CASE NO.
2921

Application,
Transcripts,
Small Exhibits
ETC.

J. O. SETH (1883-1963)

A. K. MONTGOMERY
WM. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS
GEORGE A. GRAHAM, JR.
RICHARD S. MORRIS

SETH, MONTGOMERY, FEDERICI & ANDREWS
ATTORNEYS AND COUNSELORS AT LAW
301 DON GASPAR AVENUE
SANTA FE, NEW MEXICO

STATE OFFICE OCC
1963 NOV 4 AM 8:54

POST OFFICE BOX 828
AREA CODE 505
TELEPHONE 983-7315

October 31, 1963

Mr. Daniel S. Nutter
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Case No. 2921, Application of Robert G. Hanagan

Dear Dan:

At the hearing of this case, we were allowed to withdraw applicant's Exhibits Nos. 4-9, inclusive, in order to make copies of them.

We submit herewith, as the official exhibits in this case, copies of the original documents which were presented to you at the hearing.

Very truly yours,

RSM:jc
Enclosures

Dick

cc: Mr. Robert G. Hanagan
P. O. Box 1737
Roswell, New Mexico
w/Enclosures, viz:
Original of Exhibits
4-9, as described
above.

RSM

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 2921

August 7, 1963

Humble Oil & Refining Company
P. O. Box 1597
Roswell, New Mexico

Attn: Mr. J. A. Davidson

Re: Farmout request - E½SW¼ Section 1, T-12-S, R-34-E, Lea County, N.Mexico.

Dear Mr. Davidson:

We would like to respectfully request a farmout of the above captioned tract for the drilling of a Devonian test to be located in the S½SW¼ of Section 1, T-12-S, R-34-E, Lea County, New Mexico. This request is made on the following basis:

(1) Non operator to retain 1/8 overriding royalty (operator to have a net 75 interest lease)

(2) Subject to your usual farmout letter with drilling operations to commence within 60 days from the date of the mutually agreeable farmout letter.

In order to comply with the existing field rules as to the Devonian, we would of course need to unitize the 80 acre tract which we are requesting the farmout on herein with our 80 acre tract (being the S½SE¼), thus making a total 160 acre unit. We could work out some time period in which to drill a Pennsylvanian test on the farmout tract in order to earn these rights, that is, a certain length of time after the completion of the initial proposed test well in the S½SW¼, in which to drill a Pennsylvanian test on the 80 acre spacing pattern to be located on your tract, thereby earning these rights.

You will note that I am sending a copy of this to the Phillips Petroleum Company since they own interest in this tract with Humble. I would appreciate your prompt consideration to this request as we would like to drill the proposed well as soon as possible.

Yours very truly,
HANAGAN & HANAGAN

Robert G. Hanagan

RGH/lm
copy to:
Phillips Petroleum Company
Box 791
Midland, Texas
Attn: Mr. Don Wolfenberger

Send copy to Nutter

Map #94

HUMBLE OIL & REFINING COMPANY

SOUTHWEST REGION
P. O. BOX 1597
ROSWELL, NEW MEXICO

August 14, 1963

In re: Farmout Request
Lease 219769 - State
Lea County, New Mexico

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 3931

Mr. Robert G. Hanagan
Post Office Box 1737
Roswell, New Mexico

Dear Mr. Hanagan:

Reference is made to your letter of August 7, 1963, proposing a Devonian test in the SW¼SW¼ Sec. 1, T-12-S, R-34-E, and further requesting a farmout covering the N½SW¼ Sec. 1, T-12-S, R-34-E.

We have very carefully considered the matter of supporting the above noted well with either a farmout of acreage or dry hole money and regret to advise that, at the present time, we are not interested in doing so.

Your offer of development has been very much appreciated.

Yours very truly,

HUMBLE OIL & REFINING COMPANY

BY: James A. Davidson

JAD/mk
cc: Phillips Petroleum Company
Post Office Box 791
Midland, Texas
ATTENTION: Mr. Don Wolfenberger

Called out 8/14/63
not interested in any way
on this - may be officially
drawing rank. Rachel Sharp
to write out a letter, received
8/15/63. R.S.S.

PHILLIPS PETROLEUM COMPANY
MIDLAND, TEXAS
BOX 791 PERMIAN BUILDING

EXPLORATION AND PRODUCTION DEPARTMENT
EXPLORATION DIVISION

August 26, 1963

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 3921

Hanagan & Hanagan
P. O. Box 1737
Roswell, New Mexico

Attention: Mr. Robert G. Hanagan

Re: N/2 SW/4 Sec. 1
T-12S, R-34E
Lea County, New Mexico

Dear Bob:

We wish to thank you very much for your farmout proposal covering the captioned acreage. However, after due consideration, we find that we cannot recommend such farmout to our management at the present time.

Thank you again for your request, and if we can be of further service, please advise.

Very truly yours,

Don Wolfenberger

Don Wolfenberger
Land Section

DW:lg

cc: Humble Oil & Refining Company
P. O. Box 1597
Roswell, New Mexico
Attention: Mr. J. A. Davidson

September 18, 1963

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 2921

Humble Oil and Refining Company
P. O. Box 1597
Roswell, New Mexico

Att: Mr. J. A. Davidson

Re: N½SW¼ Section 1, T-12-S, R-34-E, Lea County, New Mexico.

Dear Mr. Davidson:

We propose to drill a a Devonian test (approximately 13,000 feet in depth) to be located in the SW¼SW¼ of Section 1, T-12-S, R-34-E, Lea County, New Mexico. The purpose of this letter is to respectfully request that you communitize the above captioned 80 acre tract with the S½ of the SW¼ and join in the drilling of this proposed test.

I realize that Humble owns a 63.6% interest and Phillips Petroleum Company owns a 36.4% interest in the Four Lakes Unit. Therefore, I am sending a duplicate copy of this letter to Phillips Petroleum Company as shown below.

I would appreciate your prompt attention and consideration to this proposal.

Yours very truly,
HANAGAN & HANAGAN

Robert G. Hanagan

RGH/lm

cc to:
Phillips Petroleum Company
Box 791
Midland, Texas
Att: Mr. Don Wolfemberger

Check copy enclosed

HUMBLE OIL & REFINING COMPANY

SOUTHWEST REGION

P. O. BOX 1597

ROSWELL, NEW MEXICO

October 4, 1963

In re: Farmout Request
South Four Lakes Unit Area
Lease No. 219769
Lea County, New Mexico

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 2927

Mr. Robert G. Hanagan
P. O. Box 1737
Roswell, New Mexico

Dear Mr. Hanagan:

Reference is made to your letter of September 18, 1963 wherein you requested our Company to join you in drilling a Devonian test in the SW/4 SW/4 Section 1, T-12-S, R-34-E and to communitize the N/2 SW/4 Section 1 with the S/2 SW/4 in order to form a 160-acre proration unit covering the SW/4 of said Section 1.

In regard to this, our Company has very carefully considered your proposal and at this time we are not interested in your offer to drill this Devonian test.

Your consideration of our Company in regard to this matter is sincerely appreciated.

Yours very truly,

HUMBLE OIL & REFINING COMPANY

BY: John S. Cron

John S. Cron

JSC:fd

cc: Phillips Petroleum Company
P. O. Box 791
Midland, Texas
ATTENTION: Mr. Don Wolfenberger

PHILLIPS PETROLEUM COMPANY
MIDLAND, TEXAS 79701
BOX 791 PERMIAN BUILDING

EXPLORATION AND PRODUCTION DEPARTMENT
EXPLORATION DIVISION

October 8, 1963

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 2921

Hanagan & Hanagan
P. O. Box 1737
Roswell, New Mexico

Attention: Mr. Robert G. Hanagan

Re: Hanagan & Hanagan F/O Request, South Four Lakes Area, Lea County, New Mexico

Gentlemen:

This will refer to your letter of September 18, 1963, addressed to Humble Oil & Refining Company, copy of which we received, requesting our company to join you in drilling a Devonian test in the SW/4 SW/4 Section 1, T-12-S, R-34-E, and to communitize the N/2 SW/4 and S/2 SW/4 Section 1 to form a 160-acre proration unit covering the entire SW/4 of said Section 1.

We have very carefully considered your offer. Please be advised that at this time we are not interested in your proposal to drill this Devonian test. We sincerely thank you for considering our company in regard to this matter.

Very truly yours,

Don Wolfenberger

Don Wolfenberger
Land Section

PLC:lp

cc: Humble Oil & Refining Company
P. O. Box 1597
Roswell, New Mexico
Attention: Mr. John S. Cron

application of Robert G. Hanagan
for a non-standard gas proration
unit, Lea County, New Mexico

Applicant, in the above-styled
cause, seeks approval of
a non-standard gas proration
unit comprising the S/2 SE/4
of Section 1 and the N/2 NW/4
of Section 12, ~~Township~~ ~~South~~
Township 12 South, Range 34 East,
Four Lakes Devonian Gas Pool,
Lea County, New Mexico, to
be dedicated to a well to be
drilled in the SW/4 SW/4
of said Section 1.

J. O. SETH (1883-1963)

A. K. MONTGOMERY
WM. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS
GEORGE A. GRAHAM, JR.
RICHARD S. MORRIS

SETH, MONTGOMERY, FEDERICI & ANDREWS
ATTORNEYS AND COUNSELORS AT LAW
301 DON GASPAR AVENUE
SANTA FE, NEW MEXICO 87501

POST OFFICE BOX 828
AREA CODE 505
TELEPHONE 983-7315

MAIN OFFICE OCC
1963 OCT 11 AM 8:12

Case 2921

October 10, 1963

New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Gentlemen:

On behalf of Messrs Robert G. Hanagan and Hugh E. Hanagan of Roswell, New Mexico, we wish to enter our appearance and confirm their application for approval of a non-standard proration unit in the Four-Lakes Devonian Pool to consist of the S/2SW/4 of Section 1 and N/2NW/4 of Section 12, Township 12 South, Range 34 East, Lea County, New Mexico. This proposed non-standard unit will be dedicated to a well located 660 feet from the south line and 660 feet from the west line of said Section 1.

We would appreciate having this matter set for hearing before one of the Commission examiners on October 30, 1963, which we understand is the next scheduled examiner hearing.

At the present time the only known interested parties in this application are Humble Oil & Refining Company and Phillips Petroleum Company.

Very truly yours,

SETH, MONTGOMERY, FEDERICI & ANDREWS

By: Richard S. Morris

RSM:dd

CC - Messrs Robert G. Hanagan
Hugh E. Hanagan
P. O. Box 1737
230 J. P. White Bldg.
Roswell, New Mexico

DOCKET MAILED
Date 10-15-63

Docket No. 30-63
Docket No. 31-63

DOCKET: EXAMINER HEARINGS OCTOBER 18, 1963, AND OCTOBER 30, 1963

BOTH HEARINGS 9:00 A.M. OIL CONSERVATION COMMISSION CONFERENCE ROOM, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

Examiner: Daniel S. Nutter; Alternate Examiner: Elvis A. Utz

DOCKET NO. 30-63 - OCTOBER 18, 1963:

CASE 2910: (Continued from the October 9, 1963, examiner hearing)

Application of Big (6) Drilling Company for extension of an existing oil pool and special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the extension of the Scharb Bone Spring Oil Pool to comprise the W/2 of Section 5, all of Section 6, and the N/2 of Section 7, Township 19 South, Range 35 East, Lea County, New Mexico, and for special rules therefor, including 80-acre spacing and proration units to comprise any two contiguous 40-acre tracts, and for fixed well locations.

DOCKET NO. 31-63 - OCTOBER 30, 1963:

CASE 2678: (Reopened and continued from the October 9, 1963, examiner hearing)

In the matter of Case No. 2678 being reopened pursuant to provisions of Order No. R-2359, which order established temporary 160-acre proration units for the East Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre proration units.

CASE 2903: (Continued from the October 9, 1963, examiner hearing)

Application of Coastal States Gas Producing Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Gulf State Well No. 1, located in Unit F of Section 20, Township 17 South, Range 36 East, Lea County, New Mexico, to produce oil from the Double-A Abo Pool and an undesignated Lower Leonard pool through parallel strings of tubing.

CASE 2921:

Application of Robert G. Hanagan for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard gas proration unit comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, Four Lakes-Devonian Gas Pool, Lea County, New Mexico, to be dedicated to a well to be drilled 660 feet from the South and West lines of said Section 1.

CASE 2922:

Application of Consolidated Oil & Gas, Inc. for an unorthodox location and a dual completion, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its Jicarilla No. C-1-11 to produce gas from the Blanco Mesaverde and Basin Dakota Gas Pools. Said well is at an unorthodox Blanco Mesaverde Pool location 890 feet from the South line and 990 feet from the East line of Section 11, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

CASE 2923:

Application of Cities Service Oil Company for a special gas-lift gas allocation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce Blinebry gas from its State "S" Well No. 1 located in Unit E of Section 15, Township 21 South, Range 37 East, Lea County, New Mexico, and to utilize said gas for Hare Pool gas-lift operations on its State "S" well No. 4 located in said Unit E. Gas produced from said State "S" Well No. 1 would be metered and charged to the Blinebry Oil Pool casinghead gas production from applicant's State "S" Well No. 6 also located in the said Unit E.

CASE 2924:

Application of Socony Mobil Oil Company for a dual completion and for a tubing exception, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State Bridges No. 58-DD in Unit M of Section 24, Township 17 South, Range 34 East, Lea County, New Mexico, to produce oil from the Vacuum Glorieta and Vacuum Blinebry Oil Pools through parallel strings of tubing. Applicant further seeks an exception to Commission Rule 107(d)4 to produce the Glorieta formation through the casing-tubing annulus from perforations at approximately 6000 feet up to 2 3/8-inch tubing landed in a dual packer at approximately 4020 feet.

CASE 2925:

Application of Sunray DX Oil Company for the creation of a Strawn Gas Pool and for Special Temporary Pool Rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn Gas Pool for its New Mexico State "AH" Well No. 1, located in Unit K of Section 30, Township 18 South, Range 23 East, Eddy County, New Mexico, and the establishment of temporary pool rules therefor, including a provision for 640-acre proration units and for fixed well locations.

Docket No. 30-63
Docket No. 31-63

CASE 2926:

Application of Sinclair Oil & Gas Company for an exception to Order No. R-1670, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order permitting its Barber Gas Unit Well No. 1, located in Unit E of Section 8, Township 20 South, Range 37 East, Eumont Gas Pool, Lea County, New Mexico, to produce 600 MCF of gas per month in exception to the shut-in provisions of Rule 15(A) of Order No. R-1670, Southeast New Mexico Gas Pool Rules, said gas to be utilized in the oil well gas-lift system on applicant's B. J. Barber Lease.

CASE 2927:

Application of Skelly Oil Company for gas commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 21(A) of Order No. R-1670, Northwest New Mexico Gas Pool Rules, to permit the commingling of gas produced from its Jicarilla "C" Wells Nos. 3, 7, 4, 8 and 6, located in Units M and P of Section 21, Unit A of Section 28 and Units E and J of Section 27 respectively, Township 25 North, Range 5 West, South Blanco-Pictured Cliffs Pool, Rio Arriba County, New Mexico, allocating said gas to the individual wells on the basis of periodic testing. Applicant further proposes to meter said commingled gas and to commingle it with commingled casinghead gas produced from seven Otero-Gallup oil wells on its Jicarilla "C" lease.

CASE 2928:

Application of Texaco Inc. for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (combination) of its State of New Mexico "O" NCT-1 Well No. 14, located in Unit J of Section 36, Township 17 South, Range 34 East, Lea County, New Mexico, to produce oil from the Vacuum-Wolfcamp and North Vacuum-Abo Pools through parallel strings of 2-7/8 inch casing and to produce oil from the Vacuum-Blinebry Pool through 1-1/2 inch tubing run inside 3-1/2 inch casing, all casing strings to be cemented in a common well bore.

CASE 2929:

Application of Texaco Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Basal San Andres formation through its State of New Mexico "O" NCT-1 Well No. 12 located in Unit J of Section 36, Township 17 South, Range 34 East, Vacuum Field, Lea County, New Mexico.

CASE 2930: Application of William G. Ross for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Wilson Deep Unit Area comprising 3,920 acres, more or less, of State and Fee lands in Township 21 South, Range 34 East, Lea County, New Mexico.

State of New Mexico
Oil Conservation Commission

ir/

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 11/4/63

CASE 2921 Hearing Date 9am 10/30/63
DSN SF

My recommendations for an order in the above numbered cases are as follows:

Enter an order creating a non-standard gas unit in the ~~South~~ Four Lakes Devonian gas Pool, said unit to comprise the S/2 SW/4 of Sec 1 and the N/2 NW/4 of Section 12, Twp 12 S, Rge 34 E Lea Co NMPM. Said Unit is to be dedicated to a well to be drilled 660' from the Southline & 660' from the West line of said Sec 3

Find that operators have made a reasonable effort to form a standard unit without success.

Find further that from the evidence presented at the hearing it may reasonably be presumed that the non-standard unit is productive in the Four Lake Devonian gas Pool.

Staff Member

DRAFT
JMD/esr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 2921

Order No. R-2596

APPLICATION OF ROBERT G. HANAGAN
FOR A NON-STANDARD GAS PRORATION
UNIT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 30, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this ____ day of November, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Robert G. Hanagan, seeks approval of a 160-acre non-standard gas ~~proration~~ unit in the Four Lakes-Devonian Gas Pool comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, to be dedicated to a well to be drilled 660 feet from the South line and 660 feet from the West line of said Section 1.

(3) ~~That~~ the proposed non-standard gas ~~proration~~ unit can be efficiently and economically drained and developed by the proposed well.

(5) That the applicant has made reasonable effort to form a standard 160 acre unit to dedicate to the proposed well.

(4) That, ~~from the evidence presented at the hearing, it may reasonably be presumed that~~ the proposed 160-acre non-standard gas ~~proration~~ unit may reasonably be presumed to be productive in the Four Lakes-Devonian Gas Pool.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells and otherwise prevent waste and protect correlative rights, the proposed non-standard gas ~~proration~~ unit should be approved.

IT IS THEREFORE ORDERED:

(1) That a 160-acre non-standard gas ~~proration~~ unit in the Four Lakes-Devonian Gas Pool comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, is hereby established and dedicated to a well to be drilled 660 feet from the South line and 660 feet from the West line of said Section 1.

~~(2)~~

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

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

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 2921
Order No. R-2596

APPLICATION OF ROBERT G. HANAGAN
FOR A NON-STANDARD GAS PRORATION
UNIT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 30, 1963, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 13th day of November, 1963, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Robert G. Hanagan, seeks approval of a 160-acre non-standard gas unit in the Four Lakes-Devonian Gas Pool comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, to be dedicated to a well to be drilled 660 feet from the South line and 660 feet from the West line of said Section 1.

(3) That the proposed non-standard gas unit can be efficiently and economically drained and developed by the proposed well.

(4) That the proposed 160-acre non-standard gas unit may reasonably be presumed to be productive in the Four Lakes-Devonian Gas Pool.

(5) That the applicant has made reasonable effort to form a standard 160-acre unit to dedicate to the proposed well.

(6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells and otherwise prevent waste and protect correlative rights, the proposed non-standard gas unit should be approved.

IT IS THEREFORE ORDERED:

(1) That a 160-acre non-standard gas unit in the Four Lakes-Devonian Gas Pool comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, is hereby established and dedicated to a well to be drilled 660 feet from the South line and 660 feet from the West line of said Section 1.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

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

esr/

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

P. O. BOX 871
SANTA FE

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

November 13, 1963

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 828
Santa Fe, New Mexico

Re: Case No. 2921
Order No. R-2596
Applicant:
ROBERT G. HANAGAN

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC
OTHER

DEARNLEY-MEIER REPORTING SERVICE, Inc.
ALBUQUERQUE, N. M. PHONE 243-6691
FARMINGTON, N. M. PHONE 325-1182

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 30, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of Robert G. Hanagan for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard gas proration unit comprising the S/2 SW/4 of Section 1 and the N/2 NW/4 of Section 12, Township 12 South, Range 34 East, Four Lakes-Devonian Gas Pool, Lea County, New Mexico, to be dedicated to a well to be drilled 660 feet from the South and West lines of said Section 1.

Case No. 2921

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

MR. NUTTER: The hearing will come to order, please. The next case will be Case 2921.

MR. DURRETT: Application of Robert G. Hanagan for a non-standard gas proration unit, Lea County, New Mexico.

MR. MORRIS: If the Examiner please, I'm Richard Morris of Seth,Montgomery, Federici and Andrews, Santa Fe, appearing on behalf of the Applicant, Robert G. Hanagan; and also on behalf of the partnership of Hanagan and Hanagan, composed of Mr. Robert G. Hanagan and Hugh E. Hanagan.

MR. NUTTER: You may proceed.

MR. MORRIS: In this case the Applicants will seek the approval of a non-standard proration unit located next to the South Four Lakes Unit Area. Our evidence in this matter will show that it is not reasonably possible to form a standard unit in this area due to the refusal of the offset operators to farm out or communitize, and due to the existence of the unit boundary along the North line of our proposed unit.

Our evidence will show a geologic picture of a unique Devonian reservoir, showing a productive area outside of the South Four Lakes Unit Area underlying our proposed non-standard proration unit.

We will show a need to develop this acreage in order to obtain an efficient drainage of the 160-acre proposed non-standard unit, and we will show that we intend to drill this area and develop it if the Commission will allow us to do so.

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Albuquerque, New Mexico Phone 243-6691
Suite 1120 Simms Building

We have one witness, Mr. Hugh E. Hanagan, that I ask be sworn at this time.

(Witness sworn.)

* * *

HUGH E. HANAGAN

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Hanagan, will you please state your name and where you live?

A My name is Hugh E. Hanagan. I live in Roswell, New Mexico.

Q What is your connection with the Applicant, Robert G. Hanagan?

A I am a brother and a partner in the firm or partnership forming Hanagan and Hanagan, which is Robert G. Hanagan and myself.

Q What is the nature of the business performed by your partnership?

A We are in the oil business. We buy and sell leases, we drill wells, and have production of our own.

Q Have you ever testified before the New Mexico Oil Conservation Commission or one of its Examiners?

A No, sir.

Q Would you briefly outline your education and your experience in the oil business, particularly in the New Mexico area?

A I graduated from the University of Wichita, Wichita, Kansas, in 1949, and since that time I have devoted my entire time as a Petroleum Geologist. I have spent eighty percent of that fourteen years in Southeastern New Mexico, geology of Southeastern New Mexico, of which approximately seventy percent of that time has been spent on the deep beds, beds below the Wolfcamp.

Q Are you familiar with the Four Lakes-Devonian Gas Pool and with your application in Case 2921?

A Yes, sir.

MR. MORRIS: Are the witness' qualifications acceptable?

MR. NUTTER: They are.

Q (By Mr. Morris) In detail, Mr. Hanagan, what are you seeking or what is Mr. Robert G. Hanagan seeking by his application in Case 2921?

A We seek to form a non-standard 160-acre gas unit comprising the South Half of the Southwest Quarter of Section 1, and the North Half of the Northwest Quarter of Section 12 in Township 12 South,, 34 East, with a well to be drilled, a Devonian well to be drilled in the Southwest Southwest of Section 1.

Q What is the footage description or location of the well that you propose to drill?

A It would be drilled 660 from the South line and from the

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West line of Section 1.

Q Is that an orthodox location?

A Yes, that is an orthodox location.

Q Could you give some information concerning the ownership of the acreage comprising the non-standard proration unit you are seeking approval for here today?

A Well, the non-standard proration unit butts up against the Humble South Four Lakes Unit. Humble is the operator and Phillips is a partner in that operation. That forms the north boundary of our acreage, and also part of the west boundary of our unit.

To the south is an 80-acre tract owned by Ralph Lowe, on which is situated a dry hole that was drilled into the Mississippian. It did not penetrate the Devonian, although at the total depth that they ended up, why, it was within 100 to 200 feet of the Devonian.

Q What is the ownership of the acreage within your proration unit, Mr. Hanagan?

A It is 100 percent owned by Robert G. Hanagan.

Q Could you give some lease information on that acreage?

A That acreage was purchased from the State -- leased from the State in July of this year. The lease number is K-3413.

Q Why is it necessary to have this hearing today to establish or seek the approval of the Commission for the non-standard proration unit?

A Well, this Four Lakes-Devonian Field is prorated on 160-acre gas units since it is classified as a gas field, the normal proration units are 160 acres.

Q Excuse me, if I might correct you, this is not a prorated field, is it, Mr. Hanagan?

A No, it's a non-prorated field.

Q These are spacing units?

A Yes, spacing units, 160 acres.

Q Go ahead.

A We have attempted to form a standard 160-acre gas unit by offering Humble, who is the owner of the North Half of the Southwest Quarter, which would form an orthodox unit, gas unit -- we offered to farm out their acreage, that 80 acres, and throw it in with our South 80 to form a 160-acre unit with a well to be drilled in the Southwest of the Southwest of 1.

Q That's your present location?

A At our present location.

Q Yes.

A That letter -- we had a reply from Humble in August of this year refusing to farm out that acreage to us. In September we wrote Humble and Phillips, offering to communitize our 80 acres with their 80 acres for a standard unit. In October, the 4th, of this year, we had a reply from both Humble and Phillips rejecting the voluntary communitization. Therefore, we are forced to form this non-standard gas unit that we propose to form.

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

Q Referring now to what has been marked as Exhibit No. 1, would you state what that exhibit is and point out some of the pertinent facts on it?

A Exhibit No. 1 is an acreage dedication plat showing the area of interest, the area that we propose to unitize and the surrounding area, the lease ownership and the wells drilled in the area. The South Four Lakes Unit is outlined, or is in orange; this is an area comprising the South Four Lakes Unit.

This unit was formed in 1955, with the exception of this 80-acre tract. In 1958, Humble -- that was before this well was drilled, Humble --

Q When you say "this well", are you referring to Well No. 6?

A Well No. 6.

Q Yes.

A Before Well No. 6 was drilled, Humble had a special hearing and obtained permission to put this 80 acres into the unit.

Q Now by "this 80 acres" --

A The North Half of the Southwest of Section 1 --

Q Yes.

A -- was added to the unit in 1958.

Q Was that by Order No. R-710A?

A Yes, sir.

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MR. NUTTER: That order expanded the unit, in effect, then?

A Yes, sir, it expanded the unit by 80 acres. The proposed gas unit is colored in yellow, which consists of the South Half of the Southwest Quarter, North Half of the Northwest Quarter of Section 12. The color code here, the red indicates a Devonian producer; a blue, Pennsylvanian producer; a blue and a red is a dual Devonian-Pennsylvanian producer. The green wells to the south of here are dry holes that have penetrated the Pennsylvanian or Mississippian. They did not penetrate the Devonian itself.

The well in Section 3, Southern Petroleum Company, was strictly a Pennsylvanian test. The well in Section 11 drilled by Trice and the well in Section 12 drilled by Penrose were both Mississippian tests.

Q (By Mr. Morris) How many Devonian wells are actually shown on your plat there, and producing at this time?

A Humble Oil has drilled on the unit seven wells, five -- four of them Devonian wells. At the present time the No. 2 Well, which is a Devonian well, is producing singly from the Devonian. The No. 3 was producing dually from the Pennsylvanian and the Devonian. As of August the Pennsylvanian had been temporarily abandoned; the Devonian is still producing.

As of August, No. 6 Well was a dual completion and was producing in August from both the Devonian and the Pennsylvanian. The No. 4 Well, which is shown here as being possibly dualled, is

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not any longer a dual. The Devonian was produced singly by itself and was abandoned in 1959. The Pennsylvanian is still producing.

So at the present time the No. 4 is producing strictly from the Pennsylvanian. The No. 7 Well, which was drilled in 1962, is temporarily abandoned. It was strictly a Pennsylvanian well.

Q So as far as our presentation here today, we'll be mostly concerned with the Wells No. 2, No. 6 and No. 3?

A Yes, sir, that's right.

Q As present producers?

A That's right. The Well No. 5 was drilled to the Devonian and was dry. It was plugged back and is presently producing from the Pennsylvanian.

The Four Lakes Devonian Gas Field is lightly outlined in yellow. The gas units -- there are four 160-acre gas units presently in the field with one being abandoned. This one here is no longer producing. The offset owners, as you can see, to the proposed gas unit, is Humble to the north; and to the west, ourselves to the west, and to the east--Ralph Lowe to the south, which we propose to show that that well definitely condemns the 80 acres; and L. B. Hodges on the east.

Q Do you have anything else to point out with respect to Exhibit No. 1?

A I can think of nothing else.

Q Won't you have a seat?

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

Q Mr. Hanagan, referring now to what has been marked as Exhibit No. 2, would you explain what that exhibit is, what it shows?

A Well, for lack of a better name, I've entitled No. 2 as a Diagrammatic History of the Field. On this plat it is scaled both horizontally and vertically. The vertical scale is 1 inch to 100 feet. Each one of the vertical squares is 10 feet. On the horizontal scale, it is 16 inches to a mile.

To get our relationship correct, the No. 2 Well I'll use here as being the center well, the No. 5 Well is a direct northwest offset to the 2. The No. 6 well is a direct southeast offset to the 2. The No. 4 Well is two locations north of the 2, and the No. 3 Well is two locations northwest or northeast of the 2.

Q Your proposed location then would be a direct southeast offset to the No. 6?

A Yes, sir, that's correct. Before we get into the diagram, the color code should be explained. The orange represents the section directly above the Devonian. It includes the Mississippian and Woodford sections. The gray represents my interpretation as being tight, it's a tight cap, little or n... production would be expected from this zone. It will have a few

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streaks of porosity, and it's conceivable you could get some oil or gas, condensate or gas, but basically, it is a tight cap.

MR. NUTTER: Is it in the Devonian?

A Yes, sir, it is the Devonian. The Devonian is marked in yellow there, which is the top of the Devonian. The red represents, solid red line represents the oil column or condensate column. The brown, the inner lines here are drill stem tests taken by the operator; the brown represents on the drill stem test they recovered nothing but mud, or at least no formation fluid, no water, gas.

The section in brown that has red streaks in it would be a section where they did get some oil and gas-cut mud. The section where they have solid red is flowing drill stem test. For example, in No. 2 Well from drill stem test number five all the way through drill stem test number eleven, they had flowing condensate test.

The gray, of course, is tight section. The green perforations to the left of the column are the original perforations in the Devonian. The red perforations above the green are the present perforations in the Devonian.

All of this material, by the way, was checked directly from Commission records, along with Scout tickets, but it was all directly checked from Commission records.

The South Four Lakes Field was discovered, the discovery well was the No. 2 Well. It was discovered in 10-8-56, 1956.

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It is still presently producing. It is presently the highest well structurally in the field.

MR. NUTTER: Mr. Hanagan, may I interrupt you one minute?

A Yes.

MR. NUTTER: Where you have green representing the original perforations and the red representing present perforations, does that mean in every case that the green have been squeezed or shut off from production?

A Yes, sir. To our knowledge they have been shut off. The No. 2 Well, the best way to present this, in my opinion, would be to go from well to well to give you a history, an abbreviated history of each well which in turn will give you a better idea of the field.

The No. 2 Well, which is the first well, there were twelve drill stem tests taken in the Devonian. As you can see by the color code, the No. 1 and No. 3 drill stem tests were strictly mud tests, no oil or gas were recovered on those two tests. The No. 2 test which covered an interval of over 100 feet, close to 200, recovered a little free oil and some oil and gas-cut mud. Since the No. 3 and No. 1 drill stem tests were negative, I have interpreted the No. 2 test as being negative in the same interval. Therefore, I have assumed that what oil and little gas that they got out of that section was above tests 3 and 1.

The No. 4 test again recovered mainly mud with a little bit of oil and gas-cut mud, a little free oil again. I have

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interpreted that as being right at the bottom, near or in the zone that they are now perforated in. This can be seen from the electrical logs and also we know that within forty feet above there we had a dry test. So we can pretty well place where, according to drill stem test, where we actually got any shows.

As you can see by those drill stem tests, there, it is fairly well established that the top 252 feet of that Devonian reservoir in this particular well is, for all practical purposes, tight. It is actually a cap. This happens in a lot of Devonian fields in Southeast New Mexico, and is attributed most of the time or a good part of the time to this part of the Devonian, as being a limestone or limy dolomite which decreases or does away entirely with the permeability.

Starting with drill stem test No. 5 through 11, they were all flowing drill stem tests and so noted to your right. All drill stem tests are pressures, what they recovered, gravity of the oil, all information pertinent on each drill stem test is recorded on this chart.

As you can see, they were excellent drill stem tests, the pressures were good, both flowing pressures, shut-in pressures or bottom hole pressures, until we got down to drill stem test No. 12. Drill stem test No. 12 is in blue because that represents water. Blue on the chart is water.

The drill stem test No. 12 actually flowed also, it flowed oil, gas, and water. As You might see, the upper five

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feet or so of that section, I have red, which means that they did recover oil or condensate on that test, but predominantly it was water. This water kick, on an electrical log it can be noted on the electrical log as looking wet. The type of log, electrical log, run on this well and all wells except the No. 6, were the old E.S. logs which are pretty poor logs to determine porosities, water saturations, and so forth. The No. 6 is the only well in the pool that has a complete set of electrical logs run where you can really calculate water saturations, porosities, and so forth.

After all this testing, of course, why, they ran pipe to bottom. Before I go on the water test there, the top of that drill stem test where they obtained water was a minus 8723. So just below that point or in that vicinity would be your oil-water. The original oil-water contact as picked by the operator was a minus 8750. My original oil-water contact is in agreement. It's a minus 8725.

After they ran pipe, they perforated a 50-foot section, the top, minus 8653 to a minus 8703. They acidized this zone with 500 gallons of mud acid, which wouldn't take; they couldn't break the perforations down. They re-acidized with 1,000 gallons and initial potentialed the well, it was flowing 560 barrels of oil, 57.6 gravity.

This well was completed on 10-8-56. The original perforations, the well produced from the original perforations

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1,775,000,000 cubic feet of gas plus 555,840 barrels of condensate. No water was ever reported on this well or is presently being reported on this well.

In August of 1962 they squeezed the perforations, the original perforations, and plugged back to the middle section of the Devonian, and from the log drill stem test, I would say they're approximately at the top of their main porosity. Any porosity above this point is just thin stringers. On the log at this point, the gamma ray side which indicates a clean or a dirtying of the dolomite, definitely indicates that the dolomite or carbonaceous section was cleaning up at this point.

It's interesting to note that before they squeezed the perforations, their monthly production, average monthly production over the last four or five months was between twenty and twenty-five million a month plus five to six thousand barrels of distillate a month. It is not quite apparent to us why these perforations were squeezed. No water was reported. We have to assume that either the volume was dropping or the water increased, we don't know which. It might be a combination of both.

The present perforations, which consists of a 20-foot interval separated by approximately 35 feet and then another 13-foot interval, that interval was acidized with 1000 gallons and repotentialed for 340 barrels of condensate a day plus 4,587,000 mcf absolute open flow. Production from these perforations as of July 1st of this year has been 390,092 mcf or 390,000,000 cubic

feet of gas plus 94,258 barrels of distillate. That's from August 19, 1962 to July of 1963.

Total cumulative production as of 7-1-63 in this well has been 2,165,832 cubic feet of gas plus 650,098 barrels of condensate. Again, that pretty well covers the history of that well. The present production as of August or during the month of August, they produced 61,207,000 cubic feet of gas and 16,421 barrels of distillate during the month of August.

Q (By Mr. Morris) It looks like a pretty good well, doesn't it?

A It looks like a good well. I don't think there's any doubt in our minds that it's the best well in the field.

Q Just go on and briefly describe the history of the wells in the pool.

A All right. The second Devonian well to be drilled in the pool was the No. 3 Well. It was completed in November of 1956. It was later dualled, the dual took place in January of 1962. This well structurally was 272 feet low to the No. 2 Well on top of the Devonian. You can get your structural relationship on this map by the figures in orange and subtracting 20 feet; you can get your exact structural relationship in any well. The reason you have to subtract 20 feet is 20 feet on top of the original well here. In other words, all these wells have sat on a minus 8250 datum and the top of the Devonian on the high well was 8270.

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The No. 3 Well was drilled to 12,874 feet, approximately. Well, that's a minus 8716, which would bottom up, according to the original water contact, approximately 34 feet above it. No drill stem tests were reported in the Devonian in this well. The operators perforated, at first in the original perforations they perforated a 50-foot interval.

In several stages of acid treatment amounting to approximately 10,000 barrels of acid they were apparently unable to break those perforations down, or if they did, they were not getting enough fluid to satisfy them, so they went and reperforated the same 50 feet plus 20 feet additional, 20 feet above it, making a total of 70 feet of perforations, then re-acidized with approximately 7500 gallons for a total treatment of that zone of 17,500 gallons of acid, which would indicate that well has a fairly low permeability or awful lot of mud invasion or something; at any rate, that zone is apparently fairly tight.

It also is interesting to note on a production test in the original perforations they swabbed as high as 97 percent water before their potential, and yet to date there has never been any water reported in that well, either in the original perforations or the present perforations.

As you can note, there is approximately a 30-foot tight cap on top of the Devonian zone that I consider to be little or no commercial value as to the productivity of the Devonian. In November of '62, this well was reperforated up t he hole

approximately 30 feet below the top of the Devonian, a 35-foot section. It's interesting to note that the production, according to the production figures this well was producing as much condensate and gas before the original perforations were squeezed, it was producing as much as it did after in the new perforations. In other words, there was no change in the production rate after they squeezed the lower perforations and reperforated the upper perforations, no apparent change in the production history.

On a packer leakage test taken -- which was the last I could find on the Commission records -- 2-7-62, this well produced 159 barrels of condensate plug 496 mcf through a 14/64 choke, GOR 3110. This was over a nineteen and a half hour test. No water was reported again.

The latest bottom hole pressure test was in April of this year, 1963, 2597 pounds shut-in pressure, pounds per square inch. Present production in August of this year, total production for the month, 2791 barrels of condensate plus 13,451,000 mcf of gas.

Going back to the No. 2 a minute to compare bottom hole pressures, the latest bottom hole pressure test taken on the No. 2 in August -- I mean in April of 1963, their bottom hole pressure was 4,919 pounds per square inch; and October, this is the month for bottom hole pressures so perhaps the operator has the latest bottom hole pressures for the field. They should have been taken this month. It was unavailable to us at the time.

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I believe that's all on the No. 3 that I can think of.

On the No. 4 Well, which is the northernmost well drilled in the Devonian, this well was originally completed 2-15-57, total depth 12,893, a minus 8737. You might note that their total depth is slightly lower than my estimated original oil-water contact. It is 13 feet above their original oil-water contact.

This well was 225 feet low to the No. 2 Well, two locations to the south. There were three drill stem tests taken on this well. The first drill stem test recovered heavily gas-cut mud and 30 feet of distillate. As you can note, the upper three-quarters of that drill stem test I have noted to have a mud test; and according to my gray color, that section, even though it was perforated, is tight. When I get around to those second set of perforations, why, I can more or less tell you why I consider that area as non-productive. So considering that area, though, at the present point non-productive, the little distillate that I can show that they have I consider to be below the perforations noted, that 20-foot set of perforations noted on the chart.

The second drill stem test was approximately the same, 90 feet of distillate, gas surface, 90 minutes, proves to be somewhat tight, low permeability, probably.

The third test approximately the same, 90 feet of distillate again; the 30 minute shut-in pressure is actually lower than it was in the preceding tests. No water was recovered on

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drill stem test. Approximately two months after that well was started producing, it started reporting water, though. The original perforations were almost lateral on the bottom, within a foot of the total depth, minus 8701 to minus 8736, 35 feet of perforations. They were acidized with 3,000 gallons of acid and that well was potentialed flowing 420 barrels of oil, through a 14/64 inch choke, GOR 3580.

As you can see, this well was completed 2-15-57, and in 11-23 or November of '59, they abandoned the Devonian; but just prior to the abandonment they did go in and reperforate three zones noted on the log, a 50-foot zone, approximately 50 feet from the top of the Devonian; and then a 20-foot zone below that, and a six-foot zone. Also reperforated part of their original perforations.

As I gathered on the records, all of this perforation was not in one stage. It was at least two stages of this perforation. The top two sets, about 70 feet there was evidently perforated first. They acidized with 15,000 gallons and then re-acidized with 15,000 gallons to no avail. In other words, they could not make a commercial well of it there. That is the reason that I have indicated that that entire zone is probably of non-commercial value. Therefore, all that area is gray.

As you will note, if that is true you have a cap there of approximately 150 feet thick until you get down into your clean dolomite or better porosity, main porosity, if you would

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like to call it that. The other set of perforations there, at any rate, to make the story short here, the second -- all of the perforations were finally squeezed in the Devonian and the Devonian was abandoned.

MR. NUTTER: Were all four sets of perforations squeezed at the same time, or was the upper first and then the lower set later?

A It was kind of hard to tell. There was a note on there that they had six unsuccessful attempts to squeeze. Each time they attempted to squeeze, it went on vacuum. I'm assuming that they were attempting to squeeze all of them and that most of the effect of the vacuum was probably coming from the lower set where probably the best permeability and porosity was. That I can't tell you for sure.

You can also see just off to the left, just where the top of the Devonian picked, colored in just off to the left there, a block or so -- there's always a little section by itself in gray. That section is one that has never been tested at all, either by drill stem test or -- I mean except in the case of 2, it just never has had a test at all in that section here. For example, in this well, it would be 59 feet thick, they have never attempted to do anything with it; and for good reason, I think, it's non-productive.

While the No. 4 Well was being drilled, by the way, this Penrose well was being drilled at the same time here, these

two wells; in other words, when this well was drilled these two wells had been completed and this was drilling also. These two wells were drilling at the same time the Penrose well and the Four Lakes No. 4 Well.

Q (By Mr. Morris) No. 6 had not yet been drilled?

A No. 6 had not yet been drilled, nor the 7 nor the 5.

Q Yes.

A The No. 5 was completed July 31, 1957, from the Pennsylvanian, after penetrating the Devonian. They had one drill stem test in the Devonian which they recovered 30 feet of mud. Apparently, from the electrical logs and drill stem tests, that well was perfectly tight all the way. In other words, all they had was just that cap. They did not recover any water, any fluid of any sort out of that zone. That well structurally to the No. 2 was almost exactly 500 feet low to the No. 2 Well.

Q Before you go on to the No. 6 Well, Mr. Hanagan, back up to the No. 4. You show the cumulative production there. Was there any water reported as having been produced from that well?

A Yes, water was reported to have been produced from the original perforations. I have those figures available, although it wouldn't give you total water because there was -- I think the year '58 or something like that, the production books, Commission books did not carry water production month by month.

From the original perforations, that well did make water and fairly well agreed with the oil-water contact, the original

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oil-water contact. In fact, my original oil-water contact is picked from the No. 4 Well and the No. 2 Well.

All of the cumulative production from the No. 4, by the way, which had produced 63,660 barrels of distillate plus 41,021,000 cubic feet of gas, was all produced from the original perforations. No new oil or condensate was reported from the second, any of the second set of perforations.

The No. 6 Well, which was the last Devonian well drilled in the Four Lakes Pool, was completed April 28, 1959. Since that time there has been no further development in the Devonian horizon in this field, since 1959. This well structurally was 156 feet low to the No. 2 Well. Structurally it is the second highest well in the field.

Again no drill stem tests were reported on the No. 6 Well. The 75 feet, the top 75 feet I have noted as being barren or of little commercial value. It has never really been tested. This is based on the electrical logs primarily, and on the -- particularly on the gamma ray side where it shows a fairly dirty ratty carbonate section.

Just below the point, the gray line, you definitely see a clean-up of the dolomite from the gamma ray side. You also start picking up your porosities as noted on the electrical logs.

This well, like I say, was not drill stem tested. The well was drilled to a minus 8715. At that time I figured the oil-water contact may have been in the neighborhood of a minus

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8701. That's the only definite change in the oil-water that I could ascertain, and I wouldn't even say definite, but you could calculate on the bottom of that log it did look water-wet and would calculate to be water in the bottom part of that log.

Also on the separate little set of perforations on the No. 4 Well, off to the right there -- I mean off to the left of the original perforations is a four-foot block I have there marked blue. They perforated that separately, perhaps for a squeeze job, I don't know. But at any rate, they swabbed 100 percent water out of that particular zone there, but with the amount of perforations they had, the amount of perforating they had done in there, I don't believe that would be too reliabile. You could be getting communication and so forth; but from the electrical log of the No. 6 Well, I have assumed that the, approximately, at least the bottom or 15 feet or so, is probably definitely water and you will also note I have blue streaks or blue little notes there opposite the original perforations. That zone there calculated from the electrical log to be of a water saturation in the neighborhood of 38 percent, which is not a prohibitive water saturation; and it would produce oil, but there is a possibility that you might be able to produce a little water with it. To our knowledge, no water was ever reported from those perforations.

That zone was perforated and acidized with 1,000 gallons. You'll note that 1,000 gallons used on that zone is the lightest acid treatment of any well in the pool.

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In 1961, when it was reperforated in a higher section again, the top part of the second set of perforations or the present perforations is approximately at the top of the main porosity. There's a little eight-foot zone there.

When I say the main porosity, I don't mean particularly that all 140 feet of that section in any of these wells -- that all 100 or 200 feet of the main porosity is solid porosity. You have a little permeability streaks throughout.

This well, by the way, originally was potentialed for 782,000 cubic feet of gas and 210 barrels of condensate a day, GOR 3724 to 1. On the present set of perforations which were done in September or August of '61, -- by the way, this was the first well to be reperforated in the Devonian. The repotential on that test -- I don't believe I have that repotential noted on that particular set of perforations. On a packer leakage test taken in January of this year, the last part of January of this year, the production was 77 barrels of condensate per day plus 187,000 cubic feet of gas on 8/64 choke. The GOR was 2430 to 1, in a 22-hour test.

The bottom hole pressure as of April, 1963, was 3547 pounds per square inch; present production in August, 104 barrels of condensate plus 132 barrels of water plus 300,000 gas.

The first water ever reported on this well was in January of this year, the month of January this year. No water again was reported on that packer leakage test that was taken in that month.

January. On the reported production, it was producing water. Now this amount of fluid that it is reportedly producing in August does not indicate to me any water encroachment as such. If you had an active water drive and it was encroaching on you, you would certainly or I would expect that you would be getting more fluid than that.

Actually, with that amount of fluid I don't believe that you could say that the water table has risen up that high.

Q What would you attribute the water production to, then?

A That amount of water production could be strictly connate formation water, or connate water. There has never been any big amount of water reported. In fact, there has never been any big amount of fluid of any kind reported on this well, which brings me to the problem of trying to determine which wells are the best well.

All this information presented indicates to me, plus the electrical logs, detailed sections that I have had a well expert or a Well-X Engineering help me to interpret this Devonian section in the 6, which is the only well in there that has sufficient electrical logs to really determine the water saturation and so forth, the fluid saturation.

We came up with a possibility -- or according to our calculation, average water saturations of 25 percent, average porosities have been 5 percent, matrix porosity, which is deceiving because the reservoir is fractured and also contains vugular

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porosity which cannot be measured off electrical log.

We calculated that this well, instead of producing a total of 87,925 barrels of condensate and 291,000,000 cubic feet of gas, should produce in the neighborhood of 400,000 barrels of condensate. We further believe that the No. 6 Well is the second best well in the field, not the No. 3 as indicated by production figures.

Q Could you briefly summarize the reasons why you believe the No. 6 Well to be second only to the No. 2 Well in spite of its production history --

A Yes.

Q -- why you believe it to be better than the No. 3?

A I think there are several reasons. One, the electrical log indicates, or calculates considerably more fluid should be produced from the No. 6 than has been or that is indicated that will be.

Number two, the No. 2 Well is 120 feet higher structurally than the No. 3.

The No. 6 Well in either set of perforations, the original or the present set of perforations, has never been treated, to our understanding, with more than 1,000 gallons of acid, which is really just a wash treatment. It doesn't break down too much of your formation. The matrix porosity in the field or in the Devonian as a whole requires some fairly good acid treatments.

Q Does any reason appear of record why no more acid

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treatment was given that well than it was?

A No, none whatsoever. I don't know why they have not retreated or done any more additional treating of that section, plus if the well is that poor, why they haven't perforated more of the section. There is more section that looks productive than they have perforated. The No. 3 Well, in both cases they have acidized with considerably more acid treatment than they have in the No. 6 Well.

They used 17,500 gallons in the original sets. They used 5,000 gallons of acid over a 35-foot zone in the second set in the No. 3 Well. In the No. 6 Well, they have an interval there of over 100 feet with three separate zones, eight-foot zone, twenty-foot zone, and a six-foot zone, that whole interval they only used 1,000 gallons of acid on.

The perforations, the minus datum of the present perforations, let's see what the relationship is of them. The No. 6 Well, keep in mind, is the only well reporting water at the present time. The No. 6 Well, the bottom of the perforations, the base of their perforations is ten feet low to the No. 2 Well, the best well in the field. The No. 6 Well is perforated ten feet higher than the No. 3 Well at the base of the perforations.

So it is our conclusion that if the No. 6 Well is making water, we cannot understand why the No. 3 Well is not also making water.

Another point to bring up which to me is very important

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is the bottom hole pressure. The bottom hole pressure from the beginning of the No. 6 Well, the first bottom hole pressure right up to the present time, the No. 6 Well has anywhere from 800 to 1,000 pounds higher bottom hole pressure than the No. 3 Well. The No. 3 Well presently has the lowest bottom hole pressure in the field.

A thousand pounds of bottom hole pressure difference indicates to me that the No. 6 Well certainly has more permeability and is certainly closer, if not in the main reservoir, than the No. 3 Well. And yet the No. 3 has produced some 300,000 barrels of condensate and the No. 6 Well less than 1,000 barrels of condensate.

Q To sum up what you said here, Mr. Hanagan, you feel that the No. 6 Well is better than the No. 3, in the first place that you have mentioned, the bottom hole pressures are as much as a thousand pounds higher consistently; structurally the No. 6 is 120 feet higher than the No. 3; the No. 6 has the highest porosity in the pool of any well including the No. 2?

A Well, I don't want to make that statement because the porosity calculations from the other wells are very hard to do.

Q At least it has very good porosity in the No. 6?

A It has as good, I believe.

Q Would you say that you have a better pay section in the No. 6 than in the No. 3?

A I believe we have a thicker pay section and a better pay section in the No. 6, particularly a thicker pay section in the

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No. 6.

Q Now to further summarize the reason why you believe that the No. 6 has not produced better than it has, it has some zones, pay zones available to it that have not been perforated and it has not been extensively treated with acid as have the other wells.

A Yes, sir, if it was my well, before I abandoned it I would certainly do additional workover work on it.

Q It doesn't look like they're too anxious to make a real good well out of the No. 6, does it?

A It has that appearance.

Q Do you have anything further with respect to this exhibit, Mr. Hanagan?

A Well, the only thing I think is just to sum up the history of the whole of the field. As I've said before, it was discovered in 1956 by Humble's No. 2 South Four Lakes Well. The Humble is the only operator, single operator in the field. They have drilled five Devonian wells, one dry, one abandoned, three producing as of August.

The initial bottom hole pressure was 5113 pounds at a minus datum of 8650; that was taken 10-6-1956. The present average pressure for the three wells, the No. 2, 3, and 6, the average pressure in April of this year was 3,688 pounds. The maximum bottom hole pressure recorded is in the No. 2 Well, 4,919 pounds; that was in April of this year. The minimum bottom

hole pressure in the field, 2597 pounds.

In other words, in two locations between these two wells, you have approximately a difference of 2400 pounds bottom hole pressure between the No. 2 Well and the No. 3 Well, which indicates to me that definitely there are localized permeability barriers within this reservoir, of which I hope to expand on a little more on my structure plat.

The total production as of July 1st from all wells in the Devonian in this field is 3,639,604,000 cubic feet of gas plus 1,141,545 barrels of condensate. That is as of July 1st, 1963.

At the present rate, the first six months of this year the Devonian, if they produce the Devonian at the same rate the next six months this year, they will have produced more out of the Devonian in 1963 ~~than they have in 1962~~.

Another interesting point before I leave is that before the No. 2 and No. 3 Wells were reperforated is the time that the maximum peak of production for the field was reached.

Q Any particular reason appear to you showing the necessity for that reperforation?

A Well, normally on your decline curve where there is drastic decline or at least a decline noted, it's sometime after your production starts dropping is when you expect rework jobs, not at the peak of production.

Q Now comparing the production from the No. 2 Well to the

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total production, it appears that the No. 2 is getting a lion's share of the production from this field, does it not?

A The No. 2 has definitely produced, according to figures, in excess of 50 percent of the total production of the field, produced from the No. 2 Well.

Q Mr. Hanagan, can you make any conclusion with respect to how porosity will appear in relationship to the structural position of each of these wells?

A Yes, I have omitted that on this plat. On this plat you'll note at the top of the red column I have a minus datum circled in red in each of the production wells or wells that have produced. The very important point in that, the No. 2 Well was 150 feet high to the No. 6 Well in structure. But you will also note in the No. 2 Well you had a 250-foot section of tight section which reduced your reservoir almost in half.

Look at the minus datum on the No. 2 Well, the minus 8522; look at the minus datum on the No. 6 Well, the minus 8499; so actually if you drew this map, a structure map on top of the porosity instead of on top of the Devonian, the No. 6 Well would be higher, would be the highest well on top of the porosity in the field.

The No. 3 Well is a minus 8572, which is approximately 35 feet lower than the No. 2 Well. The No. 4 Well, which is the poorest well, which was the tightest well and really probably only had stringers of good reservoir rocks instead of solid zones of

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good porosity, was over 100 feet low.

My conclusion, which I intend to bring out again on my structure map more vividly, is my belief that the northern and northwest part of the Devonian structure, the Four Lakes structure, is a permeability barrier. This barrier is in the vicinity, it covers all this area, swings down into this area approximately like this (indicating). You'll see it much plainer on the structure map. But this permeability barrier or capping effect which is nothing more or less than a dolomitic lime replacing the good Devonian dolomite, that as you go north and not even in this area but on north even in the adjoining area, that that is the trouble that you have. You have structures up there but you cannot, by the time you get through that limestone cap and hit the good dolomite section, it's too late, you are in water.

Now I contend that as you go basin-ward, which is this way (indicating), basin-ward into the Lovington Basin, that this liming condition is decreasing and a well at this location or proposed location, that the porosity will even be higher or at least the same as in the 6, but probably higher as you go this way. You'll have less of a capping effect.

In the No. 6 you have approximately 75 feet, so I expect not only to be structurally about the same as the No. 6 on top of the Devonian, but I hope that we can pick up an additional -- anywhere from zero to 75 feet of porosity in the upper part of that Devonian.

So the capping effect, the permeability, local permeability barriers, this is not a simple anticline structure, it is not a simple reservoir, it's got permeability barriers within the reservoir itself. It's cut up, and in my opinion has not been fully developed or outlined. It has not been outlined, which I hope to prove on the next plat.

MR. MORRIS: Mr. Examiner, we can go on with the next plat at this time.

MR. NUTTER: Why don't you go ahead and start the next one?

Q (By Mr. Morris) Is that all you have with regard to Exhibit No. 2?

I think so.

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

MR. BRATTON: If the Examiner please, I don't believe appearances were called for at the beginning of the hearing, and if I could, I would like to enter an appearance now. Howard Bratton on behalf of Humble Oil and Refining Company; and also, if the Examiner please, in the interest of the conservation of time, I'd like if I could to read a statement which I was going to read at the end of the hearing, which perhaps will facilitate the hearing.

Humble Oil and Refining Company is the owner and operator of wells in the Four Lakes Devonian Gas Pool. In the event

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the subject well is drilled and completed in the Devonian formation, the fact that Humble has not actively participated in this hearing should not be construed as a waiver of its right if it should appear in order to raise in an appropriate hearing the matter of the productive limits of the Four Lakes Devonian Pool.

MR. MORRIS: If the Examiner please, we believe it very germane to this hearing at this time as part of our presentation to show, or the geologic interpretation of this pool to show that our proposed proration unit is entirely productive of gas, oil, condensate, from the Four Lakes Devonian Pool; and if Humble wishes to participate at this hearing they have had ample notice and should do so at this time.

We would not wish to acquiesce in any position taken by Humble which might tend to either delay this matter further or to bring up at a later time the very matters and issues that we are seeking to have resolved by the Commission at this hearing.

MR. BRATTON: If the Examiner please, we don't want to be technical, but I would probably have to be if we're going to get into that area. We are not here objecting to the drilling of the well, which I assume is what the Hanagans want to do. We also assume and readily concede that they must be optimistic that they're going to get a producing well or we don't think they would be proposing to drill a Devonian well. However, the hearing is called actually for the establishment of a non-standard gas proration unit which, of course, this could not be as it's not

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a prorated gas pool.

If anything, I assume it's a hearing for a drilling unit or some such. Certainly it would appear in order and reasonable if they want to go ahead and drill their well, and we've not raised any objection to the drilling of the well, for them to go ahead and do so. At the time the well is completed, if it is productive from the Devonian formation and if it appears in order at that time, certainly I would think the Commission would have the jurisdiction and offset operators would have the right, if it appeared in order, to raise the question of the productive limits of the Four Lakes Devonian Pool. That is all we're stating here today.

MR. KELLAHIN: If the Examiner please, Jason Kellahin of Kellahin and Fox, Santa Fe, appearing on behalf of Phillips Petroleum Company. We join in the objection which has been stated by Mr. Bratton on behalf of Humble, and feel that the application for a non-standard proration unit in which we are attempting to define the productive limits of the pool is premature at this time in that the pool is not a prorated pool.

MR. MORRIS: If the Examiner please, we are not in this hearing trying to establish the productive limits of the pool, but merely to show that all of our acreage and our proposed unit is productive and that this would have some bearing upon the amount of gas, oil, or condensate that this well might be permitted to produce.

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We feel it's very germane to this hearing that we be allowed to continue to present our interpretation of this reservoir, our interpretation of the productive potential of our acreage in connection with our application.

MR. BRATTON: If the Commission please, we aren't objecting to their producing anything. I was just making this comment, possibly in the hopes of expediting the hearing. What we were directing our remarks to is that probably a lot of the information is immaterial and irrelevant to the matter now under consideration before the Commission.

MR. NUTTER: Mr. Bratton, let me ask you this. In seeking a non-standard unit for this proposed well, do you think it is encumbent upon the Applicant to attempt to prove that his acreage could be productive before that acreage could be dedicated to the well proposed?

MR. BRATTON: I would think in this hearing, Mr.Nutter, at this time, probably the most significant fact would be the fact which the Applicant has already shown, that they attempted to form a standard unit and made offers which the correspondence indicates have not been accepted. At that point I would assume they certainly should be afforded an opportunity to drill on their acreage.

Now, at the time the well is drilled and completed, if it is completed in the Devonian formation, I would assume if it's in order, that is, if it appears that it's necessary to, or an

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offset operator should desire to do so, he could at that time, on the basis of the information gained from the well, raise a question as to the productive acreage, productive limits of the pool, the acreage allocated to a particular spacing unit.

We're just trying to expedite the hearing, and at the same time, I think we just want to point out that clearly, if it appears in order, we don't know whether it will or won't, but at a later date this might appear very material and we might want to raise it.

MR. MORRIS: I appreciate Mr. Bratton not wishing to oppose us at this hearing. I don't wish to be misunderstood in that regard. At the same time, we accept our burden and do feel it encumbent upon us to prove that our acreage is presumably productive, in order that we be allowed to dedicate 160 acres to our proposed well. We feel it essential to continue with our presentation in that regard.

MR. NUTTER: In that it is a non-standard that you are seeking, I think it is your burden to show that the acreage would be productive prior to the time that it would be dedicated. I think you are proceeding along the right lines in that direction. Of course, Humble at any time could ask for any case of this nature to be reopened. I'm sure at the time that they would ask for it, as Mr. Bratton says, he doesn't know whether it would be in order or not at that time. It would largely, I imagine, depend on the evidence that's obtained by the drilling of this well. I think all

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parties would recognize that any order issued by this Commission or any case that's heard by this Commission is certainly open to reopening at some future date, possibly.

MR. MORRIS: We would admit that on proper showing and change of conditions and so forth; at least we would want it determined in this hearing that prior to the drilling of the well we have at least shown that the entire acreage is presumably productive of gas from the pool.

MR. NUTTER: Based on the evidence that's available at this present time.

MR. MORRIS: Yes, sir.

MR. BRATTON: Do we assume, then, that after the drilling of the well, we assume that that would be changed conditions within Mr. Morris' definition, that is additional information?

MR. MORRIS: I'm not going to stipulate to that fact.

MR. BRATTON: Mr. Morris would not so stipulate; we would have to repeat our objection to the call of the hearing.

MR. NUTTER: Will you proceed with the case, Mr. Morris?

MR. MORRIS: Yes.

Q (By Mr. Morris) Mr. Hanagan, referring to what has been marked as Exhibit No. 3, would you state what that is and show the general aspects of the matters shown?

A This is a subsurface structure plat contoured on top of the Devonian. The scale is shown here. It encompasses an area roughly of the Four Lakes Field itself and surrounding areas,

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including the northern portions of the Pennsylvanian Field here to the south. This is strictly a Pennsylvanian Field here on the south.

The color code is so noted on the heading, but I'll briefly go over it again. The orange again outlines Humble's Four Lakes Unit, South Four Lakes Unit. The yellow outlines our proposed 160-acre gas unit. The well in red in the northwest corner of that 160 acres is the proposed location of our test. The red in the upper right in the center portion is the drilling well presently being drilled to the Devonian by Carper Drilling Company, which is the only active well in the area. The green wells so noted again are Pennsylvanian tests, some going into the Mississippian, but none penetrating, none of the green tests have penetrated the Devonian formation. The brown as noted in three wells here are dry Devonian tests.

Only one well in this field to the south has penetrated the Devonian. That was the discovery well, the Pennsylvanian discovery well so noted by brown around the outer edges. The blue denotes the original oil-water table. The red, of course, is the oil contact. In other words, that dashed line would represent the original oil-water table in the field.

I believe that pretty well covers the general color code and so forth.

As you can see, this structure map is drawn without any faults being present, it's drawn without any faults. There are

three faults, possible areas that are faulting, that could be mapped as faults. If this fault is here, in my opinion, (indicating) --

Q You are referring to the fault on the west?

A On the west side of the field between or somewhere in the vicinity of the No. 5 Four Lakes Well. If that fault is there it is possibly or probably in the neighborhood of maybe a hundred foot fault, it is a small fault. This fault could eventually die out here or go on up to the north.

This fault is a hypothetical one based, the fault on the west side of the Pennsylvanian Field to the south --

Q East side?

A -- on the east side, excuse me, of the Pennsylvanian Field to the south is based entirely on the rapid change in dip of the Pennsylvanian beds. This well is abnormally low on top of the Pennsylvanian marker. The mapping horizon that we used is abnormally low to any of these other wells. So I am assuming that there is a possibility of a fault being present on that side of the structure.

This fault running on the south end of the field, southeast side of the Four Lakes Field, running in a general northeast-southwest direction, is based on several or two or three points, which is the reason and what I feel is a fault that is probably there. That fault is probably in the neighborhood of around 300 feet, it has 300 feet of throw to it. As I pointed

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out earlier, this Penrose well was drilled at the same time the No. 4 Well was drilled, was being drilled. At that time you had two wells indicating a structure other than Devonian. Penrose drilled this well on the farmout from Ralph Lowe. That well, according to my information, which I was a friend of the geologist that Penrose had at the time -- this well was drilled on a seismic interpretation of a fault running in this general direction, in this general area (indicating).

Q Of course, they believed they would be on the north side of it, didn't they?

A That's right. As it turned out, in all probability, structure-wise and so forth, they were on the down-thrown side of that fault. That seismic information definitely indicates that there is an abnormal dip in this area and their interpretation was that a fault was here. Secondly, isopac in the Mississippian which most geologists that have worked in New Mexico, particularly any length of time, at one time or another isopac both the Upper and Lower Mississippian beds or both together on isopac basis. The Upper Mississippian, which is present all through this area and regionally, thins going to the northwest and north, thickens going towards the Lovington Basin area.

The Mississippian will thicken all right regionally, but any time in a short distance that you get an abnormal thickening, which this area here illustrates in these two wells --

Q That's between the No. 6 and the Penrose well?

A The No. 6 and the Penrose well, yes, sir. There is a definite abnormal thickening of the Mississippian in the Penrose well above the general regional thickening, which is highly indicative of faulting being present. The fault here, or if the fault is there, which in my opinion is not a fault, there is not a fault there, based again on that Mississippian theory, the Upper Mississippian isopac, this well is not much thicker than that well, not an abnormal thickening at all in the Mississippian between those two wells.

Q Which two wells are you talking about?

A I am talking about the thickening or thinning of the Mississippian between the No. 2 and No. 5 Well. There is no abnormal thickening between those two wells, so if this fault is here it is a small fault; it is not a fault of any proportion. This fault being present, this Mississippian being present here indicates to me that this well is awful close to that fault.

This well out here actually is 300 feet lower, 300 feet lower and has a thinner Mississippian than that well does. That well is probably very close to a fault.

Q The Penrose?

A The Penrose well is very close to a fault in relation to the Astro Well which was 300 feet lower structurally and yet has a thinner Mississippian than this well does.

The general production found in the Devonian, particularly speaking of Southeastern New Mexico, I know of no field, no Devonian

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producing field that does not have a fault on one side or another of it. They are all faulted anticlines. The major fault, the big fault is almost invariably on the Basin-ward side of the structure; the Basin-ward side of this structure is here (indicating).

MR. NUTTER: On the southeast flank?

A On the southeast flank is the Basin-ward side of that structure. The Lovington Basin in the Saunders area is relatively north-south; about the Bagley area it swings somewhat, bows out here to the east and then goes up north. In other words, this Basin comes right up through here (indicating), swings around this Pennsylvanian structure here right down through like that. The Devonian producers, for example, on the east side of the Lovington Basin, the Gladiola Field, the Denton Field, the Caudill Field, the West Crossroads Field, the Crossroads Field, all faulted on the Basin-ward side, the east side of those structures.

In contrast, on the western side of the Lovington Basin, the Bagley Field, the Hightower Field, the Morrow Field, the East Caprock Field, all faulted on the east side of the structure, on the Basin-ward side of the structure.

The two maps that I have seen of Humble's that were presented to the Commission, one is a seismic map, one is a subsurface map, have no indications of any faulting whatsoever in the area. I maintain that this structure is faulted and it's faulted on the Basin-ward side and the Basin-ward side is the southeast

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part of the field, the southeast part of the structure.

If it's not faulted, this well in both cases, both interpretations that I have seen of Humble's that has come in before this well has drilled, this well has come in higher than was mapped in both cases, indicating to me that every time -- after this well was drilled all of their information had to be shoved this way.

Q (By Mr. Morris) That is to the southeast?

A To the southeast.

MR. NUTTER: After the No. 6 Well was drilled, you mean?

A Yes, when the No. 6 was drilled, more of this area had to be considered productive.

This field, as I said earlier, is not a simple anticline or even a simple faulted anticline. It has permeability barriers; the best example that I can see is the tremendous change or differences in bottom hole pressures, not only today but since it has been producing. There are drastic -- like I pointed out a while ago -- 2400 pounds bottom hole pressure change between those two wells.

Q (By Mr. Morris) Which two wells?

A Between the No. 2 Well and the No. 3 Well. My theory is this: As everyone knows that has studied this area, the Four Lakes Field is considered a gas condensate field with which we have no argument, saying it isn't; but it does make it unique in that there are no other fields in northern Lea County that is a

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gas field from the Devonian, a gas condensate field.

My theory is this, again,it is based on the Mississippian. If you line up the No. 2 Well and the No. 6 Well on the Lower Mississippian lime, the No. 6 Well has a thinner Lower Mississippian lime than the No. 2 Well, indicating not only by that but by regional isopacing, which I have done in this area, based on that I feel that this side of the structure at one time was the high side, and this side was the low side; this east side of the structure was a high side, the west side was a low side.

Now this peak sticking up here is still going to be up pretty high. It's structurally extremely high between the two wells, the maximum peak in there, so this structure being, actually getting west-dip, considerably west-dip; in other words, the east side is high, this right here at this point is also still pretty high, but the whole structure as a whole is definitely low on the west side, high on the east side.

Later, after this faulting is possibly and probably present, while this side was high, then the whole structure and not only the structure but this whole general area was tilted to the east or southeast, which we know there have been more, probably more than one period of tilting. As this structure was tilted, the fluid in the reservoir -- before we go into that, as I noted a while ago, this is my local permeability barriers coming down in through here, this well, the way it was acidized, its present bottom hole pressure and so forth indicates that it was

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extremely close to the permeability barrier. This No. 4 Well always had poor permeability, that's the main reason it was abandoned. This permeability barrier right in here, and possibly it might even go in through here, making a separate barrier; this permeability barrier, I'm not saying it's a complete, it's a partial permeability barrier. As this structure was tiled, the fluids migrated from the east side to the west side of the structure; and in their migration through these impermeable zones, we all know that gas will migrate through less permeable zones than oil, more gas along with some fluid migrated to the west side and gave you the gas-condensate reservoir that you have here.

There's no well drilled on the east side of this structure to me to indicate that the size of that field is its present size. I'm just saying that that is a possibility, that is part of the explanation of why you have a reservoir that is abnormal, that has a high GOR, that has drastic changes in bottom hole pressures, is that this field has these permeability barriers locally throughout it, and that we hope that our area is not in the permeability barrier, it doesn't have a local permeability barrier.

According to this structure map, we anticipate our proposed location to be at approximately the same structural position on the Devonian as the No. 6 Well.

MR. NUTTER: I believe with that we'll interript you, Mr. Hanagan, and recess the hearing until 1:30.

(Whereupon, the hearing was recessed until 1:30 o'clock P.M.)

* * *

AFTERNOON SESSION

MR. NUTTER: The hearing will reconvene. Mr. Hanagan I believe was on direct testimony.

MR. MORRIS: Yes, sir.

DIRECT EXAMINATION (Continued)

BY MR. MORRIS:

Q Mr. Hanagan, before the noon recess you had stated that your conclusions would be the same on the southeast edge of this pool whether a fault existed in that area or whether it was merely an area of very steep dip, is that correct?

A Yes, sir, that's correct.

Q And that your proposed location you would expect to be structurally about the same position as the No. 6 Well?

A Yes.

Q Do you have an opinion concerning whether your acreage of your proposed proration unit could reasonably be presumed to be productive of gas, oil, or condensate in the Four Lakes Devonian Gas Pool?

A Yes, sir. At the anticipated structural position, the indicated structure as presented here, it should be productive.

Q Are you so convinced of your interpretation that you and Hanagan and Hanagan, the partnership, intend to drill a well

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at the proposed location?

A Yes.

Q Approximately what would be the cost of your proposed well?

A A dual completed well, Pennsylvanian, which we believe will be productive also, and a Devonian, a dual completed well, between three hundred and three hundred twenty-five thousand dollars.

Q Do you consider the area of your proposed unit being drained in the Devonian at this time?

A Yes, I do. I think that the No. 2 Well is draining a considerable area, most of it to the south. To the north you are restricted by a permeability barrier as indicated in No. 4 Well. To the west you are limited by a dry hole, the No. 5 Well. To the east, that well is draining its respective area here. Therefore, most of this production is coming from this area.

Q Do you believe that the area in the Devonian of your proposed unit is being efficiently drained at this time?

A I do not think it's efficiently drained. In the first place, it's quite a distance from the main well that is draining the area. As I have said before, the No. 2 Well actually has, to date has been the well that has really drained the reservoir. In other words, that particular well has done most of the drainage. Therefore, the amount of drainage that has taken place as attributed to the No. 2 Well to me indicates it is draining a fairly

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large area, and that that area is to the south.

Q By the drilling of your proposed well, is it your opinion that efficient drainage of the 160 acres could be accomplished?

A Yes, I believe the No. 2 Well in particular has shown that a well that has a good Devonian section, good dolomite permeability, can drain efficiently 160 acres.

Q If your application for the non-standard proration unit should be approved by the Commission, would it in any way prevent the formation of other standard units in this area, or in any way disrupt orderly development?

A In my opinion, it would not. The gas unit, the proposed gas unit crosses, as we know, crosses section lines. The normal unit, say in Section 12, would be the Northwest Quarter of 12. If you'll notice in the South Half, Northwest Quarter of 12 is a Penrose well that was drilled to the Mississippian, far enough into the Mississippian to where we can estimate the top of the Devonian.

Actually the total depth of the Penrose well is a minus 8867, which would be below the water table of the field, so that 80 acres would definitely condemn any possible development or probable development south of it. It also condemns that 80 to a great extent because it is below the water.

To the north, of course, is Humble's production, which is, in effect, being somewhat drained by these two wells, this

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lone 80 here that will -- I mean this 80 here, which is not in a unit, but the area is being drained by the 2 and 6 Wells.

Q It's not in a spacing unit but it is within the Four Lakes Unit?

A That is correct.

Q Yes.

A An offset, say, in the Southeast Quarter of Section 1 would again be a normal unit. The Northeast Quarter would be a normal unit both to the east of the proposed unit--the east offset in Section 12 to the unit could be a normal 160, the west offset in Section 11 could be a normal 160-acre unit. In other words, you could form 160-acre units without disrupting that pattern.

Q Would the approval of the application in this case prevent waste and protect correlative rights?

A I believe it would. This area that has to be at the present time considered productive in here is really basically being drained by one well. With the permeability barriers, particularly, as I have outlined, that is probably present, a considerable amount of oil could be bypassed by one or two wells draining the whole area. There's a very good likelihood that oil would be bypassed, or condensate.

Q Did you prepare Exhibits 1, 2, and 3?

A Yes, sir.

MR. MORRIS: We offer those exhibits.

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MR. NUTTER: Applicant's Exhibits 1 through 3 will be admitted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1, 2, and 3 admitted in evidence.)

MR. MORRIS: We ask that the Commission take administrative notice of its Orders R-710 and R-710A dealing with the establishment of the South Four Lakes Unit and the addition thereto of the additional 80 acres. That completes the direct examination of Mr. Hanagan.

MR. NUTTER: Does anyone have any questions of Mr. Hanagan?

MR. DURRETT: Yes, sir, I have a question.

MR. NUTTER: Mr. Durrett.

CROSS EXAMINATION

BY MR. DURRETT:

Q Mr. Hanagan, have you or your brother contemplated a forced pooling action against Humble?

A No, sir.

Q I was wondering, do you have a reason that an action of this nature wouldn't be brought? I realize from an economic standpoint it would be more favorable to you to have your own acreage dedicated, or would that be the only reason?

A I can see two reasons; one, of course, is that by joining with their 80 we're joining a non-unitized 80 with a unitized 80, which has its problems.

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Also, we're not basically convinced that the well that we drill might not be an oil well, in which case we would ask for an 80-acre oil allowable.

Q One other thing that I wasn't exactly clear on on your direct. I believe you stated that if this non-standard unit that you applied for today was approved, that it would not upset the dedication of acreage or the drilling pattern, as all the rest of the acreage would be susceptible to being dedicated to standard 160-acre units, is that correct?

A Yes, sir, all with the exception of that 80, all the other units would be susceptible to 160-acre gas units.

Q You would leave the 80, that could not be joined with anything?

A Yes, that's correct.

MR. NUTTER: Any other questions?

MR. MORRIS: I have one matter.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q When you say that you would apply for an oil allowable, do you mean by that that you would actually apply for an oil allowable or that there would be some question as to whether the acreage should be considered an oil pool or gas pool? Would you explain your answer a little bit there?

A Well, actually, I should have said that there is a question in our mind as to whether the pool, at least on the

parameters of it, may have an oil column; and should we encounter an oil column and are convinced that it is not a gas condensate well, rather, an oil well, of course, we would probably apply for an oil pool instead of a gas pool.

Q There would be some question, at least, as to that area, whether it should be considered as a gas pool?

A Right. At the present time we are in complete agreement that it is a gas-condensate field.

MR. MORRIS: That's all.

RECROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Hanagan, I believe you mentioned very briefly at the beginning of your testimony, or perhaps it was Mr. Morris that did, that you had made overtures to the operator of the unit to join with you in this venture?

A Yes, sir. We first approached them on the idea of farming out the 80 acres, the North Half of the Southwest Quarter of Section 1, farming it out to us in order that we could make a 160-acre gas unit, normal 160-acre gas unit. They declined this offer so we turned around and asked them to communitize their 80 and drill a well at our proposed present location. Again they were not interested in that proposition.

MR. NUTTER: Were you going to offer any correspondence or anything along that line, Mr. Morris?

MR. MORRIS: We have some that we can offer if the

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Examiner would be interested in seeing the actual letters themselves, rather than just accept the testimony. We would be glad to do that.

MR. NUTTER: I think it might be a pertinent part of the record in this case.

MR. MORRIS: All right.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Hanagan, I show you --

MR. MORRIS: Let's have this marked as Exhibit No. 4, please.

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

Q I hand you what has been marked as Exhibit No. 4 and ask you to state what that is, please.

A That is a letter written by Robert G. Hanagan to Humble Oil and Refining Company dated August 7, 1963, Attention Mr. J. A. Davidson, Humble Oil and Refining Company, Roswell, New Mexico. It is a farmout request, North Half of Southwest Quarter of Section 1, 12 South, 34 East, Lea County, New Mexico, in which Robert G. Hanagan requests a farmout of the above-captioned tract for the drilling of a Devonian test to be located in the Southwest Southwest of Section 1.

(Whereupon, Applicant's Exhibits Nos. 5 and 6 marked for identification.)

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Q I hand you what has been marked as Applicant's Exhibits Nos. 5 and 6, and ask you if those are the replies from Humble and Phillips that you received to your letter of August 7, 1963?

A The Exhibit No. 5 is a letter from Humble Oil and Refining Company from their Roswell office, from Mr. Davidson, concerning the farmout request of Lease 219769, in which they refused or they turned our offer down as to a farmout proposition. And the Phillips letter was dated --

MR. NUTTER: August 26.

A -- August 26, which was the same reply, they did not wish to farm out the 80 acres.

MR. MORRIS: I ask that these be marked Exhibits 7, 8, and 9.

(Whereupon, Applicant's Exhibits Nos. 7,8, and 9 marked for identification.)

Q (By Mr. Morris) I hand you what has been marked as Applicant's Exhibit No. 7 and ask 7ou to state what that is.

A Exhibit No. 7 is a letter from Robert G. Hanagan to Humble Oil and Refining Company dated September 18, 1963, to Mr. J. A. Davidson, Humble's Roswell office, in which Robert G. Hanagan offered to communitize our 80 acres with Humble's 80 for the drilling of a Devonian well in the Southwest Southwest of 1.

Q I hand you what has been marked Applicant's Exhibits 8 and 9 and ask you to state what they show, please.

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A Exhibit No. 8 is a letter from Humble Oil and Refining Company to Mr. Robert G. Hanagan, concerning Lease No. 219769, Lea County, in which they stated they did not wish to communitize their 80 with our 80 for the proposed Devonian test.

Exhibit 9 is a reply from Phillips Petroleum Company in which they were also not interested in communitizing. That letter was dated October 8, 1963.

MR. MORRIS: We offer Applicant's Exhibits 4 through 9.

MR. NUTTER: Exhibits 4 through 9 will be admitted in evidence, and you wish to withdraw these and substitute copies?

MR. MORRIS: Yes.

(Whereupon, Applicant's Exhibits Nos. 4 through 9 were admitted in evidence.)

MR. NUTTER: Mr. Bratton, Mr. Kellahin, would you care to see this correspondence?

MR. BRATTON: No.

MR. NUTTER: Do you have anything further, Mr. Morris?

MR. MORRIS: I have no further questions. I would like to make one very brief statement.

MR. NUTTER: Does anyone have anything they wish to offer in this case?

MR. BRATTON: Just a statement.

MR. NUTTER: Mr. Hanagan, you may be excused.

(Witness excused.)

MR. NUTTER: Mr. Bratton.

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MR. BRATTON: If the Examiner please, I would like to repeat and reiterate the statement which I made heretofore at an earlier portion of the hearing, and I will not set it out again in full; but I would like to repeat those statements as to non-waiver of our rights, as to productive limits at a later hearing; and I would again, for the record, present our objection that within the call of the hearing, I don't believe any unit can be dedicated to the well since the hearing calls for a proration unit and no evidence has been presented that it is a prorated field. I think the Commission can take administrative notice of the fact that it is not.

MR. KELLAHIN: We would like to reiterate Mr. Bratton's reiteration, and join in the objection and observation that he has made in regard to the scope of the hearing under the call as it appears on the docket.

MR. NUTTER: I will reiterate my remarks.

MR. MORRIS: I am going to do a little more than re-iterate my previous response. In the first place, I would ask the Commission to recognize that the terms"proration unit," "spacing unit",are often used interchangeably by the Commission; that if a pool is prorated naturally we are talking about proration units. If it's not prorated then naturally we are talking about spacing units.

Concerning the application and the evidence presented here today, I think that the Applicant has shown that the 160-acre

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non-standard unit proposed is the nearest thing to a standard unit that the Hanagans can form under the circumstances.

In the first place, they are right up against the unit boundary which in many ways necessitates the formation of a non-standard unit. Also we've shown the refusal of Humble or Phillips to farm out or communitize in the formation of any standard unit.

The fact is, of course, it does cross a section line and we have technically a non-standard unit, even though it is of 160 acres, being the standard size of unit for this pool. Nevertheless, we have accepted the burden of showing that the entire acreage is reasonably to be presumed to be productive of gas, oil, or condensate from the Devonian formation.

Certainly our interpretation of the geology of this area is reasonable, particularly in view of the evidence of the faulting or the extremely steep dip in the southeast portion of this pool. There's been evidence produced that the production in this area, the closer you actually get to the fault or the area of the steep dip, the better your porosity is likely to be, the better your opportunities of finding good production are likely to be.

I think that we have shown that a well needs to be drilled on this unit in order to efficiently drain it and to prevent waste, while at the same time the correlative rights of everyone will be protected. We have asked in this application that

a non-standard 160-acre unit be approved. If the Commission should see fit to approve our unit, then the Hanagans will proceed to drill a well relying upon that order.

Now I might not be able to argue with counsel that the matter might be subject to reopening at a later date, but certainly we should have some protection from any order that would be entered approving a non-standard unit at this time because in so doing the Commission would be, in effect, saying, "We believe that you have a hundred sixty potentially productive acres here and we're going to authorize you to dedicate all of this 160 acres to this well at this time."

To reopen the matter at a later date, to talk about productive acreage would seem in that situation to be very inequitable. Should the Commission see fit to approve the application, Mr. Hanagan has stated that they want to commence drilling as soon as possible and this year if at all possible.

We've also shown that the acreage is being drained, although not efficiently, but is being drained nevertheless by the wells within the unit; and for that reason we would also urge the Commission to grant the application and to do it as quickly as possible so that a well can be commenced.

That's all.

MR. NUTTER: Thank you. Is there anything further in this case? We'll take the case under advisement.

* * * *

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 11th day of November, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2921, heard by me on 10/30, 1963.

..... Examiner
New Mexico Oil Conservation Commission

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