

CASE 3559: Application of BTA OIL  
producers for special pool rules  
for SOUTH FLYING "M" PENN. POOL.

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CASE No.  
3559

Application,  
TRANSCRIPTS,  
SMALL Exhibits  
ETC.

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE No. 3559  
Order No. R-3228-A

APPLICATION OF STA OIL PRODUCERS  
FOR SPECIAL POOL RULES, LEA COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 1, 1968,  
at Santa Fe, New Mexico, before Examiner Elvis A. Uts.

NOW, on this 6th day of May, 1968, the Commission, a  
quorum being present, having considered the testimony, the record,  
and the recommendations of the Examiner, and being fully advised  
in the premises,

FINDS:

- (1) That due public notice having been given as required by  
law, the Commission has jurisdiction of this cause and the subject  
matter thereof.
- (2) That by Order No. R-3228, dated May 3, 1967, temporary  
Special Rules and Regulations were promulgated for the South  
Flying "M"-Pennsylvanian Pool, Lea County, New Mexico.
- (3) That pursuant to the provisions of Order No. R-3228,  
this case was reopened to allow the operators in the subject pool  
to appear and show cause why the South Flying "M"-Pennsylvanian  
Pool should not be developed on 40-acre spacing units.
- (4) That the evidence establishes that one well in the  
South Flying "M"-Pennsylvanian Pool can efficiently and  
economically drain and develop 80 acres.
- (5) That the Special Rules and Regulations promulgated by  
Order No. R-3228 have afforded and will afford to the owner of

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CASE No. 3559  
Order No. R-3228-A

each property in the pool the opportunity to produce his just and equitable share of the oil in the pool.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-3228 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the South Flying "M"-Pennsylvanian Pool, promulgated by Order No. R-3228, are hereby continued in full force and effect until further order of the Commission.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

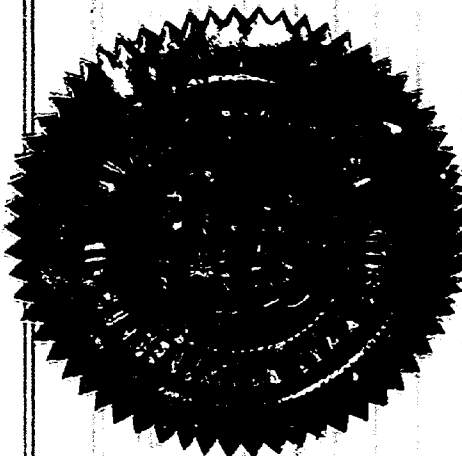
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

  
DAVID F. CARGO, Chairman

  
GHYTON S. HAYS, Member

  
A. L. PORTER, Jr., Member & Secretary



esr/

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
GUYTON B. HAYS  
MEMBER

STATE GEOLOGIST  
A. L. PORTER, JR.  
SECRETARY - DIRECTOR

P. O. BOX 2088  
SANTA FE

May 6, 1968

Mr. Jason Kellahin  
Kellahin & Fox  
Attorneys at Law  
Post Office Box 1769  
Santa Fe, New Mexico

Re: Case No. 3559  
Order No. R-3228-A  
Applicant: BTA Oil Producers

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

*A. L. Porter, Jr.*  
A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC       

Aztec OCC       

Other \_\_\_\_\_

Case 3559

Read 5-1-68

Rec. 5-1-68

to Grant B.T.A. a permanent order  
for the Sacateh slaying M-O oil pool.  
The order is R-3229.

3228

Thush. Jlf

**BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO**

**IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:**

**CASE No. 3559  
Order No. R-3228**

**APPLICATION OF BTA OIL PRODUCERS  
FOR SPECIAL POOL RULES, LEA COUNTY,  
NEW MEXICO.**

**ORDER OF THE COMMISSION**

**BY THE COMMISSION:**

This cause came on for hearing at 9 a.m. on April 26, 1967, at Santa Fe, New Mexico, before Examiner Elvin A. Uem.

NOW, on this 3rd day of May, 1967, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

**FINDS:**

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, BTA Oil Producers, seeks the promulgation of special rules and regulations for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 80-acre spacing units.

(3) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 80-acre spacing units should be promulgated for the South Flying "M"-Pennsylvanian Pool.

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CASE No. 3559

Order No. R-3228

(4) That the temporary special rules and regulations should provide for limited well locations in order to assure orderly development of the pool and protect correlative rights.

(5) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(6) That this case should be reopened at an examiner hearing in May, 1968, at which time the operators in the subject pool should be prepared to appear and show cause why the South Flying "N"-Pennsylvanian Pool should not be developed on 40-acre spacing units.

**IT IS THEREFORE ORDERED:**

That temporary Special Rules and Regulations for the South Flying "N"-Pennsylvanian Pool, Lea County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS  
FOR THE  
SOUTH FLYING "N"-PENNSYLVANIAN POOL**

**RULE 1.** Each well completed or recompleted in the South Flying "N"-Pennsylvanian Pool or in the Bough "C" zone of the Pennsylvanian formation within one mile thereof, and not nearer to or within the limits of another designated Pennsylvanian oil pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

**RULE 2.** Each well shall be located on a standard unit containing 80 acres, more or less, consisting of the N/2, S/2, E/2, or W/2 of a governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

**RULE 3.** The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a governmental quarter-quarter section or lot or the



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CASE No. 3559  
Order No. R-3228

unorthodox size or shape of the tract is due to a variation in the legal subdivision of the United States Public Land Surveys. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

**RULE 4.** The initial well on any 80-acre unit in said pool shall be located within 150 feet of the center of either the northeast quarter or the southwest quarter of a governmental quarter section. Any subsequent additional well on the 80-acre unit shall be located within 150 feet of the center of the other quarter-quarter section or lot in the unit.

**RULE 5.** The Secretary-Director may grant an exception to the footage requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon. All operators offsetting the proposed location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all operators offsetting the proposed location or if no objection to the unorthodox location has been entered within 20 days after the Secretary-Director has received the application.

**RULE 6.** A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 4.77 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

The allowable assigned to a non-standard proration unit shall bear the same ratio to a standard allowable as the acreage in such non-standard unit bears to 80 acres.

**IT IS FURTHER ORDERED:**

(1) That the locations of all wells presently drilling to or completed in the South Flying "M"-Pennsylvanian Pool or in the

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CASE No. 3559  
Order No. R-3228

Bough "C" zone of the Pennsylvanian formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before June 1, 1967.

(2) That each well presently drilling to or completed in the South Flying "M"-Pennsylvanian Pool or in the Bough "C" zone of the Pennsylvanian formation within one mile thereof shall receive a 40-acre allowable until a Form C-102 dedicating 80 acres to the well has been filed with the Commission.

(3) That this case shall be reopened at an examiner hearing in May, 1968, at which time the operators in the subject pool may appear and show cause why the South Flying "M"-Pennsylvanian Pool should not be developed on 40-acre spacing units.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

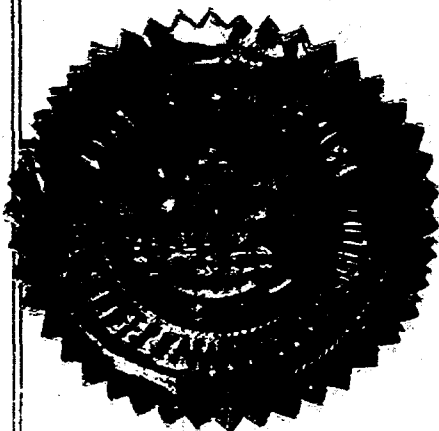
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*David F. Cargo*  
DAVID F. CARGO, Chairman

*Guyton B. Hays*  
GUYTON B. HAYS, Member

*A. L. Porter, Jr.*  
A. L. PORTER, Jr., Member & Secretary



esr/

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# WESTERN UNION

## TELEGRAM (1056)

W. P. MARSHALL  
CHAIRMAN OF THE BOARD

**SYMBOLS**

DL=Day Letter  
NL=Night Letter  
LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination.

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1968 APR 20 AM 10 25

NS MDA029 PD=MIDLAND TEX 30 932A CDT=

NEW MEXICO OIL CONSERVATION COMMISSION

STATE LAND OFFICE BLDG= SANTA FE NMEX=

SUBJECT: CASE NUMBER 3559 REOPENED GENTLEMEN UNION TEXAS PETROLEUM HAVE REVIEWED THE PERFORMANCE OF THE SOUTH FLYING N PENNSYLVANIA POOL AND PROPOSES THAT THE FIELD RULE SET FORTH IN ORDER NUMBER R3228 BE CONTINUED ON A PERMANENT BASIS. UNION TEXAS PETROLEUM COLLABORATED WITH BTA OIL PRODUCERS IN THE DEVELOPMENT OF THE DATA REFLECTED IN EXHIBITS WHICH THEY WILL PRESENT AND VERIFIES THE ACCURACY OF THE PRESSURE AND PRODUCTION DATA

WU1201 (R2-55)

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

**CLASS OF SERVICE**  
This is a fast message unless its deferred character is indicated by the proper symbol.

# WESTERN UNION

## TELEGRAM

W. P. MARSHALL  
CHAIRMAN OF THE BOARD

R. W. McFALL  
PRESIDENT

**SYMBOLS**  
DL = Day Letter  
NL = Night Letter  
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination.

FOR THE UTP NUMBER 1 MCGUFFIN

UNION TEXAS PETROLEUM HOWARD PERDUE DISTRICT  
PETROLEUM ENGINEER

3559 M R3228 BTA UTP 1

WU 1201 (R2-65) THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico

April 26, 1967

EXAMINER HEARING

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IN THE MATTER OF: )  
)  
)

Application of BTA Oil Producers )  
for special pool rules, Lea )  
County, New Mexico. )  
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Case No. 3559

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 3559.

MR. HATCH: Application of BTA Oil Producers for special pool rules, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, appearing for the applicant.

MR. UTZ: Are there any other appearances?

MR. HINKLE: If the Examiner please, Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell, appearing on behalf of A. C. Holder and John W. Ruwwe, R-u-w-w-e, of Midland, Texas.

MR. MORRIS: Mr. Examiner, I am Dick Morris of Montgomery, Federici and Andrews, Santa Fe, appearing on behalf of Shell Oil Company.

MR. KELLAHIN: We'll have one witness, I would like to have sworn, please.

(Witness sworn)

WILLIAM G. KERN, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A William G. Kern.

Q By whom are you employed and in what position?

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A BTA Oil Producers, Reservoir Engineer.

Q Have you ever testified before the Oil Conservation Commission of New Mexico?

A No, sir, I haven't.

Q For the benefit of the Examiner, would you state your education and experience as a reservoir engineer?

A Yes, sir.

MR. UTZ: Would you state your name again?

A William G. Kern, K-e-r-n. I graduated in 1958 from Marietta College with a B.S. Degree in petroleum engineering, went to work for Magnolia Petroleum Company as a reservoir engineer. After four years of various field and office experience I got a leave of absence from Mobil Oil Company, returned to Penn State University to get an M.S. Degree in petroleum engineering, and in 1964 received my M.S. Degree and returned to Mobil Oil Company where I worked until December 1965 as a reservoir engineer. In December '65 I went to work for BTA Oil Producers as a reservoir engineer and have remained in that position today.

Q (By Mr. Kellahin) In connection with your work as a reservoir engineer for BTA Oil Producers, do you work in Southeastern New Mexico?

A I do.

Q Have you done any work in the specific area involved

in the application in Case 3559?

A I have.

Q Are you familiar with the South Flying "M" Pool?

A Yes, I am.

Q Are you familiar with the application of BTA Oil Producers in Case 3559?

A Yes, sir.

Q Briefly, what is proposed by BTA in this case?

A BTA Oil Producers proposes that wells in this field should be located 660 feet from the lease lines with 1320 feet between wells in the same lease. We propose the adoption of an 80-acre spacing and proration unit with an allowable factor for 80-acre depth factor of nine to ten thousand feet, as provided by the rules and regulations of the Oil Conservation Commission.

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

Q Now, referring to what has been marked as Exhibit No. 1, Mr. Kern, would you identify that exhibit?

A Exhibit No. 1 is a lease plat showing the outline of the South Flying "M" field along with the ownership as well as we know it.

Q And the field as a whole consists solely of two quarter sections, is that correct?



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A That's correct.

Q How many wells have been drilled in this pool?

A There are currently three wells producing from this pool.

Q Now, have you made a study of the other Pennsylvanian wells in the area involved here?

A Yes, sir, I have.

(Whereupon, Applicant's  
Exhibit No. 2 was marked  
for identification.)

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit?

A Exhibit No. 2 is a field map illustrating the Penn field in this area which have 80-acre spacing or greater.

Q Of the pools that are designated on the map, how are those shown that have 80-acre spacing or greater?

A The 80-acre or greater spacing fields are shown outlined in red.

Q Do some of the pools have in excess of 80-acre spacing?

A They do. Several pools have 160-acre spacing.

(Whereupon, Applicant's  
Exhibit No. 3 was marked  
for identification.)

Q Now, referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

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A Exhibit No. 3 is a structure map on the top of the Bough "C" zone in the area of South Flying "M" field.

Q Now, the Bough "C" is a portion of the Pennsylvanian formation, is it not?

A It is.

Q Does the exhibit show the wells producing from the Bough "C"?

A The exhibit outlines the wells that have penetrated the Bough "C" and have actually tested the Bough "C". There are three wells producing from the Bough "C" and there are four that tested the Bough "C".

Q Of the three wells that are producing from the Bough "C", what is their present status?

A They're all three top allowable wells.

Q Under the rules which you just stated BTA proposes, would there be the necessity for an exception for any of the wells that have already been drilled?

A Yes, sir. We would request an exception to our FMS Well No. 1.

Q Where is that located?

A 330 feet from the South Line and 660 feet from the West Line of Section 19.

Q What is the nature of the South Flying "M" reservoir?

A This is a dissolved gas drive reservoir.

Q Solution gas drive?

A Solution gas drive.

Q Are the wells of a high GOR or low GOR?

A The wells initially came in with 1300 cubic feet per barrel. It's a high gas-oil ratio.

(Whereupon, Applicant's Exhibit No. 4 was marked for identification.)

Q Now, turning to what has been marked as Exhibit No. 4, would you identify that exhibit, please?

A Exhibit No. 4 is a correlation of the Bough "C" reservoir shown through the three producing wells.

Q What does this exhibit indicate?

A This indicates that all three wells are producing from the same interval.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q Turning now to what has been marked as Exhibit No. 5, would you identify that exhibit, please?

A Exhibit No. 5 is a production tabulation from the initial completion of the first well in the South Flying "M" field.

Q Is that the production history for the pool as a whole, then?

A That is the production history by operators and for

the pool total.

Q That is from the initial production to date, is that correct?

A Yes, sir.

Q Was April production as I see it estimated, is that right?

A April production is estimated to the date of the bottomhole pressure shown for April.

Q Now, have you prepared a pressure versus production curve, Mr. Kern?

A Yes, sir, I have. That's Exhibit No. 6.

(Whereupon, Applicant's Exhibit No. 6 was marked for identification.)

Q Would you discuss that exhibit, please?

A Exhibit No. 6 is a bottomhole pressure versus cumulative production, which illustrates the dissolved gas drive depletion in this field.

Q In what manner is this shown?

A It is shown by the pressure drop due to the production, due to the cumulative production.

Q Does that indicate to you anything in regard to the drainage in the reservoir as to the area of drainage?

A Yes, sir, it does.

Q What conclusion would you reach as to that?

A I would conclude that the original well in the field is draining in excess of 80 acres.

Q Now you stated that the GOR for the field is 1300 to 1, is that correct?

A That's the initial recorded GOR.

Q Do you know what it is now?

A It's 1500.

Q Would you consider that an excessive GOR at all?

A It's not excessive but it's a high GOR.

Q It would be a high GOR to have a solution gas drive?

A Yes.

(Whereupon, Applicant's Exhibit No. 7 was marked for identification.)

Q Turning now to what has been marked Exhibit 7, what does that show?

A Exhibit No. 7 is a bottomhole pressure versus time. This exhibit illustrates without a doubt the drawdown in this reservoir. The initial completion of American Trading No. 1, which was tested in October of 1965, was drawn down by the production from its McGuffin No. 1 well to much lower pressure in February 1967 when we re-entered it and ran a bomb in it.

Q How did the pressure compare to the field pressure

as indicated by the pressure in the other wells as of that date?

A The pressures fall right in line with the other field wells.

Q Does that indicate that drainage has occurred?

A Yes.

Q Over what area?

A Over 80 acres.

Q It would actually be in excess of 80 acres, would it not?

A Yes.

Q Where is the Trading No. 1 in relation to the McGuffin No. 1, the nearest producing well?

A The American Trading No. 1 well is 330 feet from the nearest well, the McGuffin well.

Q Assuming that was the only well that was draining it, a radius of 1221 feet would be considerably in excess?

A It would.

(Whereupon, Applicant's Exhibit No. 8 was marked for identification.)

Q Now, referring to what has been marked as Exhibit No. 8, would you identify that exhibit, please?

A Exhibit No. 8 is the rock and fluid properties from the Flying "M" reservoir. These properties have been

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taken from logs and correlations and illustrate the reservoir properties of this zone.

Q Well, now, in connection with the reservoir properties, do you show the permeability? You do not?

A We do not show the permeability.

Q Do you have that figure available?

A We don't.

Q The porosity is 7%, is that correct?

A Yes, sir.

Q But since you do not have the permeability, do you rely on other information, then, to determine the drainage area one well will affect?

A We have relied on the fact that the American Trading Well No. 1 has had a pressure decline as indicated on Exhibit No. 7.

Q And would you consider that as conclusive evidence of draining over a wide area?

A I would.

(Whereupon, Applicant's Exhibit No. 9 was marked for identification.)

Q Referring now to Exhibit No. 9, would you discuss that exhibit, please?

A Exhibit No. 9 is our interpretation of the economics of the Bough "C" well in the South Flying "M" field.

It is indicated here an 80-acre development would result in a return on your investment of 1.37 whereas a 40-acre would be .68, which would be uneconomical.

Q Would you advise your management to drill a well on 40-acre units?

A I would not.

Q Would you advise them to drill on 80 acres, assuming it's approved by this Commission?

A Yes, sir.

Q Would you consider that an economical well?

A Yes, sir.

Q Would you consider a well drilled on 40 acres an economical well?

A A well drilled on 40 acres would be uneconomical.

Q Under those circumstances, then, Mr. Kern, would approval of this application and the granting of 80-acre spacing with the proration formula as proposed by BTA result in the recovery of oil that would not otherwise be recovered, in your opinion?

A Would you state that again?

Q Would approval of 80-acre spacing with the proration formula you propose result in the drilling of wells that would not otherwise be drilled?

A 40-acre development would.

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Q 80-acre development?

A 80 acres would not.

Q Perhaps you misunderstood me. Are you talking about one well to 80 acres or two wells?

A One well to 80 acres would not result in excess wells.

Q It would not result in excess wells?

A No.

Q Would it result in recovery of oil that otherwise would not be recovered by one well to 80 acres?

A In my opinion it would amount to the same recovery if it was developed on 80 acres as it would if developed on 40.

Q But would the wells be developed on 40, Mr. Kern, in your opinion? If the Commission denied this application, in your opinion, would this pool be developed on 40-acre spacing?

A No, sir.

Q So, then, it would be your conclusion that approval of this application will result in the recovery of oil that would not otherwise be recovered, is that correct?

A Yes, sir.

Q Were Exhibits 1 through 9 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 9.

MR. UTZ: Without objection, Exhibits 1 through 9 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 9 were offered and admitted in evidence.)

Q (By Mr. Kellahin) Do you have any other conclusions to make, Mr. Kern?

A No, sir, I don't.

MR. KELLAHIN: That's all I have on direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Kern, what was the discovery well in this pool?

A The McGuffin No. 1 was the discovery well.

Q McGuffin. What's the location of that?

A That's the Union of Texas well in Section 30.

Q Then you drilled your No. 1?

A Yes, sir.

Q Then your No. 2?

A The Well No. 2 was originally American Trading's Well No. 1 and we re-entered that well.

Q So that was an old hole?

A Yes, sir. That is the information that is shown on

Exhibit No. 7. Where we have the bottomhole pressure in October of '65, then the bottomhole pressure again in February of 1967 without any withdrawals from that well and the pressure has declined.

Q What I am wondering is why you drilled your No. 1 well 330 feet from the lease line. Were you thinking about 80-acre spacing at that time?

A No, sir, we hadn't thought about it at that time. We didn't know what the field reserves were at that time.

MR. UTZ: Are there any other questions of the witness?

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Kern, I believe you qualified as a petroleum engineer?

A Yes, sir.

Q And you stated, I believe, you prepared Exhibit No. 3, structural map?

A No, sir, it was prepared under my supervision.

Q I see. Did you or whoever prepared it have any control as far as drawing the contours in Section 25, 24 and 25 were concerned?

A Sections 24 and 25. We have control further west there in Section 23.

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Q My question is, did you have any control in 24 and 25?

A No, sir.

Q In other words, those contours could have been bent or made in an entirely different manner than you have shown them here, is that right?

A Not without disturbing the general dip in this area.

Q But it would be possible to contour this structure in a different manner from the way it's contoured here, would it not?

A It would.

Q With the information available?

A Yes.

Q In other words, it might be contoured so that you could indicate that more of the acreage in 24 and 25 was productive, is that right?

A Yes, sir.

Q As I understand, you are proposing 80-acre spacing with the right of the operator to drill a well in either 40, is that right?

A Yes, sir.

Q You are not proposing alternate selection or drilling of alternate 40 acres in the 80-acre unit, are you?

A No, sir. The rules as we stated them would be 660 from the lease line and 1320 from any other well on the lease.

Q Well, that means with the election of the operator to drill in either 40 of the 80?

A Yes.

Q Whose location is it that's shown in the Southeast Quarter of the Southeast Quarter of 24?

A That is our location.

Q And you have made that on 330?

A We have made that on 330 and we would be willing to move that to 660 before drilling a location if these rules are accepted.

Q Would you have any objection to changing your proposed rule so that the operator would be required to drill on alternate 40's, so that you would have a true 80-acre pattern?

A No, sir, we would not oppose that.

Q You would not?

A No.

Q In other words, you are willing that the rules be that a definite location be made on a 40 acres so that you would have an 80-acre pattern with alternate locations?

A That would be acceptable to us.

Q That would mean, then, that in Section 19 you would

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obtain an exception to your No. 1 well which is in the Southeast-Southeast, and you would dedicate the West Half of the Southwest to that well, would you not?

A Yes, sir.

Q And you would also dedicate the East Half of the Southwest to your No. 2 well?

A Yes, sir.

Q And then to the well in 30 you would designate the East Half of the Northwest Quarter?

A Yes, sir.

Q Is that right?

A That is Union of Texas's well.

Q The North Half of the Northwest, you would designate that? I see. Then it would mean that in Section 25 you would have the North Half of the Northeast as a dedicated tract and then in 24 you would have the South Half of the Southeast, is that right?

A Yes, sir.

Q Then that would mean that your well which you denote there as 1-A in the Southeast-Southeast of 24 would be moved under that pattern to the Southwest of the Southeast, is that correct?

A Yes, sir.

Q And you are willing to go along with that proposal?

A Yes, sir, we would agree with that proposal.

Q Are you willing that the well locations selected by the operator have a tolerance of 150 feet from the center of the 40, that is for obstacles and so forth?

A Yes, sir.

MR. HINKLE: That's all at this time.

MR. UTZ: Then under those proposed rules you would have to seek an exception for both of your No. 1's?

A We would if those rules were acceptable.

MR. UTZ: Are there other questions?

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Kern, let me say at the outset that we're not opposed to the 80-acre proration units that you have proposed here; however, Shell would be opposed to any fixed pattern in this area. Under your proposal, Mr. Kern, that would require wells to be located 660 feet from the lease line, that would actually fix the location of the well in the center of the 40-acre tract, wouldn't it?

A That is correct. I believe in most cases that the Commission gives 150 feet, isn't that true?

MR. UTZ: This is true, 165 feet, some of them.

Q (By Mr. Morris) But under your proposed rules you have no such 150-foot tolerance in your proposed rule,

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do you?

A No, we haven't proposed that.

Q In view of the fact that one well has been drilled 330 from the line and your location over in Section 24 has been staked 330 from the line, would you have any objection to a well location requirement that permitted any well to be 330 from the line?

A Yes, sir, we feel that our testimony here and our exhibits indicate that a well can drain in excess of 80 acres and if the acreage is productive there should be no reason to move the location any closer than 660 to the lease line.

Q You would at least, then, be agreeable to a tolerance of 150 feet from the center of the 40?

A Yes, sir.

Q The development that has taken place so far in this field has been on a 40-acre pattern to the present time, is that correct?

A Essentially it has been.

Q Mr. Kern, if I informed you that Shell would seek an exception to your rule with respect to a proposed location in the Southwest Quarter of the Northwest Quarter of Section 30, that is an immediate east offset to its dry hole, the dry hole being in the Southwest of the Northwest, and



that the exception --

MR. UTZ: I believe you said Southwest of the Northwest, didn't you?

MR. MORRIS: That's where the dry hole is.

MR. UTZ: You mean the Southeast of the Northwest.

Q (By Mr. Morris) And the proposal is for the Southeast of the Northwest, if Shell proposed to drill a well at that location and proposed here in this hearing an exception that would permit it to dedicate a 40-acre tract to that well with a full 40-acre allowable, that is not half an 80 allowable but a full 40-acre allowable, would your company have any objection to that?

A No, sir.

MR. UTZ: Mr. Kellahin.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Kern, in response to some questions by Mr. Hinkle, you stated that you will have no objection to alternate locations in the 40's and that is, for example, the well would be located in either the Southeast of the quarter or the Northwest of the quarter?

A Yes, sir.

Q You are not advocating such a provision, are you, in these rules?

A No, I am not.

Q Is it still your testimony that your recommendation is you could drill in either 40 --

A Yes, sir.

Q -- and at a 660 location?

A Yes, sir.

Q I don't believe we ever stated in here the vertical limits of the pool we're talking about here. What is this?

A The vertical limits on this pool would be as outlined by McGuffin Well No. 1, would be from 9,045 feet in the McGuffin No. 1 to 9,081 feet.

MR. UTZ: What was the top again?

A Pardon me?

MR. UTZ: What's the footage again?

A 9,054 to 9,081, as outlined in McGuffin Well No. 1, which is the discovery well in the field.

Q (By Mr. Kellahin) That is generally designated as the Bough "C" zone of the Pennsylvanian, is that correct?

A That is the Bough "C" zone, yes, sir.

Q This is what you are talking about regardless of whether it be at that particular interval on the other wells or not?

A Yes, sir.

Q The Bough "C"?

A Yes.

MR. KELLAHIN: I believe that's all.

MR. HINKLE: Let me ask him one questions.

MR. UTZ: Yes, sir.

RECROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Kern, would you have any objection to making exception in these special rules to 330 location from the lease lines in the Northeast Quarter of the Northeast Quarter of Section 25?

A I see no reason to allow a 330 in there if that 80-acre tract is reasonably productive. I believe, as our Exhibit No. 7 showed, you could drain the 80 acres and it seemed better drainage practice to locate the well 660 from the lease line.

MR. HINKLE: That's all I have.

RECROSS EXAMINATION

BY MR. UTZ:

Q Mr. Kern, do you have any opinions as to how extensive this pool might be at the present time?

A No, sir.

Q You are willing to move one location to the west on the 1-A well, you must have a pretty good opinion it goes out that far?

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A Yes, I do. The well, Richardson Well No. 2, the dry hole in Section 30, was drilled to find the Bough "C" density at a -4643. I feel that we could move our well 330 feet to the west and encounter the Bough "C" at a less depth than that, at a deeper penetration.

Q In your opinion, as a production engineer, which offers the best pressure distribution in draining a pool, a fixed pattern or a wagon-wheel pattern?

A I would feel that a wagon-wheel pattern would.

Q You think it would?

A Yes.

Q Where you have a pressure distribution with a group of wheels, wagon wheels around a spoke?

A No, I misunderstood you. I thought you meant every other tract. The fixed location, every other tract, would offer the best drainage.

Q Under those conditions do you feel you would probably recover more oil?

A No, sir, I feel that the well can drain the 80 acres.

Q Even if it is fighting four other wells, three other wells?

A I believe it would.

MR. UTZ: Are there any other questions of the

witness? The witness may be excused.

(Witness excused.)

MR. UTZ: Any statements?

MR. MORRIS: We have one witness we would like to present.

MR. HINKLE: Well, we have one, too.

MR. UTZ: You have one witness? Let's adjourn until 1:30.

(Whereupon, a noon recess was taken.)

MR. UTZ: The Hearing will come to order. We will continue with Case 3559.

(Witness sworn)

DAVID A. FRAWLEY, called as a witness on behalf of Shell Oil Company, first having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q Will you please state your name, by whom you are employed and in what capacity?

A David A. Frawley, Midland, Texas, Shell Oil Company. Senior Reservoir Engineer.

MR. HINKLE: How do you spell your name?

THE WITNESS: F-r-a-w-l-e-y.

Q (By Mr. Morris) Mr. Frawley, have you previously testified before the Commission or one of it's Examiners and made your qualifications a matter of record?

A I have.

MR. MORRIS: Are the witnesses' qualifications acceptable?

MR. UTZ: Yes, sir.

Q (By Mr. Morris) Mr. Frawley, are you familiar with the application of BTA Producing Company in the Case 3559?

A Yes, I am.

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(Whereupon Shell's Exhibit Number One marked for identification)

Q (By Mr. Morris) Would you please refer to what has been marked as Shell's Exhibit Number One in this case and state what that Exhibit is?

A This Exhibit is a Plat of the Flying M or South Flying M Penn Field, showing the three existing producing wells. One dry-hole and two tentative locations. Imposed on this Plat of land and ownership, is a structural interpretation on the Bough C producing horizon.

Q Will you point out the acreage owned or controlled by Shell Oil Company in this area?

A The acreage which is owned by Shell Oil Company on this Plat, is designated with the dotted interior border, such as the Southwest quarter of Section 30, the south half of the northwest quarter, certain other acreage in the northeast quarter of Section 30, the east half of the southeast quarter of Section 30 and then other acreage in this area as designated by the interior wavy lines are leases which were Shell leases which have been farmed out. That includes the Union Texas Petroleum Well and the 80 acres that it is completed in and then the McGuffin Lease in Section 24, to the north and west.

Q Has Shell drilled any wells in this area?

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A Yes, sir, we have. Our Richardson Number Two well was drilled in the southwest quarter of the northwest quarter of Section 30.

Q That is shown as well number two?

A That's correct.

Q Does Shell have any plans for further development in this area?

A Yes, we do. We have plans for development in the southeast quarter of the northwest quarter of Section 30, the possibility of development on to the south or to the east depending upon how the reservoir does develop.

Q Are your plans for the development in the southeast and northeast portions of Section 30 dependent upon the results of your proposed well in the southeast of the northwest?

A That is correct.

Q How do the proposed rules as proposed by the applicant in this case affect the acreage owned or under control of Shell Oil Company and your prospects for future development in this pool?

A If an eighty acre pattern is adopted, and allowables based on eighty acres, then our proposed location in the southeast of the northwest of Section 30 would be restricted to an allowable which would be approximately half an eighty acre allowable and on that basis, we do not feel that it would be



possible to justify drilling a well on that location if it were restricted to that extent. If we are not able to justify a well in that location then the possibility for extension farther to the south or to the east is similarly precluded.

Q What proposal does Shell have to make to meet this problem?

A We propose adoption of the eighty acre spacing rules as the applicant has asked. However, we would request an exception for the quarter section -- quarter quarter section of the southeast quarter of the northwest quarter and for that particular location we would request a full forty acre allowable.

Q Mr. Frawley, I believe for the depth of this pool, the acreage factor on forty acres is presently 3.77, is that correct?

A I believe that's correct.

Q So, you would ask for this well, that, if it is completed as a producer, it be assigned an allowable of 3.77 times the normal unit allowable?

A That is correct.

Q Is any further exception needed with respect to the well location requirements as proposed by the applicant?

A We would also suggest that a 150 foot tolerance from the center spot in the quarter quarter section be incorporated in the field rules.

Q Mr. Frawley, this morning on cross examination of Mr. Kern, Mr. Hinkle suggested a possibility of a fixed location requirement, a fixed pattern in this area. What would be the position of Shell with respect to such a proposal?

A We would be opposed to a fixed location pattern, as far as the eighty acre spacing is concerned.

Q For what reason?

A A couple of reasons. One would be the erratic, if you like, development of this Bough C producing interval as evidenced by our dry hole in Section 30 now, which probably would be a pattern location if I understood your proposal correctly this morning. So, that there are enough discontinuities in this reservoir to minimize dry hole risks, I would prefer a variable pattern, the opportunity to drill on either forty and one other point in this regard is that development to date has been actually on a forty acre basis but still also on a variable location basis, and I would think it would be suitable to continue on that basis.

Q As I understand your basic proposition here, Mr. Frawley, regardless of what other action the Commission might take or what locations might be specified for the wells, Shell proposes an exception only with respect to this forty acre tract being the southeast of the northwest of Section 30, as far as the allowable to be assigned to a well drilled on a forty

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acre tract is concerned. You are not suggesting this on a field wide basis?

A That is correct. We would make that suggestion only for this location in question.

Q Was Shell's Exhibit Number One prepared under your direction?

A Yes, it was.

MR. MORRIS: We will offer Shell's Exhibit Number One into evidence.

MR. UTZ: Without objection, Exhibit Number One will be entered into the Record in this case. Are there any questions of the witness?

CROSS EXAMINATION

BY MR. HINKLE:

Q Mr. Frawley, your contours on your Exhibit Number One are quite different from the structural map which was introduced as BTA's Exhibit Number Three, is that correct?

A It differs, I think, to the northwest location, I would say it is in essential agreement in Section 30 and the lower portion of Section 19.

Q There is quite a difference though as far as Sections 24 or 25 are concerned?

A That is correct, quite a difference.

Q What control did you have to draw the contours as you

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have drawn them on Exhibit Number One in Sections 24 and 257

A We have no fixed well control in this particular area on the Bough C and I would say that this interpretation in this area is that it is highly interpreted.

Q It could be otherwise than what you have --

A That is correct. I would certainly say that it could be otherwise.

Q You are not trying to portray by this exhibit that all of Sections 24 and 25 are necessarily non-productive?

A Actually, by this exhibit, I would think they would probably be still considered productive. But, other than how you might extrapolate the failure to obtain productive formation in our Richardson Number Two, if you wanted to carry that around structurally. However, I am not sure that would necessarily be -- that you would necessarily have to do that and condemn other locations at the similar structural position.

Q In other words, this is highly speculative?

A I will say it is interpretative and I wouldn't --

MR. HINKLE: That's all I have.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused).

JOHN W. RUWWE, called as a witness on behalf of the applicant, first having been duly sworn, was examined and

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testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name and residence?

A My name is John W. Ruwwe, R-u-w-w-e, Midland, Texas.

Q Are you a geologist?

A Yes, sir, I am. I received a degree in geology.

Q Are you self employed at the present time?

A At the present time, yes, sir.

Q Would you state briefly your educational background and geological experience?

A I received a B.S. degree in geology and engineering from the University of Missouri, School of Mines at Rolla and worked with Phillips Petroleum Company as a district and division geologist at Midland, Texas beginning in 1946. I worked as a division geologist and manager for Larry Oil and Gas Company and have been self employed as a consulting geologist and as an oil operator for the past ten years.

Q Have you had considerable experience in New Mexico?

A I have, yes, sir.

Q Are you familiar with this area that is under consideration by the Commission?

A Yes, sir, I have done considerable work on this.

Q Have you made a study of all of the well logs?

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A Yes, sir.

Q And all of the information, geological information available?

A Yes, sir. That was the reason for purchasing the lease that we did.

Q Are you the owner of any lease hold interest in this particular area?

A Mr. A. C. Holder and I own a half interest in the -- a half interest jointly, we own an interest half and half in the northeast of Section 25.

Q Is that a substantial interest?

A We own a hundred and thirty acres between us of the hundred and sixty.

Q Have you recently made a well location in that area?

A We have staked --

Q In the northeast of 25?

A Yes, sir, we have. We have staked a location 330 out of the north and east of Section 25 which is a south offset to the BTA Well which was recently staked in there and has not been drilled. We have approval on that, incidentally.

Q In that connection you filed with the Oil Conservation Commission, forms C-101 and C-102?

A That is correct. And the well will be drilled in the name of A. C. Holder.

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Q And they have been approved, that well location has been approved?

A That's right.

Q That has been approved as a forty-acre development well, has it not?

A That is correct.

Q In your study of this area, are you of the opinion that one well will effectively and effeciently drain as much as eighty acres?

A I concur with that. I believe one well will efficiently drain eighty acres, but I believe that an alternate forty-acre location would be an optimum location with an eighty-acre allowable, because I believe it would more efficiently drain the reservoir. Essentially, right now, we have a forty-acre pattern established here, which I think is inefficient drainage of the reservoir. I think, if we would stay on alternate forties, we would get much more efficient drainage of the reservoir.

Q In other words, you agree with the BTA proposal for special field rules including eighty-acre spacing except that you are proposing alternate well locations?

A That is correct.

Q So that you would have a true eighty-acre spacing pattern?

A That is correct.

Q Now, if that is not followed in this particular case, what is the result apt to be as far as the drilling of a well is concerned in 24 and 25?

A Well, I think essentially, you are going to have a continuation of the forty-acre spacing pattern. I think it would be a very inefficient way to drain the reservoir. Even though the eighty-acres is allocated, I think you would still have essentially a forty-acre pattern which I think is too close of a --

Q In other words, you will have a well, probably located in the southeast, southeast of 24?

A That is correct.

Q And one in the northeast, northeast of 25?

A That's right, which will continue the forty-acre pattern which we already have in there, which I think is too close.

Q Now, in the event the Commission's sees fit to grant eighty-acre spacing with alternate locations like you propose, are you willing to change your location which you have already made in the northeast, the three thirty location in the northeast, northeast?

A I think we would go along with that six sixty with a hundred and fifty foot tolerance, in other words, if we could have a hundred and fifty foot tolerance on a six sixty location,

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I think we would go along with that.

Q Do you agree with the structural maps which have been presented, first with BTA Exhibit Number 3 and with Shell's Exhibit Number 1?

A Not entirely, because each interpretation is highly speculative. You can contour that three or four or five different ways, which I have done. Since there is no control to the west, there is absolutely no way of telling which way this reservoir will run, whether it will swing this way or whether it will swing up or whether it will continue on a strike. We have a strike established with these two wells here, which are essentially flat, the Number One McGuffin of Union Texas and the Number One BTA, are essentially flat on the top of the Bough C, which has established a strike. However, we don't know whether that strike is going to continue or whether it will swing or whether we have a deep-seated structure with a ring, rim of Bough C around it, we just do not know. In other words, this thing can be contoured to make our acreage look all good or partially good. In other words, we have no control to the west. It can be contoured.

Q In other words, you have no control in Sections 24 and 25 --

A That's right.

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Q -- of any consequence?

A All we have is a strike established in these two wells.

Q So it is highly interpretive or speculative?

A That's right.

Q Now, if this pool does prove to be of any considerable extent in your opinion, would it be in the interest of conservation and prevention of waste to have eighty-acre spacing on alternate locations rather than on any location which the operator elects to select?

A Very definitely. I think that to have a true eighty-acre spacing, you would have to have alternate forty spots.

Q Now, in the event the Commission should not go along with your recommendation on alternate locations, eighty-acre spacing, do you have any proposal to make with respect to your location which has been made?

A Well, I would like to have approval then to drill the location we have there which is already staked on three thirty.

Q In other words, you would like to have an exception --

A An exception, that's right.

Q -- just as Shell has proposed and as BTA is proposing for their Number Two Well --

A That is correct.

Q -- located in the southwest of Section 19?

A Yes, sir.

MR. HINKLE: That's all we have.

MR. UTZ: Any questions? Go ahead, Mr. Kellahin.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Ruwwe, as I understand, you say you are willing to move your location back to a six sixty location or did I misunderstand you?

A Provided we can get alternate eighty-acre locations, we would drill a six sixty with a hundred and fifty foot tolerance. We would have no objection to that provided we could get a spot which would throw this BTA Well over to the West.

Q Assuming for a moment, Mr. Ruwwe, that the spacing pattern was changed from that that has been recommended by cross examination of our witness, and say that the location would be in the other forty, in that tract in Section 25, that would be in the southwest of the northwest -- of the northeast, would you drill a well there?

A Oh, I would drill a well out there only to have control here, we have no control. As you go west, you become more highly speculative as to how the structure runs or the production runs,

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as I say, we have no idea how this thing swings, whether it swings this way, whether it comes this way or just what it does. The reasonable location for us to drill would be a diagonal spot here, because we have the control. We have no control out here.

Q And the reasonable location for BTA to drill is in the southeast of the southeast, isn't it, for the same reason?

A Probably.

MR. KELLAHIN: Yes, sir. Thank you.

CROSS EXAMINATION

BY MR. UTZ:

Q I never did quite understand the answer to Mr. Kellahin's question. Would you or would you not be willing to drill on either the southeast or the northwest --

A I wouldn't at this time, no, sir. I would want to drill in the northeast, northeast.

Q And then you would want an exception if the spacing was changed to alternate forties?

A Yes, sir, we would want three thirty where we already have the location staked.

MR. HINKLE: As I understand it, the normal location would be in the northeast, northeast, if you went on alternate location, would it not?

MR. KELLAHIN: If the Commission please, the only

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recommendation that has been made, has been that, that Mr. Hinkle made in cross examining my witness and no witness has recommended anything on spacing, to my knowledge.

MR. HINKLE: Well, Mr. Ruwwe is recommending here, alternate spacing.

MR. KELLAHIN: Yes, sir, I grant you Mr. Ruwwe recommended alternate spacing, but he didn't specify what spacing, Mr. Hinkle.

RE-DIRECT EXAMINATION

BY MR. HINKLE:

Q Well, Mr. Ruwwe, would you specify the spacing that you are recommending for eighty-acre spacing?

A Well, we would recommend eighty-acre spacing with the drilling of alternate forties, six sixty from lease lines with a hundred and fifty foot tolerance from the six sixty location.

Q In your interpretation of that, where would it throw the normal location for a well in the north half of the north-east of Section 25?

A We would be in the northeast, northeast of Section 25.

MR. UTZ: Then your recommendation is to drill the northeast and the southwest quarter-quarter sections?

THE WITNESS: Yes, sir.

MR. UTZ: Of the quarter section?

THE WITNESS: Yes, sir.

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MR. UTZ: I think Mr. Kellahin was referring to the opposite quarter-quarter sections in his question.

MR. KELLAHIN: Yes, sir.

MR. UTZ: Are there any other questions of the witness?

RECROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Ruwwe, what acreage do you and your partner control, own or control in Section 25?

A We have the northeast quarter. A hundred and thirty of a hundred and ~~sixty~~ acres.

Q If you drilled a well in the northeast of the northeast quarter and the Commission adopted a fixed pattern as you have suggested, would you be able to drill another well down in the southwest quarter of the northeast quarter?

A Well, we don't know. It would depend on how this well came in. We don't have enough geological control at this time to answer your question. In other words, if this well came in to give us enough additional information, I would answer your question, yes. If the well was dry, of course not, But --

Q You control that acreage?

A We control the acreage, that's correct.

Q Would you have any other location in the area, that

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would even be a prospect for you?

A In other words, you mean do we own any other acreage in the area?

Q Yes, sir.

A Well, not in this immediate area, no, sir, no we don't.

Q So when you are proposing alternate forty-acre locations, you are concerned only with your two possible locations and that's all?

A And the effective drainage of the reservoir as a whole, which would in turn affect us. In other words, if we have a uniform drainage pattern, it would certainly be to our benefit there, so it is not strictly because of our acreage, it is because of the entire reservoir.

Q Would you agree, Mr. Ruwwe, that a fixed pattern rule tends to impede development because of the dry-hole risk?

A Well, of course, that is true in every well you drill. We don't know enough about this reservoir right now, Shell drilled one dry hole there. Now, whether that well was high and tight, there is a lot of speculation that that well could produce. We don't know enough about the reservoir. In other words, you could offset that well, maybe a hundred and fifty feet and get a heck of a good well. We don't know enough about the reservoir to -- our main concern is to get efficient

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drainage of the reservoir and so far we have got forty acres spots established, which is not a --

Q In the event the Commission would establish an alternate forty pattern with locations in the northwest quarter-quarter and southeast quarter-quarter, it would give you some pause as to where to drill the well?

A Well, we don't have, I mean we have the control here. In other words, we have no reason for adopting that sort of a program because you are wildcatting when you get out there. The only legitimate way an operator would do it, would be to offset and stay in and keep the --

MR. MORRIS: I think that's all. Thank you.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused)

MR. UTZ: Does anyone have any further testimony or statements? If there are no statements in this case, the case will be taken under advisement.

MR. MORRIS: Mr. Examiner. I just wanted to make one statement on behalf of Shell. I don't think it clearly appears of record. The location as shown on Shell's Exhibit Number 1, is proposed but has not actually been staked and in the event the Examiner and the Commission see fit to grant the exception that has been requested by Shell, it should be done

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with respect to the forty acres and whatever well location requirements are established, but not with reference to a location that is already staked. Because it has not actually been staked or any forms filed with the Commission at this time.

I might say further, that Shell would, if some time limitation were placed on Shell within which to file its forms and actually stake a location in order to comply with an exception, we would be glad to do that.

MR. UTZ: The case will be taken under advisement.

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STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO;

I, JERRY POTTS, Notary Public, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

In Witness whereof, I have affixed my hand and notarial seal this 10<sup>th</sup> day of June, 1967.

Jerry Potts  
Notary Public

My Commission Expires:

July 10, 1970

I do hereby certify that the foregoing is a complete record of the proceedings to the former hearing of Case No. 26 in 67.  
Thelma H. [Signature]  
New Mexico Oil Conservation Commission

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Docket No. 13-68

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 1, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,  
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

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The following cases will be heard before Elvis A. Utz, Examiner,  
or Daniel S. Nutter, Alternate Examiner:

CASE 3756: Application of Gulf Oil Corporation for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen-Grayburg formation in the interval 1773 feet to 2142 feet in its Eddy State "AN" Well No. 5 located 2310 feet from the South and East lines of Section 13, Township 19 South, Range 28 East, East Millman Queen-Grayburg Pool, Eddy County, New Mexico.

CASE 3002 (Reopened):

In the matter of Case No. 3002 being reopened pursuant to the provisions of Order No. R-2684-B, which order provided special rules and regulations for the Fowler-Lower Paddock Pool, Lea County, New Mexico. All interested parties may appear and show cause whether the special pool rules, as they relate to well spacing, well classification, and limiting gas-oil ratios, should remain in effect.

CASE 3559 (Reopened):

In the matter of Case No. 3559 being reopened pursuant to the provisions of Order No. R-3228, which order established 80-acre spacing units for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

ir/

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
GUYTON B. HAYS  
MEMBER

STATE GEOLOGIST  
A. L. PORTER, JR.  
SECRETARY - DIRECTOR

P. O. BOX 2088  
SANTA FE

May 3, 1967

Mr. Jason Kellahin  
Kellahin & Fox  
Attorneys at Law  
Post Office Box 1769  
Santa Fe, New Mexico

DOCKET MAILED

Date

4-18-68

Re: Case No. 3558 and 3559  
Order No. R-3227 & R-3228  
Applicant:  
MTA OIL PRODUCERS

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC X

Artesia OCC       

Aztec OCC       

Other R-3227 to Mr. Richard Morris and R-3228 to Mr. Clarence Hinkle

Case 3559

Heard 4-25-67

Rec. 4-27-67

1. Grant B.T.A. special rules for the  
So. Flying 'M' - ~~San~~ Penn pool.  
Spacing to be 80 Acre units ~~150~~ Center  
of NE/4 and SW/4 of 1/4 section with  
150' tolerance from center of 40 A-  
tract.

2. Grant exception for wells now  
drilling or drilled.

3. Use the usual fixed spacing 80 A-  
order.

4. ~~The~~ B.T.A. - Lt #1 is an emoothed  
location being 830 from 50 line  
of sec. 19.

~~The~~ B.T.A. - Lt. #2 is another  
~~dox~~ location being in the wrong  
1/4 section.

Thos. H. D. R.

MAIN OFFICE 000

'67 MAR 29 PM 3 38

BEFORE THE  
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF  
BTA OIL PRODUCERS FOR SPECIAL POOL  
RULES FOR THE SOUTH FLYING "M"-  
PENNSYLVANIAN POOL, LEA COUNTY, NEW  
MEXICO

Case 3559

A P P L I C A T I O N

Comes now BTA OIL PRODUCERS and applies to the Oil Conservation Commission of New Mexico for establishment of special pool rules for the South Flying "M"-Pennsylvanian Pool (Bough C), Lea County, New Mexico, and in support thereof would show the Commission:

1. That applicant is an operator in the South Flying "M"-Pennsylvanian Pool.
2. That the South Flying "M"-Pennsylvanian pool produces from a depth in excess of 9,000 feet.
3. That one well may be reasonably expected to efficiently and economically drain and develop not less than 30 acres.
4. That drilling and developing the pool on 40 acre spacing and proration units would be uneconomical, resulting in waste through the drilling of unnecessary wells, and that such development would not result in the recovery of any significant amounts of additional oil.
5. That applicant proposes the adoption of special field rules for the South Flying "M"-Pennsylvanian Pool, including the following provisions:
  - a) Wells to be located 660 feet from lease lines, with 1320 feet between wells on the same lease.

DOCKET MAILED

Date 4-14-67

b) Adoption of 80-acre spacing and proration units:

c) An allowable factor of 80-acres with depth factor of 9,000 to 10,000 feet, as provided by the rules and regulations of the Oil Conservation Commission.

6. Attached hereto and made a part of this application is a generalized structure map contoured on top of the Bough C zone, showing Pennsylvanian wells completed in the South Flying "M"-Pennsylvanian pool, together with ownership and offsetting ownership to the best of applicant's information and belief.

WHEREFORE, applicant prays that this application be set for hearing before the Commission's duly appointed examiner, and that after notice and hearing as provided by law, the Commission enter its order adopting special pool rules for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico.

Respectfully submitted,

BTA OIL PRODUCERS

BY: Jaron W. Kellahi  
KELIAHIN & FOX  
Post Office Box 1769  
Santa Fe, New Mexico

Attorneys for Applicant





Docket No. 12-67

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 26, 1967

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,  
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Elvis A. Utz, Examiner,  
or Daniel S. Nutter, Alternate Examiner:

- CASE 3554: Application of Coastal States Gas Producing Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Flying "M" San Andres Unit Area comprising 4080 acres, more or less, of State, Federal and Fee lands in Township 9 South, Range 33 East, Lea County, New Mexico.
- CASE 3555: Application of Coastal States Gas Producing Company for a pressure maintenance expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand the pressure maintenance project in its Flying "M" San Andres Unit by the injection of water into the San Andres formation through 8 injection wells located in Sections 15, 16, 17, 20, 22, 28, 29 and 33, Township 9 South, Range 33 East, Lea County, New Mexico. Applicant further seeks the promulgation of special rules for said project, including provision for future expansion.
- CASE 3556: Application of Southland Royalty Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a proposed Devonian gas test well at an unorthodox gas well location 660 feet from the North and West lines of Section 12, Township 25 South, Range 35 East, Lea County, New Mexico. The well would be dedicated to the N/2 of said Section 12.
- CASE 3557: Application of Gulf Oil Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Inbe-Pennsylvanian Pool underlying the E/2 SW/4 of Section 13, Township 11 South, Range 33 East, Lea County, New Mexico.
- CASE 3558: Application of BTA Oil Producers for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Lowe 671 Ltd. Well No. 1 as an exception to the well location requirements of Order No. R-2929 for the Nonombre-Upper Pennsylvanian Pool and the Nonombre-Lower Pennsylvanian Pool, Lea County, New Mexico. The proposed well would be located 560 feet from the North and West lines of Section 5, Township 14 South, Range 34 East.

- CASE 3559: Application of BTA Oil Producers for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 80-acre proration units.
- CASE 3560: Application of Phillips Petroleum Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Hat Mesa Unit Area comprising 7874 acres, more or less, of Federal and State lands in Township 21 South, Ranges 32 and 33 East, Lea County, New Mexico.
- CASE 3561: Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Meyer B-4 Well No. 19 located in Unit O of Section 4, Township 21 South, Range 36 East, to produce oil from an undesignated Paddock pool and from the Oil Center-Blinebry Pool through parallel strings of tubing.
- CASE 3562: Application of Continental Oil Company for a dual completion, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Table Mesa Well No. 29 in Unit H of Section 9, Township 27 North, Range 17 West, San Juan County, New Mexico, to produce gas from the Table Mesa-Pennsylvanian "C" Gas Pool and from an undesignated Mississippian gas pool through the casing-tubing annulus and 2-inch tubing, respectively.
- CASE 3563: Application of Skelly Oil Company for an amendment to the Southeast New Mexico Gas Proration Rules and Regulations. Applicant, in the above-styled cause, seeks an amendment to Order No. R-1670, as amended, Rules and Regulations for Pro-rated Gas Pools, Lea, Eddy, Chaves and Roosevelt Counties, New Mexico, to provide an administrative procedure whereby wells ordered shut-in for extended periods to make up accumulated overproduction could be permitted to produce up to 500 MCF each month during such shut-in.
- CASE 3564: Application of Maxwell Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Taylor Unit Area comprising 640 acres, more or less, of federal lands in Sections 12 and 13, Township 18 South, Range 31 East, Eddy County, New Mexico.

-3-

Docket No. 12-67

April 26, 1967 Examiner Hearing

CASE 3565: Application of Jomar Industries, Inc. for a non-standard oil proration unit, several non-standard locations, temporary exception to Rule 307, and capacity allowables, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill 64 oil wells at non-standard locations on a non-standard oil proration unit comprising the S/2 NW/4 SE/4 and the N/2 SW/4 SE/4 of Section 30, Township 18 South, Range 38 East, Lea County, New Mexico, for production from the Ogallala formation. Said wells would be drilled to a density of four wells to each 2.5 acres and would be no nearer than 82.5 feet to the outer boundary of the unit and no nearer than 165 feet to another well producing from the same formation. Applicant also seeks a temporary exception to Rule 307 for each well to permit utilization of a vacuum-type drilling unit during the drilling and completion operation. Applicant further seeks authority to produce the wells at capacity even though the aggregate production from said wells exceeds the 40-acre normal unit allowable.

CASE 3566: Application of William A. and Edward R. Hudson for a waterflood expansion, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to expand their Puckett Waterflood Project, Maljamar Pool, by the injection of water into the Grayburg-San Andres formations through 10 wells in Sections 24 and 25, Township 17 South, Range 31 East, Eddy County, New Mexico. Applicant further seeks an administrative procedure for future expansion of said project.

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
May 1, 1968  
EXAMINER HEARING

IN THE MATTER OF:

In the matter of Case No. 3559  
being reopened pursuant to the  
provisions of Order No. R-3228,  
which order established 80-acre  
spacing units for the South Flying  
"M"-Pennsylvanian Pool, Lea County,  
New Mexico, for a period of one  
year.

Case 3559 (Reopened)

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 3559.

MR. HATCH: Case 3559 Reopened. In the matter of Case No. 3559 being reopened pursuant to the provisions of Order No. R-3228, which order established 80-acre spacing units for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin & Fox, Santa Fe, appearing for BTA Oil Producers. We'll have one witness I would like to have sworn please.

(Witness sworn)

(Whereupon, Applicant's Exhibits 1 through 5 marked for identification)

WILLIAM G. KERN

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A William G. Kern.

Q By whom are you employed and in what position, Mr. Kern?

A I'm employed as a Petroleum Engineer for BTA

Oil Producers in Midland, Texas.

Q Have you testified before the Oil Conservation Commission and made your qualifications a matter of record?

A Yes, sir, I have.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q Mr. Kern, are you familiar with the subject matter of Case No. 3559?

A Yes, sir.

Q Did you testify in the previous hearing in this case?

A Yes, I did.

Q Now, subsequent to that hearing has additional information become available to you?

A Yes, it has.

Q Referring to what has been marked as Exhibit No. 1 would you identify that exhibit and discuss the new information and the manner in which this exhibit has been changed from the prior exhibit offered in the previous case?

A Yes, sir. Exhibit No. 1 is a structure map of the Bough C zone in the area of the Flying "M" South Field. We have shown here the field limits designated by the

Commission. Within these limits we have four producing wells and one dry hole. There have been two unsuccessful attempts to extend the field and there is currently one well drilling to the north of the Flying "M" field.

Q Would you point out specifically the dry hole and the drilling well?

A In Section 30 the BTA well in the northeast quarter has new information since the last hearing, and in Section 24 in the northwest quarter Tom Brown has drilled a dry hole and in Section 19 American Trading is currently drilling a new location in the northwest quarter.

Q Now, based on the information obtained from the two dry holes you referred to, have you changed the contours in your structure map on top of the Bough C zone?

A We have changed our interpretation of the structure in this area. We originally had it producing from a nose and it is now a small feature, producing from a small high.

Q Do you think this is a more reasonable interpretation of the structure in this area?

A I believe it is, yes, sir.

Q Now, referring to what has been marked as Exhibit No. 2, would you identify that exhibit, please?

A Exhibit No. 2 is monthly production figures from

the four wells completed in the Bough C zone in the Flying "M" field, along with the cumulative production and the bottom hole pressures that have been taken in this field.

Q Now, in connection with the bottom hole pressures, do you see any significant changes in those pressures during the life of this pool?

A There has been a considerable drop in the bottom hole pressure, accompanied by the production of approximately 300,000 barrels of oil. Pressure has dropped from original pressure of 3,233 to 1,964 in January of 1968.

Q Have you found those pressures to be fairly uniform throughout the four wells in the pool?

A Yes, sir, they have been.

Q Referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

A Exhibit No. 3 is a bottom hole pressure versus production for the Flying "M" field and on this graph we have color coded the four wells in the field. During the initial completion of BTA's FMS Well No. 2, was originally completed by Union of Texas in October of 1965. This well was abandoned as a dry hole after taking a bottom hole pressure of 3,159 pounds. BTA reentered that well in February of 1967 and without any production from that particular



well the pressure has dropped down to 2,854 pounds, and another significant well in the pool is Roger Hanks McGuffin Well No. 1, which was completed in August of 1967. This well is located approximately 2,500 feet from the nearest production in the field, and had a bottom hole pressure of 2,338 pounds.

Q Those would appear to fall right in line with the pressures on the other producing wells in the pool, is that right?

A Yes, sir, it appears to be relatively straight line.

Q You say the Rodger Hanks McGuffin No. 1 was 2,500 feet from the nearest production?

A Yes, it was 2,500 feet from any production in the field.

Q Would that indicate that one well would drain in excess of 80 acres?

A Yes, sir, it would.

Q And your information on the BTA FMS No. 2, would that indicate also that one well would drain in excess of 80 acres?

A Yes, sir, that pressure was drawn down without any production from that well.

Q What was the nearest production to that well?

A The nearest well would have been approximately 1,300 feet from that well.

MR. UTZ: Which well would that be?

A That would be the original completion in the pool, Union of Texas, McGuffin No. 1 would have been about 1,300 feet, I believe, from the FMS No. 2.

Q (By Mr. Kellahin) Cumulative production from that well is shown on your Exhibit No. 2, is it not?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit No. 4, would you identify that exhibit?

A Exhibit No. 4 is a bottom hole pressure versus time for the Flying "M" field. This curve shows a drastic drop in bottom hole pressure during the last year. It also has been color coded and the FMS No. 2 pressure drop can be seen on this curve as well as Rodger Hanks' recent completion falling right in line with the rest of the pressures in the field.

Q Now again, the BTA FMS No. 2 well is shown as of the dates of original completion and the recompletion as on Exhibit No. 3, is that correct?

A That is true.

Q And the Rodger Hanks McGuffin No. 1 is also shown as of date of completion?

A As of date of completion.

Q Now, referring to what has been marked as Exhibit No. 5, would you identify that exhibit?

A Exhibit No. 5 is the summary of the economics for our development well in this field. We have figured economics for both 40-acre and 80-acre development.

Q Now, have you made any changes on this exhibit from the economics interpretation offered in the previous hearing on this case?

A Yes, sir, we have increased the price of oil due to an oil increase price in this area and we have also included the income from gas which we didn't have at that time.

Q Are you making some volumes of gas at the present time?

A Yes, sir, we are.

Q Have you changed the well cost figure on this exhibit?

A Well cost has been increased from 125 to 150,000 to allow for a pumping well. The original well cost estimate was for a flowing well.

Q Now, are there any pumping wells in the pool at the present time?

A There are two pumping wells.

Q And two flowing wells?

A And two flowing wells.

Q Do you anticipate the two flowing wells will be put on pump in the near future?

A I believe they will be.

Q So it would be logical then to include the cost of a pumping well?

A Cost of a pumping well.

Q Based on economics, Mr. Kern, would you anticipate there will be any further development in this pool?

A I believe other than the well that is presently drilling there probably will not be any more development in this field; apparently, the field is approximately 47 per cent depleted at this time.

Q And based on the pressure drawdown on the pool would a well drilled at the present time recover as much oil as a well originally drilled in this pool?

A No, sir, it would not.

Q Do you feel that the four wells are adequately draining the pool at the present time?

A Yes, sir.

Q As you understand the pool to be.

A Yes, sir.

Q Do you have any recommendation as to whether the 80-acre spacing rules should be continued for a temporary period or for a permanent period?

A We would like to have the present rules made permanent.

Q Now, based on your information, you state that one well will, in your opinion, drain in excess of 80 acres?

A Yes, sir.

Q Would you summarize the information which leads you to this conclusion?

A Basically, the information that leads to this conclusion is the FMS Well No. 2, which had approximately 300-pound pressure drawdown without any production from that well and the drillstem test taken on Rodger Hanks' McGuffin Well No. 1, which had a bottom hole pressure of 2,338 pounds and was 2,500 feet from the nearest production in this field.

Q Now, in your opinion, would it be economical to develop this pool on 40-acre spacing?

A No, sir, it wouldn't.

Q Would a well drilled on 40-acre spacing, in your

opinion, pay out in this stage of depletion?

A I don't believe it would.

Q Were Exhibits 1 through 5 prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLAHIN: At this time I offer in evidence Exhibits 1 through 5 inclusive.

MR. UTZ: Without objection, Exhibits 1 through 5 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 5 were offered and admitted in evidence)

MR. KELLAHIN: That's all I have on Direct Examination, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Kern, what type drive do you have in this pool?

A We believe it's solution gas drive.

Q Referring to your Exhibit No. 5 on your recover per acre figures, the second figure is what, porosity?

A Yes, sir, seven per cent.

Q .80 is 100 minus your water?

A Yes, sir.

Q And the 1.65 is your recovery for formation volume?

A That's our formation volume factor.

Q How was that arrived at?

A That was arrived by Borden's correlation.

Q Isn't that unusually high?

A It is high, I don't believe it's unusually high for 47 degree API gravity crude with a solution gas of approximately 1,300 cubic feet per barrel.

Q And what did you use for gas gravity?

A Gas gravity was 8, .8.

Q The solution GOR is pretty high, isn't it?

A Yes, sir.

Q And the 13 feet is your net pay and the 30 per cent a recovery factor?

A Yes, sir.

Q And that is then the figure you used in your economics on your 80 and 40-acre comparison?

A Yes, sir.

Q And you are asking for permanent rules precisely as the order is now written?

A Yes, sir.

MR. UTZ: Are there other questions of the witness?  
He may be excused.

(Witness excused)

MR. UTZ: Let the record show that we have  
a telegram from Union of Texas supporting the case.  
We'll take the case under advisement and the hearing is  
adjourned.



STATE OF NEW MEXICO     )  
                                   ) s3  
 COUNTY OF BERNALILLO    )

I, KAY EMBREE, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 7th day of May, 1968.

*Kay Embree*  
 \_\_\_\_\_  
 NOTARY PUBLIC

My Commission Expires:

November 19, 1971

I do hereby certify that the foregoing is a complete record of the proceedings in the hearing of Case No. 3559, held on 5-1-68, at

*Thos. E. [Signature]*, Executive  
 New Mexico Oil Conservation Commission

**PRODUCTION HISTORY  
SOUTH FLYING M (PENN) FIELD  
LEA COUNTY, NEW MEXICO**

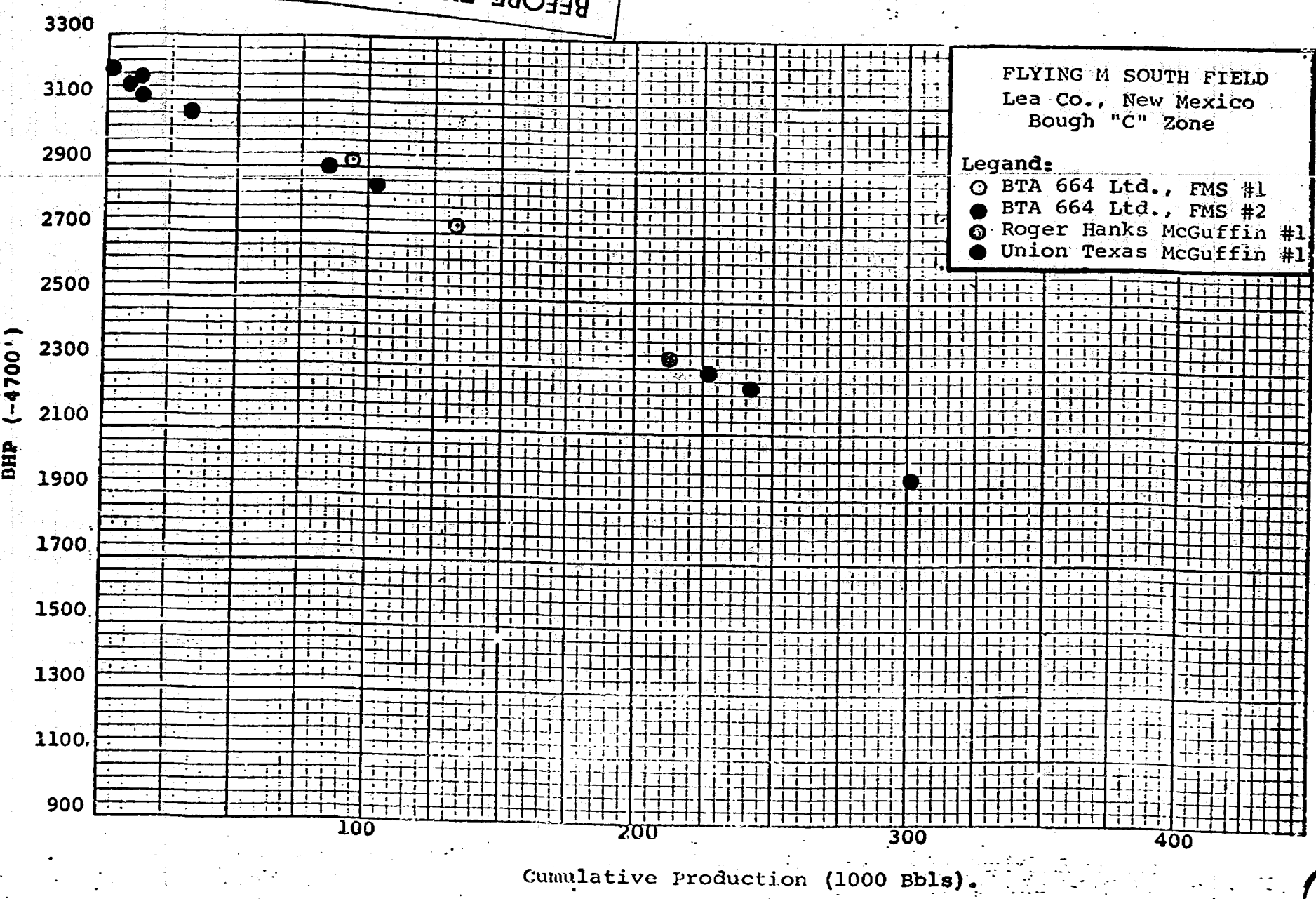
YEAR MONTH	BTA FMS #1 BOPM	BTA FMS #2 BOPM	R.C. HANKS McGuffin #1 BOPM	Union of Tex. McGuffin #1 BOPM	TOTAL FIELD BOPM	CUM. TOTAL FIELD Bbls.	BHP @ -4700' psi	
1965				1,231	1,231	1,231	3233	UT
July				4,746	4,746	5,977	3190	UT
Aug.				3,641	3,641	9,618	3143	UT
Sept.				4,333	4,333	13,951	3117	UT
Oct.				4,457	4,457	18,408		
Nov.				4,839	4,839	23,247		
Dec.								
1966				5,569	5,569	28,816	3065	UT
Jan.				3,764	3,764	32,580		
Feb.				4,889	4,889	37,469		
March				4,970	4,970	42,439		
April				5,584	5,584	48,023		
May				5,142	5,142	53,165		
June				5,084	5,084	58,249		
July				5,172	5,172	63,421		
Aug.				4,882	4,882	68,303		
Sept.				5,426	5,426	73,729		
Oct.				5,584	5,584	79,313	2900	UT
Nov.				6,306	6,306	85,619		
Dec.								
1967				6,149	8,115	93,734	2929	BTA
Jan.	1,966	--		4,952	10,060	103,784	2854	BTA
Feb.	5,108	--		5,776	13,809	113,603	2732	Avg.
March	5,527	2,506		5,551	15,857	133,460		
April	5,153	5,153		5,446	16,976	150,436		
May	5,765	5,765		6,088	19,840	170,276		
June	6,876	6,876		7,123	21,687	191,963	2338	Hnks
July	7,282	7,282		6,386	21,002	212,965	2292	UT
Aug.	7,321	7,295		985	14,792	227,757	2246	UT
Sept.	6,917	6,890	1,186	--	15,258	243,015		
Oct.	7,050	7,022	4,755	--	18,628	261,643		
Nov.	6,950	6,923	4,948	911	17,825	279,468		
Dec.	6,003	5,963						
1968				4,190	22,145	301,613	1964	UT
Jan.	5,300	5,350	7,305	2,957	20,169	321,782		
Feb.	5,403	5,523	6,286					
March								
April								

**BEFORE EXAMINER UTZ**  
LEA COUNTY CONSERVATION COMMISSION  
*Applied* EXHIBIT NO. 2  
CASE NO. 3559

CASE NO. 3559  
 EXHIBIT NO. 3  
 U.S. CONSERVATION COMMISSION  
 BEFORE EXAMINER UTZ



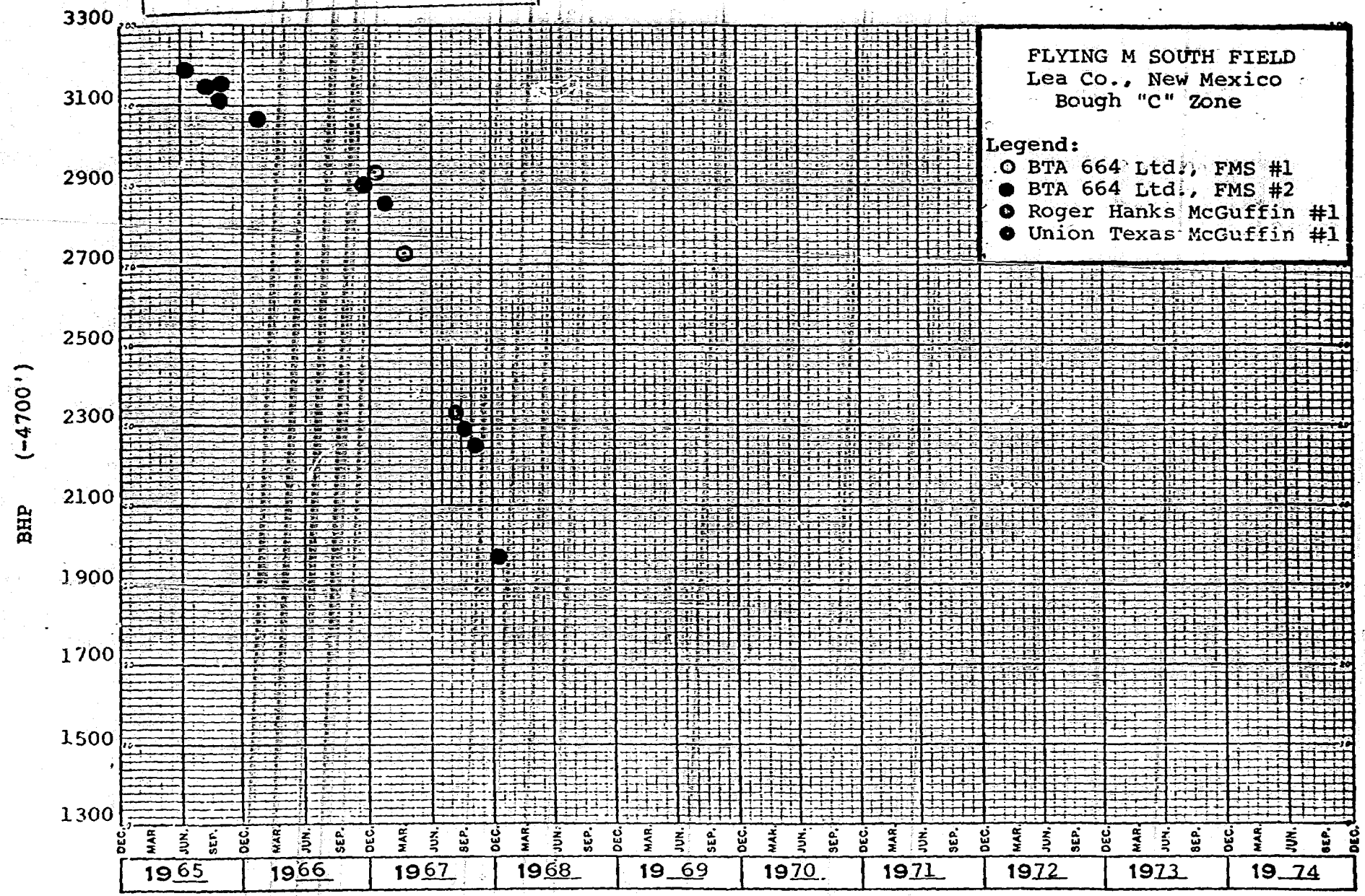
CODEX BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS  
 PRINTED IN U.S.A.



BEFORE EXAMINER UTZ  
 U.S. CONSERVATION COMMISSION  
 EXHIBIT NO. 3859  
 CASE NO. 7



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 PRINTED IN U.S.A.



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FLYING M, SOUTH FIELD  
LEA COUNTY, NEW MEXICO

BOUGH C ZONE

Income Data

Gross Oil Income (\$/Bbl)	3.05
Gas Income @ 10¢/MCF (\$/Bbl)	0.13
Royalty @ 12.5%	0.39
Tax 6.7%	0.21
Operating Costs (\$/Bbl)	0.30
Net Income (\$/Bbl)	2.28

Recovery Per Acre

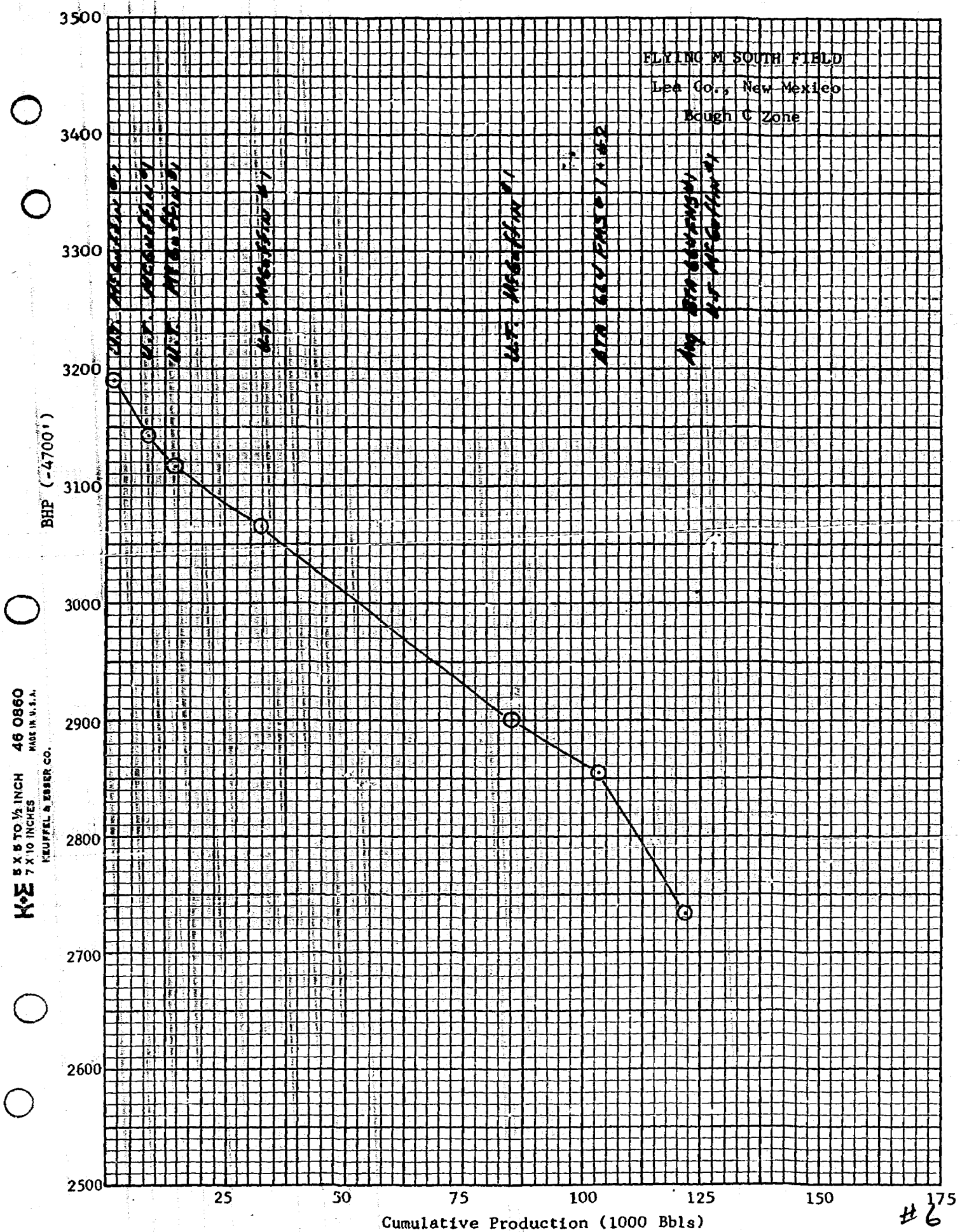
$$\frac{7758 \times .07 \times .80}{1.65} \times 13' \times 30\% = 1030 \text{ Bbl/Acre}$$

*100-220 met Pump Refactor*  
*Borden correlation*  
*47° Sol Gas 1300 H.R.*

Economics

	<u>80 Acre Development</u>	<u>40 Acre Development</u>
Reserves Per Well (Bbls)	82,500	41,250
Net Income (\$/Bbl)	2.28	2.28
Development Cost Per Well (\$)	150,000	150,000
Estimated Net Income (\$)	188,000	94,000
Return on Investment (\$/\$)	1.25	0.63

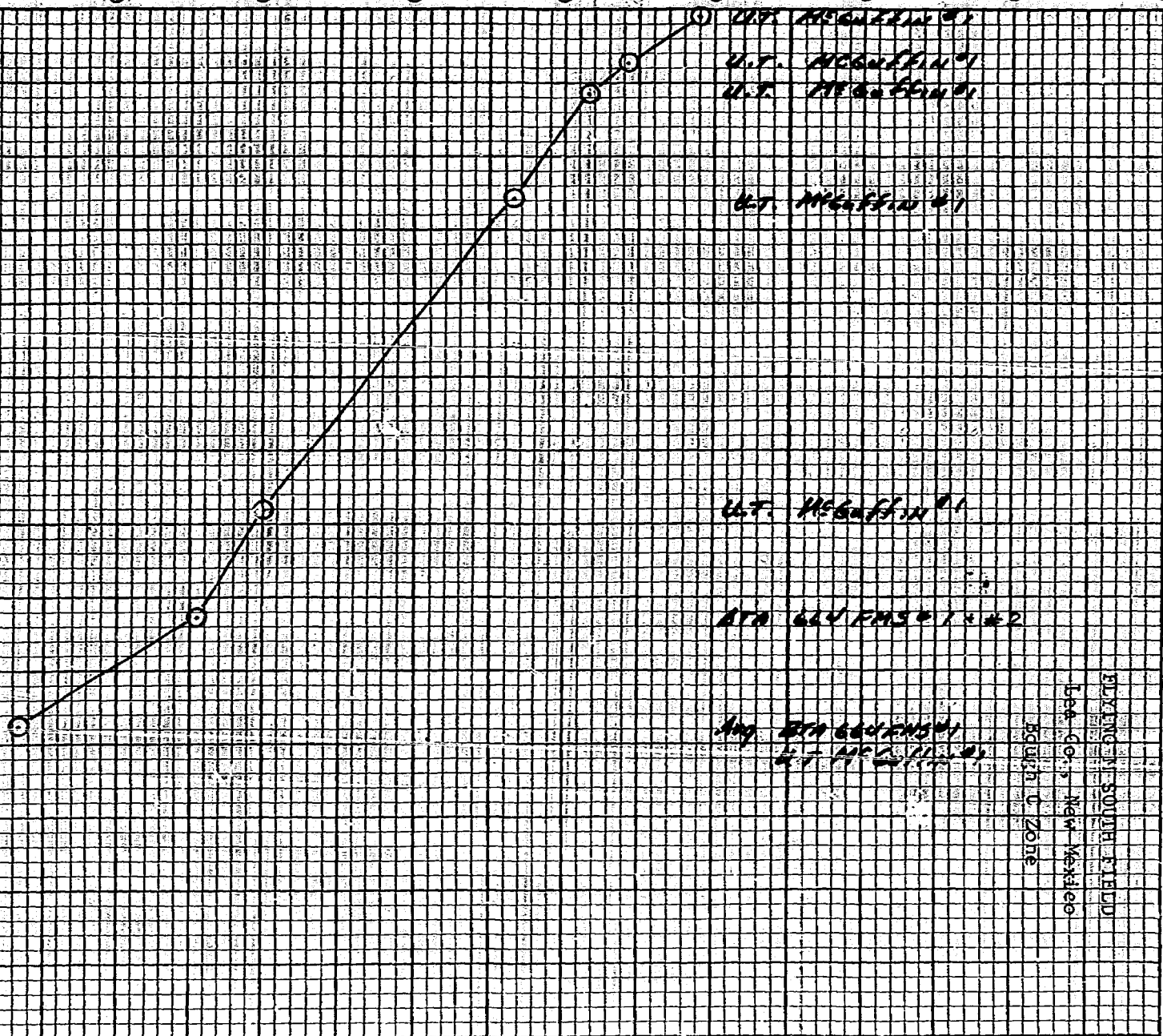
**BEFORE EXAMINER UTZ**  
 OIL CONSERVATION COMMISSION  
 CASE NO. 3559  
 EXHIBIT NO. 3



K&M 5 X 5 TO 1/2 INCH 46 0860  
7 X 10 INCHES  
KEUFFEL & ESSER CO. MADE IN U.S.A.

BHP (-4700')

2700 2800 2900 3000 3100 3200 3300 3400 3500

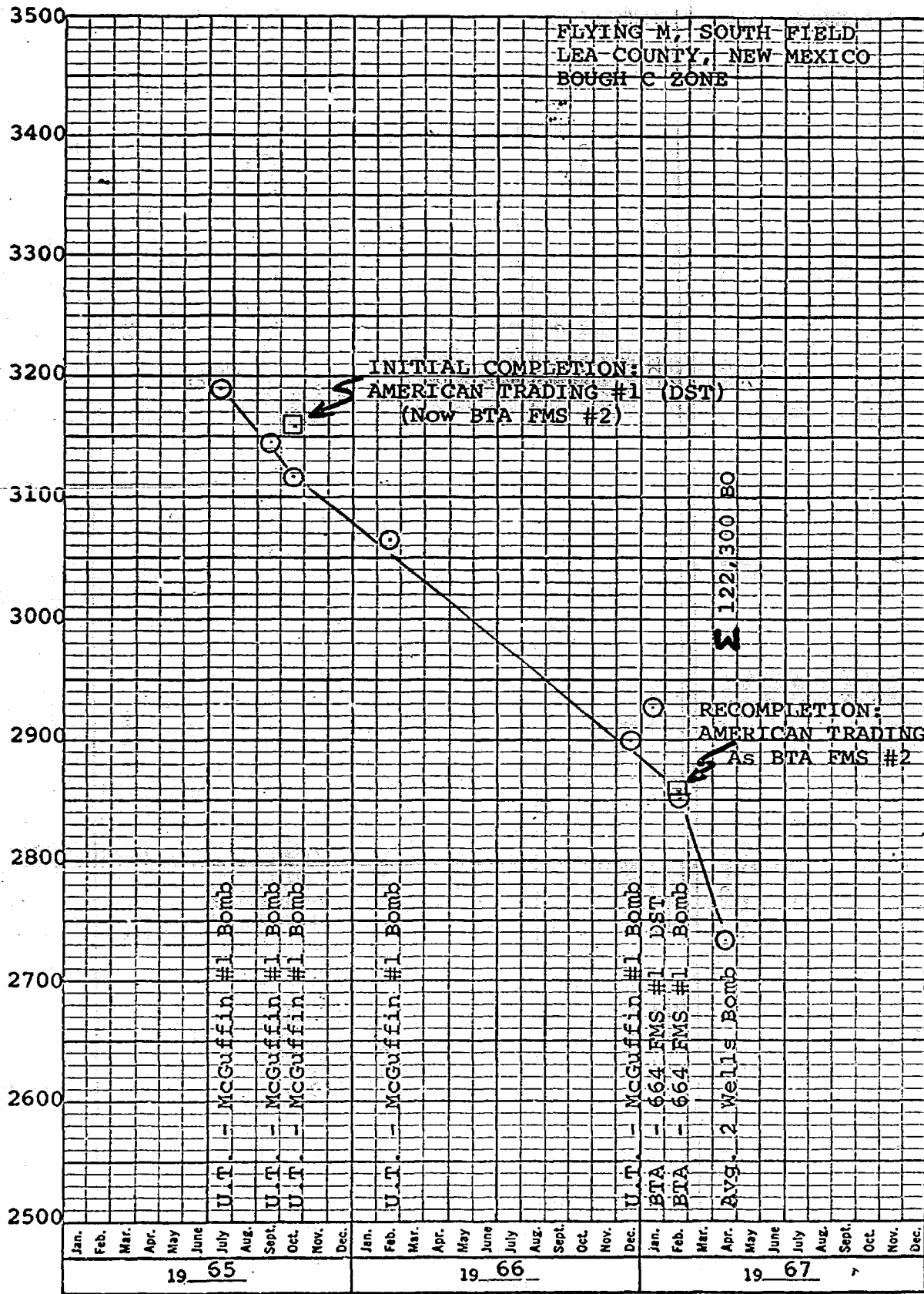




46 3290  
MADE IN U.S.A.

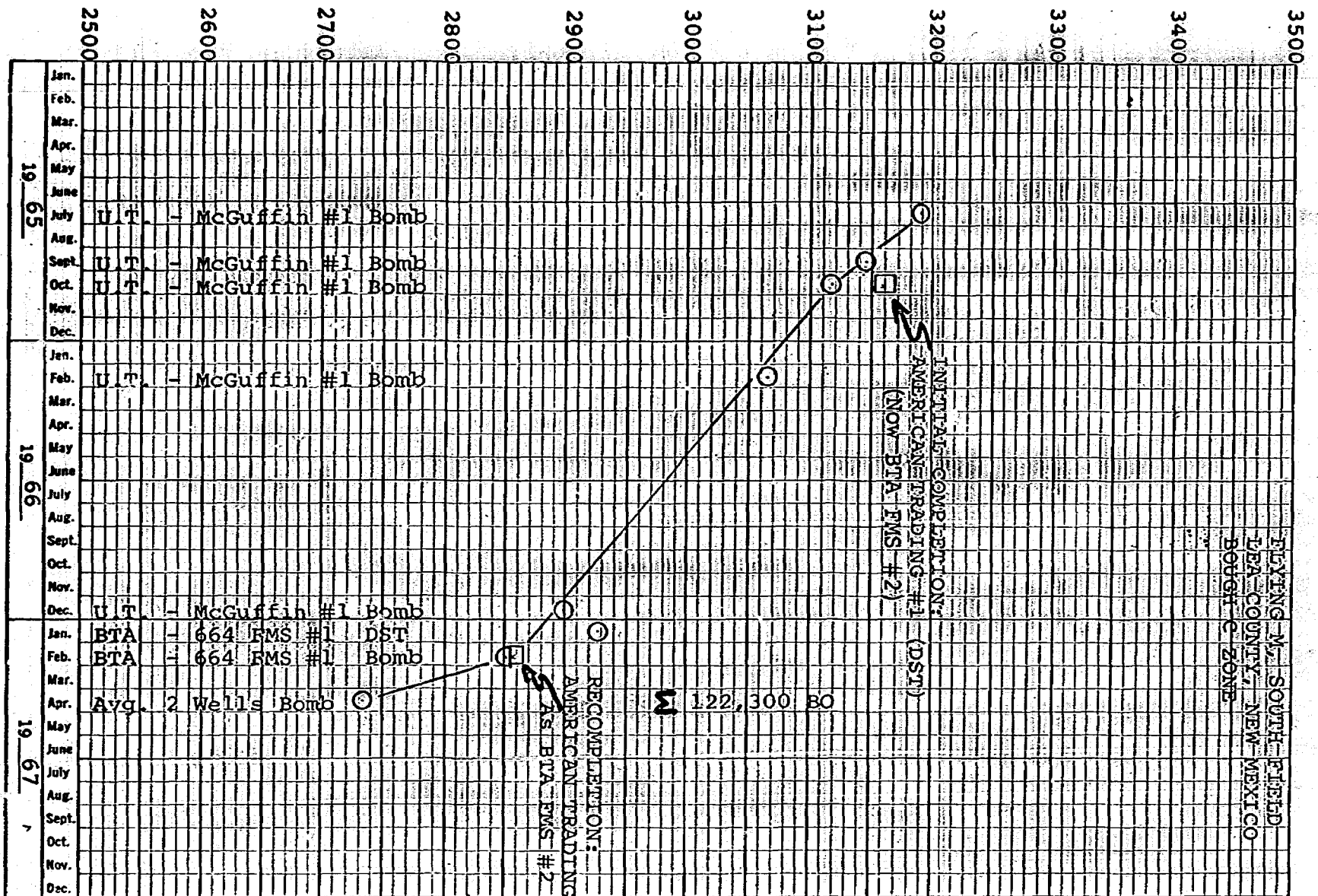
K-E 3 YEARS BY MONTHS  
X 100 DIVISIONS  
KEUFFEL & ESSER CO.

BHP (-4700')





BHP (-4700')



BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 7  
CASE NO. 3559

FLYING M, SOUTH FIELD  
LEA COUNTY, NEW MEXICO

Rock Properties

Name	Bough C
Age	Pennsylvanian
Lithology	Limestone
Depth	9058'
Porosity %	7
Net Pay ft.	13
Oil Saturation %	80
Water Saturation %	20
Temperature °F.	165

Fluid Properties

Original Pressure	3233 psig
Current Pressure	2732 psig
Bubble Point	3150
Gas Oil Ratio cfpb	1300
Gravity °API	47
Formation Volume Factor	1.65

Reservoir Mechanism

Solution Gas Drive  
Recovery % Oil In Place

30

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	8
CASE NO.	3559

#8

FLYING M, SOUTH FIELD  
LEA COUNTY, NEW MEXICO  
BOUGH C ZONE

Income Data

Gross Income (\$/Bbl)	2.95
Royalty @ 12.5%	.37
Tax 6.7%	.20
Operating Costs (\$/Bbl)	.30
Net Income (\$/Bbl)	2.08

Recovery Per Acre

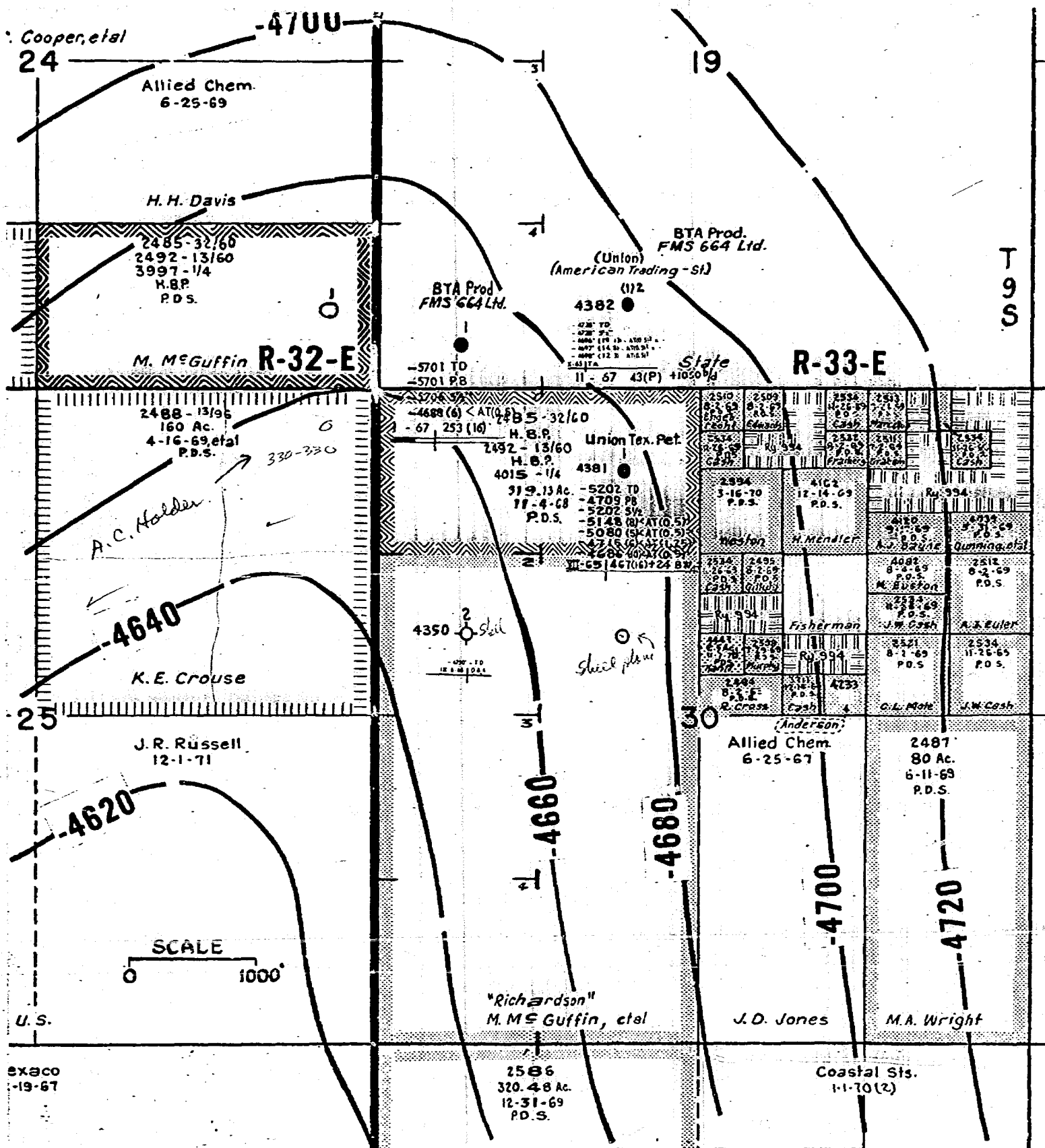
$$\frac{7758 \times .07 \times .80}{1.65} \times 13' \times 30\% = 1030 \text{ Bbl/Acre}$$

Economics

	<u>80 Acre Development</u>	<u>40 Acre Development</u>
Reserves Per Well (Bbls)	82,500	41,250
Gross Income (\$/Bbl)	2.89	2.89
Net Income (\$/Bbl)	2.08	2.08
Cost of Flowing Completion (\$)	125,000.	125,000.
Estimated Net Income (\$)	171,600	85,800
Return on Investment (\$/\$)	1.37	0.68

BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
EXHIBIT NO.	9
CASE NO.	3552

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<div>Union 6-10-67 06070</div>	<div>Sinclair 6-10-67 063101</div>	<div>Lorio 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>R.M. Young, Jr. 6-10-67 063101</div>
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<div>Union 6-10-67 06070</div>	<div>Sinclair 6-10-67 063101</div>	<div>Lorio 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>R.M. Young, Jr. 6-10-67 063101</div>
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<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>
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<div>Union 6-10-67 06070</div>	<div>Sinclair 6-10-67 063101</div>	<div>Lorio 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>R.M. Young, Jr. 6-10-67 063101</div>
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<div>Union 6-10-67 06070</div>	<div>Sinclair 6-10-67 063101</div>	<div>Lorio 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>Shell 6-10-67 063101</div>	<div>R.M. Young, Jr. 6-10-67 063101</div>
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<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>
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<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>	<div>State</div>
<div>186</div> <div>State</div>					



**FLYING M PENN FIELD** *Shell & No. 1*  
**LEA COUNTY, NEW MEXICO** *Core 3559*  
**Contours on Bough C**

# OIL PRODUCTION HISTORY

FLYING M, SOUTH (PENN)

LEA COUNTY, NEW MEXICO

Year Month	BOPM Union Texas McGuffin #1	BOPM BTA FMS #1	BOPM Total Field	Cum. Total Bbls.	BHP @ -4700' PSI
1965					DST 3233 3190 U.T.
Jul	1,231			1,231	
Aug	4,746			5,977	
Sept	3,641			9,618	3143 U.T.
Oct	4,333			13,951	3117 U.T.
Nov	4,457			18,408	
Dec	4,839			23,247	
1966					
Jan	5,569			28,816	
Feb	3,764			32,580	3065 U.T.
Mar	4,889			37,469	
Apr	4,970			42,439	
May	5,584			48,023	
Jun	5,142			53,165	
Jul	5,084			58,249	
Aug	5,172			63,421	
Sep	4,882			68,303	
Oct	5,426			73,729	
Nov	5,584			79,313	
Dec	6,306			85,619	2900 U.T.
1967					
Jan	5,759	2,000	7,759	93,378	2929 BTA
Feb	4,952	5,108	10,060	103,438	2854 BTA
Mar	5,776	8,125	13,901	117,339	
Apr*	1,690	3,271	4,961	122,300	2732 Avg.

\* April production estimated to date of BHP.

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 5  
CASE NO. 3559

#5