Case 149 incl.

BEFORE THE
OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO

TRANSCRIPT OF HEARING

November 21, 1950

E. E. GREESON
COURT REPORTER
UNITED STATES COURT HOUSE
TELEPHONE 2-0672
ALBUQUERQUE, NEW MEXICO

BEFORE THE

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

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PROCEEDINGS

The following matters came on for consideration before the Oil Conservation Commission of the State of New Mexico, pursuant to legal notice at a hearing held on November 21, 1950, at 10:00 a.m., at Santa Fe, New Mexico.

NOTICE FOR PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO TO:

All interested parties:

The Oil Conservation Commission of the State of New Mexico hereby gives public notice that hearings will be held before the Commission pursuant to Rule 503 of the General Rules and Regulations of this Commission on the dates hereinafter set forth for the purpose of setting the allowable production of oil and gas for the State of New Mexico for the calendar month following the date of each hearing. All such hearings shall be held in the Office of the Oil Conservation Commission at Santa Fe, New Mexico, commencing at 10:00 a. m., and shall be on the date:

November 21, 1950

Dated this 3rd day of January, 1950.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

SEAL /s/ R. R. SPURRIER, SECRETARY

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the rules and regulations of said Commission promulgated thereunder, of the following public hearing to be held November 21, 1950, beginning at 10:00 o'clock A. M. on that day in the City of Santa Fe, New Mexico, in the Capitol (Hall of Representatives).

STATE OF NEW MEXICO TO:

Mid-Continent Petroleum Corporation
Tulsa, Oklahoma

Magnolia Petroleum Company
Dallas, Texas

Gulf Oil Corporation
Tulsa, Oklahoma

Santa Fe Pacific Railroad Company
Amarillo, Texas

Oil Development Company of Texas
% Santa Fe Pacific Railroad Company
Amarillo, Texas

U. D. Sawyer and Dessie Sawyer
Crossroads, New Mexico

To all other persons who may have an interest in the matters herein set forth:

Case 142 (under authority of Section 8, Order No. 779, dated July 27, 1948)

In the matter of the hearing called by the Oil Conservation

Commission of the State of New Mexico upon its own motion for the purposes of:

1. Reconsidering Order No. 779 made by the Oil Conservation Commission of the State of New Mexico, in Case No. 149 on July 27, 1948, upon the application of Mid-Continent Petroleum Corporation, establishing the 80-acre drilling pattern and proration unit for the production of oil from the Devonian formation below 12,000 feet in the Crossroads Devonian Field of Lea County, New Mexico.

2. Rescinding the cancelling said Order No. 779 unless the Mid-Continent Petroleum Corporation, applicant for the aforementioned order, or any other interested parties, show good cause why the same should be further continued in effect.

GIVEN under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on October 27, 1950.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
R. R. SPURRIER, SECRETARY

SEAL

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

The State of New Mexico by its Oil Conservation Commission hereby gives notice pursuant to law and the Rules and Regulations of said Commission promulgated thereunder, of the following public hearing to be held November 21, 1950, beginning at 10:00 o'clock A. M. on that day in the City of Santa Fe, New Mexico, in the Capitol (Hall of Representatives).

STATE OF NEW MEXICO TO:

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

Case 237

In the matter of the application of the New Mexico Oil Conservation Commission upon its own motion to establish a well spacing pattern for each of the presently designated gas pools in the Counties of San Juan and Rio Arriba, State of New Mexico, producing or capable of producing from the following formations:

1. Pictured Cliffs sandstone (except Kutz Canyon-Fulcher Basin)
2. Mesaverde formation (except Blanco)
3. Any of the Pennsylvanian formations.

Case 238

In the matter of the application of Shell Pipe Line Corporation to amend for the purpose of clarification, Rule 503 (e) and Rule 503 (f) of Order No. 850, being the Rules and Regulations of the New Mexico Oil Conservation Commission, in order that the same may be construed as covering underruns and overruns, etc.

Case 239

In the matter of the application of Humble Oil and Refining Company and Magnolia Petroleum Company for permission to inject water for secondary recovery of oil from certain marginal wells in the Grayburg reservoir, Penrose-Skelly pool on the Humble Oil and Refining Company's J. L. Greenwood Lease and the Brunson-Argo lease of Magnolia Petroleum Company, in said pool, located as follows:

J. L. Greenwood Lease: S/2 Sec. 9, Twp. 22S, R. 37E, Lea County, New Mexico.

Brunson-Argo Lease: NE/4 Sec. 9, Twp. 22S, R. 37E, and NW/4 Sec. 10, Twp. 22S, R. 37E, Lea County, New Mexico.

Case 240

In the matter of the application of Resler and Sheldon for authority to dually complete a well located 2310 ft. south and the north line and 990 ft. east of the west line of Sec. 33, Twp. 23S, R. 37E, Lea County, New Mexico.

Case 241

In the matter of the New Mexico Oil Conservation Commission upon its own motion upon the recommendation of the Southeastern New Mexico Nomenclature Committee for the creation of new pools, as follows:

Twp. 21S. R. 37E. N.M.P.M.

SW/4 Section 2
SE/4 Section 3
NE/4 Section 10
NW/4 Section 11

the same to be classified as an oil pool and named NORTH BRUNSON (Ellenburger).

Twp. 12S. R. 37E. N.M.P.M.

S/2 Section 13
N/2 Section 24

the same to be classified as an oil pool and named GLADIOLA (Devonian), and for the extension of certain heretofore created pools as follows:

Extend the Grayburg-Jackson pool, Eddy County, New Mexico, by changing the present boundaries to include the N/2 Section 7, Twp. 17S, R. 31E, N.M.P.M.

Extend the boundaries of the Watkins Pool, Eddy County,

New Mexico so as to include the E/2 of Sec. 36, Twp. 18S, R. 31E for Queen production.

Extend the boundaries of the Turkey Track-Seven Rivers pool in Eddy County, New Mexico, so as to include the SE/4 Sec. 9, S/2 Sec. 10, N/2 Sec. 15, NE/4 Sec. 16, all in Twp, 19S, R. 29E, N.M.P.M.

Extend the boundaries of the Maljamar-Paddock pool in Lea County, New Mexico, so as to include therein S/2 Sec. 17, NE/4 Sec. 20, in Twp. 17S, R. 32E, N.M.P.M.

Extend the existing boundaries of the Corbin pool in Lea County, to include therein the SE/4 Sec. 33, and the Sw/4 Sec. 34, in Twp. 17S, R. 33E, N.M.P.M.

Extend the boundaries of the Nadine pool in Lea County, New Mexico, so as to include therein the S/2 Sec. 14, Twp. 19S, R. 38E, N.M.P.M.

Extend the North Drinkard pool in Lea County, New Mexico, so as to include therein the NE/4 Sec. 10, T. 21S, R. 37E, N.M.P.M.

Extend the Drinkard pool in Lea County, New Mexico, so as to include therein the E/2 Sec. 23, Twp. 21S, R. 37E, N.M.P.M.

Extend the South Leonard pool in Lea County, New Mexico so as to include therein the E/2 of Sec. 23, Twp. 26S, R. 37E, N.M.P.M.

Extend the boundary of the Langlie-Mattix pool in Lea County, New Mexico, so as to include therein the SW/4 Sec. 25 and NW/4 Sec. 36 of Twp. 24S, R. 37E, N.M.P.M.

Case 242

In the matter of the application of Continental Oil Company for an order approving the unit agreement of the Texas Hill Unit Area, Eddy County, New Mexico, comprising 13,800.43 acres more or less, situated in Townships 21, 22 and 23 south, Range 21 east, N.M.P.M. and in accordance with plat attached to said application.

GIVEN under the seal of the Oil Conservation Commission of New Mexico, at Santa Fe, New Mexico, on October 27, 1950.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

/s/ R. R. Spurrier
R. R. SPURRIER, SECRETARY

BEFORE:
Hon. Guy Shepard, Member and Acting Chairman.

Hon. R. R. Spurrier, Member and Secretary

REGISTER:

W. K. Byrom
Hobbs, New Mexico
Nolen and Byrom

B. H. Nolen
Hobbs, New Mexico
Nolen and Byrom

B. R. Carney
Tulsa, Oklahoma
Warren Petroleum Company

Booth Kellough
Tulsa, Oklahoma
Amerada Petroleum Corporation

S. J. Forester
Tulsa, Oklahoma
Sinclair Oil and Gas Company

Cecil R. Buckles
Tulsa, Oklahoma
Sinclair Oil and Gas Company

S. J. Fraser
Tulsa, Oklahoma
Sinclair Oil and Gas Company

M. L. Patterson
Odessa, Texas
Phillips Petroleum Company

Scott R. Brown
Farmington, New Mexico
Western National Gas Company

W. F. Hollis
Midland, Texas
El Paso Natural Gas Company

Elvis R. Utz
Santa Fe, New Mexico
New Mexico Oil Conservation Commission

H. W. McDody
Dallas, Texas
Southern Union Gas Company

E. B. Clark
Wichita, Kansas
Clark and Christie

Quilman B. Davis
Dallas, Texas
Southern Union Gas Company

Joe Lilly
Farmington, New Mexico
Southern Union Gas Company

C. D. Borland
Hobbs, New Mexico
Gulf Oil Corporation

E. E. Markt, Jr.
Ft. Worth, Texas
Gulf Oil Corporation

Murray C. Moffatt
Ft. Worth, Texas
Gulf Oil Corporation

Glenn Staley
Hobbs, New Mexico
New Mexico Engineering Commission

Forrest B. Miller
Santa Fe, New Mexico

T. H. McElvain
Santa Fe, New Mexico

Lloyd Holsapple
Ft. Worth, Texas
Sinclair Oil and Gas Company

G. H. Gray
Midland, Texas
Sinclair Oil and Gas Company

R. S. Blymn
Hobbs, New Mexico
New Mexico Oil Conservation Commission

G. E. Kendrick
Jal, New Mexico
El Paso Natural Gas Company

C. L. Perkins
El Paso, Texas

E. Taylor Armstrong
Dallas, Texas
James D. Hancock and Company, Ltd.
British American Oil Production Company

Paul S. Johnston
Hobbs, New Mexico
Texas Pacific Coal and Oil Company

Raymond Lamb
Artesia, New Mexico
Wilson Oil Company

R. E. Murphy
Roswell, New Mexico
Magnolia Petroleum Company

Lewis H. Bond, Jr.
Ft. Worth, Texas
Stanolind Oil and Gas Company

J. O. Seth
Santa Fe, New Mexico
Stanolind Oil and Gas Company

C. F. Bedford
Fort Worth, Texas
Stanolind Oil and Gas Company

O. Seth
Santa Fe, New Mexico
Stanolind Oil and Gas Company

Alex Clarke, Jr.
Ft. Worth, Texas
Stanolind Oil and Gas Company

Roy Yarbrough
Hobbs, New Mexico
New Mexico Oil Conservation Commission

R. S. Dewey
Midland, Texas
Humble Petroleum and Refining Company

W. E. Hubbard
Houston, Texas
Humble Petroleum and Refining Company

Payton Howard
Midland, Texas
Shell Oil Company

F. C. Brown
Houston, Texas
Shell Oil Company

M. T. Smith
Midland, Texas
Shell Oil Company

R. E. Roehl
Midland, Texas
Cities Service Oil Company

R. L. Denton
Midland, Texas
Magnolia Petroleum Company

Frank R. Loveing
Hobbs, New Mexico
Shell Oil Company

B. L. Ryan
Midland, Texas
Shell Oil Company

R. E. Canfield
Roswell, New Mexico
U. S. Geological Survey

Foster Morrell
Roswell
U. S. Geological Survey

H. L. Johnston
Ft. Worth, Texas
Continental Oil Company

E. L. Shafer
Hobbs, New Mexico
Continental Oil Company

Homer Daily
Midland, Texas
Continental Oil Company

W. Baxter Boyd
Ft. Worth, Texas
Continental Oil Company

T. M. Cady
Ft. Worth, Texas
Continental Oil Company

Thomas Steele
Hobbs, New Mexico
Ohio Oil Company

G. L. Shoemaker
Midland, Texas
Stanolind Oil Company

John Gould
Sundown, Texas
Honolulu Oil Corporation.

Charles W. Sternberg
Denver, Colorado
Sunray Oil Corporation

Manual A. Sanchez
Santa Fe, New Mexico
Delhi Oil Corporation

Robert Mims
Dallas, Texas
Delhi and Blaco Company

W. Clifford Smith
Dallas, Texas
Delhi Oil Corporation

Frank C. Barnes
Santa Fe, New Mexico
New Mexico Oil Conservation Commission

E. E. Kinney
Artesia, New Mexico
New Mexico Bureau of Mines

George Graham
Santa Fe, New Mexico
New Mexico Oil Conservation Commission

Dan McCormick
Carlsbad, New Mexico
New Mexico Oil Conservation Commission

A. R. Greer
Aztec, New Mexico
New Mexico Oil Conservation Commission

Hiram Daw
Roswell, New Mexico

J. H. Crocker
Tulsa, Oklahoma

G. T. Hanners
Levington,
New Mexico

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CHAIRMAN SHEPARD: The meeting will please come to order. The first order of business will be the allowable hearing.

MR. McCORMICK: Let's have Ed Kinney and Elvis Utz sworn. Will you swear them, Mr. Chairman?

(Mr. Utz and Mr. Kinney sworn.)

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ELVIS A. UTZ,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. McCORMICK:

Q Please state your name.

A Elvis A. Utz.

Q What is your official position with the Oil Conservation Commission?

A Engineer.

Q As such, do you make a study of market demand for oil in the State of New Mexico?

A I do.

Q Do you have the estimate of market demand furnished by the Bureau of Mines?

A No, I do not have it this month. It hasn't arrived yet.

Q Have you received and compiled nominations of purchasers of oil for the month of December, 1950?

A Yes, I have.

Q What are the nominations?

A The total nominations are 121,899 barrels per day or 633 barrels increase over November.

Q That is for the entire state?

A That is for the entire state. There are 698 barrel nominations for the northwest.

Q In your opinion what would be the reasonable market demand for oil for the entire State for the month of December, 1950?

A 142,225 barrels.

Q How much of this demand can be met by the unallocated pools of northwestern New Mexico?

A Approximately 800 barrels.

Q That leaves 141,425 for southern New Mexico?

A That is correct, for the allocated pools.

Q In your opinion would that figure, the balance of the market demand, be met by the allocated pools of southern New Mexico?

A Yes, it can.

Q Is the potential producing capacity of all the wells in southern New Mexico greater than that figure?

A Yes, I believe it is.

Q In order to prevent waste, in your opinion, is it necessary for the wells in Lea County, Eddy County and Chavez County to be limited in their production?

A Yes, I believe it is.

Q And, in your opinion, can the wells in those three counties

produce this amount of oil which you have suggested without committing waste?

A According to any information we have in our office they can, yes.

Q And your final recommendation then is 141,425 barrels for southern New Mexico?

A That is right. And I would recommend 48 barrel normal unit allowable to arrive at that total allocation.

Q That is the same normal unit allowable we have for the current month?

A That is correct.

Q How do you recomend that production be distributed?

A According to the rules and regulations of the New Mexico Oil Conservation Commission.

Q The present rules and regulations?

A Yes, sir, the present rules and regulations.

MR. McCORMICK: Any questions of Mr. Utz?

A VOICE: What was the total nominations?

A 121,899.

Q (By Mr. McCormick) I will ask you this Mr. Utz. How has the nominations for the past two months been comparing with the production and pipeline runs?

A They have been running fairly close. I will say within five *per cent of* each other.

Q Which is the lower?

A The last of July the nominations were a little above the production, that reversed in August and then production has been gaining a little each month on the nominations.

Q And the pipeline runs according to your latest figures are a little in excess of the then current nominations?

A That is correct.

MR. McCORMICK: Any questions of Mr. Utz?

(Witness dismissed.)

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E. E. KINNEY,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. McCORMICK:

Q Your name is Ed Kinney?

A Yes, sir.

Q What official position do you hold?

A Petroleum engineer, New Mexico Bureau of Mines.

Q As such, have you been making a continuing study of market demand for oil in the State of New Mexico?

A I have.

Q Please state to the Commission what the general picture is now on market demand and storage.

A A canvass of the majority of the purchasers of crude oil in the State of New Mexico shows the market demand to be firm, the supply to be slightly less than market demand; the difference

being made up from storage. It is recommended that the allowable be maintained at 48 barrels and that recent discoveries will tend to close the gap.

Q Anything else you would like to state Mr. Kinney?

A No, sir.

MR. McCORMICK: Any questions of Mr. Kinney? Does anyone else have any remarks to make.

MR. SMITH: Our nominations for the month of December have been filed with the Commission and that figure is 895 barrels for the month or 28,701 barrels per day and represents a slight increase over November, taking into consideration a new well which we expect to connect in December.

MR. McCORMICK: Anyone else? Any remarks, or comments or questions? That is all.

(Witness dismissed.)

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CHAIRMAN SHEPARD: Case Number 235.

MR. DAVIS: My name is Quilman Davis. Mr. Christie, a member of the partnership of Clark and Christie, petitioners in Case Number 235, has asked me to request the Commission to dismiss the petition filed on the basis that the questions raised under that application have been settled satisfactorily to all parties. We ask that the case be dismissed without prejudice, and also it is requested that the order previously issued in connection with case number 235 be rescinded. I have

here a signed statement by the interested parties which I would like to offer in evidence that the case has been satisfactorily settled.

CHAIRMAN SHEPARD: It will be accepted. Any objections to dismissing Case Number 235. If not, we will take it under advisement and take up the next case.

Mr. Hanners, are you ready for Case Number 149?

MR. HANNERS: If I could have just a minute.

CHAIRMAN SHEPARD: All right. At this time we will take up Case Number 237.

(Mr. Graham read the notice of publication in Case Number 237.)

MR. McCORMICK: Mr. Barnes, do you have a statement to make in connection with 237?

MR. BARNES: I have.

MR. McCORMICK: Mr. Frank Barnes, go ahead Mr. Barnes.

MR. BARNES: In the matter of Case Number 237, it appears a situation is developing in certain areas of the San Juan in northern New Mexico that may eventually result in wasteful practices which poses a considerable problem to the Oil Conservation Commission and the operators in the area. I am speaking specifically in respect to the spacing of certain gas wells drilled to the three major gas producin g formations of this area. In the San Juan basin at the present time we have only two specially designated pools that are not under the state wide 40 acre spacing regulations. The two pools are

Kutz Canyon-Fulcher, Pictured Cliffs gas pool, which is under 160 acre spacing and the Blanco-Mesa Verde pool which is under the 320 acre spacing. At the present time, these pools are not only being extended in several different directions, but a number of wildcat wells and new pools, some miles removed from these designated pools, are being drilled. Of course, some wells are being located under statewide 40 acre spacing regulations. We believe, and there is considerable geological evidence to support the fact, that many of these pools will eventually connect up and we will end up with the problem of gas wells drilled and completed on 40 acres.

This way the Pictured Cliffs or Mesa-Verde -- which will end up being connected to pools -- they already have special spacing regulations of 160 or 320 acres. When that happens -- there may not be any immediate serious consequences -- but eventually if it comes to the proration of gas in that area we will have operators with wells drilled on 40 acres that will want a 320 or 160 acre allowable. The situation hasn't reached serious proportions at the present time, but it could become quite a problem within the matter of a couple of years. What we would like to do under Case Number 237 is get the views of the operators. Their ideas as to how we could meet this problem in anticipation of the difficulties we may have later on and arrive at some universal spacing pattern on a functional basis, or it may be necessary to leave it under the

present practice of spacing these pools individually. We have made some study of the problem and have some ideas on it. It would undoubtedly be advantageous to get the ideas of the various operators in the area. That is all I have.

CHAIRMAN SHEPARD: Anyone else, anyone have anything on Case Number 237?

MR. ARMSTRONG: My name is E. Taylor Armstrong, 1218 Republic Bank Building, Dallas, representing James Hancock and Company, Limited and British American Oil Producing Company.

May it please the Commission, it wasn't clear from the notice here as to - in my mind - as to whether or not Case Number 237 would involve what is known as the Douthit Number 1 Federal Well inasmuch as the notice says all "presently designated gas pools", and as I understand it isn't in a "presently designated gas pool."

For that reason, we have - this well has been completed in September but has been shut in since that time. There is one well about two miles from it and then what is known as the west Kutz Canyon Field, is approximately five miles distant. On behalf of the operators, James D. Hancock and Company and British American Oil Producing Company, we would like to suggest to the Commission that before any spacing order is fixed by the Commission as to these Santa Fe Permit Numbers o78089, 078092, and 078094, that a special hearing be set as a matter

of fact, we have not had an opportunity to really study the pertinent factors, and based upon which we can make a suggestion to the Commission. If the Commission has in mind to adopt spacing rules that would affect these particular permits, we request a special hearing be set in the future where we could have further time to study it. I would like to file this application at this time.

CHAIRMAN SHEPARD: It will be received. Anyone else.

MR. GREER: My name is A. R. Greer with Benton and Montan. Benton and Montan are interested in about --

CHAIRMAN SHEPARD: (Interrupting) Do you want to testify or are you just making a statement?

MR. GREER: Just making a statement. We have an interest in about --

CHAIRMAN SHEPARD: (Interrupting) A little louder.

MR. GREER: We have an interest in about twenty-five thousand acres in the west Kutz Canyon Area and we believe that about fifteen thousand acres will eventually be taken under consideration or will connect with the wells that are presently drilled in the west Kutz Canyon Field. This particular well that British American has reference to will also undoubtedly connect with the west Kutz Canyon Area and as such there will be a very large area directly affected by the rules and the spacing set up for the west Kutz Canyon Field. In view of this we concur in British American's recommendation that a special hearing be had covering the west

Kutz Canyon Field and taking into account the area as far south as the British American and Hancock Douthit Number 1 and probably should include as far south as the Huerfano area.

We would like to request about 60 days in which to gather additional information before this hearing be set up. We recommend it be held sometime in January.

MR. DAVIS: I represent Southern Union Gas Company. First, I would like to ask if it is intended special hearings will be held on individual wells for a spacing order, or is the information given here today to be taken and from which orders will be written?

MR. SPURRIER: This hearing, Mr. Davis, according to the notice is to consider all the pools now named.

MR. DAVIS: Well, that was what I wasn't clear on. I didn't understand.

MR. SPURRIER: That is right. In this particular well that Mr. Armstrong is talking about, since it isn't in a named pool, it won't be considered today and will be taken up at a hearing at a later date.

MR. DAVIS: On that basis, Southern Union Gas Company recommends 160 acre spacing for Pictured Cliff wells and 320 acre spacing in the Mesa Verde wells, particularly in the La Plata Field. We would like to see 320 acre spacing there and wells located on the 160 acre unit 320 feet out from the

center of the alternate quarter. Now, we do have a situation up there which will have to be provided for in the order to permit wells either on the northwest southeast as a pattern with a provision that wells hereto fore drilled on the northeast southwest pattern can be drilled so that we will be able to produce wells on 320 acre spacing. Now, as to this Kutz Canyon Field, we feel that 160 acre spacing for picture cliff wells there is desirable. As to the Barker dome we feel in that instance there is only one lessor, the Ute Mountain tribe of Indians, and the Southern Union Gas Company is the lessee, under those leases were sublease agreements going through, I believe, El Paso Natural Gas Company. We feel in this instance that we do not have enough information to justify spacing there and recommend it be deferred until such time as we can determine what is proper spacing up there. We will have no trouble whatsoever as far as production because of the fact that we are the lessees under the lease and the Indians hold us responsible for all operations there with El Paso Natural operating through us under a sub lease agreement.

MR. SPURRIER: How many wells are there in the Barker Dome? Do you know, Mr. Davis?

MR. DAVIS: Pennsylvania well.

MR. SPURRIER: Yes.

MR. DAVIS: Where is my engineer, about eight wells.

MR. SPURRIER: And you think that is not enough information

to set a spacing pattern.

MR. DAVIS: No, sir, not at that time.

CHAIRMAN SHEPARD: Do you have any more questions, Mr. Spurrier?

MR. SPURRIER: No.

CHAIRMAN SHEPARD: Anyone else.

MR. BOND: My name is L. H. Bond with Standolinde Oil and Gas Company. Stanolind Oil and Gas Company is the interest owner with Benson Montan in the acreage near the West Kutz Canyon Field. Since that acreage has not been developed at this time and since we do not have what we consider information to support our spacing recommendations, we would like to concur with Mr. Green's recommendation that a special hearing be set for the West Kutz Canyon field in 60 days or whatever period is convenient with the Commission. The Stanolind Oil and Gas Company also is an interest owner in the Ute Dome Paradox Field which is a Pennsylvania formation. There is only one well completed in the Pennsylvania in the Ute Dome field at the present time, Stanolind Ute Indians No. 4. This well was completed in 1943 in September at a total depth of 3692 feet and was perforated from 3295 to 3305, 3315 to 3360 in the Paradox. The well flowed natural 1100 cubic feet per day. After acidation flowed at the rate of 1025 cubic feet per day. Inital bottom hole pressure in this field was 350 barrels and the bottom hole temperature 140 degrees. The gas from this well has a

very high carbon dioxide content, approximately 24.37 per cent. It also has a high hydro-sulphide, hydrogen sulphide content in the percentage of 1.33. I would like to submit in this respect as Stanoldin's Exhibit No. 1 an analysis of the gas in this well which was run by the E. W. Saybolt and Company. In view of the extremely sour gas which is produced from this well which makes the market picture very ppor and since this well has been shut in since it was completed for lack of a market Stanolind Oil and Gas Company recommends that a spacing of 640 acres be established in the Ute Dome Paradox Field. It is our believe at this time at least that spacing on anything less than 640 might possibly prove uneconomical. Another field which falls under the call of this hearing - Stanolind is the only operator in the field - and it consists of Section 35, Section 36 in Township 32, North and Sections 1 and 2 in 31 North both in Range 14 West. We are the only operator in the field. In the Blanco Pictured Cliffs Field Stanolind has acreage in the general field limitation and a considerable amount of acreage which we anticipate will be productive in the Pictured Cliffs formation. There is only one well completed in the Pictured Cliffs formation at this time. Since the operators there do not have pertinent data on that well to present, it is our believe that the Pictured Cliff formation in Blanco will probably not be developed until the Mesa Verde formation which is apparently the most prolific in that area and which covers the same area probably

as the Blanco Pictured Cliff is depleted. The spacing in the Blanco Mesa Verde field is one well of 320 acres. It is our recommendation that the Blanco Pictured Cliff fields also be extended on one well to 320 acres.

It is believed upon depletion of the Mesa Verde formation in this field it will be possible to replete the wells in the Pictured Cliff formation and adequately drain that reservoir. That is all I have.

MR. SETH: Just one question. Return for a minute to the Ute Paradox.

MR. BOND: Yes, sir.

MR. SETH: You limited your testimony to the Paradox. There are Pennsylvania sands besides the Paradox.

MR. BOND: Not to my knowledge. There is a possibility, I believe, of production.

MR. SETH: Should it develop there is, do you recommend the same spacing for all pools?

MR. BOND: Yes, sir. Any Pennsylvania formation, I believe, should have 640 acre spacing.

CHAIRMAN SHEPARD: Anything else, anyone else?

MR. MIMS: I am with the Delhi Oil Company. We wish to state we are in accord with 320 acre spacing for Blanco and 160 acre spacing for Pictured Cliffs in all areas now proved.

MR. SPURRIER: You mean to say 320 acre spacing for Mesa Verde?

MR. MIMS: That is right and 160 for Pictured Cliffs with the present information on call and so forth we can hardly see how you could drill on more or less acreage and get ultimate production from the wells.

CHAIRMAN SHEPARD: Anyone else.

MR. DAVIS: I overlooked one thing a while ago. With the psacing orders I would like to recommend to the Commission that any spacing order prepared for any fields be pure and simple a spacing order without provisions for casing and cementing programs, such as equipment, testing and so forth and that the general rules and regulations of the Commission be used for that purpose. We work awfully hard to get these rules into effect and if there need to be any additional rules let's put them in the rule book instead of a separate order and we strongly recommend the special order be limited to the spacing of wells.

MR. SPURRIER: Do you know what the spacing pattern on Barker Dome now is for the Paradox?

MR. DAVIS: For the paradox. As far as I know it was initially planned for 320. Mr. Thompson can probably answer that question.

MR. SPURRIER: Well, I think we had better get Mr. Thompson up here then.

MR. DAVIS: All right. He is here so I think I had better use him.

MR. SPURRIER: All right.

MR. DAVIS: This will be a pure statement by Mr. Thompson. If it is all right with the Commission we will consider this just a statement.

MR. SPURRIER: All right. Do you understand the question, Mr. Thompson?

MR. THOMPSON: Please repeat it.

MR. SPURRIER: What is the approximate spacing pattern on Barker Dome now?

MR. THOMPSON: The present pattern has been scattered out in some places where the wells are as much as two miles apart. In some places we have two wells per section. The reason we would like to postpone a spacing order up there at present is that we would like to have more productive data on the thing to tell more about it. For instance, the Federal Power Commission and the State Geologist and DeGaullier and McNaughton have estimated the reserves in the order of 60 million feet to 100 million feet per acre. If that is true, it will certainly be economical to drill on 320 acre spacing. Does that answef the question?

MR. SPURRIER: Yes, sir, thank you.

CHAIRMAN SHEPARD: Anything further on 237?

MR. MORRELL: In view of the interest of the United States Government with respect to the Pictured Cliffs and the Mesa Verde and the Pennsylvania sands in the northwest of New Mexico, I think it would be interesting to the Commission to put into the record that on the basis of development to date

the geological survey prefers a spacing of 160 for Pictured Cliffs and 320 for Mesa Verde. As to the Pennsylvanian formations two fields are now involved, the Barker Dome and the Ute. It so happens that on the Barker Dome there is but a single lease of any land, being a single lease the question does not present itself as to drainage between operators or lessee and lessor. Under the circumstances, being a single lease, I question the necessity of establishing under state regulations spacing units for Barker Dome. As to Ute Dome that field is also covered by a single lease with the Stanolind Oil and Gas Company and for the same reason there is no - being no drainage between operators - on the basis of present information there appears to be considerable question as to the necessity of establishing a spacing unit for Ute Dome. I thought at this time for the benefit of the operators in the San Juan Basin it would be interesting to them to review very briefly some recent correspondence that I have had with Mr. Spurrier with respect to location of wells. I thought it might be informative. If you have no objection, Mr. Spurrier?

Rule 104-A of the General Rules and Regulations of the New Mexico Oil Conservation Commission provides for spacing of wells both oil and gas not closer than 660 feet to any boundary line of a tract. There appears to be considerable question as to what is meant by the term "tract". Apparently it has been interpreted differently by different parties. I feel

that the consensus of opinion is that it refers to a proration unit as used in prior regulations taking that literal construction it was necessary where wells are drilled 990 feet from the outer boundary of 160 acre drilling unit to apply to the Commission for an unorthodox location. Inasmuch as the existing orders for Fulcher Basin and Kutz Canyon and also for the Blanco Gas pools provide for that spacing, that is, 330 feet from the center of 160 acre tract, or conversely 990 feet from the ounter boundary of 160 acre tract, it has been the policy of the geological survey to require operators on federal lands to drill wildcats on that same basis inasmuch as drilling to the Pictured Cliffs formation or to the Mesa Verde can be expected to find the gas only. Which would result in having them brought within a designated ppool. And following the precedent established in those two pools for which outstanding orders exist it is reasonable to assume the same spacing would be required.

The recent correspondence with Mr. Spurrier has suggested the possibility that the Commission bring on its own motion a review of Rule 104 to permit the 990 spacing in the San Juan Basin. Mr. Spurrier has informed me that as a result of a prior hearing on Rule 104 that some review of that rule is now under consideration.

Since it is under consideration I thought it would be

interesting to bring it to your attention so that you could work with the Commission and help them to rewrite that rule in such a way it would attain the objective you would like.

Mr. Spurrier, I was wondering if you had any further comments with respect to that status of the review of Rule 104.

MR. SPURRIER: Yes, we are holding up that review waiting for some of the operators to express their views. You remember I called for those in the meeting at Farmington the other day.

MR. MORRELL: That is right.

MR. SPURRIER: And we haven't yet heard from them.

MR. MORRELL: Thank you.

MR. BARNES: Mr. Morrell, on the basis of state regulations Rule 104 is there actually anything you can see that would prevent an operator from drilling a wildcat well in that area to any formation through 40 acres. Is there anything that would prevent it?

MR. MORRELL: The application for notice of intention to drill states the objective, if the objective is to one of those formations expecting to produce gas, I would say it should follow the gas well spacing.

MR. BARNES: But referring again to wildcat wells. Now, when you say outside of designated pools, is there legally anything to prevent an operator from drilling on 40 acres.

What I mean is there any requirement you can conceive of that would force an operator under that rule to have more than 40 acres to drill a well anywhere to any formation in the San Juan Basin?

MR. MORRELL: I don't know that there is anything legally so far as state law is concerned, so far as federal leases are concerned they have to get the permission of the supervisor.

MR. BARNES: In other words, you would require specific permission to drill one 40 acre tract to any formation?

MR. MORRELL: Well, it so happens that the rules and regulations of the geological survey with respect to federal lands are sufficiently broad that it is the duty and responsibility of the supervisor to set up and plan for well spacing even in connection with a wildcat well if it is deemed appropriate in an area reasonably expected that they can produce gas. We have consulted our lessees and operators as to their spacing pattern that they have in mind, so that the wildcat well is still based on a pattern that would be followed if it was a successful test.

MR. BARNES: In other words, it has been the policy of the United States Geological Survey to set up spacing of federal wells based legally on a formational drilling program rather than on a field or pool basis, is that correct?

MR. MORRELL: I would say your statement is correct except for the use of the word arbitrary.

MR. BARNES: I didn't chose the word too carefully, but I thought may be it would apply in that particular case anyway.

MR. MORRELL: In answering your question, Mr. Barnes, I would say specifically that Southern Union and the Aztec Oil and Gas Company are currently developing the La Plata pool on the basis of 320 acres spacing units. That is entirely on a voluntary basis pending a hearing before the Oil Conservation Commission for setting that spacing. We have already considered and have immunitization agreements on 320 acre units for that purpose so we do anticipate. Does that answer it?

MR. BARNES: Well, partially Mr. Morrell. I was simply trying to bring out, to point out the fact that on a purely legal basis and insofar as the Oil Conservation Commission Rules and Regulations go there would be no basis, no legal basis to deny the operator the right to drill on a wildcat area, let's say a Pennsylvanian well on 40 acres provided he was fool enough to do so and thought he could do so economically.

In the designated pools where there is no regulations there would be nothing to prevent him from drilling on more than 160 acres.

MR. MORRELL: You have brought in the Pennsylvania formation. As to the Dakota lease and the Pennsylvanian we are approving those on 660 foot locations.

My reference to 330 and 990 referred only to Pictured Cliffs and Mesa Verde.

MR. BARNES: That is, Mr. Morrell, I just wondered what your program is and how much we actually had to say about the spacing program as it develops up there in so far as our own rules and regulations are concerned.

It has been my impression that the United States Geological Survey was anticipating some of these pool extensions and I don't want to use the word forcing, let's say suggesting spacing programs that coincide with the actual pools adjacent to these wildcat wells.

MR. MORRELL: My thoughts were to inform the Commission and be helpful to the operators so that they would be informed all at the same time.

CHAIRMAN SHEPARD: Thank you, Mr. Morrell. Anyone else?

If not, 237 will be taken under advisement and at this time we will have a five minute recess.

(Recess.)

CHAIRMAN SHEPARD: Case Number 149.

Mr. Graham, will you read the notice of publication, please.

(Mr. Graham reads the notice of publication in case 149.)

CHAIRMAN SHEPARD: Will all the interested parties in case 149 enter their appearance at this time? I believe they are represented here by attorneys. We will just have them entered before we start.

MR. DOW: For the Mid Continent Petroleum Corporation, Mr. J. H. Crocker of Tulsa; for the Magnolia Petroleum Corporation, Mr. W. E. McKellar, Dallas and for both those companies, Mr. Hiram M. Dow of Roswell; For the Santa Fe Pacific Railroad Company of Amarillo and the Oil Development Company of Texas, Mr. Earl C. Iden of Albuquerque.

MR. HANNERS: On behalf of U. D. Sawyer and Dessie E., G. T. Hanners of Lovington, New Mexico.

CHAIRMAN SHEPARD: Mr. Hanners, will you proceed?

MR. HANNERS: We have been discussing the matter if the Commission please as to the procedure in the hearing. In discussing with Mr. Dow, we treated the matter in the nature of a rule to show cause by the Commission on its own Motion and directed to Mid-Continent the applicant and the other lessees in the area as to why the order should be continued in effect. We believe the orderly procedure would be for the Mid-Continent to proceed with its technical proof which isn't available to us.

CHAIRMAN SHEPARD: Is Mid-Continent ready to proceed or what do you think of this procedure?

MR. DOW: Well, if the Commission please, I want to state to the Commission first that we come in peace. We have had varied reactions to the Commissions order to show cause in this case and we are going to dictate into the record what we might term a motion to dismiss in the beginning. We are, of course, as I say in a spirit here of cooperation and we are not perhaps expecting the Commission to take definite action on this Motion in the beginning, but perhaps after all the testimony is in. Notwithstanding our Motion we are here with testimony to reprove the case that was made when the original order was entered. The Mid-Continent Petroleum Corporation and the Santa Fe Pacific Railway Company and the Oil Development Company of Texas and the Magnolia Petroleum Company are appearing today in response to the citationnotice issued by this Commission in the matter of Case Number 149. These operators are not fully informed, in fact are somewhat puzzled, by the Commission's Action in reopening this case. For the record, the respondents would like a statement from the Commission as to the basis upon which the Commission has taken this action.

Now, there is no allegation or no -- we are not accused of waste or committing waste or of effecting correlative rights, in fact not accused of anything and we would like to know

At the outset what prompted the Commission to take the action, upon what basis, the basis of its order which it directed to use to show cause why the order should not be rescinded. We are presuming that it was upon information that was filed by the Sawyers through Mr. Hanners. The Sawyer information does not allege that waste, as defined by the New Mexico Oil Conservation Act of 1949, has occurred in the Devonian Pool of the Crossroads Field. And without such allegation the Oil Conservation Commission of New Mexico has no jurisdiction over the subject matter of said information. I am dictating our motion for the record. Further the order number 779 was issued in the matter of Case Number 149 on July 27, 1948, effective August 16, 1948, and becoming final 20 days thereafter when no interested party applied for a rehearing. Order Number 779 has now been in full force and effect for over two years. Pursuant to said order and believing this Commission respected its previous order and we had acquired substantive rights, the operators in the Crossroads Devonian Field have invested in excess of three million dollars.

The rights obtained in Order 779 have become vested and as such cannot be affected in a collateral attack of this character. The Oil Conservation Commission of New Mexico is a statutory body created by the Conservation Act of 1949. The jurisdiction of this Commission is especially

limited by the Act. The Commission has statutory authority to modify the order only to the extent necessary to prevent waste as defined by the Act. Your attention is specifically directed to Section 13-E of the Oil Conservation Act.

The Sawyer information contains no allegation that waste, as prohibited by the Oil Conservation Act, is occurring within the Crossroads Devonian Pool. The Commission has no cause or authority to summon operators of the Crossroads Devonian Pool before it simply to listen to complaints of any interested New Mexico royalty owner.

The Commission is not a complaint board. Its jurisdiction and duties, its powers and authorities are strictly set forth in the Oil Conservation Act. The Commission has committed serious error in citing these respondents to appear and again prove their case in the matter of order number 779, without any proof that waste, as defined by the Act, is occurring. This Commission is without jurisdiction to reopen Case 149. These respondents suggest this and challenge the jurisdiction of the Commission in this matter and object to again being summoned to reprove the case for 80 acre spacing without information and believe that order number 779 is resulting in waste in the Crossroads Devonian Pool.

The duty is upon the informants to appear and prove their case. For the reasons assigned the respondents move that the Commission dismiss this case. Mr. Commissioners, we bring that to the attention of the Commission because we think

the precedent of this case might prove serious to the Commission and the operators and all concerned. If some complainant in some other pool is dissatisfied with the 40 acre spacing and just complained and wanted the order changed as to that pool, this might set a precedent that would be hard to get away from. This Commission has had a wonderful record and we certainly do not want to see this case go on up and have the jurisdiction and all these features of the Commission challenged. And therefore, we are here at considerable expense and lots of time put in to furnish testimony that in our opinion will not only justify the former order but will show it was a wise one and the conditions that now apply in that field should strengthen the belief of the Commission in the justice and fairness of the correctness of this order. With that understanding, we will produce our testimony. I am going to ask each of the attorneys associated with me in this wheeknow their technical witnesses and are familiar with the points they want to bring out to do the interrogating. Mr. Crocker will first place his witnesses on the stand for the Mid-Continent.

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M. B. PENN,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. CROCKER:

Q State your name please.

A M. B. Penn.

Q Have you been sworn as a witness?

A I have.
Q Are you a graduate petroleum engineer? A Yes, sir.
Q Will you state your qualifications please? What school were you graduated from and in what year and with whom you have been connected since and what your principle duties are in your present position?

A I was graduated from the University of Tulsa in 1932 and a Bachelor of Science in petroleum engineering. The last 15 years I have been associated with the Mid-Continent Petroleum Corporation. The last ten years of which I have been doing petroleum engineering work in the production department and now have the capacity of chief petroleum engineer.

Q Mr. Penn, as a petroleum engineer, have you heretofore testified before this Commission on engineering matters pertaining to the so-called Crossroads pool as it produces from the Devonian formation?

A I have.

Q I will ask you to state whether or not Mid-Continent Petroleum Corporation is presently a producer in the Devonian formation of the Crossroads pool?

A It is.

Q Can you state for the record the description of the particular tracts upon which Mid-Continent Petroleum Corporation has wells producing from the Devonian formation.

A The discovery well known as the U. D. Sawyer A No. 1 -

Q Just give the description of the lease first.

A It is located on the lease described as the south half of Section 27, Township 9 south, range 36 east Lea County, Oklahoma.

Q New Mexico?

A New Mexico. The U. D. Sawyer 1-D lease comprises the northeast quarter of the same Section 27 and the Dessie Sawyer No. 1 is located on a lease comprising the southwest quarter of the same Section 27. A well is now drilling to the Devonian reservoir on the U. D. Sawyer C Lease which comprises the north half southeast quarter of the same section 27. This well is now drilling, I think, someplace between nine and ten thousand feet.

Q Has Mid-Continent heretofore drilled a well in the north half of Section 34 of the same Township and range?

A It has.

Q Mr. Penn, will you advise the Commission as to how many wells are presently producing in the Crossroads pool from the Devonian formation? That would include wells drilled by other operators as well as Mid-Continent.

A Mid-Continent has three wells producing from the Devonian. Two other companies each have a well producing from the Devonian.

Q Does that mean there are five presently producing wells from the Devonian formation in the Crossroads pool?

A That is correct.

Q How many producing wells are there located on leases in which Mr. and Mrs. Sawyer are the lessors?

A Three.

Q Of the five producing wells in the Crossroads three are located on Sawyer land?

A That is correct.

Q I wish Mr. Penn you would go to the discovery well please and advise the Commission when it was started and when it was completed?

A The discovery well which is the U. D. Sawyer "A" No. 1 was started in September 1947 and completed in May 1948?

Q To what depth?

A At a total depth of 12,258 feet if my memory serves me correctly.

Q Did this well produce commercially upon completion in the Devonian formation?

A It did.

Q Do you remember approximately what the initial production was upon completion?

A On May 6, 1948 an initial production test was taken on the well, which indicated 995 barrels flowing through 3/4 inch choke in 6 hours and 20 minutes.

Q What was the next well started - let me ask you this. Do you have the figures on the cost of that well?

A Yes, sir, I do. The well was drilled at a cost of $355,640.39

Q Is the oil kept separate that is produced from this well from other wells producing on the Sawyer lease?

A It is.

Q Do you have the record of the money recovery you have had as a result of this expenditure?

A The total revenues from the oil sold amounts to $258.513.75 through September 30, 1950.

Q Would you subtract the two figures please and give the result as being the red figure?

A The figure I have before me includes with the drilling expense and the operating expense to date which gives a difference of $254,345.47, with the drilling expense plus the operating expense minus the total revenue gives the last figure I stated.

Q What was that figure?

A $254,345.47 in the red.

Q That is on the discovery well?

A That is on the discovery well.

MR. HANNERS: May I interrupt and call attention to the fact the figures you have given will not produce that result. Perhaps I misunderstood your figures.

A I am directing these remarks to Mr. Hanners. The total drilling expense was $355,640.49. I was under the impression that Mr. Crocker wanted the present status of the well. To that drilling figure should be added $80,098.09 operating expense from the completion of the well to date. That gives

the difference I stated.

Q Well let's see if we have this straight. You stated that the cost as reflected by our books directly applicable to this operation amounts to $355,640.49?

A For the drilling of the well alone.

Q All right. Now what was the operating expense?

A $80,098.09.

Q That is to be added to the figure I just referred to, the $355.640.49?

A That is correct.

Q Now the revenue, total revenue, amounts to $258,513.75. Is that what you testified to?

A That is correct.

Q That was what results in the red figure of $254,345.48?

A That we still have invested in the well that we have not had returned to us.

Q All right. What was the next well Mid-Continent drilled to the Devonian formation?

A Mid-Continent moved in another rig as soon as the first well was completed and started drilling two wells, being the Dessie Sawyer No. 1 and the U. D. Sawyer B No. 1. Both of these wells were started in June, 1948 and the latter completed in February, 1949 - the former completed in February 1949 - and the latter completed in March 1949.

Q Let's refer to the U. D. Sawyer B No. 1.

A That is the one completed in March 1949.

Q Did that well produce oil or was it a dry hole?

A I would say that well produced 1,632 barrels of oil.

Q Has it been plugged as a dry hole?

A It has.

Q Has the lease upon which it was drilled been released to Mr. and Mrs. Sawyer?

A I understand it has.

Q What depth - to what depth was that well drilled? Was that well drilled to a sufficient depth to fully test the Devonian formation if it existed?

A It has. It was drilled to a total depth of 12,750 feet.

Q Do you have the cost figures on that well?

A That well cost $425,848.32.

Q $425,8 - what?

A $ -,848.32.

Q You recovered how much oil from it?

A We recovered in money $4,212.46.

Q Will you calculate and advise the Commission what the red figure is on that operation?

A $421,635.96.

Q All right. Let's develop some information on the Dessie Sawyer No. 1 located in the northwest quarter of the southwest quarter of Section 27, northeast of the southwest of 27. Mr. Penn how deep was this well drilled?

A This well was drilled to a total depth of 12,241 feet.

Q It was bottomed in the Devonian formation?

A That is correct.

Q Is it presently a commercial producer?

A It is.

Q Do you have the cost figures pertaining to that operation?

A That well has cost $442,865.22.

Q Do you have a record of the revenue thus far produced and received from that operation?

A The revenue was $386,093.34. The difference is $56,771.78.

Q That is the red figure?

A That is the red figure.

Q What well was next started on the Sawyer land?

A The next well started in February 1949 upon completion of the Dessie Sawyer No. 1 well which we call U. D. Sawyer D No. 1. It was completed in August 1949?

Q Was it completed to a depth sufficient to test the Devonian formation?

A It was bottomed at 12,150 feet.

Q Is that in the Devonian formation?

A In the Devonian formation.

Q Did it produce oil commercially?

A It did.

Q Is it now producing oil commercially?

A It is.

Q Do you have the cost figures on that one?

A That well has cost $344,328.34.

Q Now, Mr. Penn, do you have a record of the revenue that has

been derived from the well you are just speaking of?

A The revenue amounts to $264,268.35.

Q Will you give the red figure on that operation?

A $80,059.99.

Q (Off the record.)

Q Now, Mr. Penn, would you testify that Mid-Continent Petroleum Corporation is presently drilling a well located in the northeast quarter of the southeast quarter of Section 34?

A I would.

Q That well has not been completed as yet I take it?

A That is correct.

Q Is it the purpose of the company to drill that well to the Devonian formation?

A It is.

Q Can you give the Commission a little data such as you may have with respect to the present depth of the well, when was it started?

A The well started drilling in June 1950 and it is presently drilling between nine and ten thousand feet.

Q Baring unforeseen difficulties when do you estimate the approximate date of completion of that well would be?

A In the early part of next year.

Q I presume you have no authentic cost figures pertaining to this operation up to the present time that is?

A The only cost figures I have are those invoices which we have received up to the effective date I have been giving on

these other wells which is September 30, 1950. At that time we had only invoices amounting to $29,520.32.

Q That is somewhat negligible as to what the figure would be if you had all the invoices is it not?

A That is right.

Q Mr. Penn upon the completion of the discovery well about which you have testified, that completion date being some date in May 1948, was a meeting convened in which all operators or lease owners in the Crossroads pool met for the purpose of discussing the propriety of appearing before this Commission to seek spacing for the pool?

A That is correct, such a meeting was held in Tulsa.

Q Is it not true that the Magnolia Petroleum Company originally set the machinery in motion pursuant to which the meeting was held?

A I believe that is correct.

Q It was - I will ask you if it was due to the fact that Mid-Continent Petroleum corporation actually had completed the discovery well that it was the consensus of opinion at the meeting that Mid-Continent Petroleum Corporation should file the application with the Commission?

A That is correct.

Q It was filed at the direction and with the authority and approval of Magnolia Petroleum Company, Oil Development Company, Gulf Oil Company, Skelly the Santa Fe Pacific people?

A I believe there were some others. I don't recall.

Q I believe there were, but the ones I have mentioned approved of it, did they not?

A Yes, sir.

Q Prior to the filing of that application for spacing I will ask you whether or not Mid-Continent Petroleum Corporation appeared before this Commission and secured an allowable governing the production in the discovery well?

A That is correct, they did.

Q What allowable did the Commission grant?

A They originally upon that informal hearing - it was 500 - per day.

Q Did Mid-Continent Petroleum Corporation start to produce that well at the rate of 500 barrels a day pursuant to the authority given it by the Commission?

A They did.

Q How long did they produce at that 500 barrels a day?

A I believe the record will show about a month.

Q What happened then?

A Well it began to make some water.

Q Did we call the Commission in Santa Fe and so advise them?

A I believe we did.

Q When we appeared before the Commission seeking the spacing, did we advise the Commission that we thought an allowable of 500 barrels a day was entirely too much due to the entrance of water in that well?

A We did.

Q What did we recommend as being a fair allowable based on the information we then had and were able to present?

A 300 barrels a day.

Q Did you conclude it might be a mistake to have over-produced that well at the rate of 500 barrels a day?

A I believe we did conclude that.

Q Do you feel that you are very close to the water line in that well and that to produce at 500 barrels a day tended to hasten the water entrance?

A I believe it did.

Q What are they producing at the present time from two other wells, that would be D 1, UD Sawyer D, do you know?

A 340 barrels a day each.

Q Are either of those wells making water?

A Neither of those wells is making water.

Q Let's go back to the discovery well. Is that well making water?

A Yes, it is.

Q I wish you would tell the Commission how much water and how much oil is being produced daily.

A That well produces about 450 barrels of water a day and about - then in the month of October -

Q What year?

A 1950. It produced about 65 barrels of oil a day.

Q I presume the well is on the pump?

A It is.

Q Are the D 1 and Sawyer D flowing wells?

A They are.

Q Are they making their allowable without difficulty?

A They are.

Q Mr. Penn, did the Skelly Oil Company drill a well to the Devonian formation located in the northeast northeast of Section 33 in the same township and range we have been speaking of?

A They did.

Q Do you know what they encountered - Skelly encountered - in the Devonian formation?

A Salt water.

Q Are you informed that the Magnolia well located in the southwest of the southwest of 26, Township 9 south, 36 East, has in the past made water and probably at the present time making any water?

A That is my information.

Q Do you know whether that well is flowing or on the pump?

A That well is on the pump.

Q If I understand your testimony correctly, you state that the Santa Fe - that the Skelly well in 33 and the Magnolia well in 26 and the Mid-Continent well, the discovery well, in 27 all - the Skelly well of course didn't produce oil on account of the salt water - and presently the Magnolia well and the Mid-Continent discovery are making water?

A That is correct.

Q Is this a water drive field in your opinion as an engineer?

A The energy for lifting the oil to the surface in this reservoir is that derived from what is known as a water drive reservoir.

Q Mr. Penn, do you regard water then as a source of energy under which this field produces, is that right?

A That is right.

Q Will you as an engineer state the principle forms of energy sources ordinarily encountered in this country in producing pools and reservoirs?

A I believe most of the reservoirs in this part of the country produce from what is known as the dissolved gas drive. That is that the gas dissolved in the oil lifts the oil to the surface. Other pools have produced from energy derived from an expanding gas cap above the oil reservoir. This field produces from the third type which is a water drive source of energy.

Q What is the theory of engineers with respect to recovery from the various sources of energy, in other words, from what source do you think you get the utmost in recovery if that can be testified to.

A Practical indications and - practice indicates and proves that more or recoverable oil is being produced from water drive fields than is produced from gas drive fields. As a matter of fact, I would say that gas drive fields produce from as low as three per cent of the oil in place to as high as 25 per cent of the oil in place whereas water drive fields produce from 60 to as high as

35 per cent in some instances of the oil in place.

Q Are the D 1 and Sawyer D wells higher on the structure than the Mid-Continent discovery well, the dry hole of Skelly in 33, the dry hole of Mid-Comtinent in 34, and the Magnolia well in 26?

A They are.

Q Is it your theory that through the force of the water drive oil might migrate towards the uplift or towards the peak of the structure?

A That is true in this field.

Q If we might forget for a moment the property lines on the surface that charter individual rights and think only in terms of the reservoir itself, I would like to ask you what the potentialities are of a well, or two or three wells, located on the peak or top of the structure with respect to ultimately recovering all recoverable oil from the reservoir?

A In such a field as this those wells which now exist on the top of the structure would eventually drain all the oil therefrom.

Q Do you think in a water drive field density of wells might hasten the entrance of water to the point that the edge wells would be captured by water?

A That is true.

Q Do you have any further obsérvations which you might care to make for the benefit of the Commission?

A I believe not.

MR.CROCKER: Does the Commission wish -

CHAIRMAN SHEPARD: Well, at this time, we will recess until 1:30.

(noon recess.)

CHAIRMAN SHEPARD: Mr. Crocker, will you resume.

MR. CROCKER: If the Commission please, we still have two or three questions.

CHAIRMAN SHEPARD: All right, you may proceed.

FURTHER DIRECT EXAMINATION
of
M. B. PENN,

By MR. CROCKER:

Q Mr. Penn, first I believe you have a record, you would like to make in regard to some figures. Will you do that?

A I will have to admit I was somewhat confused in the form our accountants gave us on these costs and didn't put all the costs into the record thus accounting for the improper arithmetic. The cost and expense allocable to the U D Sawyer A No. 1 as of September 30, 1950 totals $512,859.22. This sum is arrived at as follows: The lease hold expense, $271.75; well and lease and equipment, $76,848.99; drilling expense, $355,604.39; operating expense, $80,098.09. Those figures total the sum I gave. I would also like to correct the October production for this same well from 1900 barrels to 2900 barrels for October. This will revise the 65 barrels of oil per day to approximately 100 barrels of oil per day.

Q As against how much water.

A 450 barrels a day of water.

Q Mr. Penn, during the noon hour have you had an opportunity to make a grand total of money spent on all of our operations on the Sawyer leases, and a grand total of all the revenues so that you can tell the Commission what the present status of the entire operation is?

A The total amount of money we have spent on the four wells discussed, excluding the drilling well, is $1,725,901.10. The total revenue from these four wells is $913,087.90. The balance of money spent still not recovered, which is the difference between those two figures, is $812,813.20, which is approximately one-half of the total money spent.

Q Mr. Penn, from your observation in drilling and developing in the Crossroads pool since the completion of the discovery well are you convinced that there have been any changed conditions such as would make you believe that 80 acre spacing is not the proper spacing in the interest of conservation?

A I am still convinced as I was after we tested the first well that was drilled that one well on this Devonian reservoir in the Crossroads pool would adequately drain at least 80 acres.

Q Is it your thought that the 80 acre spacing proration unit should be continued in the Crossroads pool in the future in the light of studies you have made of reservoir conditions developed by the past drilling operations?

A It is.

MR. CROCKER: I believe that is all.

CHAIRMAN SHEPARD: Mr. Hanners, do you desire to cross examine?

MR. HANNERS: I do, if the Commission please.

CROSS EXAMINATION

By MR. HANNERS:

Q Mr. Penn, I hand you a little hand-made plat that has the four sections of the Devonian field drawn on it and that shows the lands owned by Sawyer in the solid lines and lands owned by other parties in the diagonal and ask you to state if that fairly represents the situation - I will ask you to state if that represents the situation on the ground as to producing wells, dry holes and drilling wells?

A Yes, sir, with one exception. The well located in the southeast corner of the northwest quarter of Section 27, which we call Oil Development Company of Texas 2-27, Santa Fe Pacific, I believe that well wasn't completed.

Q That was completed in the month of October, 1950, wasn't it?

A I believe that is correct.

Q Do you know the initial production from that well?

A No, sir, I don't have the final report on that well. I am not prepared to testify as to the completion or the initial production data on that well.

Q If the figure 576 barrels as indicated by the report - would that be approximately correct so far as you know?

A I understand it is a commercial well.

Q There has been one other well completed in the southeast

quarter of the southwest quarter of Section 22 which was also an oil development well.

A I believe that well is completed but I don't believe that well produces from the Devonian.

Q That is a pensylvania well in Section 22, is that correct?

A I believe it is.

Q Now, you say, you said awhile ago, as I understood you that the water drive found in the Magnolia well in the SW quarter of 26 and found in the Sawyer discovery well- I believe the phrase you used was, causing the oil to migrate upward toward Dessie-Sawyer well and the Sawyer 1 D, was that correct?

A That would occur.

Q That was your testimony? A Yes.

Q Now observing from the plat the Sawyers would be entitled to drilling of an offset well sometime between the U D Sawyer well the SWNE of 27, and the Pennsylvanian well of Magnolia in the SWSE of Section 22, would that be true?

A Are you referring to the drilling of a well on the northwest quarter of the northeast quarter of Section 27?

Q Yes, sir, that is my question.

A That would be off pattern.

Q I will develop it further. Would there not also in time be a well due the Sawyers between the Dessie-Sawyer well on the NE of the SW of 27, and the Pennsylvania well of Magnolia on the NE of the SE of 28?

MR. CROCKER: I would like --

MR. HANNERS: I will develop it further, Mr. Crocker.

MR. CROCKER: Are you talking about Devonian or Pennsylvania?

MR. HANNERS: I will develop it further, but the statement the witness has just made is that itwould be off pattern.

MR. CROCKER: You are not asking - undertaking to develop - that the well there would be a Pennsylvania well if there is a legal obligation to drill it.

MR. HANNERS: No. Those two locations would be midway between the Pennsylvania well and a Devonian well, wouldn't they, Mr. Penn?

A That is correct.

Q And under your present 80-acre spacing pattern a Devonian well isn't to be located at either of those two quarters?

A That is correct.

Q Now, if there is a water encroachment forcing the migration of oil northwestward toward the Dessie-Sawyer well and toward the Sawyer B well then would it be reasonable for a well at either of those locations I have mentioned to be drilled into the Devonian formation?

A I don't follow the reasoning.

Q If a well were drilled at either of those locations would it be reasonable for the well to stop as soon as it had encountered the Pennsylvania formation, or would it be reasonable for that well to be drilled deeper into the Devonian formation producing in the well known as the Dessie-Sawyer well and the one known as the Sawyer B?

A You have based your question on the assumption that the water drive was from the southeast. I don't believe that has been developed that the water drive occurs only from the southeast.

Q I have understood you to say, Mr. Penn, that the water drive was forcing your oil to migrate toward the Dessie-Sawyer well and toward the Sawyer D1.

A Assuming those wells are on the top of the structure, that takes place in all directions, not necessarily only from the southeast.

Q But Mr. Penn, would a prudent operator with an obligation to drill a well at either of the intervening locations I have mentioned, that is, between the Pennsylvania well and the Devonian well on the north, and between the Pennsylvania well on the west and the Devonian well, would a prudent operator also explore the Devonian formation at that location?

A I believe you are asking for geoligical testimony there.

Q Would it be reasonable, Mr. Penn, for a prudent operator drilling a well inthose locations, particularly after the recent bringing in of the Santa Fe 2-27 as a Devonian producer, to stop at the Pennsylvania formation in those two locations I have mentioned, or would he go deeper and penetrate the Devonian sands?

A Mr. Hanners, if we had presented here a picture of our conception of the geology of this structure, or if we had

presented an interpretation of our seismograph data from which one might readily see the structure which is present, or if you had developed the same type of evidence I believe a geologist could take the stand and answer that question.

Q I assume then, you are not in a position to testify whether a reasonably prudent operator would or would not explore the Devonian formation if he was at either of those two locations I have mentioned.

A That's right. That is a geological question.

Q And under the present 80-acre pattern, a devonian well is not to be located at either of those two locations I have mentioned?

A That's right.

Q Is it your testimony, Mr. Penn, that one well will drain 80 acres efficiently?

A At least 80 acres.

Q How will you draw off that 80-acre tract? Will it be an oblong?

A By saying that one well will drain 80 acres under a reservoir I mean that one well will drain that porportionate part of the oil from the reservoir that 80 acres would be - would be allocated to 80 acres.

Q And if one well allocated to 80 acres in an oblong running east and west such as the initial pattern here, is it your testimony one well would drain that 80 acre oblong tract?

A That conclusion doesn't follow from my answer to the previous question, I believe.

Q Will you please look at the chart and point off to me, if you will please, sir, the 80 acres being drained now by the recent oil development company well known as 2-27 located in the southeast of the northwest of 27. Before you answer that it is true that the well just west of that recent Santa Fe well was a dry hole in the Devonian formation. Is that true?

A That is correct.

Q Now, will you please explain to me the 80 acres being drained by the Oil Development Company well 2-27 located in the southeast of the northwest of 27?

A The 80 acres being drained by that well could be any 80 acres in the vicinity of the well covering the productive limits of the field.

Q Then would it be true, Mr. Penn, that the 80 acres in that instance should run towards the south, the 80 acre tract should be in an oblong running north and south?

A That is the 80 acres I believe that is -- drilled -- that is applicable or allocable to that well as far description is concerned. But that is not necessarily or actually the acres that is being drained by that well as it appears in the reservoir.

Q Well, could you now find the approximate limits of that 80 acres that is now being drained by the Oil Development Company well?

A I believe my answer to the previous question that that can

be any 30 acres under the reservoir - under the surface - that is contained in the reservoir.

Q Then under the present 80-acre pattern, if the Santa Fe well to which we have been referring is draining 30 acres it would be draining an 80-acre lease area assigned to it, would it not, and that would be the 30 acres on the north and south?

A No, not necessarily.

Q Then where would the 30 acres be, Mr. Penn?

A It can be any 30 acres on the -- in the reservoir that is productive.

Q So then, Mr. Penn, if the Santa Fe well is now draining 30 acres would it be reasonable to assume it is draining from the Devonian to the north because it couldn't drain from the Devonian formation to the west of it because it is dry.

A It could drain - in the absence of any geological testimony- it could drain the Devonian formation from a very few feet of the hole in the west.

Q Would it be reasonable to assume it is draining an 80-acre tract in an oblong running north and south under the spacing pattern. Isn't that the only basis on which you could justify the 30 acres allocated to that well?

A You have asked me two questions that conflict. The answer to the second question I believe was no.

Q Then your answer to the first one -

A Would you repeat the first question?

Q I will rephrase it. Mr. Penn, I want to be fair, I don't

want to confuse you.

A That's why I want to make the record straight.

Q What I want to know is, 80 acres is allocated to the Santa Fe well 2-27. If 80 acres is being drained by that well, doesn't it follow the 80 acres must be an oblong tract running north and south?

A As far as the reservoir is concerned I will answer the questions, Mr. Hanners, by saying no, because the well can be drained within a very few feet, the Devonian formation, within a very few feet of the dry hole to the west.

Q Then I take it your testimony is that the well isn't effeciently draining 80 acres.

A I would conclude that well could be draining more that 80 acres.

Q If it is draining more that 80 acres it is draining from the north isn't it?

A Yes.

Q Then it would be reasonable to assume that a well drilled north of the Sawyer B-1 would be drilled into the Devonian formation, wouldn't it?

A No, because that well would adequately drain at least 80 acres and there is no use to drill a well up there.

Q But observe the diagonal lines and the land owned by the Santa Fe Railroad which would be draining from land owned by the Sawyers by the failure to drill the Devonian well north of the D well. Wouldn't that be true?

A I don't follow that reasoning. I don't understand what you are driving at there. Would you repeat that?

Q You said that the 80 acres being drained by the 2-27 well would logically lie north of it. I believe that is your testimony.

A As well as within a few feet of the dry hole to the west.

Q My question is then, if the area being drained by the 2-27 lies north of the well wouldn't it be reasonable if a well be drilled north of the Sawyer D-1 well that it also be drilled into the Devonian formation because you say there is a drainage from the north by the Santa Fe 2-27 well.

A No, I don't see at all that the 2-27 well is draining any of the Sawyer's land if that is what you are getting at. I say two wells equally distant from the center line of the north half of 27 will both produce the same allowable and I see no reason to believe that one is draining any oil from the other, unless one might testify that the Sawyer D well of the Mid-continent has heretofore drained some oil out from under the Santa Fe lands because of the priority it got from an early completion. And in the same manner, I say that the well south of the 2-27 well was completed prior to the 2-27 well and it no doubt has drained some oil out from under it, and if anything has happened the Sawyer's has been draining the Santa Fe rather than the Santa Fepresuming to ever drain the Saywer's.

Q Now Mr. Penn will you move to the southeast corner of the

map to the Santa Fe well in the southwest of the southwest of 26 and explain the 80 acres being drained by that well.

A Are you referring to the well in the southwest southwest of 26?

Q That is correct.

MR. CROCKER: May I ask a question, Mr. Hanners?

MR. HANNERS: Yes, sir.

MR. CROCKER: I believe the Santa Fe has an engineer who will be on the witness stand.

MR. HANNERS: I wanted Mr. Penn to develop the testimony he just started to give about the drainage by Sawyer particularly in view of the Santa Fe well in the southwest southwest of 26 as to what area is being drained by it.

THE WITNESS: The well referred to drains at least 80 acres of the reservoir in the Devonian. That isn't 80 acres that I can draw a circle or confine by any kind of a line.

Q But if there be drainage there as between different owners it would be drainage from the Sawyers following the same reasoning that you just discussed in the last answer, wouldn't that be true, Mr. Penn.

A Not necessarily, Mr. Hanners. The well referred to is the only well on what appears to be three-quarters of the section. And the amount of that three-quarters of the section that is productive is included in the area that that well, I would say, is draining.

Q You were asked a question awhile ago if there had been any radical change between now and 1948, Mr. Penn. When you testified on this matter in 1948, didn't you then assume that

the four sections represented by that map designated as the Devonian area, the Devonian field, would be productive of oil from the Devonian formation?

A As I recall, Mr. Hanners, the area was designated by a committee then in existence and known as the Nomenclature Committee. And the basis upon which they designated that area is unknown to me. My conclusion at that time was drawn entirely from the physical data obtained from our discovery well.

Q But at that time were you not all assuming that the four section area designated by the Nomenclature Committee would be productive of oil from the Devonian formation?

A If you change the word "assuming" to "hoping" I will hold with you.

Q And since that time you have had three dry holes in the Devonian formation.

A That is correct.

Q Much of your testimony has related to financial matters, Mr. Penn, and discussing your figures as to the Sawyer No. 1 I notice you have included $80,000 of operating expense. Is it true, Mr. Penn, that during the last year you spent some forty or fifty thousand dollars on a pumping unit on that well?

A Approximately forty thousand dollars, I would say.

Q Now, do the figres you gave in each case include the equipment you now hve at the location?

A They include the equipment we now have on that lease.

Q That is your pumping and producing equipment?

A The only pumping equipment we have is on the one well, the other equipment would be such things as lead lines, tank batteries, Christmas trees, and tubing in the well.

Q In the cost of the dry hole you drilled in Section 34, what was your figure there?

A That is the U-D Sawyer B No. 1?

Q That is right.

A The total investment and expense there was $425,848.32.

Q Now, should there be deducted from that any appreciable amount for salvage from that dry hole in casing and what-not?

A The answer I will have to give you on that Mr. Hanners, is this: the figures I have given you are the status - is the status - of the investment and expense as of September 30, 1950, and if we had recovered any pipe from that well it could only have been the 5½ inch pipe that existed above the intermediate string, above the lowest point reached by the intermediate string, and it would be included because this is a true status of the amount of money that has been spent on that well.

Q All right, Mr. Penn, coming back to financial matters again I believe you said the Dessie-Sawyer well was completed in February of 1949 at a total cost of $442,000 plus.

A That included expenses to September 30, 1950.

Q And you have recovered from that $386,000 plus dollars?

A That is correct.

Q So that in the 18 or 19 months since its completion, you lack

only $56,000 of having recovered that $442,000 investment?

A That is correct.

Q And on the Sawyer D well you completed it in August 1949 at a cost of $344,000 plus dollars including your operating and maintenance expense?

A That is correct.

Q And have recovered 264,000 plus dollars from it in a period of about 14 or 15 months.

A That is correct.

Q One thing further. I understood you to say that the difficulty in the Sawyer discovery well had been brought about in part, at least by the excessive rate at which you first began to produce it. Is that correct?

A Water coned into the well. I am inclined to believe that is a true statement.

CHAIRMAN SHEPARD: Any further questions of this witness?

REDIRECT EXAMINATION

By MR. CROCKER:

Q Mr. Penn, with respect to drilling an exploratory operations at the present time are materials increasingly hard to obtain?

A Pipe is very difficult to obtain at the present time.

Q Have labor costs gone down?

A Since the drilling of our last completion, I would say no.

Q Mr. Hanners asked you about various locations as to whether or not if a well were drilled in these various locations he referred to it is possible you would encounter the Devonian

formation, did he not?

A Something to that effect.

Q He asked you whether or not you figured such wells would be necessary if you encountered the formation, the Devonian formation, in order to prevent waste from the reservoir.

A No.

Q In your opinion if those wells are not drilled and the spacing crder is conformed to is it your opinion that the ultimate recovery of oil from the reservoir on the 80-acre spacing pattern will recover all -- sufficiently drain and recover -- all the recoverable oil from the reservoir?

A That is my opinion.

MR. CROCKER: That is all.

MR. HANNERS: That is all.

CHAIRMAN SHEPARD: Any further questions of this witness? If not, you will be excused Mr. Penn. Call the next witness.

(Witness excused.)

JAMES R. PUCKETT

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. MCKELLER:

Q Please state your name.

A James R. Puckett, petroleum

Q Are you a graduate/engineer, Mr. Puckett?

A Yes.

Q Will you please state to the Commission your experience and

your position and by whom you are employed?

A I have had 5 years experience as Petroleum Engineer for Magnolia and presently I am District Petroleum Engineer for Magnolia.

Q The Magnolia well, does it fall within your District?

A That's right.

Q Are you familiar with the formation known as the Crossroads Devonian formation?

A Yes.

Q You are familiar with the Santa Fe Pacific "C" No. 1 well?

A Yes.

Q Does this well in your opinion produce from the formation known as Crossroads Devonian?

A Yes.

Q What depth is this well producing from?

A It is producing from a total depth of 12,263 feet.

Q 12,263. When was this well completed?

A January 11, 1949.

Q Could this well flow initially when it was first completed?

A Yes.

Q Approximately how long did it flow?

A Approximately 8 months to the best of my knowledge.

Q To the best of your knowledge it flowed about 8 months, at which time it had to be put upon a pump?

A Right.

Q Is this well still producing from a pump?

A Right.

Q For this reason it is my understanding you have no bottom hole pressure data on this well.

A That is correct.

Q Will you please state the previous history of the oil-water ratio in this Magnolia well.

A The well was potentialed initially 100 per cent oil and no water but the well started making water in a couple of days after it was potentialed. Some 20 to 25 per cent water and the water-oil ratio has increased since then, continued to increase.

Q At the present time the last month for which you have production figures available, Mr. Puckett, what per cent of water did this well produce? I wish when you answer the question you would state the number of barrels of oil per day and the number of barrels of water.

A For the month of October it averaged 120⅔ barrels of oil per day and 138 barrels of water per day. Slightly over 50 per cent water.

Q This well is producing at the present time slightly in excess of 50 per cent water?

A That is correct.

Q In your opinion, Mr. Puckett, as an experienced petroleum engineer what type drive do we have, that is the source of energy in this particular field, the Crossroads Devonian Field?

A The primary source of energy appears to be water, the water

drive, water influx.

Q In your opinion it is a water drive?

A Yes.

Q On what do you base this opinion, Mr. Puckett?

A The low solution ratio, the small amount of gas in solution in the oil. It is not sufficient to lift the oil.

Q What has been our gas-oil ratio, just approximately?

A Approximately 40 cubic feet per barrel..

Q Approximate gas-oil ratio at 40 to 1.

A 40 cubic feet to a barrel of oil.

Q Such a small ratio would certainly not be sufficient to furnish the energy for this field, would it?

A That is my opinion.

Q Do you have any other data or have you made any other studies and data obtained from any other production history of any other Devonian wells in that Crossroads pool that would give us any other data upon which to substantiate an opinion?

A I have none.

Q But you feel certain from the studies you have made of Magnolia's one well in this field that we do have a water drive?

A Yes.

Q Well, in your opinion then, would one well sufficiently, drain - effectively drain - drain 80 acres in the Crossroads Devonian pool?

A It is my opinion that any reservoir where you have an effective

water drive, that one well will effectively drain 80 acres at least.

Q Well, is it further your opinion or not that the wells which are at present complete or in the process of drilling in the Crossroads Devonian pool in all probability will recover all the recoverable oil in place which can be recovered by primary means, and these wells which have been drilled and in the process of drilling will they effectively recover that oil?

A Will you restate that question please?

Q Yes, sir. Strike that and I will restate it. In your opinion would the wells which have been drilled or which are now in the process of drilling effectively drain all the recoverable oil from the Crossroads Devonian pool which can be recovered by primary means?

A I am afraid I haven't made a detailed enough study to figure that.

Q But in your opinion one well will effectively drain 80 acres?

A Yes.

Q What was the initial cost of Magnolia's Santa Fe Pacific well?

A The cost figure I have is a total completed expenditure cost to September 30, 1950. That figure is $402, 957.27.

Q That is a total capital investment. Does that include operation lifting costs and other operating expense?

A No. The operating expense has been $50,604.78 to September 30, 1950.

Q Then until September of 1950 you have expended approximately

$450,000 on this well?

A The total figure is $453,562.05.

Q Does this figure to the best of you knowledge include the pumping unit which you had to place on our location?

A Yes.

Q It includes the cost of the repairs, usual maintenance, labor and what-not, added individually?

A That's right.

Q And we have shown what has been our revenue from this well or income?

A Net income has been $145,280.00.

Q Leaving us in the red approximately how much?

A $308,082.05.

Q Magnolia still has then invested in this well the sum total of around $308,000.00. Is that correct?

A Correct.

MR. McKELLER: I have no further questions to ask the witness, Mr. Hanners.

CHAIRMAN SHEPARD: Would you care to ask him any questions?

MR. HANNERS: Just a very few.

CROSS EXAMINATION

By MR. HANNERS:

Q Mr. Puckett, do you have your production records through 1950?

A Through October of 1950.

Q That will show an excess of 3500 barrels a month through the 10 months of 1950, won't it?

A Yes.

Q What is your total for 1950?

A I have a grand total but I don't have - it looks like it will average around 3500 a month.

Q And as I under stand your testimony it is based upon your experience with your own Devonian / well in the southwest quarter of the southwest quarter of 26 -

A That is correct.

Q And you have stated that you didn't feel qualified to testify as to whether or not the Devonian wells existing on the remainder of the Devonian field would efficiently drain the entire field -

A I have not made that thorough enough study.

MR. HANNERS: That is all.

CHAIRMAN SHEPARD: Any further questions?

REDIRECT EXAMINATION

By Mr. McKELLER:

Q But you did state, Mr. Puckett, that based upon your study of our well that you feel - that it is your opinion - that one well will efficiently drain 80 acres?

A Correct.

MR. McKELLER: I have no further questions.

CHAIRMAN SHEPARD: If there is no further questions, you will be excused, Mr. Puckett. Next witness.

JOHN C. MAJOR

HKing been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. IDEN:

Q Will you state your name please?

A John C. Major.

Q What is your profession or occupation?

A I am a petroleum engineer with the Oil Development Company of Texas.

Q Are you a licensed petroleum engineer?

A Yes, sir. Licensed in the State of Texas.

Q Are you familiar in a general way at least with the Crossroads Devonian pool?

A Yes, sir, in respect to our well.

Q And what well do you refer to, Mr. Major?

A I refer to the present producing well of the Oil Development Company of Texas known as Santa Fe Pacific Railroad 2-27.

Q Is that well in the southeast quarter of the northwest quarter of Section 27?

A Yes, sir.

Q Will you give - state generally, Mr. Major the - with reference to the status of that particular well?

A Well No. 2-27 was started June 9, 1950. The top of the Devonian pay was encountered at 11,778 feet. The well was completed with an open hole from 11,775 to the total depth of 11,880. It was acidized. The initial potential on the quarter inch choke was 576 barrels per day and the tubing pressure 1-10 and the casing pressure 1251, gas-oil ratio

40 to 1, gravity 44.6, basic sediment 27.4 of 1 percent, and received an allowable of 324 barrels a day effective October 1, 1950.

Q Do you have an exhibit, Mr. Major, with reference to pressure tests with respect to this particular well?

A Yes, sir.

Q Will you produce that form?

A Yes.

Q Mr. Major, you produced a chart which has been identified as "Exhibit 1". Will you explain to the Commission what this chart shows and the purpose of making it and also what conclusion you can reach from what is shown by this exhibit. Go into such detail as you think might be helpful to the commission.

A This is a chart showing the results of the shut-in and flowing bottom hole pressure test taken on the subject well during the period November 4 to November 6, 1950. The work as performed by the West Texas Engineering Service, Inc. under my supervision. The graph at the top underlined in pink is a graphic representation of the pressure behavior at the bottom of the well for a 48 hour shut-in period followed by a 24 hour flowing period which was in turn followed by a period of four hours of observation of pressure build up. The green graph shows casing and tubing pressure during the flowing period of the test. The other graphs indicate a constant choke size of 16 slant lines 64ths inches, and a constant flowing bottom hole pressure of 4156 and a constant

gas-oil ratio of 23cubic feet per barrel which existed during the flowing period of the test with the resultant productivity index which is underlined in yellow at .865 barrels per pound drop in bottom hole pressure. It appears in this graph the well built up to reservoir pressure in less than 24 hours. I am referring to the pink line. Start at the left and follow it across, please. As there is a negligible difference between the 24 hour shut-in pressure and the 48 hour shut-in pressure, upon opening the well the pressure immediately dropped from 4714 PSI to 4156 PSI flowing pressure. This pressure remained constant throughout the flowing portion of the test. At the end of the test when the well was shut in the bottom hole pressure rapidly increased from 4156 to 4669 within two hours time. Over on this right-hand side which is the top part of the graph. And built up to within 13 pounds of reservoir pressure within 3 hours. The gas-oil ratio of 23 cubic feet per barrel, it is my opinion that this rapid pressure build up is a strong indication of a water drive and the drive medium has an almost immediate effect upon the reservoir in the vicinity of the well, both indicating a continuous pressure, that is, from the driving medium, the water, into the well bore.

Q Mr. Major, based on your knowledge of the Crossroads Devonian field in particular the well you have been testifying about, what is your opinion and the opinion of those you represent here with reference to what the spacing should be in this pool to properly drain the pool?

A It is our opinion that development of the Devonian reservoir of Crossroads on an 80-acre spacing program is adequate to economically drain the reservoir without causing waste.

Q Do you have any further or other information on bottom hole pressure that might be helpful?

A Yes, if it is used with other pressures in the field to which I do not have access. The static bottom hole pressure at the Santa Fe Pacific well No. 2-27 at a test depth of 11,870 was 4712 pounds. This pressure extrapolated to the datum of 8141 Sub. R, which is the common pressure datum in the field, is 4854.

MR. IDEN: That is all we have.

CROSS EXAMINATION

By MR. HANNERS:

Q Mr. Majors, were you the geologist with the Oil Development Company some two years ago when this matter was first discussed before the Commission?

A No, sir.

Q Were you the geologist with the Oil Development Company when they drilled or spudded it in or began the dry hole you drilled in the southwest of the northwest of 27?

A No, sir. I am a petroleum engineer. The geologist with the company at that time is no longer with us.

Q After the drilling of that well, your company sought permission to depart from the 80-acre pattern that had theretofore been established, did it not?

MR. DOW[illegible] Excuse me Mr. Hanners, if the Commission please I presume the Commission will take judicial knowledge of its own procedings and as I understand there was no departure from the 80-acre pattern.

MR. HANNERS: They turned it north and south.

MR. DOW[illegible] That's right.

MR. IDEN: I think the record will show that the application was for an exception and of course, the record speaks for itself and of which I assume the Commission will take notice. It is the best evidence.

Q From your experience with this question, Mr. Major, was it true that the original 80-acre pattern was adopted on the assumption that the four section area would all be productive of oil in the Devonian formation?

A I am sorry, I cannot answer that. I wasn't employed by this company during the original field development.

Q Were you with the company when your company filed the application for the exception on the 80-acre pattern in January of this year?

A Yes, sir.

Q Did you confer with Mr. Iden when prepared that petition?

A No, sir. The petition was prepared by Mr. Pascal who was manager of production for the Oil Development Company of Texas, and Mr. Iden.

Q Mr. Major, I hand you a little chart that another witness has identified. There is shown on that four devonian wells in production. One Devonian well drilling and your well

2-27 is shown as a drilling well which has been completed since the preparation of that chart. Now, is it your testimony, Mr. Major, that those Devonian wells will effectively drain and efficiently drain the entire Crossroads Devonian field?

A Yes, sir.

Q There is no need for the drilling of any further wells?

A From an engineering standpoint, I don't believe there is.

Q From an engineering standpoint you do not believe it will be necessary ever to drill anymore wells into the Devonian formation in this Crossroads field.

A I believe that is correct.

MR. HANNERS: That is all.

CHAIRMAN SHEPARD: Anything more? If not, the witness will be excused.

(Witness excused.)

MR. DOW Mr. Booth Kellough of Amerada is present and I would like to have him make a statement for the Commission.

MR. KELLOUGH: I am Booth Kellough representing Amerada Petroleum Corporation. I don't believe it will come as a surprise to this Commission to learn that the Amerada is in favor of the 80-acre spacing in these deep pools in New Mexico. Now, there is nothing I could add to this hearing to the fine presentation which has been made by merely saying Amerada doesn't have any properties in the Crossroads pool but we are interested in the questions and

problems which seem to currently arise in the 80-acre spacing request, and I would like to convey a thought to the Commission which I believe, I hope will be helpful in considering this and other similar cases. It isn't new, but I do submit that it is sound. Getting back to the very fundamentals, to focus our attention on what is the issue in these 80-acre spacing cases, we go first to the source of the law. And I want to quote the statutues. This is a quotation; I copied it down last nigh. Section 213 of the 1941 New Mexico annotated statutes as amended in 1949, but this provision was left intact which I think it is reasonable to assume is an expression of the legislature that they intend to keep the current view and the current law. Here is what the statute says. No owner of a property in a pool should be required by the Commission, directly or indirectly, to drill more wells than are reasonably necessary to secure his proportionate part of the production. To avoid the drilling of unnecessary wells, a proration unit for each well may be fixed, such being the area which may be efficiently and economically - get those two words - efficiently and economically drained and developed by one well. The drilling of unnecessary wells creates fire and other hazards conducive to waste and that necessarily increases the production costs of oil and gas to the operator, and thus also unnecessarily increases the cost of production to the ultimate consumer. That is your basic statute. It

says in substance that if one well will drain 80 acres that is the size of the proration unit that should be fixed by this commission. Now, that is a question of fact so we come to the next step. How do you determine that? That ultimate question of fact which the legislature says is the decisive issue. Well, it is based upon opinion naturally and conclusions of the geologists and engineers. Now then, here you get the question; where does your proof lie? When you have a case like you have here at Crossroads or as you have in the Knowles pool where the Commission has made an order based upon the most advanced testimony of the engineers and geologists and all the information they have available. That it is their honest opinion under oath that one well will drain 80 acres. Now, then the burden of proof to deny that should be upon the party who contends that one well will not drain 80 acres. Now why is that? I think this is a very clear answer to that. The statute says that if you drill an unnecessary well that is waste. So, that if one well will drain 80 acres any extra well is an unnecessary well. Now then that is the kind of waste that you can't stop after the wells are drilled. The only time you can prevent the wasteful expenditure of money or waste as defined by the statute is before they are drilled. So, when you have the best engineering and geological evidence you can get, and they conclude it is their opinion that one well will drain an area of 80 acres then the only time you can

prevent the wasteful drilling of an unnecessary well is to rely upon that testimony until you are convinced that one well won't drain 80 acres. Now, there is only one other comment on the merits - and the merit - in connection with this case I would like to make and I wish to make a brief statement about this because it is a prevelaent, I think, misconception in these 80 acre spacing cases. There are of course other incidental questions which arise in connection with these. Now, the fundamental and primary issue is whether or not one well will drain 80 acres. Now when your evidence establishes that under the law and under conservation and under just plain right and wrong the operators should be required to drill only one well to 80 acres if that will adequately drain the pool. Now then we have questions of how you are going to arrange the proration units and you have problems of well spacing but those are incidental. Now then whole attack here is based upon the idea that when you have 80-acre spacing you are going to get some drainage across lease lines. Well, that is a situation which you never cure by spacing. Under any kind of spacing you are going to get drainage across lease lines unless the proration units and the spacing pattern is dependent entirely upon property rights. That is not what the statute requires the Commission to do, and I am sure the Commission knows the proper way to develop an oil pool. It seems to me quite,

helpful when considering 80-acre spacing when you have these diagonal shaped units as you necessarily have in order to keep your 80-acre units is to turn your map diagonally. The map in this case, if it is turned diagonally - I won't mark it up —.

MR. HANNERS: That is all right. Go ahead.

MR. KELLOUGH: Of course, it doesn't drain in the exact form of a square. Probably it is nearly in the form of a circle. But if you turn it diagonally and add a diagonal side of each quarter section you have a picture of 80-acre spacing and it is uniform. It is in the form of a square. It is just a bigger square. Take this ase here. The inference was this well in the southwest of 26 would drain over here into 27. Now it is the contention that you can correct that by changing the spacing. Well, they are now drilling a well in the northeast southeast of 27. Presumably it will drain over into this Section 26. So all you do by changing your spacing is your would have four wells instead two and the operator spend half a million dollars and the royalty owner get the same amount of oil... I don't want to inject myself into the merits of your case, but that is one of the principal questions and propositions that seem to currently arise in the request for 80-acre spacing. That is there ought not to be 80-acre spacing because you will have drainage across lease lines. We have that under any spacing and you don't correct it by sub-spacing. I wish to

to urge that if in viewing these cases you can keep in mind the fundamental issue of whether or not one well will drain 80 acres and who has the burden of upsetting that, I hope it will be some guide and some help to this Commission. Thank you.

CHAIRMAN SHEPARD: Thank you. Anything further?

MR. HANNERS: There is one matter of evidence I wanted to cover with Mr. Penn and failed to do it.

(Mr. Penn was called for further cross examination by Mr. Hanners.)

Q Mr. Penn, I have the September production records rather than the October ones. Do they appear correct? Your September ones for the Sawyer No. 1 were 2,532 barrels; from the Dessie-Sawyer, 10,002 barrels; from the Sawyer B, 10,010 barrels; for a total of 22,544 barrels. I took those from the September runs. In following the line of your financial testimony I have multiplied those figures by two and a half dollars and find that the recovery for mid-continent from those three wells for the month of September was slightly under $50,000.00. Are those figures approximately right?

A They appear to be substantially correct. I was using production rather that pipe-line runs on my estimation.

Q I won't quibble about the few cents difference. I wanted to get in the monthly production as being approximately $20,000.00 to the Mid-continent.

A I believe that's right.

MR. SPURRIER: Mr. Penn, do you have any permiability

figures on these wells you have drilled?

A. I have a core analysis of free samples from the "A" and we have other samples from the Dessie-Sawyer well that I would be glad to furnish the Commission.

MR. SPURRIER: Would you care to give them to us now or would you rather introduce them as an exhibit? In other words, do you have them availalbe now?

A. I have only one copy of them with me. I would like to send you a copy of them by mail if I could.

MR. HANNERS: No objection to that.

MR. SPURRIER: That will be all right.

MR. DOWELL: Is that all?

MR. HANNERS: Yes, sir.

(Witness excused.)

MR. DOW: Mr. Cecil Buckle of Sinclair.

MR. BUCKLE: At the risk of bothering the Commission with the statement "me too" I would like to get into the record the fact that the Sinclair Oil and Gas Company as an operator in New Mexico is vitally interested in not only maintaining the 80-acre spacing in the State where it is shown 80-acre spacing will adequately drain the pools - we were here at the former hearing when this order was made, and stated our position, and are back here still insisting we think the Commission should give due credence to the economic factor of producing at an economic loss on New Mexico, retaining if possible the extra cost of these wells,

because it might result in some of these wells being drilled where this cost is getting pretty close to a half million dollars a well and the possibility of recovery of the investment isn't coming back very fast. We took the same position before this Commission on the Knowles field and would like very much to have the record show our continued interest in this 80-acre spacing.

MR. DOW: The Commission probably has on file a letter from the Skelly Oil Company from Mr. Selinger under date of November 17, 1950, entitled this case. We would like to have this letter go into the record. I have shown it to Mr. Hanners.

MR. HANNERS: No objections.

CHAIRMAN SHEPARD: It will be received.

(Off the record.)

MR. DOW: Outside of the argument - I presume we will have an argument - that ends our testimony.

MR. SPURRIER: Mr. Dow, could you put someone on that would give us an approximate time of the pay out on this well?

MR. McKELLER: In answer to the question, I will put my engineer on the stand. I don't think our reservoir engineer has been able to compute from the data we have and the rapid encoachment of the water on our well any reliable definite time. We will feel extremely lucky if we get our initial investment out of it. However, if you would like to have Mr.

Puckett on the stand? Jim, could you help any on that?

MR. DOW: Mr. Puckett, could you assist us on that?

MR. SPURRIER: Mr. McKeller, what I would like is the figures for this pool. Any one well doesn't necessarily reflect the true figure.

MR. McKELLER: There has been no engineering committee set up for the pool, has there Mr. Staley? Jim, if you could come and take the stand and answer any questions that the Commission might have in that respect. I can't promise anything but glad to help all we can.

MR. PUCKETT: Well, the only information I can offer is a repetition of what we have written here. We still have $308,000 plus dollars investment to obtain. The water percentage is increasing and the production curve in this well hasn't leveled off sufficiently to extrapolate what our ultimate recovery would be, but it looks doubtful if we will ever get our money back.

MR. McKELLER: This isn't secret technical date that should not be introduced?

MR. PUCKETT: No.

MR. MCKELLER: We have here the production curve if that will be any help to you, Mr. Spurrier. If you can draw any conclusions based on that. I don't think you can.

MR. DOW: I presume Mr. Spurrier --

MR. HANNERS: (Interrupting) Mr. Puckett, you testified as to the slow recovery from your well. Other witnesses have testified the Mid-continent Sawyer well drilled in February

1949 at a cost of (figures not given) and already recovered $386,000.00 from February 1949 to date and about $56,000.00 yet in the red. But the Sawyer D well drilled by Mid-continent completed in August of 1949 at a cost of $342,000 has already recovered $264,000 in about 15 months. Those figures would indicate a highly rapid payout for those two Mid-continent wells as contrasted to the very slow payout for your well. Wouldn't that be true?

MR. McKELLER: If you can answer it, Jim, based on your knowledge as an engineer, go ahead.

MR. PUCKETT : I am inclined to agree with Mr. Spurrier it would have to be a field-wide figure. You have dry holes over here that have a half million dollars invested that haven't recovered anything that should be considered in the whole picture.

MR. HANNERS: Your testimony is there are wide extremes in your case and in the case of the Mid-continent wells.

MR. PUCKETT: Yes.

MR. HANNERS: That is all.

CHAIRMAN SHEPARD: We will be at recess.

(Recess.)

CHAIRMAN SHEPARD: The meeting will come to order.

MR. SPURRIER: Before you begin I would like to remind everyone that wants a copy of the record to let the reporter know, leave an order with the reporter.

MR. DOW[illegible]: I am not going to make a speech, Mr. Commissioner

this thing to my mind and our minds strikes at the very foundation of development in New Mexico, and the notice -- I assume that not only we but any other interested party may show good cause, and I would like to inquire if any other operators here would like to make a statement on this in the record. I am informed a Stanolind Oil and Gas Company representative would probably so desire and I would like to get that in the record.

OLIVER SETH: I would like to make a brief statement on behalf of the Stanolind Oil and Gas Company. Stanolind has no leases or acreage in this particular field but they are vitally concerned as are the other companies involved in any determinational policy which will cover further development in the State. Stanolind does have general leases in the area and in fields with similar geology. We would just like to express our position that we support the position taken by the companies here and the 80-acre spacing policy as heretofore expressed by the Commission. We all are anxious to see the proper and orderly development of all the existing fields and any new areas. There are several in the Blanco area in which Stanolind is interested and similar problems will arise and consequently we would like to make it known to the Commission at this time what the views of Stanolind are. Thank you.

MR. DOW[illegible] May I inquire, Mr. Commissioner, if there are other parties here who would like to make a statement?

I assume you will allow us a small period of time to argue this matter and I should like particularly for the Commission to hear from both Mr. McKeller and Mr. Crocker and Mr. Iden on this matter. We are up to the time of presenting the argument and I would like to call on them in that order.

(Argument by Mr. McKeller; argument by Mr. Crocker; Argument by Mr. Iden.)

MR. DOWELL: That is all Mr. Commissioner.

CHAIRMAN SHEPARD: Is that all?

MR. DOWELL: That is all.

CHAIRMAN SHEPARD: Mr. Hanners?

(Argument by Mr. Hanners.)

MR. JOHNSON: I am Paul Johnson of the Texas Pacific Coal & Oil Company. We have these Devonian wells in the Bagley Field near Tatum and as yet we are not producing any water, of course, we might in the future. I personally am against making a permanent order for 80-acre spacing until we know more about it.

MR. McKELLER: Is that for the Bagley field?

MR. JOHNSON: Yes, I am talking about the Bagley field. We don't have any production in the one. And I understand before I went with the Texas Pacific they did want 40-acre spacing. I don't know why at the moment. However, in the event we do go to 80-acre spacing in the Bagley field, that is as a permanent order, I understand there is an injunction against that now, then we do want to see more engineering data presented as to why we shouldn't go to 40 or stay on the 80.

In other words, we might want to go to 160. And in presenting data for any reservoir we are going to have to have some core analysis and the permiability and the amount of oil in place and the direction from which the water drive is coming, and how it is going to affect the wells as it approaches those particular wells. At the moment we are in an enviable position in the Bagley field. We have the highest well in the field and have our wells right around it. So we will be postponing any hearing forgetting 40-acre spacing on that. It might be our off set operators will want to go to it sooner than we do. So that is the position of the Texas Pacific on the thing right now.

(Further argument by Mr. Manners.)

CHAIRMAN SHEPARD: Anything further? If not, the case will be taken under advisement and we will promise you a decision very shortly. The next case is 238. Will you read it Mr. Graham, please.

(Reads the notice of publication in case No. 238.)

MR. HOWARD: I have here prepared proposed changes. Mr. Brown, you have some of those. Would you circulate them among the remaining people. Appearance for Shell Pipline Corporation, Paxton Howard. If the Commission please, when the new rules were written it was recognized by everyone who participated in the writing of them that as they were put into effect certain ambiguties would develop that would need consideration and clarification. Sure enough it is the feeling of certain of the parties that those ambiguities do exist. The Shell Pipeline Corporation whom I am representing at this hearing has called to my attention certain questions in the rules that bothers the pipeline company and I know it is bothering -- these questions -- the orther pipeline companies. The proposals I am going to make are not changes in the rules. They are merely attempts at clarification. In other words to put into the rules in black and white that which I think is generally understood to be the rules anyway but which is not just as clearly stated as it might be. Now as to the problem, there is this question in the pipeline company's mind. Suppose that a certain unit unit has an allowable we will say for the month of October at 1400 barrels. The pipeline company makes its last run from the lease or from the unit on the 26th of October at which time it has run 1200 barrels from that particular

unit for the month of October. Now, that leaves another 200 barrels production from that unit for the month. The next run from the unit won't be made until the 3rd of November. Now there is the question in the minds, I know of my client, and I think of some of the other pipeline companies as to whether the rules do give that pipeline company specific authority to run in November that 200 barrels of that October allowable which wasn't run in October? Now as I stated I think we all when we were writing the rules were under the impression we were including in the rules the right to do that. And I think it has been the thought of the Commission and the thought of everyone concerned that in other words the first runs that were made in November were to be considered as the running of that valid underage in October. The difficulty as I see it comes about by reason of definition in the rules. Definition 56, shortage or under production, shall mean the amount of oil or the amount of natural gas during a proration period by which a given proration unit fail to produce the amount equal to that authorized in the proration schedule. Now as I say, I was a member of the committee that worked on those and I am sure it was really my thought and the thought of the members of the committee at the time that the term "fail to produce" wasn't intended to limit actual production. It was supposed to include this matter of underruns as well. But we didn't say so. Now there has also been some question

in the minds of the pipeline companies - there is no clear distinction between what is intended to be current shortage such as the example I gave, that 200 barrels, and what is intended/to be back allowable. In other words what can the pipe line companies run without having the publication on the schedule. And what is it necessary to put on the schedule in order to authorize the pipeline companies to run. I think the commission is aware of the fact that the pipeline companies are very anxious to abide completely by what the rules are and it is the feeling, that of my client at least, that if we can make these amendments and express in the rules that which we all understand to be the rule that it would be beneficial to the pipelines in complying with the regulations. I have prepared and I have submitted to you and submit here the proposed changes that we suggest in order to clarify this matter. I will state this is not submitted on the basis this is the only answer. It is an attempt on our part to get the answer to the problem that is common to all the pipeline companies. So, I want to submit my proposition here and it may be that someone else has a much better answer to it. But at least this will get the matter started now without taking too much time, you will note I have prepared this in the form of alternative suggestions. Suggestion A, which I will state as my preference and Suggestion B, which is a shorter way of doing it but I don't believe is as desirable. I suggest that we have in the rules a definition of over-production and a

definition of under-production such as I have prepared here. In other words over-production will be changed to read as follows:

"41. Over-Production shall mean the amount of oil or the amount of natural gas produced froma proration unit during a proration period in excess of the amount authorized on the proration schedule."

Under-production, which will be rule 42 shall mean:

"42. Under-Production shall mean the amount of oil or the amount of natural gas during a proration period by which a proration unit failed to produce an amount equal to the authorized on the proration schedule."

You would introduce definitions of over runs and under runs.

"43. Over-rung shall mean the amount of oil or the amount of natural gas run from a proration unit during a proration period in excess of the amount authorized on the proration schedule."

A new definition of "Under-runs" will be added and will become Definition 44 as follows:

"44. Under-Runs shall mean the amount of oil or the amount of natural gas during a proration period by which a proration unit failed to have run an amount equal to that authorized on the proration schedule."

Now there you break down, break them down, between runs and production. Now Rule 503 (e) which is the

make-up rule would be changed to read as follows:

"503 (e) Current oil "Under-Production" or"Under-Runs" may be made up, or current and unavoidable and lawful "Over-Production" or "Over-runs" shall be compensated for, at any time or times during the two proration periods next following the proration period in which such occurred. This may be done without any special authorization therefor from the Commission, and the volumes thereof will not appear in the Schedule. Such current "Under-Production" or"Under Runs" are not to be confused with "Back-Allowable."

Now, the theory of that is, of course, that this current over or under either production or runs which is to be made up during the two proration periods immediately following the occurrence thereof will not be considered as Back-Allowable. It will not require any publication on the schedule. It will not require any special letter or order of the Commission. The pipeline companies will be able to make it up during those two proration periods immediately following the happening of the event. When, however, that is not made up during two periods, then it would come within the classification of back-allowable which will require an application to the Commission for the allowance of back-allowable as the rules now provide. Now in connection with back allowable there has been a suggestion that back-allowables should not be published in the schedule. It has been suggested that since it isn't actually a part of current allowables that it has no place in the schedule, and that it does cause a lot of bookkeeping on the part of the parties making up the schedule; and it has been suggested that it be dropped from the section of the schedule. If that is done, I want to call

attention to the fact that there will have to be a change made in rule 501F, the first section of which now reads: All legal and authorized back-

allowable available for purchase will be published in the monthly proration schedule. There will have to be added to that sentence of the provision, authorized by letter or order of the Commission.

A VOICE: Which rule is that?

MR. HOWARD: 503, I beg your pardon. At the end of the first sentence of 503 (f), if you are then to publish the back-allowable there should be added, authorized by letter or order of the Commission. If the Commission please, this is submitted as a clarification to meet a question that has bothered the pipelines. I don't consider it as an amendment in any sense. I don't consider it is a matter which needs to be supported by testimony from the stand. It is administrative and if the Commission is of the opinion that the clarification is in order, it is my opinion the Commission can make such change and it isn't necessary to introduce testimony just to the effect that it ought to be done.

Now, there is one other matter I would like to call to the Commission's attention that I think has also been bothering the pipelines and that is this. Of course, the runs are supposed to be made in accordance with the schedule. Now if the schedule, or say the allowable hearing is held on the 25th and an order for the state-wide allowable is granted but the schedule doesn't come out until the 7th or 8th of the following month. Now in the case of the matter

I am trying to correct there. We know it is the intention that the producer shall produce and the pipeline shall run on the basis of the preceeding monthly schedule until the new schedule comes out. So actually there is no present order providing for that so that you do have a situation until the schedule comes out in the first part of the month that there is no definite break down schedule for that month. Now that could be remedied by one of three ways. The meeting setting allowables could either be held earlier in the month so that the schedule could be out the first of the month or in the state-wide order issued there could be a statement to the effect that until the schedule comes out production and the transportation authorized on the basis of your preceeding months schedule or there should be included, or there could be included in the rules some statement or rule to the effect that would be the case. Those are two suggestions on behalf of the Shell Pipeline Company I wish to make to the commission for consideration and for consideration by the other operators.

There is another matter that just came up as a result of a gathering last night of several folks talking over the rules and in which they were all in accord and asked me since I was presenting this other matter if I would present this too. It is in connection with the Form C-110. At the present time it is required that a C-110 be filed for every unit and on a 160 acre lease there would have to

be four C-110's filed on that particular lease. It has been suggested in order to cut down paper work considerably and recording and such as that, if it were possible for the C-110 to be filed on a lease basis. That is not changing the allowable. It doesn't have anything to do with that but instead of referring to only one unit it could refer to say the four units on the lease and certify that the production from all of them was in accordance with the law. If the Commission please, those are the suggestions I have to make. Thank you.

CHAIRMAN SHEPARD: Anyone else? Anyone else have anything to say on these proposed changes. If not, we will take up case 239. Will you read it Mr. Graham?

(Reads the notice of publication of case no. 239.)

ROBERT S. DEWEY

having been first duly sworn, made the following statement:

MR. DEWEY: My name is Robert S. Dewey, Division Petroleum Engineer for the Humble Oil and Refining Company of Midland, Texas.

On September 21, 1950, the Humble Oil and Refining Company and the Magnolia Petroleum Company filed a joint letter addressed to the New Mexico Conservation Commission requesting this hearing on a proposed water flood in the Primrose-Skelly field. I request that this letter be made a part of this hearing and be identified as Exhibit 1. For the benefit of those present I will give the pertinent

information that is contained in the request for the hearing.

Application is requested to inject water in the Grayburg reservoir Penrose-Skelly field, Lea County, New Mexico, (reads from the letter.) As part of this, these plats mentioned on this location is all part of this lease. Alittle over a year ago meetings were held with several operators in this area to discuss the advisability of entering into some sort of cooperative water injection program. As a result of those meetings the Humble Oil Company and the Magnolia Petroleum Company have entered into a joint agreement, subject to the approval of this Commission, to water flood a certain section of the Penrose-Skelly field. The area in the Penrose-Skelly field which is primarily concerned in this case is the Humble J. L. Greenwood lease, south half of Section 9, Township 22 South, range 37 East, Lea County, New Mexico, and the Brunson - and the Magnolia's Petroleum Company's Brunson-Argo lease, the northeast quarter, Section 9, Township 22 south, range 37 east, and the northwest quarter, Section 10, Township 22 south, range 37 east, Lea County, New Mexico. Humble's property comprises 320 acres and Magnolia's property comprises 160 acres. Due to the meetings that were held the other operators in the area have been advised relative to the intentions of the Magnolia and Humble relative to the injection of water and besides that the two companies have obtained waivers from said operators.

I will give you - is it all right to present photostatic copies?

CHAIRMAN SHEPARD: Yes, sir.

MR. DEWEY: Rather than the originals?

CHAIRMAN SHEPARD: Yes, sir.

MR. DEWEY: I would like to enter in the record the photostatic waivers that have been received by the Humble Oil and Refining Company advising the other operators in the area relative to our proposal and obtaining their approval. I would like to bring out the fact that while there are several other producing horizons in the same area as the Grayburg formation, our proposal is strictly limited to water injection into the Grayburg formation and we are not asking for water injection in any other formation. We have very little geological evidence to offer. The structure relief on the Humble property as determined by the base of the queen and the top of the Grayburg formation is nearly flat. There is less than 25 feet difference in structure on the Humble lease. The top of the Grayburg formation is approximately 3600 feet. The geologist informs us that the Grayburg formation consists of a crystalline dolamite. The original drilling of the Penrose-Skelly field, the wells penetrated approximately 80 feet below the casing set and into the Grayburg formation. From electric logs that were obtained in conjunction -- were obtained when we obtained information on deepening of later wells on the lease, to lower formations, our interpretation is that the pay section

in the Grayburg formation underlying the Humble lease is approximately 44 feet. Of that 44 feet we have very little idea of the net pay. The wells on the Humble-Greenwood lease were originally completed between the years 1937 and 1940 at which time it wasn't customary to core and very little if any used was made of electric logs. One well was partially cored, Greenwood No. 1. The analysis of ten samples from this core indicate that the average porosity of those ten samples was 7.9. The highest permiability was less than one millidarcy. In the original drilling of the wells the wells were drilled approximately in the center of 40-acre spacing. On the Humble lease the 7 wells were completed on 320 acres. Due to the rapid decline in production the 8th location was never drilled. It was customary to set - to run surface pipe - and exclude the surface water and complete the wells with 7 inch casing set from the top of the Grayburg dolamite. The casing was then drilled out leaving the six and a quarter open hole to the formation. On one - on our Greenwood No. 1 - we have deepened that to the Brunson pay so that well isn't available for water flooding. The Greenwood No. 5 was deepened to the paddock at which point it was found it was dry and the well was plugged back subsequently and has remained plugged back to the Grayburg formation. It is a temporarily abandoned well with the idea that it might be used in connection with water flooding the lease. In drilling this well to the paddock pay it was necessary

to run 5½ inch casing. To recomplete the well as we propose to do and make an input well the casing will have to be perforated and the well recompleted. All the wells on the Humble lease are on the pump. The production, the daily production of the five producing wells, runs from the- runs on the order of 12 to 14 barrels a day. The production on the Magnolia lease I think is fairly comparable. The Magnolia Petroleum Company agreed to use their No. 8 Brunson-Argo well as an injection well and we have agreed to use our No. 5 as a diagonally off-setting injection well and we mutually agreed that comparable amounts of water will be injected into these two wells in a pilot flood. We know very little about the characteristics of the Grayburg formation and how those characteristics may effect the water injection. We feel this is strictly an experimental water flood and for that reason we desire a good deal of lattitude in the injection rate that we will use in injecting water. We do desire to be allowed to inject as high as 1,000 barrels per well per day in either or both of the two wells and to determine mutually what seems to be the best injection rate. Now we don't know whether either well will take water or at that rate. Our No. 5 well, as I explained before has to be recompleted. We did run a test on the Humble Greenwood 7 in which we determined over a 12 hour period that the well would take water under gravity of about 52½ barrels per hour or approximately 1260 barrels per day. We intend to

We intend to use fresh water that is available on the lease for injection purposes. The Humble has four water wells and one of these wells was tested, and we found we could produce it at 1000 barrels per day with a Pomona pump.

We intend to keep very accurate reports on the amount of water and the pressure at which the wells take the water and all pertinent data pertaining to water injection and plan to furnish it to the Commission monthly by letter if that is satisfactory. We would like very much for other operators in the same area to join with us in the experimental plan. We would be glad to furnish any other operator in the area the identical information we furnished the Commission. If the injection of the Humble Greenwood No. 5 is successful we desire to proceed with the injection into wells Nos. 3 and 6 which are also included in this request.

Does the Commission have any questions?

MR. MCKORMICK: How soon do you plan to start your operation?

MR. DEWEY: I see no reason why we can't get started very shortly, after the - if the Commission grants its approval. It will take a little time to recomplete the well, perhaps a week, might take a week to lay some water lines and that sort of thing around the lease. But there isn't a great deal of work to be done and I see no reason why it wouldn't be launched within two weeks after we obtain permission as far as we are concerned.

MR. MCCORMICK: This would be calculated to recover some

oil that wouldn't be recovered by any other methods.

MR. DEWEY: That is right. We hope to recover some oil by this method. We wouldn't spend our money if we didn't think we would get a return from it. Does anyone have a question?

CHAIRMAN SHEPARD: Any questions?

MR. DEWEY: Thank you.

CHAIRMAN SHEPARD: Mr. Dewey, without any objections that order will be entered right away, so you may proceed. Case No. 240.

(Mr. Graham reads notice of publication in case No. 240.)

MR. SHELDON: My name is Vilas P. Sheldon. I am to represent Resler and Sheldon in this matter asking for dual completion to be approved for a multible zone completion for a well which has been drilled in Section 33 of Township 23 south, Range 37 east which places it in the Mattix Field of Lea County.

In 1938 this well was drilled to a depth of 3481 feet, gas being encountered in the Queen sand down from 3414 to 3472 approximately and it was completed at the depth of 3481 as a gas well and has more or less continuously since that time sold dry gas for fuel tovarious concerns, the last of which has been the El Paso Natural Gas Company. They have a connection to the well at the present time and took gas from the well until workover operations were started in the first part of October, 1950. In other words, they did take gas from the well in September and the first few days of October and all the months before that.

In October 1950 the well was deepened to a total depth of 3620 feet, oil being found in that interval. The oil section was shot with nitroglycerin and proved to be capable of producing oil. To complete the oil the operator ran a string of two inch tubing with the Lane formation packer, the packer being set in the formation from 3480 to 3490 feet. Testing over several days indicated an effective seal created by the packer and the well flows pipeline oil to the tubing. The gas pay has been packed up and the connection to the El Paso Natural while it is still there, the gates are shut on it and no gas is being sold. Oil is being sold. On November 18 to 19th in the 24 hour period the gas oil ratio was conducted on the well during which time the well was flowing and flowed by a magnitometer (?), making seven flows a day of about 45 minutes duration each. The gas oil ratio was 1136 cubic feet per barrel. The petitioner requests permission of the Commission to make a dual completion. The dual completion has been made but we request permission for authority to sell oil, to sell gas, pardon me.

We ask permission to sell gas from the same pay that has been producing gas for some 12 years.

MR. McCORMICK: From what formation is it producing oil?

MR. SHELDON: The Queen in my opinion.

MR. McCORMICK: And also gas from the Queen?

MR. SHELDON: I would say yes.

MR. McCORMICK: What is there between the two zones?

MR. SHELDON: Dense dolamite. The zone is absolutely separate, as the packer installation has proven. This ratio of 1136 is a very satisfactory ratio. The gas is shut off and it is necessarily agreeable to the petitioner that the dual completion should be granted on the basis that the effective nature of the dual completion be maintained.

MR. McCormick: Are there other wells in that field that have dual completions?

MR. SHELDON: No, sir.

MR. McCormick: Are there other oil wells offsetting this producing from the Queen?

MR. SHELDON: Yes. In the application to the Commission which we furnished that was set out however I will offer as an exhibit a little sketch map. There is a well, one location directly west, producing oil from the identical sand we produce oil from. There is a well directly - pardon me - there is a well one half mile to the sath producing oil from the same sand that we produce oil from and in the general vicinity, that is, taking in an area of quarter sections there are quite a number of wells producing oil from the section we are producing oil from. In the immediate vicinity of this well there is no well producing oil from the section that this well produces gas from. It seems to be a rather strange affair.

MR. McCormick: Any wells producing gas?

MR. SHELDON: There have been none drilled. There are some other wells in the area drilled

through it but they drilled through it and set pipe.

MR. McCORMICK: Is there any possibility that gas which you have encountered is a gas cap for the Queen.

MR. SHELDON: In this particular field it is my opinion that it isn't possible. In other words, geological information that I have secured indicates that the zone that produces gas in this well is too high above sea level in this pool to ever - the gas oil contact is pretty well-defined.

MR. McCORMICK: Do you know of any way that waste could result from this completion you have requested?

MR. SHELDON: The dual completion as made now has effectively shut the gas off, that is the upper gas off from the oil pay so I do not see how there could be any waste from producing the oil and we are in effect asking for permission to continue to sell gas from the pay the gas has been sold from for 12 years. In my opinion it will not create waste in the pool as we know it now.

MR. McCORMICK: I have nothing further.

CHAIRMAN SHEPARD: Any objections?

MR. MORRELL: No objection.

CHAIRMAN SHEPARD: If there is no objection, the order will be entered.

MR. SHELDON: Thank you sir.

CHAIRMAN SHEPARD: Case No. 242.

(Mr. Graham reads the notice of publication in Case No. 242.

W. BAXTER BOYD,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. DOW:

MR. DOW: Mr. Commissioner this is an application of the Continental Oil Company for approval of the proposed unit agreement of the Texas Hill Unit Area, Eddy County, New Mexico comprising 13,800.43 acres more or less, situated in Township 21, 22, and 23 south, Range 21 east N.M.P.M. 11,880 acres of the lands embraced in the proposed unit agreement are lands of the United States. 1800 acres are state lands and 120 acres are fee or privately owned land.

MR. SURRIER: Mr. Dow, you said 13 thousand didn't you mean 18 thousand?

(Off the record.)

MR. DOW: It is 13,800.43 acres. In the proposed order. The unit area described in the proposed unit agreement was designated by the Director of the United States Geological Survey as one suitable and proper for unitization, and a copy of which letter is attached to the application. There is also attached to the application and made a part as Exhibit C a copy of the geological report made by Mr. W. Baxter Boyd geologist for the Continental Oil Company with a plat attached thereto which is the same report filed with the Director of the United States Geological Survey, and pursuant to which the area was designated as an area proper and suitable for unitization.

The Continental Oil Company is designated as unit operator and proposes to drill to 8200 feet or to such lesser depth as the Ellenberger formation has been penetrated, and also provides for the drilling within two years after oil and gas has been discovered on the second exploratory well to test the other geological feature as per the unit agreement.

There is a proposed form approved b y the State of New Mexico and Secretary of the Interior. It is believed it will promote the economic and efficient recovery of oil and gas to the end that the maximum yield may be obtained from the sand or area if oil and gas should be produced in paying quantities. I wish to offer the testimony of Mr. W. Baxter Boyd, district geologist for the Continental Oil Company.

Q I wish you would give briefly your educational background, your experience and familiarity with the section of New Mexico and with the proposed unit agreement.

A I graduated from the University of Okalhoma with a Bachelor of Science degree in geology in 1928. I have been continuously employed in the application of petroleum geology through the industry since then. For 17 years I have been employed by Continental Oil Company and for the past 2 and half years I have been given the supervision of geology of the West Texas and southeastern New Mexico area among other areas in Texas. During this time I have become familiar with the geology of southeastern New Mexico. The particular geological features with respect to this unit have been checked by - under my

supervision - by field parties and a projected producing horizons which we expect to explore have been examined by geologist under my supervision in our midland office. All these details I am familiar with.

Q You prepared or caused to be prepared the report which is filed with the application?

A Yes, sir.

Q Does the Continental Oil Company propose in the agreement to drill a well for oil and gas on some portion of the land?

A Yes.

Q And to what depth?

A 8200 feet or 500 feet into the Ellenberger.

Q You are familiar then with the proposed unit agreement?

A Yes, sir.

Q Would that in your opinion be in the interest of the conservation of oil and gas and the prevention of waste?

A It would yes.

Q In your opinion does the proposed unit agreement cover all the land situated upon the geological structure involved and it will afford effective control of the entire structure if oil and gas is discovered?

A It does.

Q MR. DOW: Do you care to ask any questions, Mr. Commissioner?

CHAIRMAN SHEPARD: No.

MR. McCORMICK: I have no questions.

MR. DOW: That is all.

Do you want to offer anything else, Mr. Boyd.

MR. BOYD: I can't think of anything that will add to the material in the Commission's hands.

CHAIRMAN SHEPARD: Anyone else have anything to say? Any objections? The order will be granted.

Case No. 241.

(Mr. Graham reads the notice of publication in Case No. 241.

EDWARD E. KINNEY,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. McCORMICK:

Q State your name.

A Ed Kinney.

Q What is your official position?

A Petroleum engineer New Mexico Bureau of Mines.

Q Have you been a member of the Nomenclature Committee of Southeastern New Mexico?

A Yes, sir.

Q Secretary I believe, you have been recording secretary. I will ask you if you have checked the description of the proposed pools as set out in the official publication of Case No. 241?

A I have.

Q Without going into the details of each pool I will ask you if the information as revealed in this publication constitutes a recommendation of the southeastern New Mexico Nomenclature

A It does.

Q And in your opinion is that recommendation as prepared based on present information?

A It is.

Q The pools they recommend be created and to be extended would each constitute common reservoirs as they are now known or thought to exist?

A Yes, sir.

Q You recommend to us that these pools be created and extended?

A I do.

MR. McCORMICK: Any quest ons? That is all.

CHAIRMAN SHEPARD: Anything further. If not, we will stand adjourned.

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STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

I HEREBY CERTIFY That the attached and foregoing transcript of proceedings before the Oil Conservation Commission is a true and complete record therof to the best of my knowledge, skill and ability.

DATED AT Albuquerque, New Mexico this 19th day of December, 1950.

E. E. Foreman
Notary Public.

My Commission expires August 4, 1952.