CASE 3406: Application of PAN AM. for special rules for the BOUGH-DEVONIAN POOL, LEA COUNTY, N.M.

CASE NO.

3406

Application,

Transcripts,

Mail Exhibits

ETC.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

June 1, 1966

Mr. Guy Buell
Pan American Petroleum Corporatio
Post Office Box 1410
Fort Worth, Texas

Re: Case No. 3406
Order No. R-3070
Applicant:

Pan American Petroleum Corp.

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other

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. 3406
Order No. R-3070

APPLICATION OF PAN AMERICAN PETROLEUM
CORPORATION FOR SPECIAL POOL RULES, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 25, 1966, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of June, 1966, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Pan American Petroleum Corporation, seeks the promulgation of special rules and regulations for the Bough-Devonian Pool, Lea County, New Mexico, including a provision for 80-acre spacing units.

(3) That the applicant has established that one well in the Bough-Devonian Pool can efficiently and economically drain and develop 80 acres.

(4) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, special rules and regulations providing for

80-acre spacing units should be promulgated for the Bough-Devonian Pool.

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

IT IS THEREFORE ORDERED:

That Special Rules and Regulations for the Bough-Devonian Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
BOUGH-DEVONIAN POOL

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

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

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a governmental quarter-quarter section or lot or the unorthodox size or shape of the tract is due to a variation in the legal subdivision of the United States Public Land Surveys. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well shall be located within 150 feet of the center of a governmental quarter-quarter section or lot.

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

RULE 6. A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 6.67 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

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

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the Bough-Devonian Pool or in the Devonian formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before June 15, 1966.

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

(3) That 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, Chairman

GUYTON B. HAYS, Member

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

esr/

Docket No. 13-66

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 25, 1966

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

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

CASE 3399: (Continued and Readvertised)

Application of Tenneco Oil Company for two non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of two non-standard gas proration units adjacent to the Blanco-Pictured Cliffs Pool and described as follows:

(1) A 155.40-acre unit comprising the SE/4 SW/4 and Lot 4 of Section 19, and the E/2 NW/4 and Lots 1 and 2 of Section 30, Township 30 North, Range 9 West;

(2) A 156.08-acre unit comprising the E/2 SW/4 and lots 3 and 4 of Section 30 and the NE/4 NW/4 and lot 1 of Section 31, Township 30 North, Range 9 West, all in San Juan County, New Mexico.

CASE 3404: Application of Tenneco Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Grayburg and San Andres formations through six wells in Sections 22 and 28, Township 17 South, Range 29 East, Grayburg-Jackson Pool, Eddy County, New Mexico. Applicant further seeks an administrative procedure for expansion of said project to include additional injection wells and leases.

CASE 3405: Application of David Fasken for special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the North Indian Hills-Morrow Gas Pool in Section 4, Township 21 South, Range 24 East, Eddy County, New Mexico, including a provision for 640-acre spacing units.

CASE 3406: Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bough-Devonian Pool, Lea County, New Mexico, including a provision for 80-acre proration units.

CASE 3002: (Continued and Readvertised)

In the matter of Case No. 3002 being reopened pursuant to the provisions of Order No. R-2684-A, which order continued the original order for an additional year, establishing 320-acre spacing for the Fowler-Lower Paddock Gas Pool, Lea County, New Mexico. The original applicant, Pan American Petroleum Corporation, seeks continuation of the 320-acre spacing for

CASE 3002 - Continued:

said gas pool and the amendment of the special pool rules to include the classification of oil and gas wells in said pool, a provision for 80-acre spacing for oil wells, and the establishment of a limiting gas-oil ratio of 6000 to 1.

CASE 3407: Application of Midwest Oil Corporation for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N, Section 29, Township 13 South, Range 34 East, Nonombre-Upper Pennsylvanian Pool, Lea County, New Mexico.

CASE 3408: Application of Marathon Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Queen formation through three wells in Sections 10 and 15, Township 18 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 3409: Application of Dr. Sam G. Dunn for a secondary recovery project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a secondary recovery project by the injection of air into the Upper San Andres formation through three wells located in Section 26, Township 7 South, Range 26 East, Leslie Spring-San Andres Pool, Chaves County, New Mexico. Applicant further seeks an administrative procedure to place additional wells on air injection if necessary.

ATWOOD & MALONE
LAWYERS

P. O. DRAWER 700
TELEPHONE 505-622-6221
SECURITY NATIONAL BANK BUILDING
ROSWELL, NEW MEXICO
88201

JEFF D. ATWOOD (1883-1960)
ROSS L. MALONE
CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER
ROBERT A. JOHNSON
JOHN W. BASSETT, JR.

May 11, 1966

Mr. A. L. Porter, Jr., Secretary
New Mexico Oil Conservation Commission
Post Office Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

We enclose herewith our Entry of Appearance on behalf of Pan American in Case No. 3406 on the Examiner's Docket for May 25, 1966.

With best wishes, we are,

Very truly yours,

ATWOOD & MALONE

Ross L. Malone

RLM:sah

Encl.

cc: J. K. Smith, Esquire

'66 MAY 12 PM 1 21

BEFORE THE OIL CONSERVATION COMMISSION

OF THE STATE OF NEW MEXICO

IN RE: APPLICATION OF PAN AMERICAN)
PETROLEUM CORPORATION FOR SPECIAL) No. 3406
POOL RULES FOR THE BOUGH-DEVONIAN)
POOL, LEA COUNTY, NEW MEXICO)

ENTRY OF APPEARANCE

The undersigned Atwood & Malone of Roswell, New Mexico, a firm of attorneys whose members are duly licensed to practice law in the State of New Mexico, hereby enters its appearance in the above entitled proceeding as local counsel for Pan American Petroleum Corporation with Guy Buell, Esquire, of the Texas Bar.

DATED at Roswell, New Mexico, this 11th day of May, 1966.

ATWOOD & MALONE

BY Guy L Malone

Attorneys for Pan American
Petroleum Corporation
Post Office Drawer 700
Roswell, New Mexico

Docket No. 13-66

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 25, 1966

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

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(2) A 156.08-acre unit comprising the E/2 SW/4 and lots 3 and 4 of Section 30 and the NE/4 NW/4 and lot 1 of Section 31, Township 30 North, Range 9 West, all in San Juan County, New Mexico.

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CASE 3406: Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bough-Devonian Pool, Lea County, New Mexico, including a provision for 80-acre proration units.

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CASE 3002 - Continued:

said gas pool and the amendment of the special pool rules to include the classification of oil and gas wells in said pool, a provision for 80-acre spacing for oil wells, and the establishment of a limiting gas-oil ratio of 6000 to 1.

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FORM 470 2-57

PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 268
Lubbock, Texas 79401
April 22, 1966

APR [illegible] 03

File: RES-3311-986.510.1

Subject: Application of Pan American Petroleum Corporation for Adoption of Permanent Rules, Bough-Devonian Pool Lea County, New Mexico

Case 3406

Mr. A. L. Porter (3)
Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Dear Sir:

Pan American, as operator of the three producing wells in the subject pool, respectfully requests that a hearing be docketed before an examiner to consider its application for adoption of permanent rules for the Bough-Devonian Pool, Lea County, New Mexico.

In our opinion, the information available to date regarding this pool indicates the necessity for, and we plan to include in our request for permanent rules, the following:

1. 80-acre proration units, more or less, consisting of the N/2, S/2, E/2 or W/2 of a governmental quarter section.

2. Each well to be drilled or recompleted in the Bough-Devonian Pool, subject to the effective date of the rules, shall be located no closer than 510' to a governmental quarter-quarter section line.

3. Allocation of production to be based on 100 per cent of the acreage assigned to the proration unit for the well.

As noted on the attached plat, Pan American is the only operator in this pool. In our opinion, the establishment of the above rules will be in the interest of conservation and will serve to protect correlative rights.

Yours very truly,

J. W. Brown
Assistant District Production Superintendent

RWA:jn
Attachment

DOCKET MAILED

Date 4-10-66

SUGGESTED PERMANENT RULES AND
REGULATIONS FOR THE
BOUGH-DEVONIAN POOL
LEA COUNTY, NEW MEXICO

Rule 1 - Each well completed or recompleted in the Bough-Devonian Pool or in the Devonian formation within one mile thereof, and not nearer to or within the limits of another designated Devonian Oil Pool, shall be spaced, drilled, operated, and produced in accordance with the special rules and regulations hereinafter set forth.

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

Rule 3 - The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit comprising a governmental quarter-quarter section or the unorthodox size or shape of the tract is due to a variation in the legal sub-division of the United States Public Land Surveys. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the formation of the non-standard unit within 30 days after the Secretary-Director has received the application.

Rule 4 - Each well shall be located no closer than 510' to a governmental quarter-quarter section line.

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

Rule 6 - A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 6.67 for allowable purposes and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

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

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Pan Am's EXHIBIT NO. 1
CASE NO. 3406

PRODUCTION DATA
BOUGH-DEVONIAN POOL
LEA COUNTY, NEW MEXICO

Year	Month	Oil (bbl.)	Water (bbl.)	Gas (MCF)	GOR
Federal "A" No. 4					
1965	May	6606		496	75
	June	6668		141	21
	July	6530		142	22
	August	6736		158	23
	Sept.	6447		142	22
	Oct.	7498		168	22
	Nov.	5999		131	22
	Dec.	6477		150	23
1966	Jan.	7248		131	18
	Feb.	7714		142	18
	Mar.	8079		148	18
	Apr.	7500 (est.)			
Federal "A" No. 5		83,502			
1965	July	4250		318	75
	Aug.	8018		106	13
	Sept.	6447		94	15
	Oct.	7499		111	15
	Nov.	5999		87	15
	Dec.	6477		150	23
1966	Jan.	7249		132	18
	Feb.	7713		142	18
	Mar.	8079		148	18
	Apr.	7500 (est.)			
Hood-Federal No. 2		69,231			
1965	Dec.	6870		72	10
1966	Jan.	6442		95	11
	Feb.	6678		291	44
	Mar.	7039		78	11
	Apr.	7500 (est.)			
		36,529			

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Pan Am's EXHIBIT NO. 4
CASE NO. 3406

BOTTOM HOLE PRESSURE DATA
BOUGH-DEVONIAN POOL
LEA COUNTY, NEW MEXICO
DATUM: -7850' SUBSEA

Well.	Date	Time Shut-in (hr.)	BHP @ Datum (psig)
Federal "A" No. 4			
	5-7-65	120	4540
	4-30-66	52	4518
Federal "A" No. 5			
	7-10-65	*	4537*
	4-30-66	50	4523
Hood-Federal No. 2			
	4-30-66	54	4523

*Pressure obtained from drillstem test data.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Pan Am's EXHIBIT NO. 6
CASE NO. 3401

RESERVOIR DATA
BOUGH-DEVONIAN POOL
LEA COUNTY, NEW MEXICO

Producing Formation	Devonian
Lithology	Fractured, Vuggy Dolomite
Average Depth	11,925 feet
Bottom Hole Temperature	164°F
Initial Bottom Hole Pressure (datum: -7850')	4,540 psig
Initial Gas-Oil Ratio	57 Cu. Ft./Bbl.
Average Porosity (Core)	6.7%
Average Permeability (Core)	588 md.
Average Water Saturation	24%
Producing Mechanism	Water Drive
Estimated Oil-Water Contact	-7977 feet
Crude Oil Gravity	43.8° API

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
PAN AM'S EXHIBIT NO. 5
CASE NO. 3406

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 25, 1966

EXAMINER HEARING

IN THE MATTER OF:
Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico.

Case No. 3406

BEFORE:

Daniel S. Nutter, Chief Engineer

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 3406. Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico.

MR. BUELL: For Pan American Petroleum Corporation, Guy Buell, we have one witness, Mr. Anderson.

(Witness Sworn.)

(Whereupon, Applicant's Exhibits 1 through 8 marked for identification.)

* * *

R O B E R T W. A N D E R S O N, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Anderson, would you state your name, by whom you are employed, in what location and in what capacity, sir?

A Yes, sir. My name is Robert W. Anderson. I'm employed by Pan American Petroleum Corporation in their Lubbock District Office, as a Petroleum Engineer.

Q Does the Pan American District Office have control and supervision over Pan American's operations in the area of the Bough-Devonian Oil Pool?

A Yes, sir.

Q Would you briefly state for the record your education in petroleum engineering as well as your work

experience in petroleum engineering?

A Yes, sir. I graduated from the University of Oklahoma in June, 1961 with a Bachelor of Science Degree in Petroleum Engineering, and following that I enrolled in the graduate school at the University of Texas in September of 1961. A year later in September 1962 I began employment with Pan American. And in January of 1963 I received a Master of Science Degree in Petroleum Engineering, and since September 1962 I have been in the employ of Pan American in various petroleum engineering assignments.

Q All right, sir. Mr. Anderson, the rules that we're going to recommend here today have been reduced to exhibit form and have been identified as our Exhibit 1. In order that the Examiner can analize and evaluate your exhibit in reference to the rules, I wish you here at the outset would briefly summarize what you think are the more pertinent rules. Don't read every one because the exhibit is too lengthy. Just summarize what you think are the more important rules.

A Briefly, these rules provide for 80 acre-proration units, provide for spacing so that each well shall be located no closer than 510 feet to a governmental quarter-quarter section line, and they provide an 80-acre proportionate factor of 6.67 for allowable purposes.

Q All right, sir. Would you look at what has been

marked as Pan American's Exhibit Number 2. What is that exhibit?

A Exhibit Number 2 is a structure map that is contoured on top of the Devonian formation. On this map there are 3 producing wells in the pool. These are denoted by large red dots. There are also several dry holes in the area denoted by conventional dry hole well symbols. And in the Northeast quarter section of 24 there is a small blue dot that designates a well that is currently drilling, and this well is projected to the Devonian formation.

Q Would you briefly describe the structure as it is reflected on Exhibit Number 2?

A This structure is -- on the structure is shown a dashed line here which indicates an estimated oil-water contact at minus -7977 feet subsea, and also to the Northwest of the producing area this is an indication of a fault in Section 14, and this fault is shown later.

Q Is this an anticline or monocline, or what type of a structure is it?

A Northwest to Southeast trending anticline.

Q What is the red line that connects the 3 producing Devonian Wells?

A This is a surface cross section.

Q Would you refer to Exhibit 3 and identify that, please, briefly discuss this exhibit for the record.

A Exhibit 3 is a cross section. On the left side of the sheet is the Northwest direction, on the right side is the Southeast direction. The 3 producing wells are shown on the cross section, and the top of the Devonian formation is shown by the heavy line drawn through the 3 wells. The well in the center of the cross section, the Pan American Federal A Well Number 4, is shown here by the gamma ray sonic log, and I'd like to make mention that this well was drilled to a total depth of 11,940 feet as shown below the well log, and 7" casing was then -- first of all, the well was logged.

Q Logged at a total depth of 11,940?

A That's right.

Q Then what did we do?

A A casing was run and cemented in place, and then it was decided to core the well beneath the casing point, approximately 50 feet deeper, and we did not run a log in this open hole section. So in lieu of a normal log we're showing a logless drive from the core data, and this includes a gamma ray log taken at the surface on the core itself.

Q Really, the log of Federal A Number 4 is a composite log of 11,940, it's a gamma ray sonic log running the normal course of events, and the additional 11,940 is a log prepared from the core that we took out of that interval?

A Yes, that's correct.

Q All right, sir. Have you shown on this exhibit, pertinent completion information for each of these 3 producers?

A Yes, sir.

Q Is there anything of interest in that completion data?

A Yes. Of interest is the small volume of acid stimulation that was used to complete these wells.

Q When only such a small acid job is required, what does that indicate to you?

A This indicates that the well has a high capacity to produce, and also indicates it has a high permeability.

Q And all of these 3 wells, after a slight acid job, came in on rather large flowing potentials?

A Yes, sir, that's correct.

Q You mentioned that you had indicated or shown the top of the Devonian with a heavy blue line through all of these producing wells. Did you have any difficulty in locating the top of the Devonian and correlating it from well to well?

A No, sir, it's an easy matter to correlate the top of the Devonian from well to well.

Q Let me ask you to think back now to Exhibit 2, as well as Exhibit 3 that we're looking at here, now, and ask you whether or not in making your sub-surface evaluation of this reservoir, that you discovered that wells had the opportunity

at least to drain a very large area?

A Yes, I would say that very definitely the wells had had an opportunity to drain a very large area.

Q All right, sir. I wish you would look now at Exhibit 4, Mr. Anderson. What is that exhibit?

A Exhibit Number 4 is a tabulation of production data from a Bough Devonian Pool. This exhibit, I think, is self-explanatory. I might mention that the total cumulative withdrawals from the pool are approximately 189,260 barrels of oil,and I might also call attention to the very low gas-oil ratio in each of the 3 wells that is shown by this exhibit.

Q What is that indicative of?

A This is indicative of an active water drive reservoir.

Q We're going to discuss that in detail later, are we not?

A Yes, sir.

Q Exhibit 5 is what?

A A tabulation of pertinent reservoir data for the Bough Devonian Pool.

Q These data appear to be self-explanatory. Why don't you comment on the data that you feel are the most significant?

A Very well. The lithology of this reservoir is fractured, the rock is fractured and it's also vuggy as a

dolomite. The initial gas-oil ratio was 57 standard cubic feet per barrel. The initial bottom hole pressure as measured in the discovery well was 4,540 psig. The average porosity as determined by core analysis was 6.7 percent. The producing mechanism is a water drive. And there's one item here that I would like to call particular attention to, the average permeability as determined by core analysis is 588 millidarcies, which is high not only in the Devonian reservoir but any other reservoir.

Q Is that all the comments you have on that exhibit?

A Yes, sir.

Q Look at Exhibit 6, what is that?

A Exhibit 6 is a tabulation of the available bottom hole pressure data in the Bough Devonian Pool.

Q Do you have any particular comments you would care to make on the data reflected on that exhibit?

A There is one thing that is very interesting as shown by this exhibit. All 3 of the producing wells in the pool were surveyed on April 30, 1956 and the bottom hole pressure in each of these 3 wells was found to be the same for all practical purposes.

Q What does that indicate to you that these 3 wells on the same day would have almost identical bottom hole pressure?

A This indicates to me that these 3 wells are in

communication with each other, or it's a very unusual coincidence.

Q Well, did you make any study to rule out the possibility of this being the world's greatest coincidence?

A Yes, sir, I made a further study to rule out the opportunity for this very unusual coincidence.

Q Relate for the record, please, as to what this study consisted of?

A This study consisted of a determination of the orqginal oil-in-place for 2 wells in the pool, based on 80 acres.

Q Let me see if I understand. You determined the original oil-in-place under 80 acres around 2 of the individual producing wells in the pool?

A Yes, sir.

Q All right, sir. Then what did you do?

A And with that knowledge then I was able to calculate a predicted bottom hole pressure performance for each of these 2 wells, making the assumption they were going to be produced under a volumetric depletion mechanism.

Q Knowing the original oil-in-place under 80 acres, and assuming a volumetric drive, you can predict the pressure from a well?

A That's correct.

Q What did you do after you had made your volumetric pressure predictions, what did you do then?

A I compared this with the actual pressures as shown here on Exhibit 6 at the same point and time.

Q Let me ask you this. Did you find any actual observed pressures higher or lower than your predicted volumetric pressures?

A I found the pressures higher than could be predicted.

Q What is the significance of that fact?

A This is significant in that it shows that either these wells are draining an area considerably in excess of 80 acres or that they are being produced under an active water drive.

Q Is it possible, Mr. Anderson, to have an active effective water drive without having almost complete communication throughout the reservoir?

A No, sir.

Q So regardless of what these data show, whether they were draining a larger area than 80 acres or we have a very effective water drive, the result is complete communication?

A That's correct.

Q Look at the exhibit on one of those two wells. Let's take first Federal A Well Number 4, identified as our

Exhibit Number 7, briefly relate for the record what this exhibit reflects and make the comparison between the actual reserve pressure and the predicted volumetric pressure?

A This exhibit which is for Federal A Well Number 4, shows the predicted bottom hole performance for this well by the dashed line, and shows the actual performance by the solid line. The predicted performance would indicate a pressure on April 30th of 3,500 pounds, and we actually measured a pressure of 4,518 pounds on this same day. This indicates that either this well is draining an area greatly in excess of 180 acres or is a very active water drive.

Q Going to Exhibit 8, briefly state for the record the comparison on this well?

A Well, on this exhibit a predicted bottom hole pressure of approximately 2600 pounds was made for April 30, 1966, whereas we measured an actual pressure of 4,523 pounds on this day, and of course, this is --

Q What is the difference there?

A This is a difference of over 1500 pounds, approximately 1900 pounds, and this difference is very substantial, indicating the well must be draining in excess of 80 acres or it's being produced under a very active water drive.

Q Looking back at Exhibit 7, I notice with regard to the predicted volumetric pressure performance of Well Number

4 and Number 5, there is a substantial variance in the predicted performance of these 2 wells. What caused that?

A Well, perhaps this could be best explained by referring back to the cross section which is Exhibit Number 3, comparing those 2 wells, Federal A Number 4 with Federal a Number 5. It can be easily seen here that there is considerably greater reserves, greater oil-in-place in Federal A Number 4 than there is in Federal A Number 5. Five is on the flank of the field, it is lower structurally, and Number 4 is relatively high on the structure. This would indicate that we would anticipate a faster decline in bottom hole pressure in Federal A 5.

Q Assuming it was draining 80 acres?

A That's right.

Q Let me ask you this. As of the April date of this pressure survey on these two wells, is their cumulative production about the same?

A It was in the same order of magnitude.

Q Would not the fact with the obviously less reserves of the oil-in-place with the flank well 5 as compared to our high structure well 4, that their pressures were almost identical with almost the same cumulative, would that not in itself so effect the drainage?

A Yes, sir.

Q I want to get this in the record, specifically; let me ask you this question. In your opinion do you feel that these data conclusively show that one well in the Devonian reservoir will effectively and efficiently drain 80 acres?

A Yes, sir.

Q Is it your opinion that the rules recommended here today as shown on Exhibit 1, will serve conservation as well as protect the Correlative Rights of all the interest owners in this pool?

A Yes.

Q Do you have anything else you would care to offer at this time?

A No, sir.

MR. BUELL: That's all we have. I would like to formally offer Exhibits 1 through 8, inclusive.

(Whereupon, Applicant's Exhibits 1 through 8 offered into evidence.)

MR. NUTTER: If there are no objections the exhibits will be admitted.

(Whereupon, Applicant's Exhibits 1 through 8 admitted into evidence.)

MR. NUTTER: Are there any questions of this witness? He may be excused. Does anyone have anything to offer in Case 3406? The Commission will take the case

under advisement. There's a written appearance in Case 3406, Mr. Malone, appearance by Ross Maione for Atwood and Malone on behalf of Mr. Buell. We will take a fifteen minute recess.

(Whereupon, a recess was taken.)

I N D E X

E X H I B I T

NUMBER	MARKED FOR IDENTIFICATION	OFFERED	ADMITTED
Applt's. 1	2	13	13
Applt's. 2	2	13	13
Applt's. 3	2	13	13
Applt's. 4	2	13	13
Applt's. 5	2	13	13
Applt's. 6	2	13	13
Applt's. 7	2	13	13
Applt's. 8	2	13	13

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

Witness my Hand and Seal this 7th day of June, 1966.

Bobby J. Davis
NOTARY PUBLIC

My Commission Expires:

March 13, 1969.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3406 held on 5/25, 1966.

, Examiner
New Mexico Oil Conservation Commission