the prospective Blanco field and second, by a minerals (royalty) unitization program on practical drilling units.

5. It is believed by Brookhaven Oil Company that any spacing program or order for drilling promulgated at the present time by the Commission, if such spacing area exceeds forty-acre tracts, will necessarily benefit the holders and owners of large blocks of leases and royalty in the proposed area to the detriment of the owners and holders of small tracts. In this connection, it is pointed out that the land owned by the State of New Mexico in this general area has been leased and is now held in comparatively small units, usually consisting of not more than a forty or eighty acre tract in one ownership. Since a spacing program without unitization and in excess of this size, would make it impossible, or at least impractical, for the holders of leases on such small units to drill them themselves, the State of New Mexico would be hindered and prejudiced in that its property would probably be the last area in the field

to be drilled and would be in substantial danger of considerable drainage by wells drilled upon the larger drilling units.

6. Brookhaven Oil Company, which is representative of the many holders and owners of small units in this general area, both on State land and patented private land, feels it is imperative for the protection of its interests and the interest of all small owners in the area, that lease and royalty unitization plans be worked out, submitted, and approved by the Commission before any spacing program is approved or ordered by the Commission. Once a lease unitization plan for the area has been worked out and approved, and then a royalty unitization plan has been worked out, the matter of spacing in this particular field can be ordered to fit the productive characteristics as the same become known.

7. Brookhaven Oil Company further calls to the attention of the Commission the fact that two aspects of production within the prospective area are to be considered; first, the problem dealing with the holders of leases on all types of land in the area; and secondly, the problem dealing with the holders of mineral royalty interests on the patented lands. It is our position that these two interests must be dealt with separately and that it will be necessary to first unitize the holders of oil and gas lease interests, and after this is done, then to work out some unitization program which will include the holders of royalty interests in whatever size unit is deemed practical.

8. We call the Commission's attention to the practice of the State of New Mexico in leasing its State lands in small tracts, usually in forty and eighty acres, and also the provision in the existing state leases calling for offset to be drilled if a producing well is located three hundred feet of leased border, contained in provision No. 8 of the standard oil and gas lease issued by the State. The proposed action of establishing 640 acre spacing may result in a situation where there would be no offset obligation required unless drainage could be proved. If this condition resulted, it is obvious that it would be to the irreparable detriment of the State of New Mexico.

9. We further point out that in many cases the owners and holders of small State leases to be contained in a large spacing unit such as that proposed by Stanolind Oil Company, are scattered throughout the United States, and it would be an impractical proposition for an owner of small acreage such as Brookhaven Oil Company, to have the burden of financing and working out a drilling agreement with all of these numerous small operators, if a drilling unit of considerable area is established prior to some action of the operators of the field or the Commission itself in unitizing the entire area before establishing a drilling pattern.

10. Although, Brookhaven Oil Company does not advocate at this time any particular spacing plan for drilling until such time as engineering data warrants sound conclusions, it is opposed to an arbitrary 640 acre spacing for drilling without lease and royalty unitization as described above, because we know that it is impractical under such a wide spacing for the small owner to operate and receive his just share of recovery.

Respectfully submitted,

BROOKHAVEN OIL COMPANY

By

Shas B. Scott  
President

SIMMS, MODRALL, SEYMOUR & SIMMS

By

J. R. Modrall  
Its Attorneys

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE PETITION OF )  
STANOLIND OIL AND GAS COMPANY FOR THE )  
ADOPTION OF REGULATIONS ESTABLISHING )  
640-ACRE SPACING IN THE BLANCO FIELD )  
IN SAN JUAN COUNTY, NEW MEXICO; )  
ESTABLISHING THE LOCATION OF THE INI- )  
TIAL WELL ON EACH 640 ACRES; FIXING )  
REGULATIONS AS TO THE SETTING OF PIPE; )  
AND FOR BACK PRESSURE TESTS OF THE )  
VARIOUS STRATA. )

123  
Case No. \_\_\_\_\_

PETITION

Comes now the Stanolind Oil and Gas Company, and respectfully requests:

That this Commission adopt regulations governing the Blanco Field, in San Juan County, New Mexico, as follows:

1. That a 640-acre spacing program be adopted, with the initial well within 660 feet of the centre of the Northeast Quarter of each Section until field limits are defined, and other regulations adopted as further development of the field may require.

2. Surface pipe be set through the shallow water beds, and be not less than 250 feet, with cement circulating to the surface.

3. That the production string be set on top of the cliff house pay, with a minimum of 100 sacks of cement, and that tests be made under the existing regulations of the Commission.

4. That all wells drilled through the point lookout pay be required to take separate back pressure tests of (a) the cliff house pay, (b) the point lookout pay, and (c) both pays commingled, with a minimum of three points to each back pressure test. That wells in the cliff house pay be required to take back pressure test, obtaining a minimum of three points, and that all tests be taken either in the process of completion, or by means of packer separation between the point lookout and cliff house pays after after completion, and that all tests be certified and filed with this Commission.

5. That annual back pressure tests be required, to be taken in June, July or August, for each completed well.

Petitioner believes that the foregoing rules will promote the conservation of gas and other hydrocarbon substances in the field, and will result in a greater ultimate recovery from the field, and will be fair to all interested parties, including the royalty owners.

Petitioner requests that this Petition be set down for hearing at an early date at the convenience of the Commission.

STANOLIND OIL AND GAS COMPANY

By *[Signature]*

Its Attorney.

STATE OF NEW MEXICO        )  
                                  ) ss.  
COUNTY OF SANTA FE        )

J. O. Seth, being first duly sworn, deposes and says that he is attorney for the Petitioner in the foregoing Petition; that he has read said Petition, knows the contents thereof, and the matters and things therein stated are true, as he is reliably informed and verily believes.

*[Signature]*  
Subscribed and sworn to before me this 12th day of October, 1948.

*[Signature]*  
Notary Public.

My Commission Expires:

October 10th, 1951