

Case No.

672

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Application, Transcript,  
Small Exhibits, Etc.

CASE 672: Special Joint Hearing  
with Texas R.R. Commission 2-23-54  
(Re Bronco-Siluro-Devonian Pool)

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARINGS  
HELD JOINTLY BY THE NEW MEXICO  
OIL CONSERVATION COMMISSION AND  
THE RAILROAD COMMISSION OF TEXAS  
FOR THE PURPOSE OF CONSIDERING:

CASE NO. 672  
ORDER NO. R-510

THE MATTER OF PRORATION METHODS,  
MAXIMUM EFFICIENT RATE OF PRODUCTION,  
AND SPECIAL POOL RULES FOR OIL AND GAS  
POOLS EMBRACING LANDS WITHIN THE STATES  
OF TEXAS AND NEW MEXICO: NAMELY, THE  
BRONCO-SILURO-DEVONIAN POOL IN LEA  
COUNTY, NEW MEXICO (THE TEXAS PORTION  
OF WHICH LIES IN YOAKUM COUNTY AND IS  
TERMED THE BRONCO POOL.)

ORDER OF THE COMMISSION

BY THE COMMISSION:

WHEREAS, After due notice, the Railroad Commission of Texas and the New Mexico Oil Conservation Commission held a joint hearing in Santa Fe, New Mexico, on February 26, 1954, to consider the adoption of rules and regulations to govern the drilling, completion and operation of wells in the Bronco-Siluro-Devonian Pool, Lea County, New Mexico, and Yoakum County, Texas; and

WHEREAS, After due notice, the Railroad Commission of Texas and the New Mexico Oil Conservation Commission held a joint hearing in Austin, Texas, on April 2, 1954, to consider the adoption of rules and regulations to govern the drilling, completion and operation of wells in the Bronco-Siluro-Devonian Pool, Lea County, New Mexico, and Yoakum County, Texas; and

NOW, on this 15th day of July, 1954, the Oil Conservation Commission of New Mexico, a quorum being present, having considered the records and the testimony adduced, and being fully advised in the premises,

FINDS:

(1) That due notice of the time and place of hearing and the purpose thereof having been given as required by law, it has jurisdiction of this case and the subject matter thereof.

(2) That waste will take place in said pool unless rules are adopted by the Commission for the prevention thereof, and that the rules and regulations hereinafter set forth are necessary to prevent such waste and to provide for a more orderly development and operation of said field.

IT IS THEREFORE ORDERED, by the Oil Conservation Commission of New Mexico that the following rules, in addition to such of the Commission's general rules and regulations as are not in conflict herewith, be and the same are hereby adopted to govern the drilling, completion and operation of wells in the Bronco-Siluro-Devonian Pool, Lea County, New Mexico.

**RULE 1.** The permitted gas-oil ratio for all wells shall be two thousand (2,000) cubic feet of gas per barrel of oil produced. Any oil well producing with a gas-oil ratio in excess of two thousand (2,000) cubic feet of gas per barrel of oil shall be allowed to produce daily only that volume of gas obtained by multiplying the daily oil allowable of such well as determined by the applicable rules of the Commission by two thousand (2,000) cubic feet. The gas volume thus obtained shall be known as the daily gas limit of such well. The daily oil allowable therefor shall then be determined and assigned by dividing the daily gas limit by its producing gas-oil ratio.

**RULE 2.** The acreage assigned to the individual oil well for the purpose of allocating allowable oil production thereto shall be known as a proration unit. No proration unit shall consist of more than forty (40) acres except as hereinafter provided, and the two farthestmost points in any proration unit shall not be in excess of twenty-one hundred (2100) feet removed from each other; provided, however, that in the case of long and narrow leases or in cases where because of the shape of the lease such is necessary to permit the utilization of tolerance acreage the Commission may after proper showing grant exceptions to the limitations as to the shape of proration units as herein contained. All proration units, however, shall consist of continuous and contiguous acreage which can reasonably be considered to be productive of oil.

If after the drilling of the last well on any lease and the assignment of acreage to each well thereon in accordance with the regulations of the Commission there remains an additional unassigned lease acreage of less than forty (40) acres, then and in such event the remaining unassigned lease acreage up to and including a total of twenty (20) acres may be assigned to the last well drilled on such lease or may be distributed among any group of wells located thereon so long as the proration units resulting from the inclusion of such additional acreage meets the limitations prescribed by the Commission.

Operators shall file certified plats of their properties in the pool, which plats show all those things pertinent to the determination of the acreage claimed for each well hereunder.

**RULE 3:** The casing program of all wells hereafter drilled in said pool shall include at least three (3) strings of pipe set in accordance with the following program:

(a) The surface casing shall consist of new or reconditioned pipe with an original mill test of not less than one thousand (1000) pounds per square inch, and shall be set and cemented below the top of the red beds; provided, however, that not less than three hundred (300) feet of surface string shall be set. Cement shall be by the pump and plug method, and sufficient cement shall be used to fill the annular space back of the pipe to the surface of the ground or the bottom of the cellar. Cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before drilling the plug. The casing shall be tested by pump pressure of at least five hundred (500) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of one hundred and fifty (150) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

(b) The intermediate string shall consist of new or reconditioned pipe that has been tested to two thousand (2000) pounds per square inch, and shall be set no higher than the top of the San Andres formation at an approximate depth of forty-five hundred (4500) feet. Sufficient cement shall be used to fill the calculated annular space back of the pipe to at least as high as

Order No. R-510

the bottom of the surface pipe. Cement shall be by the pump and plug method, and the cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before initiating tests or drilling the plug. The casing shall be tested by pump pressure of at least one thousand (1000) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of one hundred and fifty (150) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

(c) The producing or oil string shall be new or reconditioned pipe that has been tested to three thousand (3000) pounds per square inch, and shall be set no higher than the top of the producing formation. Cement shall be by the pump and plug method, and sufficient cement shall be used to fill the calculated annular space behind the pipe to a point at least thirty-three hundred (3300) feet above the shoe. Cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before drilling the plug or initiating tests. The casing shall be tested by pump pressure of at least fifteen hundred (1500) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of two hundred (200) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

At the option of the operator, a liner may be run in lieu of a full length producing or oil string, such liner to extend not less than 200 feet above the shoe of the next larger casing string. The liner shall be secured to the next larger casing string in a manner approved by the New Mexico Oil Conservation Commission through a duly authorized representative or the District I Oil and Gas Inspector. Such liner shall be tested in the manner prescribed above for the testing of producing or oil strings.

**RULE 4:** The production allowable for said pool within New Mexico shall be, and the same hereby is fixed at 227 barrels of oil per day beginning at 7 o'clock a.m., M.S.T. on June 1, 1954, and continuing until further order.

**RULE 5:** The datum reservoir pressure of all wells in the pool shall be determined annually and the testing period shall be during the months of October and November; the results thereof to be reported to the Commission on or before the fifteenth (15th) of December of each year. All pressure determinations shall be reported at a datum of eight thousand (8000) feet below sea level. Prior to testing, all wells shall be shut in for a period of not less than forty-eight (48) hours or more than seventy-two (72) hours. All offset operators shall be notified at least forty-eight (48) hours before such test is made on any well, and any operator in the pool shall have the privilege of witnessing such pressure determinations. Said pressures shall be taken on all flowing wells with subsurface pressure gauge or other method of equal accuracy and may be taken on pumping wells with sonic devices or other method of equal accuracy.

**RULE 6:** All operators shall take a GOR test not sooner than 30 days nor later than 60 days following the completion or recompletion of an oil well. A GOR test shall be made annually on all oil wells producing from the Bronco-Siluro-Devonian reservoir pool. Such tests shall be made in accordance with Commission Rule 301, and shall be taken during the months of April and May of each calendar year. Results of such tests shall be reported on Commission Form C-116 not later than June 15 of the year in which the test was made.

-4-

Order No. R-510

IT IS FURTHER ORDERED, That this cause be held open on the docket for such other and further orders as may be necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

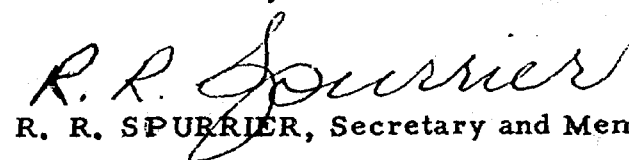
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman



E. S. WALKER, Member



R. R. SPURRIER, Secretary and Member

SEAL

**AFFIDAVIT OF PUBLICATION**

State of New Mexico,  
County of Lea.

I, Robert L. Summers,  
Publisher

Of the Hobbs Daily News-Sun, a  
daily newspaper published at  
Hobbs, New Mexico, do solemnly  
swear that the clipping attached  
hereto was published once a week  
in the regular and entire issue of  
said paper, and not in a supple-

ment thereof for a period of —

One time weeks.

beginning with the issue dated —

February 14, 1954

and ending with the issue dated —

February 14, 1954

Robert L. Summers  
Publisher.

Sworn and subscribed to before

me this 7 15 day of —

February, 1954

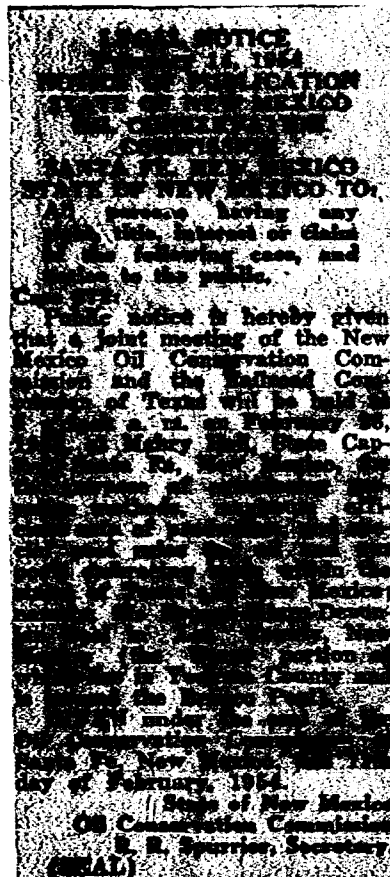
M. L. Barnett  
Notary Public.

My commission expires —

3/17, 1957

(Seal)

This newspaper is duly qualified  
to publish legal notices or ad-  
vertisements within the meaning  
of Section 3, Chapter 167, Laws  
of 1937, and payment of fees for  
said publication has been made.







New Mexico  
OIL CONSERVATION COMMISSION

GOVERNOR EDWIN L. MECHEM  
CHAIRMAN  
LAND COMMISSIONER E.S. WALKER  
MEMBER  
STATE GEOLOGIST R.R. SPURRIER  
SECRETARY AND DIRECTOR



P. O. BOX 871  
SANTA FE, NEW MEXICO

February 11, 1954

Editor  
Hobbs News-Sun  
HOBBS N M

Dear Sir:

Re: Notice of Publication  
Case 672

Please publish the enclosed notices one time immediately on receipt of this request. Please proofread carefully and send a copy of the paper carrying such notices to this office.

Immediately upon completion of publication, send publisher's affidavit in duplicate. For payment, please submit statement in duplicate and sign and return the enclosed voucher. (Do not fill in.) We should have these immediately after publication in order that the legal notice will be on hand for the holding of the hearing which it advertises, and also so that there will be no delay in your receiving proper payment.

Please publish the notices not later than

~~This must be published be-~~  
~~for February 16 in order to be~~  
~~legal, and we will appreciate your~~  
help. Thanks -

Very truly yours,

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

R. R. SPURRIER,  
Secretary-Director

Encl.

GENERAL OFFICES  
120 BROADWAY NEW YORK

AMERADA PETROLEUM CORPORATION

BEACON BUILDING  
P. O. BOX 2040  
TULSA 2, OKLA.

January 11, 1954

Railroad Commission of Texas  
Oil and Gas Division  
Austin, Texas

Re: Application for Field Rules, MER, and  
Allowable for the Bronco Field, Yoakum  
County, Texas and Lea County, New Mexico

Gentlemen:

By this letter of application Amerada Petroleum Corporation wishes to state the following:

- (a) The Bronco Field was discovered October 23, 1952;
- (b) The field now has three (3) wells in the State of Texas and five (5) in the State of New Mexico;
- (c) The field is being developed and operated under the applicable statewide rules of the States of Texas and New Mexico;
- (d) The allowable as determined by applicable statewide rules results in unequal withdrawals as between wells within the different states.

Therefore in the interest of conservation and the protection of correlative rights, we respectfully request a hearing be set to consider the following:

- (1) Special field rules;
- (2) Determination of the MER;
- (3) Establishment of an allowable that will protect the correlative rights of all concerned;
- (4) Any other matter pertinent to the case.

Railroad Commission of Texas

- 2 -

January 11, 1954

By a copy of this letter the New Mexico Oil Conservation Commission is advised of this request for a hearing before the Railroad Commission of Texas.

Please set this case for hearing at your earliest convenience.

Respectfully submitted,

AMERADA PETROLEUM CORPORATION

By R. S. Christie  
R. S. Christie

RSC:vd

cc: New Mexico Oil Conservation Commission  
Box 871  
Santa Fe, New Mexico

OIL CONSERVATION COMMISSION  
P. O. BOX 871  
SANTA FE, NEW MEXICO

February 11, 1954

C  
O  
P  
Y

Mr. Arthur Barbeck  
Railroad Commission of Texas  
Tribune Building  
AUSTIN, TEXAS

Dear Sir:

Enclosed is copy of legal notice as sent out today to advertise the joint hearing of February 26, 1954, on the Bronco (Siluro-Devonian) Pool.

We will look forward to seeing you and other Commission representatives at that time.

Sincerely,

R. R. Spurrier

RES:mr

OFFICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO  
STATE OF NEW MEXICO TO:  
All persons having any right,  
claim, interest or claim in the  
following case, and notice to  
the public.  
CASE NO. 1  
Notice is hereby given that a  
new meeting of the New Mexico Oil Con-  
servation Commission and the Railroad  
Commission of Texas will be held at 9  
o'clock A.M. on February 20, 1954, at Ma-  
jor Hall, State Capitol, Santa Fe, New  
Mexico, for the purpose of considering pro-  
duction methods, maximum efficient rate of  
production, and special pool rules for oil  
and gas pools embracing lands within the  
state of Texas and New Mexico; namely,  
the Permian-Bureau-Devonian Pool in Lea  
County, New Mexico (the Texas portion of  
which lies in Yockum County and is  
known as the Permian Pool).  
GIVEN under the seal of the Oil Con-  
servation Commission at Santa Fe, New  
Mexico, this 11th day of February, 1954.  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
(SEAL)  
R. M. STURRIS  
Secretary  
Feb. 11, 1954.

## Affidavit of Publication

State of New Mexico } ss.  
County of Santa Fe

I, Emory J. Bahr, being first duly sworn,  
declare and say that I am the (Business Manager) (~~Editor~~) of the New  
Mexican, a daily newspaper, published in the English  
Language, and having a general circulation in the City and County of Santa Fe, State of  
New Mexico, and being a newspaper duly qualified to publish legal notices and advertise-  
ments under the provisions of Chapter 167 of the Session Laws of 1937; that the publi-  
cation, a copy which is hereto attached, was published in said paper once each week for  
one time consecutive weeks, and on the same day of each week in  
the regular issue of the paper during the time of publication, and that the notice was  
published in the newspaper proper, and not in any supplement, once each week for  
one time weeks consecutively, the first publication being on the  
15th day of February, 1954, and the last publica-  
tion on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_; that payment  
for said advertisement has been (duly made), or (assessed as court costs); that the under-  
signed has personal knowledge of the matters and things set forth in this affidavit.

Emory J. Bahr  
Business Manager.

Subscribed and sworn to before me this 15th  
day of February, A. D. 1954.

Anna K. Ormsbee  
Notary Public

My Commission expires

June 11, 1957

### PUBLISHER'S BILL

34 lines, one time at \$ 3.40  
\_\_\_\_\_ lines, \_\_\_\_\_ times, \$ \_\_\_\_\_  
Tax \$ \_\_\_\_\_  
Total \$ 3.40

Received payment,

By \_\_\_\_\_

New Mexico  
OIL CONSERVATION COMMISSION

GOVERNOR EDWIN L. MECHEM  
CHAIRMAN  
LAND COMMISSIONER E.S. WALKER  
MEMBER  
STATE GEOLOGIST R.R. SPURRIER  
SECRETARY AND DIRECTOR



P. O. BOX 871  
SANTA FE, NEW MEXICO

February 11, 1954

Editor  
THE NEW MEXICAN  
SANTA FE

Dear Sir:

Re: Notice of Publication

Case 672

Please publish the enclosed notices one time immediately on receipt of this request. Please proofread carefully and send a copy of the paper carrying such notices to this office.

Immediately upon completion of publication, send publisher's affidavit in duplicate. For payment, please submit statement in duplicate and sign and return the enclosed voucher. (Do not fill in.) We should have these immediately after publication in order that the legal notice will be on hand for the holding of the hearing which it advertises, and also so that there will be no delay in your receiving proper payment.

Please publish the notices not later than immediately on receipt, please

Very truly yours,

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

R. R. SPURRIER,  
Secretary-Director

Encl.

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
SANTA FE - NEW MEXICO

STATE OF NEW MEXICO TO:

All persons having any right,  
title, interest or claim in  
the following case, and notice  
to the public.

CASE 672:

Public notice is hereby given that a joint meeting of the New Mexico Oil Conservation Commission and the Railroad Commission of Texas will be held at 9 o'clock a.m. on February 26, 1954, at Mabry Hall, State Capitol, Santa Fe, New Mexico, for the purpose of considering proration methods, maximum efficient rate of production, and special pool rules for oil and gas pools embracing lands within the states of Texas and New Mexico; namely, the Bronco-Siluro-Devonian Pool in Lea County, New Mexico (the Texas portion of which lies in Yoakum County and is termed the Bronco Pool).

GIVEN under the seal of the Oil Conservation Commission at Santa Fe, New Mexico, this 11th day of February, 1954.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*R. R. Spurrier*  
R. R. Spurrier, Secretary

S E A L

Cons 672

# THE TEXAS COMPANY

TEXACO PETROLEUM PRODUCTS



P. O. BOX 1720  
FORT WORTH 1, TEXAS

February 22, 1954

PRODUCING DEPARTMENT  
WEST TEXAS DIVISION  
OIL CONSERVATION COMMISSION  
SANTA FE, NEW MEXICO  
FEB 24 1954

JOINT HEARING - TEXAS RAILROAD  
COMMISSION AND OIL CONSERVATION  
COMMISSION OF NEW MEXICO, BRONCO  
SILURO-DEVONIAN FIELD, LEA COUNTY,  
NEW MEXICO & YOAKUM COUNTY, TEXAS

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

Attention: Mr. R. R. Spurrier

Gentlemen:

This is to advise that The Texas Company is in favor of proposed field rules for the Bronco Siluro-Devonian Field, Lea County, New Mexico and Yoakum County, Texas, as submitted to The Texas Company by Amerada Petroleum Corporation with Mr. R. S. Christie's letter of February 19, 1954.

The Texas Company also has no objection to adoption of the proposed 240-barrel calendar day allowable without shut-down days in both states.

Yours very truly,

*L. W. Folmar*

L. W. FOLMAR  
Asst. Div. Petroleum Engineer

LWF-MFP

cc-Mr. R. S. Christie  
Amerada Petroleum Corp.  
Tulsa, Oklahoma



OIL CONSERVATION COMMISSION  
P. O. BOX 871  
SANTA FE, NEW MEXICO

March 28, 1954

Railroad Commission of Texas  
Oil and Gas Division  
Tribune Building  
AUSTIN TEXAS

Attention: Mr. George Singletary

Gentlemen:

We failed to ascertain whether you were on the reporter's list for a copy of the transcript covering the joint hearing held by our two Commissions in Santa Fe on February 26 for consideration of Bronco (Siluro-Devonian) Pool problems. In case you do not have one, we are airmailing you a copy of the transcript herewith for its value to you prior to your April 2 hearing in the same matter.

Very truly yours,

*N.R.*  
For W. B. Macey, Chief Engineer

WBM:mr

Encl.

C  
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P  
Y

February 14, 1954

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION  
SANTA FE - NEW MEXICO

STATE OF NEW MEXICO TO:

All persons having any right,  
title, interest or claim in  
the following case, and notice  
to the public.

CASE 672:

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GIVEN under the seal of the Oil Conservation Commission at Santa Fe, New Mexico, this 11th day of February, 1954.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

R. R. Spurrier, Secretary

SEAL

B. S.

12  
Case 672

MAIN OFFICE OCC

1954 MAR 25 AM 8:36

RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

OIL AND GAS DOCKET NO. 126

#8 - 28,965

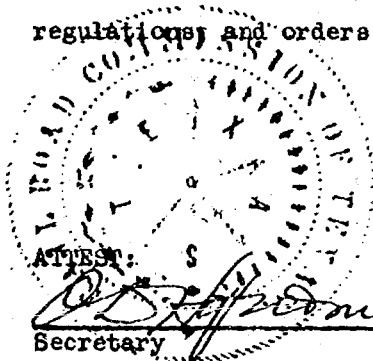
IN RE: CONSERVATION AND PREVENTION OF  
WASTE OF CRUDE PETROLEUM AND  
NATURAL GAS IN THE BRONCO  
(DEVONIAN) FIELD, YOAKUM  
COUNTY, TEXAS

Austin, Texas  
March 22, 1954

NOTICE OF HEARING  
ON THE MOTION OF THE RAILROAD COMMISSION OF TEXAS  
PERTAINING TO THE ADOPTION OF FIELD RULES AND A DETERMINATION OF THE MER  
FOR THE BRONCO (DEVONIAN) FIELD  
YOAKUM COUNTY, TEXAS

THE RAILROAD COMMISSION OF TEXAS, Having sat jointly with the New Mexico Oil Conservation Commission in a Hearing called by that body at nine a.m., February 26, 1954, in Mabry Hall in the State Capitol, in Santa Fe, New Mexico, for the purpose of adopting special field rules and determining the most efficient rate of production for the Bronco-Siluro-Devonian Pool in Lea County, New Mexico, hereby gives notice to the public and all interested persons that the Railroad Commission of Texas will hold a Hearing at nine a.m., APRIL 2, 1954, in its Hearing Room in the Tribune Building, Austin, Texas, for the purpose of promulgating and adopting special field rules to govern drilling and production in the Bronco (Devonian) Field, Yoakum County, Texas; and for the further purpose of determining the most efficient rate of production for wells in this field.

PURSUANT To said Hearing, the Commission will enter such rules, regulations, and orders as in its judgment the evidence presented may justify.



RAILROAD COMMISSION OF TEXAS

*Conrad Thompson*  
Chairman

*J. M. Murray Jr.*  
Commissioner

*Wm. L. Culbertson*  
Commissioner

Case 672-15

Railroad Commission of Texas  
OIL AND GAS DIVISION

COMMISSIONERS  
ERNEST O. THOMPSON  
CHAIRMAN  
WILLIAM J. MURRAY, JR.  
OLIN CULBERSON  
O. D. HYNDMAN, SECRETARY

MAIN OFFICE OCC



HARRY M. BATES  
CHIEF SUPERVISOR  
ARTHUR H. BARBECK  
CHIEF ENGINEER  
L. E. DAVIS  
AUDITOR

1954 APR 12 AM 9:05  
AUSTIN, TEXAS

April 8, 1954

TO ALL OPERATORS IN THE BRONCO (DEVONIAN) FIELD,  
Yoakum County, Texas.

IN RE: Joint hearings held before the  
Railroad Commission of Texas and the New Mexico  
Oil Conservation Commission for the adoption  
of field rules and a determination of the MER  
for the BRONCO FIELD, Yoakum County, Texas, and  
Lee County, New Mexico.

This is to advise that the Commission at a formal conference held the seventh found the MER for the subject field to be 250 barrels per well per day, and ruled that the allowables for the wells be established at a value equivalent to the allowables of wells producing from the same reservoir in the State of New Mexico, said allowable to be granted exempt from shutdown days. At the same conference the Commission adopted the following rules to govern the drilling of and production from the subject field:

- 1) Casing program.
- 2) 40-acre proration units with a 20-acre tolerance for the last well completed on a lease.
- 3) Allocation formula based on 100% acreage.
- 4) 2000/1 gas-oil ratio limit.

In addition, the Commission ruled that the field designation be changed to that of Bronco (Siluro-Devonian) in order that it might agree with the field designation as established in the State of N. M.

A formal order setting out the above summarized rules will be forthcoming.

Yours very truly,

*Arthur H. Barbeck*  
Arthur H. Barbeck  
Chief Engineer HLM

HLMCC/LJ

Copy to New Mexico Oil Conservation Commission

Mr. J. A. Rauhut  
Mr. E. C. Rach  
Mr. Joe Greer

MAIN OFFICE OCC

1954 JUN 11 AM 8:56  
RAILROAD COMMISSION OF TEXAS  
OIL AND GAS DIVISION

OIL AND GAS DOCKET NO. 126

#8 -29,645

IN RE: CONSERVATION AND PREVENTION  
OF WASTE OF CRUDE PETROLEUM  
AND NATURAL GAS IN THE BRONCO  
(SILURO-DEVONIAN) FIELD,  
YOAKUM COUNTY, TEXAS.

Austin, Texas  
June 8, 1954

SPECIAL ORDER

ADOPTING RULES AND REGULATIONS FOR THE BRONCO (SILURO-DEVONIAN) FIELD,  
YOAKUM COUNTY, TEXAS.

WHEREAS, After due notice, the Railroad Commission of Texas and the New Mexico Conservation Commission held a joint hearing in Santa Fe, New Mexico, on February 26, 1954, to consider the adoption of rules and regulations to govern the drilling, completion and operation of wells in the Bronco (Siluro-Devonian) Field, Lea County, New Mexico, and Yoakum County, Texas; and

WHEREAS, After due notice, the Railroad Commission of Texas and the New Mexico Conservation Commission held a joint hearing in Austin, Texas, on April 2, 1954, to consider the adoption of rules and regulations to govern the drilling, completion and operation of wells in the Bronco (Siluro-Devonian) Field, Lea County, New Mexico, and Yoakum County, Texas; and

WHEREAS, From evidence adduced at said hearings, the Railroad Commission of Texas is of the opinion and finds that the subject field was discovered in November, 1952, and is currently developed with 12 wells producing from a Siluro-Devonian dolomite encountered at an approximate depth of 11,500 feet; that the structure is that of a north-south trending anticline with no gas cap present and a water-oil contact established at 8105 feet subsea; that the average gross thickness of the pay zone is 266 feet with an average net effective oil pay thickness of 186 feet or 70 per cent of the gross; that from core analyses the average porosity and permeability have been determined to be 5.8 per cent and 148 millidarcies, respectively; and

WHEREAS, From evidence submitted at said hearings, the Commission is of the opinion and finds that waste, as the term is defined in the applicable statutes, will take place in said field unless rules are adopted by the Commission for the prevention thereof, and that the following field rules are necessary to prevent such waste and to provide for a more orderly development and operation of said field.

Now, Therefore, IT IS ORDERED By the Railroad Commission of Texas that effective April 7, 1954, the following rules, in addition to such of the Commission's general rules and regulations as are not in conflict herewith, be and the same are hereby adopted to govern the drilling, completion and operation of wells in the Bronco (Siluro-Devonian) Field, Yoakum County, Texas.

RULE 1. The permitted gas-oil ratio for all wells shall be two thousand (2,000) cubic feet of gas per barrel of oil produced. Any oil well producing with a gas-oil ratio in excess of two thousand (2,000) cubic feet of gas per barrel of oil shall be allowed to produce daily only that volume of gas obtained by multiplying the daily oil allowable of such well as determined by the applicable rules of the Commission by two thousand (2,000) cubic feet. The gas volume thus obtained shall be known as the daily gas limit of such well. The daily oil allowable therefor shall then be determined and assigned by dividing the daily gas limit by its producing gas-oil ratio.

RULE 2. The acreage assigned to the individual oil well for the purpose of allocating allowable oil production thereto shall be known as a proration unit. No proration unit shall consist of more than forty (40) acres except as hereinafter provided, and the two farthest points in any proration unit shall not be in excess of twenty-one hundred (2100) feet removed from each other; provided, however, that in the case of long and narrow leases or in cases where because of the shape of the lease such is necessary to permit the

utilization of tolerance acreage the Commission may after proper showing grant exceptions to the limitations as to the shape of proration units as herein contained. All proration units, however, shall consist of continuous and contiguous acreage which can reasonably be considered to be productive of oil.

If after the drilling of the last well on any lease and the assignment of acreage to each well thereon in accordance with the regulations of the Commission there remains an additional unassigned lease acreage of less than forty (40) acres then and in such event the remaining unassigned lease acreage up to and including a total of twenty (20) acres may be assigned to the last well drilled on such lease or may be distributed among any group of wells located thereon so long as the proration units resulting from the inclusion of such additional acreage meets the limitations prescribed by the Commission.

Operators shall file certified plats of their properties in the field, which plats show all those things pertinent to the determination of the acreage claimed for each well hereunder.

RULE 3: The casing program of all wells hereafter drilled in said field shall include at least three (3) strings of pipe set in accordance with the following program:

(a) The surface casing shall consist of new or reconditioned pipe with an original mill test of not less than one thousand (1000) pounds per square inch, and shall be set and cemented below the top of the red beds; provided, however, that not less than three hundred (300) feet of surface string shall be set. Cement shall be by the pump and plug method, and sufficient cement shall be used to fill the annular space back of the pipe to the surface of the ground or the bottom of the cellar. Cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before drilling the plug. The casing shall be tested by pump pressure of at least five hundred (500) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of one hundred and fifty (150) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

(b) The intermediate string shall consist of new or reconditioned pipe that has been tested to two thousand (2000) pounds per square inch, and shall be set no higher than the top of the San Andres formation at an approximate depth of forty-five hundred (4500) feet. Sufficient cement shall be used to fill the calculated annular space back of the pipe to at least as high as the bottom of the surface pipe. Cement shall be by the pump and plug method, and the cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before initiating tests or drilling the plug. The casing shall be tested by pump pressure of at least one thousand (1000) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of one hundred and fifty (150) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

(c) The producing or oil string shall be new or reconditioned pipe that has been tested to three thousand (3000) pounds per square inch, and shall be set no higher than the top of the producing formation. Cement shall be by the pump and plug method, and sufficient cement shall be used to fill the calculated annular space behind the pipe to a point at least thirty-three hundred (3300) feet above the shoe. Cement shall be allowed to stand a minimum of twelve (12) hours under pressure and a total of twenty-four (24) hours before drilling the plug or initiating tests. The casing shall be tested by pump pressure of at least fifteen hundred (1500) pounds per square inch applied at the well head. If at the end of thirty (30) minutes the pressure shows a drop of two hundred (200) pounds per square inch, or more, the casing shall be condemned. After the corrective operations, the casing shall again be tested in the same manner.

At the operator's option, a stub string of casing may be employed for the production or oil string; provided, however, that the top of the liner extends

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at least two hundred (200) feet into the next larger string of casing. If this program is followed, the pipe shall be new or reconditioned casing which shall be tested, set and cemented in accordance with all provisions herein prescribed. In addition, the stub string shall be attached to the inside of the next larger string of casing previously run, either by cementing or by using a liner hanger of accepted design and manufacture.

RULE 4: The daily oil allowable for the field as fixed by the Commission after deductions have been made for marginal wells, high gas-oil ratio wells, and wells incapable of producing their allowables shall be distributed among the remaining producing wells in the field on the following basis:

The daily acreage allowable for each remaining well shall be that proportion of one hundred (100) percent of such remaining daily field allowable that the acreage assigned to such well bears to the total acreage assigned to all of such remaining wells in the field.

RULE 5: The datum reservoir pressure of all wells in the field shall be determined annually and the testing period shall be during the months of October and November; the results thereof to be reported to the Commission on or before the fifteenth (15th) of December of each year. All pressure determinations shall be reported at a datum of eight thousand (8000) feet below sea level. Prior to testing, all wells shall be shut in for a period of not less than forty-eight (48) hours or more than seventy-two (72) hours. All offset operators shall be notified at least forty-eight (48) hours before such test is made on any well, and any operator in the field shall have the privilege of witnessing such pressure determinations. Said pressures shall be taken on all flowing wells with subsurface pressure gauge or other method of equal accuracy and may be taken on pumping wells with sonic devices or other method of equal accuracy.

RULE 6: Gas-oil ratio tests shall be conducted annually on all wells during the months of April and May; the results thereof to be reported to the Commission on Form GO-2 on or before the fifteenth (15th) of June of each year.

IT IS FURTHER ORDERED That this cause be held open on the docket for such other and further orders as may be necessary.



ATTEST:

*[Signature]*  
Secretary

HLMCC:ms

RAILROAD COMMISSION OF TEXAS

*[Signature]*  
Chairman

*[Signature]*  
Commissioner

*[Signature]*  
Commissioner

BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO

and  
RAILROAD COMMISSION OF  
TEXAS

\* \*

February 26, 1954  
Mabry Hall  
Santa Fe, New Mexico

TRANSCRIPT OF PROCEEDINGS

CASE NO. 672

ADA DEARNLEY & ASSOCIATES  
COURT REPORTERS  
ROOM 105-106, EL CORTEZ BLDG.  
PHONES 7-9645 AND 8-9546  
ALBUQUERQUE, NEW MEXICO



BEFORE THE  
OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO  
and  
RAILROAD COMMISSION OF  
TEXAS  
\* \*

February 26, 1954  
Mabry Hall  
Santa Fe, New Mexico

- - - - -

PUBLIC NOTICE IS HEREBY given that a joint meeting of the New Mexico Oil Conservation Commission and the Railroad Commission of Texas will be held at 9:00 a.m. on February 26, 1954, at Mabry Hall, State Capitol, Santa Fe, New Mexico, for the purpose of considering proration methods, maximum efficient rate of production, and special pool rules for oil and gas pools embracing lands within the states of Texas and New Mexico; namely, the Bronco-Siluro-Devonian Pool in Lea County, New Mexico ( the Texas portion of which lies in Yoakum County and is termed the Bronco Pool).

Case 672

BEFORE: Honorable Edwin L. Mechem, Governor,  
Honorable E. S. "Johnny" Walker, Land Commissioner  
Honorable R. R. Spurrier, Secretary to the Commission  
Honorable Ernest Thompson, Texas Railroad Commission

R E G I S T E R

H. L. McCracken	Texas Railroad Commission, Austin Texas
Alden S. Donnelly	Honolulu Oil Corporation, Midland, Texas
George R. Hoy	Honolulu Oil Corporation, Midland Texas
R. S. Christie	Amerada, Tulsa, Oklahoma
Carl Barnhart	Amerada, Tulsa, Oklahoma
John A. Woodward	Amerada, Tulsa, Oklahoma
A. L. Porter	Oil Conservation Commission, Hobbs, N. M.
L. A. Hansen	Oil Conservation Commission, Artesia, N.M.

- - - - -

MR. SPURRIER: The meeting will come to order please. As you all know, this is a joint hearing of the New Mexico Oil Conservation Commission and the Texas Railroad Commission to determine proper spacing and other related matters in the Bronco Pool which is a

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pool common to Texas and New Mexico. For the remainder of the hearing, we will ask Mr. Ernest Thompson to conduct.

MR. THOMPSON: It is always a great pleasure for us, Governor Mechem, to come over here and meet with you and your colleagues on the Oil Conservation Commission of New Mexico.

The Texas Railroad Commission desires to work with you as a sister state in the conservation to the end, we hope, that identical rules and regulations on all phases of conservation work might be adopted by each state. To that end, we are glad to come here, Governor and gentlemen of the Commission, and sit with you in Santa Fe.

It is always a delight to come to Santa Fe anyway and just be with you all in the hope that your wishes may first be expressed so that we may later have a hearing in Texas at an early date with the view of adopting, as I said before, identical rules and regulations.

Case No. 672, notice issued by the State of New Mexico Oil Conservation Commission, State of New Mexico to all persons having any right, title, interest or claim in the following case, and notice to the public. Public notice is hereby given that a joint meeting of the New Mexico Oil Conservation Commission and the Railroad Commission of Texas will be held at 9:00 a.m. on February 26, 1954, at Mabry Hall, State Capitol, Santa Fe, New Mexico, for the purpose of considering proration methods, maximum efficient rate of production, and special pool rules for oil and gas pools embracing lands within the states of Texas and New Mexico; namely, the Bronco-Siluro-Devonian Pool in Lea County, New Mexico (the

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Texas portion of which lies in Yoakum County and is termed the Bronco Pool.) Given under the seal of the Oil Conservation Commission at Santa Fe, New Mexico, this 11th day of February, 1954, State of New Mexico Oil Conservation Commission, R. R. Spurrier, Secretary.

Who is here who wishes to give us the benefit of your experience and testimony upon which we may consider the promulgation of proper rules and regulations covering the subject mentioned in this notice?

MR. WOODWARD: John Woodward representing Amerada Petroleum Corporation, applicant in Case 672.

MR. THOMPSON: You are going to testify, Mr. Woodward?

MR. WOODWARD: No, sir. Mr. Christie and Mr. Barnhart are applicant's witnesses.

MR. THOMPSON: Any other witnesses? You may proceed with your presentation.

MR. WOODWARD: These are copies, if the Commission please, of the exhibits that Amerada will introduce.

MR. THOMPSON: You may proceed, Mr. Woodward.

MR. WOODWARD: Applicant asks that Mr. Christie and Mr. Barnhart be sworn.

(Witnesses sworn.)

MR. THOMPSON: Proceed, Mr. Woodward.

MR. WOODWARD: Applicant's first witness will be Mr. Barnhart.

C A R L B A R N H A R T

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. WOODWARD:

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PHONES 7-9648 AND 8-9546  
ALBUQUERQUE, NEW MEXICO

Q Mr. Barnhart, will you state your name, please?

A Carl Barnhart.

Q Where do you live, Mr. Barnhart?

A Tulsa, Oklahoma.

Q By whom are you employed and in what capacity?

A The Amerada Petroleum Corporation, senior geologist in charge of the Permian Basin.

Q Are you familiar with the Bronco Field in Lea County, New Mexico and Yoakum County, Texas?

A I am.

Q Have you previously testified before this Commission in your capacity as an expert witness as a petroleum geologist?

A I have.

MR. WOODWARD: Are Mr. Barnhart's qualifications acceptable?

MR. THOMPSON: Anyone contest the qualifications? If so, we will have him delineate his experience and education. If not, we will say he is eminently qualified. He is well known to the presiding officer. Any one wish to have him delineate his distinguished experience and education? If not, the qualifications will be accepted.

Q Have studies of the electric logs, cores and samplings in the Bronco Field been conducted under your supervision or direction and are you familiar with the results of those studies?

A Yes.

Q Mr. Barnhart, I hand you what has been marked as Exhibit A, will you tell what it is please?

A This is a structure map of the Bronco Field contoured on

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top of the Siluro-Devonian.

MR. THOMPSON: That is the same map on the board behind you there?

A The same map that is displayed on the board.

MR. THOMPSON: Thank you.

A Using a contour interval of one hundred feet and, I might call attention to one thing on this map and that is, the hatchet area as shown simply delineates an operating unit. It is not to be confused with any of the geological information.

Q That delineates the operating unit of which Amerada is the operator?

A Yes.

Q What is the depth range of the producing formations in this field?

A From 11,380 to 11,920 with the present information.

Q Would you describe the geologic characteristics of this formation?

A The Siluro-Devonian in this field is a dolomite with vugular, primarily vugular and fractured porosity, minor amounts of intergranular porosity.

Q Mr. Barnhart, what type of geologic structure is indicated by Exhibit A?

A This is anticlinal fold.

Q Do you know of any structure irregularity in this anticlinal fold which would tend to obstruct movements of fluid through the formation?

A Based on the present information, I do not know of such

obstruction.

Q Does the area contoured on Exhibit A represent one continuous common source of supply contoured on Exhibit A?

A Yes.

MR. WOODWARD: Applicant has no further questions.

MR. THOMPSON: How many wells have been drilled in the area?

A A total of nine producing wells.

MR. THOMPSON: How many dry holes, if any?

A In the Siluro-Devonian, there have been three dry holes.

MR. THOMPSON: Twelve wells.

A Twelve wells.

MR. THOMPSON: Is the drilling of twelve wells, nine producers and three dry holes, great enough upon which you as an expert could advise the regulatory commissions as to the proper rules and regulations?

A I believe that we have now sufficient information to set up rules and regulations.

MR. THOMPSON: You think with twelve wells you have adequate information to guide you?

A I believe so.

MR. THOMPSON: In asking us to prescribe rules and regulations?

A Yes.

MR. THOMPSON: Any questions of any member of our group? Any of the engineers of the Texas or New Mexico Commission?

CROSS EXAMINATION

By MR. MACEY:

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Q In your Number One Ward, Mr. Barnhart located on the Mexico side of the field, you refer to the first and second Devonian, would you explain that?

A There is an indication of a native fluid duplication of the Devonian on top of the Devonian. The map is contoured on the lower point as shown. That is a slight indication of some fault in that one well. However, it has not been found or evidence of it has not been found in any other well drilled to date in the field.

MR. MACEY: That is all I have.

MR. THOMPSON: Any further questions of this witness?

MR. GRAHAM: With reference to the State Line, Mr. Barnhart, how many wells on the Texas side and how many on the New Mexico side?

A I will double check myself but there are four in Texas and five in New Mexico.

MR. THOMPSON: May we share the honors on the dry holes the same way?

A Unfortunately or fortunately, whichever side we are on, we have one dry hole in Texas and two in New Mexico.

MR. THOMPSON: That makes the record complete. Any other questions of this witness? Thank you very much.

(Witness excused.)

R. S. CHRISTIE

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. WOODWARD:

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PHONES 7-9645 AND 5-9546  
ALBUQUERQUE, NEW MEXICO

Q Will you state your name, please?

A R. S. Christie.

Q Where do you live, Mr. Christie?

A Tulsa, Oklahoma.

Q By whom are you employed and in what capacity?

A Amerada Petroleum Corporation, engineer.

Q Mr. Christie, are you familiar with the Bronco Field in Lea County, New Mexico and Yoakum County, Texas?

A Yes, sir.

Q Have you previously testified before this Commission in your capacity as an expert witness or as a petroleum engineer?

A Yes, sir, I have.

MR. WOODWARD: Are Mr. Christie's qualifications acceptable?

MR. THOMPSON: Anyone wish to have him delineate his experience and education? If not, we assume his distinguished qualifications are accepted by every one. Go ahead.

Q You have before you Mr. Christie Exhibits Marked B through H. I will ask you to tell what the Exhibits are and in doing so explain the purpose and the reason for this application.

A The reason for the application, of course, is to propose a set of field rules to operate this field under and to determine the MER and also establish an allowable for the pool.

MR. THOMPSON: And for the orderly development of the field?

A Yes, sir, that is correct.

MR. THOMPSON: Go ahead.

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A The Bronco Siluro-Devonian Pool as has been stated in the notice is located in Lea County, New Mexico and Yoakum County, Texas. Based upon the present stage of development, it appears that the productive area will be equally divided between the two states. The discovery well, Weems No. 1 was completed on November 5, 1952. At the present time there are nine completed wells and two drilling. Exhibit A has already been presented and described by Mr. Barnhart. Exhibit B is a copy of the proposed field rules. It will be noted we are not proposing a special spacing rule, preferring to operate under the state-wide rules of the separate states. The statewide rule for New Mexico is 330-660' and for Texas 330-933' which provides sufficient flexibility for further development in the Devonian as well as the shallower pays.

We believe that we can operate and drill the remaining wells under the state-wide spacing rules without any difficulty. It appears that most of the wells will be located in the center of 40's or 66-1320's but the particular statewide rules provide for closer spacing if it is necessary, around the edge particularly.

MR. THOMPSON: Could you tell us roughly the cost of these wells in round figures about?

A The cost of this well -- the costliest well was the Schenck Number 1 located in New Mexico. It cost \$341,000.00, however that well was taken from the granite and was plugged back. The Ward Number 1 well which was probably a representative well cost \$225,000.00, so that in my opinion the average cost of future wells unless some trouble is encountered would be approximately \$225,000.00.

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MR. THOMPSON: Thank you.

A Briefly without reading the rules. Rule 1 is the casing program which provides for three strings of pipe set and cemented in such a manner as to adequately protect all fresh water, salt and potash formations, and other probable oil and gas producing formations. Will it be necessary to read the entire rule?

MR. THOMPSON: Let's have comment on that rule from anyone who wishes to comment?

MR. McCRACKEN: How many feet of surface casing?

A Approximately 300 feet.

MR. THOMPSON: A is your casing program?

A Exhibit B shows the field rules and Rule 1 is the casing program, yes, sir.

MR. DONNELLY: Alden S. Donnelly, Honolulu Oil Corporation. I have a question on that. I note in part C of your proposed Rule 1 you have provided for a full length string of oil string to be run. I would like to suggest that the operator at his option be permitted to run a liner rather than a full length oil string of casing. The top of the liner to extend at least 200' into the next larger string of casing and to be cemented to it or attached to it with an accepted liner hanger and liner seal or the two strings of casing shall be cemented together. Would there be any objection to that, Mr. Christie?

A As an alternate procedure, we wouldn't have any objection.

MR. THOMPSON: Then the rule with your consent as offered could add what has just been suggested as an alternative?

A Yes, sir.

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MR. THOMPSON: without objections on your part?

A We have no objections.

MR. THOMPSON: Anyone here see the objection to the suggested alternative? Please give the reason why you suggest the alternative.

MR. DONNELLY: The intermediate string of casing in this well will be approximately 4600 feet long. During the War in many of the deep fields in West Texas or the past Korean War, we have set a number of liners to save steel. In this case it would save approximately 4500' of oil string. The one requirement is that the two strings of casing be tacked together where there is no possibility of a leak.

MR. THOMPSON: Has it been found equally satisfactory?

MR. DONNELLY: It has been and we believe on down the line with the larger pipe at the surface, it may be possible to develop dually completed pumping wells if we have nine and if eight were to work instead of seven inch.

MR. THOMPSON: Anyone have any objection to the later suggestive, the alternative suggestion that has been accepted by the witness? We found it to be good practice and very acceptable in our State. No. objection? We will consider then that you will offer this amendment so that it can be written into the rules?

MR. DONNELLY: I will.

MR. THOMPSON: Offer it to both Commissions and mark it supplement to Rule C, No. 1.

A Rule 2 provides for the size, and to a limited degree, the shape of the proration unit, including also the tolerance feature.

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That simply provides for 40-acre proration unit with a 2100' diagonal and the 20-acre tolerance for the 40-acre unit.

MR. THOMPSON: For the convenience in allocating proration allowables?

A Yes, sir.

MR. THOMPSON: Any objection to the Rule 2 as explained? Proceed.

A Rule 3 provides for the allocation of production based on 100% acreage.

MR. THOMPSON: Any comment from anyone on Rule 3, 100% acreage?

A I might say here that in New Mexico all production is based on 100% acreage and, of course, we have many fields in Texas that have 100% acreage and would seem to present less difficulty to have that type of formula.

MR. THOMPSON: Is the producing pay about uniform in thickness?

A Not in thickness but in quality it is.

MR. THOMPSON: So, it would average out all right on 100% acreage?

A Yes, I think it would.

MR. THOMPSON: Sometimes, we have a fellow with a thin section very happy to get 100% acreage. A fellow with a thick section not so happy over it.

A Well, nature provides for that generally. If they have a thin section, they get an early allowable, but they get wiped out of the picture a lot quicker. It evens up pretty well.

MR. THOMPSON: I am bringing up a point for the record.

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Sometimes the cold reading of a record doesn't cover the full spirit of the hearing. These questions and answers do. Any question from anyone on the Rule 3, 100% acreage? Proceed.

A Rule 4 provides for a limiting gas-oil ratio of 2000 cubic feet of gas per barrel of oil produced. That is more or less a standard rule in both states where there are no special rules.

MR. THOMPSON: Any objection to 2000 to one gas-oil ratio going into the rules for this field? I hear none. Anything else?

A The rules here proposed are few but we believe they are adequate for proper and efficient operation and are inclusive enough to prevent waste and protect correlative rights. That is all the testimony I have.

MR. THOMPSON: Did you work with others in the preparation of these proposed and suggested rules?

A A copy of the proposed rules were sent to all known operators in the field.

MR. THOMPSON: Did you get any response from any of them?

A We got a response from the Texas Company which I will read into the record if you wish.

MR. THOMPSON: Please do.

A This is addressed to the Oil Conservation Commission, New Mexico. "Gentlemen: This is to advise that the Texas Company is in favor of proposed rules for the Bronco Siluro-Devonian field in Lea County, New Mexico and Yoakum County, Texas as submitted to the Texas Company by Amerada Petroleum Corporation with Mr. R. S. Christie's letter of February 11, 1954. The Texas Company also has no objection to adoption of the proposed 240 barrel per calendar day allowable without shut-down days in both states".

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MR. THOMPSON: That has not been mentioned.

A No, we haven't gotten to it yet. The magnolia advised me over the telephone that they were in favor of these rules with the exception of the 40-acre unit and they preferred an 80-acre unit. But as far as the other three rules, they concur.

MR. THOMPSON: Does that include all of the operators?

MR. DONNELLY: Mr. Commissioner?

MR. THOMPSON: Yes.

MR. DONNELLY: On the part of Honolulu Oil Corporation, we have seen these proposed field rules and recommend their adoption with the modification we suggested earlier in the hearing.

MR. THOMPSON: The witness has accepted your modification so then you could say, as now offered to this Commission?

MR. DONNELLY: I wish to amend my statement that way.

MR. THOMPSON: Proceed.

A I might say that the other operators in this operating unit are Magnolia, Warren, Sinclair and Coates and each of these company's have been advised of the proposed rules and has appointed Magnolia and Honolulu and Texas Company - -

MR. THOMPSON: You did send copies to each and every operator you knew in the field?

A I did.

MR. THOMPSON: Did Mr. Livermore get a notice?

A He did not, yet. He is not within the confines of this pool.

MR. THOMPSON: He drilled a dry hole out there.

A It is quite aways off, I believe.

MR. THOMPSON: Here is a telegram, will you read it into the

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record.

MR. SPURRIER: Yes. "Please be advised that Warren Petroleum Corporation supports the position of Amerada Petroleum Corporation with regard to the adoption of proposed field rules for the Bronco Siluro-Devonian Field of Lea County, New Mexico and Yoakum County, Texas, namely that the proposed field rules should be adopted. Signed E. S. Valkert, Warren Petroleum Corporation".

MR. THOMPSON: It is admitted into the record. You have further testimony.

A Next, I would like to take up the question of the MER. The Devonian formation is a vugular, fractured, intergranular dolomite source bed which from all indications appears to have good communication throughout the reservoir. To substantiate this conclusion the following Exhibits are submitted. Exhibit C is a tabulation of pertinent well information on wells completed prior to February 1. That includes all wells except the Texas Company well.

MR. THOMPSON: You offer these Exhibits for the record?

A I do.

MR. THOMPSON: They will be received.

A Reference is made particularly to the potential tests, bottom hole pressures and thickness of the producing section. You will note that the potentials vary from 560 barrels in 24 hours, correction 413 barrels to as high as 2364 barrels in 24 hours on choke. The bottom hole pressures have declined very little and are very uniform. The P. I. tests also reflect the producing characteristics more particularly the permeability of the formations, and the P. I. vary on the four tests that we have taken from

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1.94 to 42,37. Exhibit E is a graphical interpretation of the oil and water production, average bottom hole pressure and the number of wells.

MR. THOMPSON: Any question occur to anyone at any point, please feel free to ask them. You may proceed.

A Exhibit F is productivity index reports on four wells that I mentioned previously. These tests indicate the wells are capable of producing at relatively high sustained rates. As Exhibit F we have included a copy of all those four tests.

MR. THOMPSON: They are self-explanatory?

A Yes, sir.

MR. THOMPSON: Proceed.

A Exhibit G is a report of the only core analysis taken in the field that we are familiar with as far as the operations of Amerada is concerned.

Of the 113' cored and analyzed, 92' or 81.4% is considered productive, that is had a permeability of greater than one milidarcy. Based on this analysis and the interpretation of electric logs on all wells, it is estimated the average net effective pay is approximately 70%. Later, I will give that exact figure.

Exhibit H is an Electric log of the Ward No. 2 well which is presented primarily as a representative log. All these logs in such deep wells build up in files and one is representative of all logs, although there is some difference in all of them.

A Study of these Exhibits, E through H, indicates a reservoir having a water drive, high productive capacity and therefore capable of high sustained rates of flow. While it may be somewhat premature to determine the MER based on the performance of the

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reservoir to date and from the various tests that have been conducted, it is my opinion the reservoir with a sufficient number of wells, is capable of producing without waste nine to ten thousand barrels daily.

Assuming the ultimate number of wells will be approximately 15, the per well MER would be 600 barrels daily. However, we would prefer to keep the MER on a reservoir basis for it is unlikely all wells will be capable of producing 600 barrels daily. Notwithstanding this opinion, we are not recommending, of course, an allowable of 600 barrels daily.

MR. THOMPSON: Will you explain why not?

A 600 barrels a day would be, in my opinion, unfair from an equity standpoint of allowables as between fields and we would prefer to keep the allowable down within the normal allowable of fields of that depth.

MR. THOMPSON: What would be your recommendation?

A I will give that now.

MR. THOMPSON: Go ahead.

A Do you have a question, Mr. Spurrier?

MR. SPURRIER: Yes, sir, I do. Did I understand you to recommend 240 barrels?

A Yes.

MR. SPURRIER: Per well per day?

A That will be my recommendation.

MR. SPURRIER: What is the allowable in Texas now, per well?

A I will read this next paragraph and I think that will answer all your questions.

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MR. SPURRIER: All right.

A The present allowable for wells in the Bronco Siluro-Devonian is 227 barrels per well in New Mexico and 290 barrels per well in Texas, which is the discovery allowable. This field as far as Texas is concerned is still operating under the discovery allowable.

MR. THOMPSON: That is granted until six wells are completed or the field is eighteen months old, whichever is sooner.

A Based on the so-called 1947 yardstick, for Texas, the allowable in Texas, on a 40-acre unit, at a depth between 11,500' and 12,000' is 310 barrels. This allowable would normally go into effect when the discovery allowable is terminated. The two states have different methods of adjusting the monthly allowables to conform to the market demand. For the month of March, New Mexico will maintain its February rate and Texas will be producing on an 18 day schedule.

Disregarding the discovery allowable, the allowables then would be 227 barrels in New Mexico and 180 barrels in Texas on a calendar day basis. We apparently are going into a period of greater demand, therefore, to take care of such a contingency and to simplify the mechanics of establishing allowables for this two state pool, we recommend an allowable of 240 barrels per calendar day without shut down days.

MR. THOMPSON: Without shut down wells on either side of the State line would be producing the same rate?

A Yes.

MR. THOMPSON: That has been our custom to give the same state allowable.

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A I understand it is.

MR. THOMPSON: You made reference to the increase in the allowable. May I state for the record, prior to the increase, the State Railroad Commission had cut the allowable 410,000 barrels, so all we did was just work off stocks and restore, well, 159,000 to be exact, of the 410, the increase was 159,000 barrels per day but there were approximately 200,000 at the end of March on account of new wells. So, your figure of 200,000 would be correct about March 31.

A Based on various estimates of economies and so forth, it appears that the demand might increase some this next year as it has in the past.

MR. THOMPSON: About four or five percent.

A Therefore, we will anticipate that this 240 barrels we think might average out over a year's time as the average allowable for these wells.

MR. THOMPSON: Most economists say it increased in consumption for 1954 over 1953 would be four or five, or maybe five and a half percent. I noticed yesterday the latest statement was four percent increase over 1953 which would be good, of course, because 1953 was the banner year of the industry.

A Actually in New Mexico, it would only have to increase there about two barrels per well to bring that up to the 240, I believe would be 256, if I remember correctly, and Texas would have to have about 22 days to bring it up to 240, somewhere in that neighborhood.

MR. THOMPSON: Whatever would be equal so they would have the same withdrawals on each side of the line?

A Yes, but it would be impossible to apply the different state formulas and have it even.

MR. THOMPSON: We understand that. That is the reason for the joint hearing so as to listen to you on this.

A Finally, then such an allowable would be fair and equitable, in my opinion, and would prevent waste and protect correlative rights.

MR. THOMPSON: And would not inordinately draw down pressures or tend to increase gas-oil ratios?

A In my opinion, it would not.

MR. THOMPSON: Based upon the studies you have given us here?

A That is correct.

MR. THOMPSON: Any questions on this point by anyone?

MR. MACEY: Mr. Christie, I think you are familiar with our present case here in New Mexico, Case 608, pertaining to the adjustment of the deep well factors where we sent out and obtained a large amount of statistical information on well costs. In connection with that, the Commission's staff is going to recommend a reduction in some of the factors which we give to the deep wells at the present time.

We made a rather hasty check a few moments ago, about what the allowable approximately would be if the Commission adopted the new system and that pool which is now getting 227 barrels per day, that is on an every day basis, would end up -- and this is an approximation -- with approximately 204 barrels per day. I noticed that you mentioned the inequities between pools as far as allowables are concerned. Don't you think that possibly if you gave the Bronco

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240 and gave other pools in the same depth range, the approximately 202 or 204 barrels a day, don't you think that would be an inequity between pools there?

A I think it would if you actually change the depth factors, why, it would.

MR. MACEY: I am looking down the road. If we went along on a 240, then two months from now, we cut what it is presently 227 to 203, we might, put it bluntly, we might get a little static.

A Actually, this is a rather small pool. If you want to make a comparison, we will go back over in Texas and assume they have a 31 producing schedule with 310 barrels per day. It is hard to arrive at an even figure and have everything in balance.

MR. THOMPSON: Couldn't we not resolve that question by having me say that the Texas Commission will follow the New Mexico Commission on allowable. Would that resolve it?

MR. SPURRIER: It would.

MR. THOMPSON: I make that statement. If you see fit to take those factors into consideration in your state and make it 202, even though 240 has been recommended and it came about that your policy would bring it to 202, and then a copy of that order were sent to us, it would be of sufficient force to us to make ours identical, if the Commission should adopt it, if, as and when. Is that all right?

MR. SPURRIER: Yes, sir.

MR. THOMPSON: Governor?

GOVERNOR MECHEM: Yes, sir.

MR. THOMPSON: Walker?

MR. WALKER: Yes, sir.

MR. THOMPSON: You would see no objection to that?

A No, we are giving the facts and rely on the wisdom of the Commission to set the allowable.

MR. SPURRIER: 310 barrels a day for 18 days would be 5580 barrels for the month, that is in Texas, while 204 barrels per day for our average 30-day month would be 6120 barrels, so the allowable as proposed by Mr. Macey would still be higher than an ordinary Texas allowable for that pool. Am I correct?

A Well, if your figures are correct, your opinion is correct.

MR. WOODWARD: Your statement and recommendation dealt with one set allowable for wells in both states for an entire year period in which demand might fluctuate and which shut down days may fluctuate and in the interest of simplicity, I believe you stated in your statement you were suggesting one figure for the entire year to take care of these fluctuations in demand and increases and decreases in the allowable as to other fields in both states, is that correct?

A Yes, that is correct.

MR. THOMPSON: What we would do, Gentlemen, from Texas, in view of the fact that New Mexico would operate each day, we would do the same, so you would have the same daily withdrawal and not have a shut in period and adopt the same allowable. So, you would have the field operating as one unit just like it was in New Mexico. You see no objection to that from an operating standpoint?

A No.

MR. THOMPSON: Either from the reservoir engineering standpoint?

A No, sir.

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MR. THOMPSON: Do you have anything further?

A I have some additional information that might aid in determining the MER which is a tabulation that the Railroad Commission sends out for all MER hearings. The average porosity 5.8 percent. Average permeability, this is taken on that one core that I mentioned, 148 milidarcies. The water-oil contact, minus 8105. We have no gas cap, therefore, no gas-oil contact. The average net effective oil pay thickness, 186', which is based on the seventy percent that I mentioned, seventy percent of the gross which I mentioned earlier. The average gravity oil is 44 degrees API. We have no gravity on the gas. The solidity of the water, 54,000 parts per million chloride. We have run no bottom hole sample analysis, therefore, we don't know what the saturation pressure is or the formation volume factor is. However, we are sure that there is less than 800 pounds. Original reservoir pressure, 4709 pounds, that is minus 8,000', at a temperature of minus 172 degrees.

We have taken two periodic surveys, one on 10/1/53. The average pressure was 4769 pounds and have present pressure on February 15, 4775 pounds. I might point out that is an increase over the last pressure; the reason for that is the allowables in the State of New Mexico have been decreased and therefore the pressures are coming back up, which reflects a very active water drive. The reason that they are less in Texas and higher in New Mexico is that we couldn't shut them all in at the same time and we had some of them producing so that the reservoir couldn't equalize.

MR. THOMPSON: Would you suggest a shut in period for equilization to get more accurate figure?



A Ordinarily we do, but in this particular case, we are using the gas for drilling purposes, we couldn't shut them in all at the same time.

MR. THOMPSON: You don't think it desirable?

A Not in this particular instance. What we want to do is try to get an average pressure as recent as we could for this hearing. I mentioned before the productivity index varied from 1.55 to 42.37. There is only one well in the field making water which results in less than two percent of the fluids in the field being water.

Average GOR is 3700 cubic feet per barrel. Our usual practice in setting pipes is to set on top, or through, and perforate and acidize with just enough acid to moisten mud for the formation. The average well density is one well to 40, or slightly in excess of that, due to some larger units in New Mexico. The volume of flare gas is 245 MCF, except when we are drilling and we have no flare gas at the present time. It is all used for drilling purposes. Of course, being a new reservoir and water drive, there is no pressure maintenance being carried out at this time.

MR. THOMPSON: Isn't that very low gas-oil ratio?

A It is very low, but that is characteristically deep up in the permian basin, we have some as low as 20 to 30.

MR. THOMPSON: Do you have anything further to add?

A I believe that is all.

MR. THOMPSON: Any questions of this witness by anyone?

MR. MACEY: Mr. Christie, do you have any dates to recommend as far as poolwide, or bottom hole pressure surveys might be conducted?

A Nothing specific. I certainly think one a year would be ample because we don't expect them to increase under a water drive system. We will take, I am reasonably sure, take two pressure surveys a year anyway, and at the present time we are taking them in, well, it will be October, and somewhere around March, if that is satisfactory.

MR. THOMPSON: If we require one to be taken not later than November 1st, something like that, that would fit your schedule?

A Well, the last one in order to fit our schedule, the last survey we took last year was in October and we ran this one up a little bit on account of the hearing.

MR. THOMPSON: If we should prescribe one survey to be submitted to the Regulatory Commissions of the State, not later than November 1st --

A For GOR?

MR. THOMPSON: Yes.

A Yes, that would be all right.

MR. THOMPSON: It would not inconvenience you in your orderly work.

A It would be all right, if it would fit into the schedule.

MR. MACEY: Yes.

MR. THOMPSON: Do you have some other date in mind?

MR. MACEY: No, once a year by November 1st. That would be very satisfactory.

MR. THOMPSON: It would suit us all right, now, Mr. McCracken?

MR. MCCrackEN: Yes.

A I am not sure whether it is now set up or not. It it is

I think that would be all right, whatever time it is.

MR. THOMPSON: Just so we can have something in the order.

A I would like also to suggest that this field be called Bronco Siluro-Devonian Field. I think it is actually called the Bronco Pool in Texas and Siluro-Devonian in New Mexico.

MR. THOMPSON: One name should be given on both sides. Tell us why you wish the long descriptive name?

A I will let Mr. Barnhart answer that.

MR. THOMPSON: For the record.

MR. BARNHART: It is very difficult, particularly on the north platform to differentiate between the Devonian and the Siluro so it is common practice to define the two formations and use a joint name of Siluro-Devonian. Our suggestion is that the term Siluro-Devonian be used.

MR. THOMPSON: Bronco --

A With the field, Bronco, yes.

MR. THOMPSON: Three? Bronco --

A Bronco-Siluro-Devonian.

MR. THOMPSON: Which do you want first?

A The field name Bronco Siluro-Devonian, designating the reservoir.

MR. THOMPSON: Is that agreeable with you gentlemen? We have taken up that solid matter and it is agreed; it is so named.

MR. McCracken: I believe the field is Bronco-Devonian, in Texas.

MR. THOMPSON: He wants to add the word, Siluro.

A I all probability, we <sup>will</sup> have several other reservoirs in this

field. There will be a Bronco Pennsylvania and Bronco Mississippian.

MR. THOMPSON: So, you will be able to distinguish.

Any questions of the witness before he is excused?

(Witness excused.)

MR. THOMPSON: Do you have another witness?

MR. WOODWARD: I would like to call Mr. Barnhart.

MR. THOMPSON: Do that.

C A R L B A R N H A R T,

recalled as a witness, being first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. WOODWARD:

Q Mr. Barnhart, are you familiar with the location of Mr. Livermore's dry hole previously referred to?

A Approximately a mile or mile and a half north of the northeasternmost producing well of the field. In my opinion, it is separated from the structure of the Bronco Field and was not included.

MR. THOMPSON: I see. You understand I heard there was a dry hole, I wanted to have the record covered.

A In this study, it is not included.

MR. THOMPSON: In your opinion, it is separate from this producing --

A (Interrupting) From this structure, yes.

MR. THOMPSON: Any further questions on that?

MR. WOODWARD: Not on that point.

MR. THOMPSON: Do the electric logs in your opinion accurately reflect the true porosity of the Devonian in this field?

A The micro log in this field, in my opinion, is not a true

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reflection of the porosity. That is based on sample studies and studies of the cores, drillstem tests and production tests. My explanation of that being the nature of the reservoir itself. It is primarily a vugular and fractured porosity and in that type formation, why, micro log will not give a true reading. As a result there will be some discrepancy between the micro logs and the average porosity figure as given by Mr. Christie.

MR. WOODWARD: That is all.

MR. THOMPSON: Any questions of Mr. Barnhart?

(Witness excused.)

MR. THOMPSON: Anything else to bring before the two Commissions?

MR. WOODWARD: No, sir, that concludes our presentation.

MR. THOMPSON: Anyone have anything to say for this record before it is closed? Anyone? (No response.) The record is closed, the hearing is adjourned. We thank you very much for your attention and for this information.

(Whereupon, the hearing was adjourned.)

#### C E R T I F I C A T E

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the Oil Conservation Commission of the State of New Mexico and the Railroad Commission Of Texas, held in Mabry Hall on February 26, 1954, Santa Fe, New Mexico, constitutes a true and correct record of said proceedings to the best of my knowledge, skill and ability.

DATED at Albuquerque, New Mexico, this 2nd day of March, 1954.

  
REPORTER

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