

CASE 3477: Application of PAN AM.
for pool rules for the CATO-SAN
ANDRES POOL, CHAVES COUNTY.

CASE No.
3477

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

November 9, 1966

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

Re: Case No. 3477
Order No. R-3147
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

ir/

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztac OCC

OTHER Mr. Sim Christy, Mr. R. Ken Williams, Mr. Eugene Nearburg
Mr. Pat Kelly, Mobil Oil Company, Box 633, Midland, Texas

79701

**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. 3477
Order No. R-3147**

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 19, 1966, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 9th day of November, 1966, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, 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 Cato-San Andres Pool, Chaves County, New Mexico, including a provision for 80-acre proration units.

(3) That the applicant has not established that the wells in the Cato-San Andres Pool can efficiently and economically drain and develop 80 acres or that the establishment of special rules and regulations would prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, prevent reduced recovery which might result from the drilling of too few wells, or otherwise prevent waste or protect correlative rights.

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CASE No. 3477
Order No. A-3147

(4) That the subject application should be denied.

IT IS THEREFORE ORDERED:

(1) That the subject application is hereby denied.

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

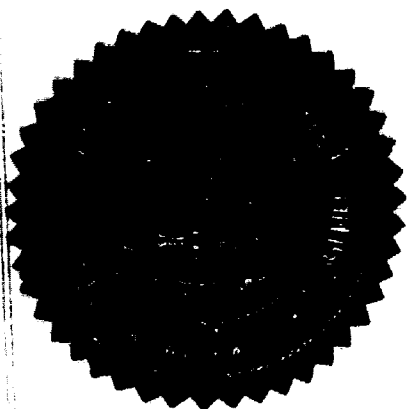
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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



esr/

DOCKET: REGULAR HEARING, WEDNESDAY, OCTOBER 19, 1966

OIL CONSERVATION COMMISSION, 9 A.M., MORGAN HALL, STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

- ALLOWABLE: (1) Consideration of the oil allowable for November, 1966.
- (2) Consideration of the allowable production of gas for November, 1966, from thirteen prorated pools in Lea, Eddy and Roosevelt Counties, New Mexico. Consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, for November, 1966.

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CASE 3476: In the matter of the hearing called by the Oil Conservation Commission upon its own motion for the purpose of considering changing the previously designated date for the regular Commission hearing in December, 1966. Date of said hearing would be changed from December 14, 1966, to 9 a.m. December 16, 1966, to avoid a conflict of dates with the annual meeting of the Interstate Oil Compact Commission.

CASE 3477: Application of Pan American Petroleum Corporation for special pool rules, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Cato-San Andres Pool, Chaves County, New Mexico, including a provision for 80-acre proration units.

CASE 3478: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico.

a) Create a new pool in Eddy County, New Mexico, classified as an oil pool for Delaware production and designated as the Burton-Delaware Pool. The discovery well is J. C. Williamson, Yates Federal No. 1, located in Unit P of Section 7, Township 20 South, Range 29 East, NMPM. Said pool described as:

TOWNSHIP 20 SOUTH, RANGE 29 EAST, NMPM
Section 7: SE/4 SE/4

b) Create a new pool in Eddy County, New Mexico, classified as an oil pool for Delaware production and designated as the Ingle Wells-Delaware Pool. The discovery well is Jack L. McClellan, Jennings Federal No. 1, located in Unit D of Section 3, Township 24 South, Range 31 East, NMPM. Said pool described as:

TOWNSHIP 24 SOUTH, RANGE 31 EAST, NMPM
Section 3: NW/4 NW/4

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Docket No. 26-66

Regular Hearing - October 19, 1966

- c) Create a new pool in Eddy County, New Mexico, classified as an oil pool for San Andres production and designated as the North Millman-San Andres Pool. The discovery well is Martin Yates III, State N & C No. 1, located in Unit M of Section 6, Township 19 South, Range 29 East, NMPM. Said pool described as:

TOWNSHIP 19 SOUTH, RANGE 29 EAST, NMPM
Section 6: SW/4 SW/4

- d) Extend the North Bagley-Middle Pennsylvanian Pool to include therein:

TOWNSHIP 11 SOUTH, RANGE 33 EAST, NMPM
Section 21: NW/4

- e) Extend the North Benson Queen-Grayburg Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM
Section 31: E/2 NE/4
Section 32: S/2 NW/4

- f) Extend the Bluitt-San Andres Gas Pool in Roosevelt County to include therein:

TOWNSHIP 8 SOUTH, RANGE 37 EAST, NMPM
Section 5: All

- g) Extend the Cato-San Andres Pool to include therein:

TOWNSHIP 8 SOUTH, RANGE 30 EAST, NMPM
Section 10: NE/4
Section 11: NW/4

- h) Extend the Cemetary-Morrow Gas Pool to include therein:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
Section 16: W/2

- i) Extend the Chaveroo-San Andres Pool to include therein:

TOWNSHIP 7 SOUTH, RANGE 33 EAST, NMPM
Section 22: SE/4

TOWNSHIP 7 SOUTH, RANGE 34 EAST, NMPM
Section 30: N/2

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Docket No. 26-66

Regular Hearing - October 19, 1966

TOWNSHIP 8 SOUTH, RANGE 33 EAST, NMPM
Section 1: NW/4

- j) Extend the Corral Canyon-Delaware Pool to include therein:

TOWNSHIP 25 SOUTH, RANGE 30 EAST, NMPM
Section 8: SW/4 NE/4

- k) Extend the Drinkard Pool to include therein:

TOWNSHIP 22 SOUTH, RANGE 30 EAST, NMPM
Section 17: SE/4

- l) Extend the Eagle Creek-San Andres Pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM
Section 23: NE/4 NW/4

- m) Extend the Grayburg-Jackson Pool to include therein:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 16: SE/4

- n) Extend the Pearl-Queen Pool to include therein:

TOWNSHIP 19 SOUTH, RANGE 34 EAST, NMPM
Section 26: SE/4

- o) Extend the Shugart-Delaware Pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM
Section 22: SW/4 NW/4

- p) Extend the Wantz-Abo Pool to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 35: NE/4
Section 36: NW/4

ir/

Mobil Oil Corporation

P.O. BOX 833
MIDLAND, TEXAS 79701

OCT 19 1966
October 17, 1966

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

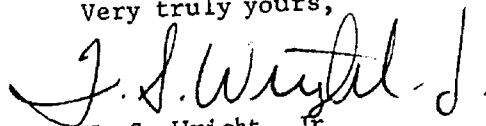
Attention: Daniel S. Nutter

SPECIAL POOL RULES
CATO (SAN ANDRES) POOL
CHAVES COUNTY, NEW MEXICO
OCTOBER 19, 1966 HEARING
CASE NO. 3477

Gentlemen:

This is to advise you that Mobil Oil Corporation supports Pan American Oil Corporation's application for Special Pool Rules for the Cato (San Andres) Pool and requests adoption of the rules proposed by Pan American.

Very truly yours,


F. S. Wright, Jr.
Producing Manager

BJT/nab

CLASS OF SERVICE
This is a fast message
unless its deferred char-
acter is indicated by the
proper symbol.

WESTERN UNION TELEGRAM

W. P. MARSHALL, PRESIDENT

1201 (4-00)

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

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

LA136 DA579

1966 OCT 14 PM 6 18

D LLA199 PD=TEX DALLAS TEX 14 417P CST=
A L PORTER, NEW MEXICO OIL CONSERVATION COMMISSION=
STATE LANE OFFICE BLDG SANTAFE NMEX=
RE: CASE NO 3477 PAN AM PROPOSED RULES FOR CATO=SAN
ANDRES POOL INCLUDING 80 ACRE SPACING SUN OIL COMPANY
AS A LEASEHOLD OWNER IN THE AREA OF THE REFERENCED POOL
URGES ADOPTION OF THE SPECIAL RULES AND REGULATIONS
AS PROPOSED BY PAN AMERICAN. THE ADOPTION OF THESE
RULES WOULD ENHANCE THE POSSIBILITY OF SUN DEVELOPING
ITS PROPERTIES AT AN EARLY DATE=
SUN OIL COMPANY BY P W MEEK.

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a fast message
unless its deferred char-
acter is indicated by the
proper symbol.

WESTERN UNION TELEGRAM

W. P. MARSHALL, PRESIDENT

1201 (4-00)

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

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

LA064 DC367 KC121

1966 OCT 18 PM 4 00
(40)

K BRA075 PD=BARTLESVILLE OKLA 18 137P CST=
NEW MEXICO OIL CONSERVATION COMMISSION, ATTN
AL PORTER JR= PO BOX 2088 SANTA FE NMEX=
RE CASE 3477 CATO=SAN ANDRES POOL CHAVES COUNTY
NEW MEXICO

THIS IS TO ADVISE THAT CITIES SERVICE OIL COMPANY
CONDURS IN PAN AMERICAN PETROLEUM CORPORATIONS
APPLICATION FOR THE ADOPTION OF SPECIAL FIELD RULES
WHICH INCLUDES 80 ACRE PRORATION UNITS FOR THE CATO=SAN
ANDRES POOL CHAVES COUNTY NEW MEXICO=

RE ADAMS CITIES SERVICE OIL CO BARTLESVILLE OKLA=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE



SINCLAIR OIL & GAS COMPANY

P. O. Box 1470
MIDLAND, TEXAS 79701

October 14, 1966

1966 OCT 15 AM 9 53

WEST TEXAS REGION

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.,
Secretary and Director

Gentlemen:

Sinclair Oil & Gas Company has substantial lease holdings within the probable Field limits of the Cato-San Andres Pool, Chaves County, New Mexico. Sinclair wishes to join in the Application of Pan American Petroleum Corporation scheduled for hearing, Wednesday, October 19, 1966, Case #3477, in their request for flexible 80 acre proration units for this Pool. It is our understanding that Pan American will propose that the 80 acre unit run either East-West or North-South at the election of the Operator and that the first well may be located on either end of said Unit.

Yours very truly,

E. H. Whitlock

E. H. Whitlock
Engineering Specialist

RMA/ar

cc: Pan American Petroleum Corp.
P. O. Box 1410
Fort Worth, Texas
Attention: Mr. Guy Buell

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
PAN AMERICAN PETROLEUM CORPORATION
FOR SPECIAL POOL RULES FOR THE CATO
SAN ANDRES POOL, CHAVES COUNTY, NEW
MEXICO.

66 OCT 19 1966
No. 3477

ENTRY OF APPEARANCE

The undersigned attorneys, Atwood & Malone, duly
licensed to practice law in New Mexico, hereby enter appear-
ance in this cause as co-counsel with Guy Buell, Esquire, of
Fort Worth, Texas, in behalf of Pan American Petroleum Cor-
poration.

DATED at Roswell, New Mexico, this 7th day of
October, 1966.

ATWOOD & MALONE

By



P. O. Drawer 700
Roswell, New Mexico

PAN AMERICAN PETROLEUM CORPORATION

OIL AND GAS BUILDING P. O. BOX 1410
FORT WORTH, TEXAS—76101

September 13, 1966

File: GHF-338-986.510.1

Subject: Application of Pan American
Petroleum Corporation for
Adoption of Temporary Pool Rules,
Cato-San Andres Oil Pool,
Chaves County, New Mexico

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

Dear Sir:

Pan American Petroleum Corporation respectfully requests that a hearing be docketed to consider its application for adoption of temporary pool rules for the Cato-San Andres Oil Pool, Chaves County, New Mexico.

Attached are the pool rules which Pan American Petroleum Corporation will recommend which include 80-acre proration units with flexible well spacing. Also attached are the names and addresses of operators in the Cato area.

Yours very truly,

D. L. Ray
D. L. Ray
Division Engineer

CFH:df
Attachments

DOCKET MAILED

Date 10-7-66

NAMES AND ADDRESSES OF OPERATORS
IN THE CATO AREA
CHAVES COUNTY, NEW MEXICO

Sun Oil Company
Box 2880
Southland Center
Dallas, Texas

MWJ Producing Company, et al
413 First National Bank Building
Midland, Texas

Union Texas Petroleum Division
Allied Chemical Corporation
1300 Wilco Building
Midland, Texas

PROPOSED
SPECIAL RULES AND REGULATIONS
FOR THE
CATO - SAN ANDRES POOL

RULE 1. Each well completed or recompleted in the Cato-San Andres or in the San Andres formation within one mile thereof, and not nearer to or within the limits of another designated San Andres 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 2.00 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 THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico October 19, 1966

Regular Hearing

IN THE MATTER OF:

Application of Pan American
Petroleum Corporation for Special
Pool Rules, Chaves County,
New Mexico.

Case No. 3477

BEFORE: JACK M. CAMPBELL, Governor

A. L. (Pete) Porter, Sec. - Director

Transcript of Hearing

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 315-1162

ALBUQUERQUE, N. M.
PHONE 243-6691



MR. PORTER: We will take up case 3477.

MR. HATCH: Case 3477, Application of Pan American Petroleum Corporation for special pool rules, Chaves County, New Mexico.

MR. BUELL: For Pan American Petroleum Corporation, Guy Buell.

MR. PORTER: Are there any further appearances?

MR. CHRISTY: Sim B. Christy, for Union Texas, a division of Allied Chemical.

MR. PORTER: Is there anyone else that would like to make an appearance in the case at this time?

MR. WILLIAMS: I will want to make a statement; I have no testimony to present, R. Ken Williams, M. W. J. Producing Company.

MR. PORTER: Anyone else who would like to make an appearance?

MR. BUELL: May it please the Commission, may we have a moment or two to put some exhibits up on the wall behind the Commissioners?

MR. PORTER: We will take a very short recess while the applicant posts his exhibits.

(Whereupon a short recess was taken.)

MR. BUELL: If it please the Commission, Pan

American has one witness. Mr. Ford, that has not been sworn.

MR. PORTER: Let the record show that the hearing has been called to order. Mr. Buell, will you have your witness stand and be sworn?

(Whereupon the witness was sworn)

MR. BUELL: I would like to make a brief opening statement, if it please the Commission, primarily to commend the Commission on picking such an appropriate date for this hearing. Today is the birthday of the Cato-San Andres Oil Pool. It was discovered exactly four months ago, on June the 19th, 1966, by the completion of the Pan American Basket, No. 1.

Other than that little note, I am afraid I will have to tell the Commission that there is nothing unusual or novel about this application. It is a simple application for temporary eighty-acre units for this newly discovered pool.

Naturally, with a pool that is only four months old, we have no data with respect to the drainage from the standpoint of production history or engineering data. It is almost physically impossible -- I will say it is physically impossible to have drainage data in such a short period of time.

So actually, that is the purpose of our application, to adopt eighty-acre units for an interim period of time so

dearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1203 FIRST NATIONAL BANK EAST • PHONE 251-1294 • ALBUQUERQUE, NEW MEXICO

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that the operators can accumulate data to satisfy not only the Commission, but themselves as to the proper drainage area of a well and the ultimate and proper proration unit size.

I would direct the Commission's attention now, if I may, to an exhibit on the wall behind them. I have it marked as Exhibit 3. That is a base map of the Cato-San Andres Area. On there, we have colored in red as well as yellow, acreage of which Pan American is the operator.

I would point out to the Commission that the several eighty-acre tracts that are colored in yellow are farm out acreage, acreage farmed out by Union Texas and subsequently acquired by Pan American. The farm out contract requires that this yellow acreage be drilled to a density of forty acres, one well each forty acres, or the acreage reassigned, so I would like to point out to the Commission right now that unless this farm out contract is amended Pan American is contractually obligated to drill one well to each forty acres on those yellow eighty-acre tracts, or reassign the acreage to Union Texas.

GOVERNOR CAMPBELL: Is that irrespective of any Order of this Commission?

MR. BUELL: Yes, sir, it is a most unusual farm out contract.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXHIBIT TESTIMONY, DAILY COPY, CONFIDENTIALS
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1203 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE 5

GOVERNOR CAMPBELL: Yes, it is.

MR. BUELL: Contractually, Governor, that is our obligation.

I would like to direct the Commission's attention to Exhibit 3, I believe it does reflect that Pan American is a dominant holder of acreage in this area and we do have a dominant and a compelling interest in the Cato-San Andres Oil Pool.

GEORGE H. FORD

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

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Ford, would you state your complete name, by whom you are employed and what capacity and at what location?

A I am George H. Ford, Staff Engineer for Pan American Petroleum Corporation in Fort Worth, Texas.

Q Mr. Ford, would you briefly give your educational background in Petroleum Engineering, as well as your actual engineering experience after graduation?

A All right, sir. I received a Bachelor of Science Degree in Petroleum Engineering from Texas A & M College in 1950. In the sixteen years since that time I have worked for Pan American Petroleum Corporation in various phases of petroleum engineering in New Mexico, Texas, Oklahoma and Louisiana.

Q In your capacity with Pan American, have you been

actively interested in the development of the Cato-San Andres Oil Pool?

A Yes, sir, I have.

Q In your capacity with Pan American, have you also made a study of data available to date from the drilling and completion of wells in the Cato-San Andres Pool area?

A Yes, sir.

MR. BUELL: Are his qualifications accepted?

MR. PORTER: Yes, they are accepted.

Q (By Mr. Buell) Mr. Ford, in order that the Commission can evaluate your testimony, your exhibits, and your evidence, I would like to direct your attention first to the pool rules that we are going to recommend that has been identified as Pan American's Exhibit No. 1. For the benefit of the Commission, would you briefly summarize the more important pool rules on that Exhibit?

A All right, I will. I would like to point out first, Rule 2 of Exhibit 1. This would provide for a standard eighty-acre proration unit to consist of the north half, south half, east half or west half of a Governmental quarter section. And also, the rule provides that nothing shall prohibit the drilling of a well on each of the quarter quarter sections in the unit.

Now going on to Rule 4, this provides that each

well shall be located within one hundred and fifty feet of the center of a Governmental quarter quarter section or lot.

Rule 5, of course, provides for exceptions to Rule 4.

Then Rule 6, an eighty-acre standard proration unit would receive an eighty acre proportional factor of two for allowable purposes. Also, in that rule in the event there is more than one well on an eighty-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

Q So actually, the effect of these rules, Mr. Ford, would not prohibit an operator, if he was contractually obligated, or, if he just desired to drill two wells on a standard eighty-acre proration unit?

A No, sir, it would not.

Q I notice, Mr. Ford, you have not included a pool rule to provide for administrative approval of interference tests. Why is that?

A Well, we are currently considering a field-wide data gathering program that would include interference tests, of course a field-wide program would require the cooperation of all of the other operators in the field. When we finalize our ideas and have a definite recommendation to make to these other operators, we intend to contact them.

Q Let me ask you this, Mr. Ford, in the event this field-wide data gathering program might not be executed for one reason or another, do you think it might be wise to include in the pool rules the normal administrative provision for approval of simple, formal interference tests such as the Commission has included in several of the San Andres field, where they have adopted eighty-acre proration units?

A Yes, sir, I do, and I so recommend that to the Commission.

Q All right, sir, I wish you would go now, Mr. Ford to an exhibit that is behind the Commission on the wall, Exhibit No. 2. What is that exhibit?

A Exhibit 2 is an orientation map of a portion of southeast New Mexico. I thought it might be of convenience to the Commission to see the geographical relationship of the Cato-San Andres, the subject of our hearing, and other San Andres pools in southeast New Mexico.

Starting over on the right hand side, I have shown the Todd-San Andres Pool outlined in red. That is in Roosevelt County. Just to the south of that, the South Prairie-San Andres Pool, outlined in red, then going on over to the west, still in Roosevelt County, the Milnesand-San Andres field. Then further west in Roosevelt and Chaves County, the Chaveroo-San Andres Pool. That is outlined in

yellow. South of that the Flying "M" San Andres Pool in Lea County, outlined in red, then our subject pool, Cato-San Andres in Chaves County highlighted with a red color.

Q All right, sir, fo you have any comments on our Exhibit 3 that is the Pan American Exhibit that shows the Pan American acreage?

A No, sir, that is an ownership map, and you have already commented on it in your opening statement.

Q All right, sir, go then to Exhibit 4; what is that Exhibit?

A Exhibit 4 is to the same base as Exhibit 3, without coloring on it; that is my structure map of the Cato-San Andres Pool.

I have shown the twelve completions thus far in the field, the producing wells with the conventional black dot. I have also shown six wells that are in the process of either drilling or completing, with their conventional symbol, that is an open circle.

Now, this status of wells is as of last Friday, October the 14th. The field is in a very active stage of development, and things happen each day out there.

Q Mr. Ford, it might be of benefit to the Commission to give them a breakdown on the wells operated by the various operators.

A Union Texas Petroleum operates three of the producing wells, Pan American operates nine of the producing wells.

MR. BUELL: May it please the Commission, may I ask the reporter at this time, that any time Mr. Ford or myself say Union of Texas, that he delete the "of". It is Union Texas, and I have a terrible difficult time in leaving the "of" out.

Q (By Mr. Buell) All right, sir, would you briefly describe the structures as represented on Exhibit 4, Mr. Ford?

A It is contoured on top of a correlative marker in the San Andres. The contour interval is fifty feet. I would term the structure a regional monocline. I think that this is a stratographic trap and the limits are going to be determined by whether you have porosity and permeability. Now, the presence or absence of porosity or permeability may be related in some way with structure. We really do not have the productive limits well defined at the present time. When we come over to the east part of the field, the Max Coll well shown in Section 13 -- I was advised yesterday of it being completed as a producer of over a hundred barrels per day. Then further on east, covered up by the title block on the map is a dry hole in the southeast quarter of the southeast

quarter of Section 13. McLellan-Smith. That well was abandoned last November with no completion attempt. The core analysis indicates to me that there might be as much as twelve feet of possible San Andres pay in that well.

MR. PORTER: What depth did you say it was drilled to, or did you say?

A About 3600 feet.

Then going west in the field, there are four wells over about a mile west of the wells that are now prorated in the Cato-San Andres field. Those wells were drilled about fifteen years ago to test the Devonian. In fact two of the wells, in Section 6 and Section 7, are still producers in the Light Cap Devonian Field. The tests on these wells as they went through the San Andres are not encouraging to me, but I pass it to condemn this portion of this area for San Andres based on information from these old wells.

Q (By Mr. Buell) All right, sir, now, almost due south of the Light Cap area, down in Section 17, I see the symbol for a producing well. What is that well?

A That is Pan American's Crosby No. 1.

Q How far is that well from the main bulk of the producers in the Cato Pool?

A It's about two miles.

Q Did you make a study, Mr. Ford, and an attempt to

determine whether or not that well is producing from the same common source of supply, as the bulk of the Cato wells?

A Yes, sir, I found some evidence to indicate that it was producing from the same common source of supply as those other wells, and some that it was not. I think we will just have to wait on development in this two mile interval over to the well to determine whether or not it is in the same common source of supply.

Q It is currently definitely prorated in the Cato-San Andres Pool, is it not?

A Yes, sir, it is.

Q Do you see how any harm could result from continuing to prorate it from that pool?

A No, sir, if it develops to be in the same source of supply, everything will be just right, and if it develops that it is in a separate pool, it can be separated and put in a separate pool.

Q All right, sir. Coming back now to the main bulk of the completed wells, I notice a line that connects several of the wells. What is the significance of that line?

A That is the trace of a cross section, A. A. Prime.

Q Are you ready to discuss that cross section now, Mr. Ford?

A Yes, sir.

Q All right, it has been identified as Pan American's Exhibit No. 5. Briefly comment on it, please.

A Exhibit 5 is a cross section labeled A.A Prime, running from southwest to northeast. I have the logs of four wells on the cross section; above each one of the logs is the operator, the lease, well number and the elevation. Then below each one of the logs is the completion information on each one of the wells. The last well is still testing at the present time. I have shown the San Andres correlative marker emphasized in red connected between these wells. This is what I used for preparation of Exhibit 4, the structure map. Then the perforations for each of the wells on the cross section are shown with conventional symbols, and then highlighted in red so that we can see the correlation of the producing intervals across the reservoir.

Now, all of the wells are completed in both major intervals of porosity. I consider this a major interval of porosity and this a major interval of porosity, separated by anhydrite. Three of the wells are completed in both of those major intervals. One well is completed only in the lower interval, that is the discovery well, Pan American's Baskett No. 1. It was completed for a good flowing potential of three hundred and twenty-two barrels per day. The upper interval is present and developed and available to be opened

later when needed.

Q All right, Mr. Ford, based on your sub-surface evaluation of development to date in this Cato area, what conclusions did you reach that would be of importance to the Commission from the standpoint of this hearing today?

A I concluded that there were no impediments to free communication in the reservoir and that from a geological standpoint one well should be able to drain a large area.

Q All right, sir, look now at what has been identified as Pan American's Exhibit 6. What is that Exhibit, Mr. Ford?

A Exhibit 6 is a tabulation of pertinent well completion data so that all the information on these twelve completions would be available in one place for the Commission to review. I won't read all this information; I will point out generally what is on the tabulation, the operator, the lease, the well number, the completion date, together with the initial completion data, the elevation, total depth, the completion interval, stimulation, and present allowable.

All of the wells are top allowable at the present time. I would like to point out that in connection with stimulation, the majority of the wells require only a small acid stimulation to make good producers.

Q All right, sir, look now at what has been identified

as our Exhibit No. 7. What is that Exhibit, Mr. Ford?

A Exhibit 7 is a tabulation of pertinent data for the Cato-San Andres pool. Again, I won't read everything on here, we have already covered some of it. We do expect it to produce by solution gas drive mechanism. The depth is about thirty-five hundred feet. The original reservoir pressure was eleven hundred and sixteen pounds on the discovery well at seven hundred pounds datum, after forty-one hours shut in.

Q Plus seven hundred?

A Plus seven hundred foot datum. It was shut in only forty-one hours. The well was still building up; I would expect the original pressure to be somewhat higher than this eleven sixteen.

Then I would like to point out the average porosity, 8.3% from cores. The average permeability 8.3 millidarcies from cores and 23 millidarcies from the bottom hole pressure build up analysis on one well.

Q All right, sir, those are pretty good rock characteristics, are they not, for San Andres reservoir rock, for your porosity and permeability?

A Yes, sir.

Q I wish you would go back now, if you would, Mr. Ford, to Exhibit 2, and let me ask you whether or not any of

the San Andres pools on that exhibit currently have eighty-acre proration unit rules?

A Yes, they have, three of the pools, these three that I have outlined in red, the Todd-San Andres, South Prairie-San Andres and the Flying "M"-San Andres.

Q Have you examined the reservoir rock characteristics of those three pools that have currently eighty-acre proration units?

A Yes, I have.

Q In that connection, I wish you would look now at what has been marked Exhibit No. 8. What is that exhibit?

A Exhibit 8 is a comparison of reservoir rock properties. The Cato-San Andres Oil Pool with three other pools in southeast New Mexico, that now have pool rules providing for eighty-acre oil units. I have listed on the left the pool porosity and permeability, again Cato, now, has 8.3% porosity, 8.3 millodarcies permeability from core analysis, 23 millodarcies from bottom hole pressure buildup.

The next thing I have on Exhibit 8 is Flying "M"-San Andres where we have eighty-acre units, we have 11% porosity and 7.5 millodarcies permeability from core analysis, and then Todd-San Andres with 6.5% porosity and 0.9 millodarcies permeability from core analysis and 4.7 millodarcies from bottom hole pressure buildup. Then South Prairie-San Andres

is 6% porosity and 6.8 millidarcies permeability.

Q Mr. Ford, how would you define permeability so a layman like myself could understand it?

A The ability of fluid to flow in the reservoir rock.

Q It is certainly important from the standpoint of drainage, is it not?

A Yes, sir, it is very important.

Q If my observation of Exhibit 8 is correct, the permeability in Cato is of a higher magnitude than any of the three pools that currently have eighty-acre proration units, is that correct?

A Yes, sir, you are correct.

Q Mr. Ford, in conclusion, let me ask you this. In your opinion, would the adoption of these temporary rules for an interim period both serve conservation as well as protect the correlative rights of all the owners of interest in the pool?

A Yes, sir, it would.

Q You feel that actually, the adoption of these rules on a temporary basis might actually prevent waste?

A That's correct. If these rules are adopted, we have the opportunity to develop certain other properties to eighty acres, we will have an opportunity to gather data to prove whether or not eighty acres is the optimum development

pattern. We'll save the monies that would be required to develop down to forties.

Q If, ultimately, we find that these pools need to be developed to forty, then you can always drill down to forties, can't you?

A Yes, sir.

Q But it is pretty hard to undrill a well that is already unnecessarily drilled?

A That is correct, now is the time for eighty-acre temporary rules.

Q Do you have anything else you would care to add at this time to the record, Mr. Ford?

A No, sir, I don't.

Q Let me ask you whether or not all eight of these exhibits which you have discussed were either prepared by you or under your supervision or direction?

A Yes, sir, they were.

MR. BUELL: May it please the Commission, that's all we have by way of direct evidence.

At this time I would like to formally offer Pan American's Exhibits 1 through 8.

MR. PORTER: If there are no objections, the Exhibits will be admitted.

GOVERNOR CAMPBELL: Mr. Buell, your question to

your witness about defining permeability reminds me of many years ago, the late Dr. Herman Kateler was testifying and I was one of the attorneys, and I asked him what he meant by permeability and he said, "That's a term we engineers have conceived to confuse the lawyers."

MR. PORTER: Anyone have a question of Mr. Ford?

MR. CHRISTY: I have a few questions.

CROSS EXAMINATION

BY MR. CHRISTY:

Q Mr. Ford, in your Exhibit 8, you referred to permeability as 8.3 millodarcies out of core. How many different wells did you core?

A This particular 8.3 millodarcies was calculated from the perforated interval in Pan American's Baskett No. 1 and Pan American's Abko Federal No. 2.

Q So this represents two cores out of the twelve wells, is that correct?

A Yes, sir, that's correct.

Q Isn't it true that there is considerable variation in the permeability in the various wells in the Cato Field?

A There is even variations in the permeability on the core analysis on these two wells, which is exactly what you would expect.

Q Therefore, I understand you to answer my question

yes, that there is considerable variation of permeability in the various wells.

A The average permeability for these two wells didn't vary very much, between the two wells. There is really no permeability measurement for the other wells that were not cored. You don't get permeability off the log.

Q On your Exhibit 1, your proposed rules, I particularly have reference to Rule 6. I would understand Rule 6 that if you had a poor permeability and porosity well on one forty and a good one on another forty, that you could produce, for example, sixty or seventy barrels out of the good well and twenty or thirty out of the bad well, is that what you are proposing?

A There would be several things involved besides permeability in the productive capacity of the wells, such as what type of stimulation, how much pay was open, whether or not there was any well bore damage, but to answer your question on the latter part, with this rule like it is in Rule 6, if it is adopted, the allowable for the eighty-acre unit can be produced from either of the wells in any proportion.

Q Do you think that would protect the correlative rights of the interested parties, including the royalty owners in the event there was a difference in royalty ownership

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between the two forties?

MR. BUELL: Would you read that question back?

I think I misunderstood it.

MR. CHRISTY: May I restate it. Do you believe that the adoption of that type of rule would protect the correlative rights of the interested parties in the two forty-acre tracts, in the event there was a difference in ownership of the royalty interest in the two forties?

MR. BUELL: May it please the Commission, I cannot visualize the different royalty interest in an eighty-acre standard proration unit.

MR. CHRISTY: You can have a man that owns a override on one forty, and a different owner of override on another forty, and put those two forties together to make your eighty. Would you like an example, sir?

A Yes.

Q (By Mr. Christy) Referring to your Exhibit 3, let us assume for the moment that we have a five percent override on this forty acres here known as the northwest northwest, Section 3. We have a twelve percent override on the southwest northwest, Section 3. Now if you drill one well on the eighty acres, and you have poor permeability and porosity in the north part of that eighty-acre tract, won't you be taking away the production -- excuse me, you have

poor porosity and permeability in the south part of the tract and your well is located there. Won't you be draining off the override royalty interest up here in the northwest northwest?

A I believe if that interest is confined to that northwest northwest, they wouldn't receive any income from the well on the southwest of the northwest, without some type of pooling agreement.

Q They would if it was eighty-acre proration, wouldn't they? If the well had the entire eighty acres committed to it?

MR. BUELL: Excuse me, Mr. Ford. May it please the Commission, I believe he is getting this engineering witness into the New Mexico Law of non-apportionment. I might submit to the Commission that if a condition such as Mr. Christy visualizes existed and a royalty interest owner thought that his correlative rights were being violated, he always has the Force Pooling Statute of New Mexico to protect his correlative rights, to make all the interest in this eighty-acre unit common.

MR. PORTER: I believe Mr. Christy is assuming that we have an eighty-acre unit, Mr. Buell.

MR. CHRISTY: If the witness does not feel qualified to answer, I will withdraw the question.

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MR. BUELL: Well, if he completely understands you, Mr. Christy, he is doing better than I am.

MR. CHRISTY: Let me continue with you on another question, please sir.

Q (By Mr. Christy) Do I understand you that you are contractually bound to drill a forty-acre well on the yellow acreage shown in Exhibit 3, or give back the acreage?

MR. BUELL: May it please the Commission, again that is a legal question. I have looked at the Contract, it is my opinion that Pan American is contractually bound to drill one well on each forty acres in those yellow eighty-acre tracts, or reassign the acreage, or the contract would have to be amended.

MR. CHRISTY: Then, do I understand you Mr. Buell, that notwithstanding your application for eighty-acre spacing, you are saying a portion of this field must continue to be developed on forties?

MR. BUELL: It will either have to be developed on forties, or the acreage reassigned or the contract amended, yes, sir.

MR. CHRISTY: Thank you very much, the witness and the other witness.

MR. PORTER: Any further questions, Mr. Christy?

MR. CHRISTY: No, sir.

MR. PORTER: Does anyone else have a question of this witness? You may be excused.

Mr. Buell, you say you only have the one witness?

MR. BUELL: Yes, sir, that is all.

MR. PORTER: This concludes the testimony for the applicant?

MR. BUELL: Yes, sir, it does.

MR. PORTER: Mr. Christy, do you have some testimony you would like to present?

MR. CHRISTY: Yes, sir, we do have one witness.

MR. PORTER: Would you have the witness stand and be sworn?

(Witness sworn)

HOWARD M. PERDUE
called as a witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CHRISTY:

Q For the record, would you please state your name, address, by whom you are employed and in what capacity?

A My name is Howard M. Perdue. I am employed by Union Texas Petroleum as District Petroleum Engineer in Midland, Texas.

Q Mr. Perdue, have you ever testified before this regulatory body and had your qualifications accepted?

A No, sir, I have not.

Q Would you very briefly state your background,

educational wise, and the degrees received in Petroleum Engineering, and your experience subsequent to graduation?

A I was graduated from the University of Oklahoma in 1951 with a Bachelor of Science Degree in Petroleum Engineering. Since that time, I have worked for Union Texas Petroleum in various capacities, and primarily in Louisiana and Texas and New Mexico.

MR. PORTER: Was that Anderson-Prichard Company prior to it becoming Union Texas?

A If I may elaborate just a little bit on that question, Union Texas Petroleum merged with Allied Chemical and later on purchased the Anderson-Prichard Company.

MR. PORTER: But you were working for Union Texas from the outset?

A Yes, I was.

Q (By Mr. Christy) Mr. Perdue, are you familiar with the Cato Field in Chaves County, New Mexico, and their wells and their producing history and characteristics?

A Yes, sir.

Q Have you made a study of that?

A Yes, I have.

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

MR. PORTER: Yes, they are.

Q (By Mr. Christy) Mr. Perdue, let me initially refer you to Exhibit 1 in the Direct presentation. There is a comparable map which I believe is their Exhibit 3, except Allied Exhibit 1 seems to have some additional data. Would you briefly tell us what the data depicted is on Allied's Exhibit 1?

A Well, in the Allied Exhibit 1, we have shown the Union Texas acreage colored yellow, with the farmed out acreage to Pan American in slashed green. We have also shown the current limits of the field and the one mile effective limits.

Q The current limits of the field shown in red would include the two hundred and sixty acre tracts which are the subject matter of an additional case here today, are they not?

A Yes, sir, that's true.

Q Then the dotted red marks show the one mile effective limits of any pool rules?

A Yes, sir, that's true.

MR. PORTER: Is the additional case that you referred to the regular nomenclature case?

MR. CHRISTY: Yes, sir, it is up for today. I believe at the moment, there is only a hundred and sixty acres in the pool and we propose to add another three hundred

and twenty.

Q (By Mr. Christy) And you also depicted on Allied's Exhibit 1 the twelve producing wells which were referred to by Mr. Ford?

A Yes.

Q All right, sir. The statement was made that Pan Am. had a dominant position in the Cato Field. As I understand you, the Allied acreage is shown in yellow?

A Yes, sir, that's true.

Q This would appear to me, I submit to the Commission also a very major interest in the Cato Field.

Let's return to Allied's Exhibit 2, and would you please state briefly what it is and make any comments that you feel are applicable to it.

A Allied's Exhibit No. 2 is a structure map, contoured on the top of the porosity interval in the P-1 Zone, or the top of the San Andres pay section.

Q Let's stop right there. You said the P-1 Zone, what do you mean by that?

A Mr. Ford referred to two major porosity intervals in his testimony. What I refer to as P-1 would be the uppermost of these two major porosity intervals.

Q I assume the lower one would be the P-2?

A Yes, sir.

Q All right, continue please.

A In general, I would say that Allied's Exhibit No. 2 compares with that submitted by Pan American; essentially, we have a monocline dipping to the southeast and we would -- from what we have seen, we would expect the trap to be stratigraphic in nature.

Q You agree with Mr. Ford's testimony concerning that?

A Yes, we would agree with Mr. Ford's testimony in that regard.

Q All right, sir, now it was mentioned that there was a farm out contract between Union Texas and Pan Am. and for the record, will you identify Exhibit 3, please, is that the farm out agreement?

A Exhibit 3 is the farm out agreement between Allied and actually, this particular instrument is between Whyte and Newberry and Allied, which was subsequently assigned to Pan American.

Q Did you hear Mr. Buell's statement with respect to the drilling obligations contained in that contract, and if so, do you concur in the interpretation?

A Yes, sir, I certainly do.

Q Now, Mr. Perdue, you have heard the Case in Chief presented by Pan Am., let me ask you at this time whether or

not you concur or do not concur that the Cato Field should now be developed on eighty-acre proration units?

A I do not concur.

Q Would you tell me why?

A The reason that I do not concur in that is that as a result of the studies we have made, we see no reason why it is not feasible to develop the field on forty-acre spacing, the economic feasibility appears to be good, and we see no reason to deviate from the normal spacing as set forth by the New Mexico Oil Conservation Commission.

Q Let's talk about these economics a minute; what does it cost to drill a well out there?

A We have estimated that the cost of a normal well would be approximately \$56,000.00.

Q Would you refer to Exhibit 4?

A Exhibit No. 4 is the estimate that was made for this example well, or what we could call the normal well in the Cato Field.

Q Now the figures in Exhibit 4, which total out to \$56,000.00, the figure you testified to, are those guesses, or are they actually all of A.F.E.'s or what?

A Most of the figures come from actual A.F.E.'s.

Q In the completed well, was there an assumption made that there was one tank battery per hundred and sixty

acres?

A Yes, sir, that is right.

Q In other words, you just took one-fourth of the tank battery in arriving at the \$56,000.00?

A In this example, we took one-fourth of the cost of the tank battery.

Q And does Exhibit 4 also divide the approximate cost of a dry hole out there?

A Yes, sir, it does.

Q What is that figure?

A That figure is approximately \$30,000.00.

Q Now actually, Mr. Perdue, can you drill a dry hole out there and be convinced it is a dry hole until you set pipe?

A In my opinion, no, I think that probably most any well that was drilled within this area, would probably have to have pipe set and tested before --

Q So your \$29,000.00 figure is very, very minimal?

A Yes, sir.

Q Now, what kind of pay thickness do we have out there in these twelve completed wells, have you made any calculation on those from logs, cores or any other data?

A Yes, sir, I have examined the logs of the twelve wells referred to by Mr. Ford, and analyzed them in regard to

the log data and the core data, and this study resulted in an indicated average net pay thickness of sixty-six feet.

Q Are those calculations depicted in Allied's Exhibit 5, at this hearing?

A Yes, sir.

Q Did you calculate those yourself?

A Yes, sir, I did.

Q From the log? You also calculated from the core, did you not?

A Yes, I did.

Q Did you use the same two cores Mr. Ford testified to?

A Yes, I did, the same two cores; the cores from Baskett No. 1 and Abko Federal No. 2.

Q All right, sir. Now, did you also make some calculation as to economics with respect to recoveries out in the Cato Field?

A Yes, sir, I did.

Q Would you refer to Exhibit 6, and tell me what economics you came up with?

A Exhibit No. 6 shows what we have estimated as the recoverable oil on a acre foot basis. This has been related to the average of sixty-six feet of pay and a forty-acre proration unit to arrive at a recoverable oil value of a

hundred and ten thousand, eight hundred and eighty barrels. The price of the oil is shown, less a trucking charge that is currently in effect out there in this particular Field. We have estimated the operating cost and from that we have come up with a net revenue per barrel of a dollar ninety-five cents. The working interest share of the oil recovery is shown as ninety-seven thousand barrels. The net income on this basis is indicated to be a hundred and eighty-nine thousand, one hundred and fifty dollars; with our well cost of fifty-six thousand dollars and sixteen cents, which is the accurate number from the well cost estimate, we show a profit of a hundred and thirty-three thousand, one hundred and thirty-four dollars for a forty-acre well. This would give a ratio of income to investment of 3.4 to 1. We have estimated the pay out period on the basis of an allowable of forty-seven barrels of oil per day, and it is indicated to be 1.9 years.

Q Do you consider that a reasonable rate of return, 3.4 to 1?

A Yes, I do.

Q Is Allied willing to continue its development program on a forty-acre basis out there in the Cato Field with an income investment ratio of 3.4 to 1?

A Yes, sir, Allied is willing to drill these wells on these basis.

Q Now, sir, you said the pay out figure was 1.9 years on a forty-acre basis. Do you have any estimate or opinion as to a pay out period if one well was drilled on eighty acres, would that pay out period be half, or what?

A The pay out period for -- we have done some work along that line; however, as was pointed out by Pan American's witness, we are early in the life of the field. The pay out period will probably be less than it would be for a forty-acre well, just how much less is something I can't answer at this time.

Q Now, referring you to Pan American's Exhibit 8, they mentioned the permeability of 8.3 millidarcies from core in the Cato Field. Do you feel that that figure is accurate from your study?

A If you average the permeabilities, as indicated by the core, I think that would be very close to what I come up with. The thing, I think, that needs to be noted and we do not have the core analysis as an exhibit at this time, but there is some sections that show high permeability compared to other sections, so this is not an even distribution of permeability over the entire section.

Q It is not homogeneous?

A No, sir, it is not homogeneous.

Q Now, as we go to the edges of the pool, wherever

it may be, do we not, with our changes in permeability and porosity in wells coming out to the edge of the pools, encounter some additional risk of dry holes?

A Yes, sir, I would say we would.

Q What is the effect, if you drill on eighty acres versus drilling on forty acres on risking dry holes?

A Well, it boils down to the fact that you are moving further from a known point of what you have in regard to reservoirs, when you move from forty acres to eighty acres, you move further away. I think it would stand to reason that you stand a higher risk of encountering poor development or no development.

Q And eating up your profits?

A Yes. If you drill a dry hole, you certainly eat up your profits.

Q Do you have anything else you would like to mention to the Commission?

A I would only like to say that as a result of our study, the economic feasibility appears to be such that Allied would like to develop the field on forty-acre spacing and we see no reason to deviate from the normal.

Q Were Exhibits 1, 2, 4, 5 and 6 prepared by you or under your direct supervision?

A Yes, sir, they were.

MR. CHRISTY: At this time, I offer in evidence Exhibits 1 through 6, inclusive, Allied's Exhibit 3 is the contract.

MR. PORTER: If there are no objections, the Exhibits will be admitted.

MR. CHRISTY: That's all I have of this witness.

MR. PORTER: Mr. Perdue, I assume that you feel that two wells on an eighty will drain more oil and recover more oil from the reservoir than one well?

A That would be my opinion, yes, sir.

MR. PORTER: In a reasonable period of time?

A Yes, sir, that's true.

MR. PORTER: At this point, would you want to indicate any kind of percentage figure as to how much more?

A No, sir, I feel at this point that I don't know how much more.

GOVERNOR CAMPBELL: How do you know any more?

A Governor, I don't know. Mr. Porter specified something that I think is very pertinent to that question, and that is the time interval. I certainly feel that it would take longer for one well on an eighty-acre tract to drain the recoverable oil, whatever it might be, from that tract than it would for two forties to drain whatever oil that might drain.

MR. PORTER: Mr. Buell, do you have any questions?

MR. BUELL: May it please the Commission, I have one or two questions, if it is my turn.

CROSS EXAMINATION

BY MR. BUELL:

Q Mr. Perdue, as I understand your testimony, your opposition to our proposed rules is the fact that you think that an operator can economically drill down to a forty-acre density, is that correct?

A Yes, sir, that's true.

Q And you base your economic conclusion on your study of the reserves and the economics as primarily reflected, I believe, by your Exhibits 5 and 6?

A Yes, sir; in addition to that, of course, we were conscious of the fact of what has been recovered from similar fields.

Q Yes, sir, but we are here today, and your economics are based on Cato, are they not? You are not basing them on Flying "M" or South Prairie?

A That's right.

Q All right, sir, in your Exhibit 6, how did you arrive at your recoverable oil, how did you ascertain your reserves, what method did you use?

A This was on a volumetric basis.

Q Is that the same thing as pore volume calculations?

A Yes, sir.

Q Let me ask you this. Has it been your experience that pore volume calculations of reserves made early in the life of a pool are often inaccurate?

A I will say that the more oil that is produced from a given reservoir or field -- the more nearly you are depleted, the more accurate your reserves figures are.

Q Well, to borrow a ploy of Mr. Christy's, you answered my question, yes, did you not?

A I would say that the reserve figures, after a considerable history, after you are able to observe some considerable history would be better, yes, sir.

Q All right, sir, and naturally, your economic calculations are tied very sensitively to your reserve calculations, are they not?

A Yes, sir.

Q And if your pore volume reserves are on the high side, the economics are not going to be as good as presented by your Exhibit 6?

A Yes, sir, very true.

Q Just as sure as night follows day, that would be the case, wouldn't it?

A I did not understand your question.

Q Just as sure as night follows day, that would be the effect, if your reserves were high and they prove out to be lower, the economics are going to be much poorer than shown on your Exhibit 6.

A Mr. Buell, we said inaccurate. I think that we should not always -- when we said inaccurate, mean that they are always high. I agreed to your suggestion that they could be inaccurate, but I am not agreeing to your suggestion that to be inaccurate, they have to be high.

Q How many reservoirs have you studied, Mr. Perdue, where you made a pore volume calculation of reserve early in the life of the pool and later on modified those pore volume calculations based on production history?

A I wouldn't be able to set a specific number, several.

Q Quite a few?

A Yes, sir.

Q Recall, if you can, what percent of the time would you say that your pore volume were on the high side, as later evidence showed.

A I wouldn't -- as you might know, I don't have any statistics.

Q Would you rather not answer, I realize that may not be a fair question to you, to ask you to recall that from

memory?

A I would say that, though, in regard to your question that I have revised reserves upward as well as downward in my experience.

Q All right, sir, let me ask you this; now, going back to Exhibit 6, I believe you based your economics on sixty-six feet of net pay, is that correct?

A Yes.

Q Now you realize, of course, that that is the average of the wells for which you made net pay calculations as shown on your Exhibit 5?

A Yes, sir.

Q And since this is an average, naturally some of the wells have net pay lower than sixty-six, as well as higher?

A Yes, sir, I believe that is indicated on the Exhibit.

Q What is your range of net pay as reflected by Exhibit 5?

A The range of net pay, I believe, would be from forty-five to eighty-three feet.

Q All right, sir, that well that has the forty-five feet of net pay, according to your calculations, Exhibit 6 would not reflect the economics on that well, would it?

A No, sir.

Q Because Exhibit 6 relates to the well where you picked sixty-six feet of pay?

A Yes, sir.

Q All right, sir. Mr. Perdue, since your reasons for objecting to our pool rules are based on the fact that you feel that Union Texas can economically develop down to forty, let me ask you this. Do you realize, under the Rules we propose, that if your Company were so inclined, you could do that?

A We are aware of that, yes, sir.

MR. BUELL: That's all I have.

MR. PORTER: Any further questions of the witness? Mr. Nutter?

MR. NUTTER: Mr. Perdue, as far as determining reserves early in the life of the pool, is there any other method which is more reliable than a pore volume calculation?

A In arriving at a reserve for this pool, we studied the indicated recoveries from other similar pools and I would say that there probably two ways early in the life of a pool to determine reserves. One is by a pore volume calculation, the other would be by analogy with similar pools.

MR. NUTTER: You cannot use a material balance at this stage?

A No, sir, I wouldn't think so. It would be my opinion that you couldn't.

MR. NUTTER: You cannot use a production decline curve, can you?

A No, sir.

MR. NUTTER: So all you have left is the pore volume?

A Or the analogy with similar pools. We studied both, I might say, Mr. Nutter.

MR. NUTTER: Now, the testimony earlier indicated that those pools which are outlined in red on Pan American's Exhibit on the wall up there were developed or have pool rules providing for eighty-acre spacing. Are you acquainted with the circumstances and the testimony which was offered at the eighty-acre spacing hearings for those reservoirs?

A No, sir, I am not familiar with it.

MR. NUTTER: You are not acquainted, then, with the fact that the main appeal for eighty-acre spacing in those pools was that the economics was so poor that one well on forty acres just would not pay out?

A I wasn't aware of that, no, sir.

MR. NUTTER: Now, Mr. Buell, in his examination of Mr. Ford, employed a rather antiquated cliché in stating that you cannot drill wells that have been drilled, but he

also said you can go back in at any time and drill on forties if the need is indicated. Now, assuming that your reserve figures are correct and you've got approximately a hundred and eleven thousand barrels of recoverable oil per forty-acre tract, that would indicate that two wells on two forties would recover two hundred and twenty-two thousand barrels of oil, is that correct?

A I can't testify to that fact.

MR. NUTTER: I said assuming that your hundred and eleven thousand is recoverable --

A Two wells on two forties, excuse me, yes, sir, excuse me, I misunderstood your question.

MR. NUTTER: All right, assuming then that you went in and drilled on eighty-acre spacing and one well recovered the one hundred and eleven thousand barrels from that forty, but it only recovered eighty-nine thousand barrels from the other forty, then there would be a remaining twenty-two thousand barrels in the forty which has not been drilled. Would it be economic to go in and drill that other forty when you have got twenty-two thousand barrels of oil left over there?

A I wouldn't think so, no, sir.

MR. NUTTER: Thank you.

MR. PORTER: Any further questions of the witness?

The witness may be excused.

If there is no further testimony to be presented in the case, we will entertain statements at this time.

MR. WILLIAMS: My name is R. Ken Williams, President of M. W. J. Producing Company in Midland.

M. W. J. is the operating agent for the owners of the State Oil and Gas Lease in Section 2, Township 8 which joins Section 11 on the north, Section 11 being the location of the discovery well, and as owner of that lease, we are, of course, vitally interested in the procedure going on here today. We are opposed to any rigid eighty-acre pro-ration unit, in a field that apparently has the characteristics that have been presented here. However, as I understand the proposed rules, that Pan American has presented, an operator at his own choice and election, would be permitted to develop the acreage on a normal forty-acre density, subject to the limitations of the footage in Rule 4, I believe. And if my understanding of this is true, then we would support Pan American in their proposal, and would request the adoption of approval of the Rules.

MR. PORTER: Mr. Buell, did your witness recommend any Pool Rules rigid location for the first well drilled on an eighty?

MR. BUELL: No, sir, these Pool Rules are flexible. It could be located on either quarter quarter.

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MR. PORTER: And the dedication of the acreage

is also flexible to either half, either one of the four halves?

MR. BUELL: Yes, sir, these are what I would term flexible eighty-acre Pool Rules.

GOVERNOR CAMPBELL: You would not call it an

eighty-acre pattern, would you?

MR. BUELL: No, sir, if you had a geometrically spaced pool on an eighty-acre pattern, it would be what we term, perhaps, loosely rigid eighty-acre spacing, as opposed to the flexible where you can locate the well in either quarter quarter.

The Commission might observe, though, on the Exhibits that are on the wall, that some of the wells have been spaced under what we term rigid eighty-acre spacing even though we are under Statewide forty-acre development.

MR. PORTER: Does anyone else have a statement or position they would like to state?

MR. CHRISTY: May I make one final statement, please, sir? I have heard several comments here today that under the proposed Rules, you can still drill on forties if you want to. I think that is pretty well standardized, as any eighty-acre rule. The point is that is not the question. The question is: Should we make an exception to our Statewide Rules; we have Statewide Rules on forties. Now the question

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is whether or not it is necessary in order to gain development, to protect the correlative rights, and to avoid the necessity of drilling unnecessary wells, do we need to develop on eighties? Now, the testimony here today that we have presented and the statements we have made, we are willing to continue on Statewide Rules. The proof has to be the necessity for the exception, not the fact that we may develop on forties, and they may develop on eighties; that is not the issue. We think that the normal Statewide Rules will make money 3.4 to 1. We feel that that is a reasonable, fair return of investment to oil operators. We think there is danger if you permit eighty-acre drilling of too far step-outs here which will cause premature abandonment because the dry holes will eat up the profits and the operators will quit developing. We do not think that the evidence here today justifies an exception to the normal Statewide Rule, and that is the requirement in this case, not that we can develop on forties, but that it is necessary for an exception to develop on eighties, so we do not think that the case has been made.

MR. EHEONBURG; I am Eugene Eheonburg, President of Capitan, Inc., and we have some acreage approximately one mile west from the present development in the field in the marginal area and we would like to support the flexible pattern that Pan American has requested.

MR. PORTER: Does anyone else desire to make a statement in the case?

MR. BUELL: May I inquire if there are any expressions from any interest owners in the area in the Commission's file?

MR. HATCH: I have some letters.

MR. PORTER: Would you refer to the correspondence at this time?

GOVERNOR CAMPBELL: Did you suspect that, Mr. Buell?

MR. BUELL: Yes, sir, we received copies.

MR. HATCH: A letter from Mobile Oil Corporation dated October 17, 1966: "This is to advise you that Mobile Oil Corporation supports Pan American Oil Corporation's application for special Pool Rules for the Cato-San Andres Pool, and request adoption of the Rules proposed by Pan American". A telegram from Cities Service Oil Company, dated October 18, 1966: "This is to advise that Cities Service Oil Company concurs in Pan American Petroleum Corporation's application for the adoption of special Field Rules which includes eighty-acre proration units for the Cato-San Andres Pool in Chaves County, New Mexico."

A telegram from Sun Oil Company, dated October 14, 1966: "Re: Case No. 3477, Pan American's proposed Rules for Cato-San Andres Pool, including eighty-acre spacing. Sun

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Oil Company, as a lease owner in the area of the referenced pools, urges adoption of special Rules and Regulations proposed by Pan American. The adoption of these Rules would enhance the possibilities of Sun developing these properties at an early date."

A letter from Sinclair Oil and Gas Company, dated October 14, 1966: "Sinclair Oil and Gas Company has substantial lease holdings within the probable field limits of the Cato-San Andres Pool, Chaves County, New Mexico. Sinclair wishes to join in the application of Pan American Petroleum Corporation scheduled for hearing Wednesday, October the 19th, 1966, case No. 3477, in their request for flexible eighty-acre proration units for this pool. It is our understanding that Pan American will propose that the eighty-acres run either east-west or north-south, at the election of the operators, that the first well may be located in either end of said unit."

That's all of the communication.

MR. BUELL: May it please the Commission, very briefly, at the outset, I would like for the Commission to clearly understand two things: One, as Union Texas Exhibit 3 shows, Pan American did not negotiate the original farm out with Union Texas. We subsequently acquired the contract after it was made. And two, that I believe the record is

clear that Pan American in no way is trying to interpose this Commission between Pan American and Union Texas with regard to this farm out contract. That's why I wanted to state at the outset that we recognize our contractual obligation and unless that contract is amended, that farm out acreage will have to be drilled to a density of forty acres or reassigned.

It is always difficult at a hearing for temporary pool rules, when you are opposed, because it is easy for the opposition to say you did not prove that one well will drain eighty acres.

We admitted at the outset that we had no drainage data. A pool only four months old, it is just impossible to have drainage data. I will submit to the Commission that Pan American is not capable at this time, based on data that we have to date, of satisfying itself that this field can be developed to forty acres on an economic basis.

It is for that reason that we ask for only a temporary period of a year on an eighty-acre pattern so that data can be accumulated which will show to the operators and to this Commission the proper final pattern for the development of this San Andres Pool. All we are asking for is time; we made our Rules as flexible as possible so that those operators that are convinced at this time on this meager data that they can economically drill to forty, and if they wanted to, would be able to.

That is our reason that we made the rules just as flexible as the

rules can be. Pan American urges that we be given this time to see if we can acquire sufficient data to properly determine the development pattern for this San Andres Pool.

GOVERNOR CAMPBELL: Mr. Buell, and Mr. Christy, I am not sure I understand the position of your clients with regard to this contract. Do I understand that you consider that an Order of this Commission establishing an eighty-acre basis for drilling does not amend this contract?

MR. BUELL: No, sir, it does not, not in my opinion.

MR. CHRISTY: Not in my opinion, either.

GOVERNOR CAMPBELL: Are you saying that the parties can contract in a way to overrule the decision of this Commission on prevention of waste?

MR. BUELL: No, sir.

GOVERNOR CAMPBELL: Well, that is what you are saying.

MR. BUELL: No, sir, if you will let me go a little further, Governor, I believe this Commission could adopt an Order, a Pool Rule Order that would amend this contract, but if the Commission adopts the Order that we have recommended, it will not amend this contract. This Commission, with it's police power --

GOVERNOR CAMPBELL: Just cut down your allowable?

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MR. BUELL: You have the overriding authority --

GOVERNOR CAMPBELL: Authority to drill two wells?

MR. BUELL: Yes, sir, you have the overriding authority under your waste prevention Statutes to amend any contract that any private party --

GOVERNOR CAMPBELL: If we were to fix a fixed pattern, and not permit the drilling of both wells, then it would have the effect of amending the contract?

MR. BUELL: It would.

GOVERNOR CAMPBELL: You are not saying that this Commission has not the authority?

MR. BUELL: No, sir, I would never say that, because you amend private contracts every day by your Orders, and you cannot give too much consideration to the fact that you do it.

MR. CHRISTY: I think Mr. Buell's point is that the proposed Rules would permit the forty acres which is actually the contractual part. Is that correct, Mr. Buell?

MR. BUELL: Yes, sir.

MR. CHRISTY: I would like to have a copy of this transcript, please.

MR. PORTER: Anyone else have anything to offer in this case? Off the record.

(Whereupon an off the record

discussion was held)

MR. PORTER: Back on the record. If there is nothing further to be offered in the case, the Commission will take it under advisement.

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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, W. DON MC INTYRE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner a Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, I have affixed my hand this 4th day of November, 1966.

W. Don Mc Intyre
Court Reporter

PROPOSED
SPECIAL RULES AND REGULATIONS
FOR THE
CATO - SAN ANDRES POOL

RULE 1. Each well completed or recompleted in the Cato-San Andres Pool or in the San Andres formation within one mile thereof, and not nearer to or within the limits of another designated San Andres 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 2.00 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 of the non-standard unit bears to 80 acres.

BEFORE THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
<i>Pao An's</i>	FILED No. <i>1</i>
No. <i>3477</i>	

Pertinent Well Completion Data
Cato-San Andres Pool, Chaves County, New Mexico

Operator, Lease	Well No.	Completion Date	Initial Daily Potential	Elevation RDB, Ft.	Total Depth, Ft.	PBD, Ft.	Completion Interval	Stimulation	Pres. Allow. BOPCD
Pan American Petroleum Corporation Abko Federal	1	7-27-66	S 263 B0 + 74 BW GOR NA	4118	3700	3470	Pf3344-66, 3400-44	A/7000 Gal	47
	2	7-31-66	F 350 B0 + 10 BW GOR 840	4091	3548	3510	Pf3300-07, 3317-25, 3327-36, 3372-80, 3385- 89, 3395-3402, 3408-14 Pf3496-3536	A/2000 Gal	47
	1	6-19-66	F 322 B0 + 3 BW GOR 500	4143	3561	3536		A/2000 Gal	47
D. C. Baskett	1	8-13-66	F 318 B0 + 0 BW GOR 625	4149	3562	3539	Pf3413-20, 3426-34, 3436-45, 3484-92, 3495- 98, 3500-05, 3507-12, 3519-25	A/2000 Gal	47
Baskett 'B'									
Baskett 'C'	1	9-7-66	S 181 B0 + 26 BW GOR 554	4100	3515	3487	Pf3378-80, 3399-3402, 3404-14, 3442-57, 3475- 80	A/2000 Gal	47
Baskett 'D'	1	9-18-66	F 360 B0 + 0 BW GOR 670	4166	3605	3582	Pf3456-68, 3478-80, 3483-97, 3534-48, 3552- 60, 3567-69, 3573-75	A/2000 Gal	47
Thelma Crosby	1	8-11-66	S 103 B0 + 0 BW GOR NA	4120	3682	3635	Pf3254-80	A/2000 Gal	47
Crosby 'B'	1	10-9-66	F 264 B0 + 0 BW GOR 475	4104	3460	3437	Pf3315-23, 3342-54, 3381-97, 3408-32	A/2000 Gal	47
Queen	1	9-3-66	S 144 B0 + 0 BW GOR 540	4077	3420	3396	Pf3263-65, 3273-86, 3289-94, 3329-49, 3351- 61, 3368-71	F/30,000 Gal A/2000 Gal F/30,000 Gal	47
Union Texas Petroleum Corporation	1	8-31-66	F 104 B0 + 2 BW	4155	3700	NA	3469-97, 3526-48	A/2000 Gal	47
	2	9-12-66	F 264 B0 + 1 BW	4138	3618	NA	Pf3379-3413 3440-65	A/12,000 Gal	47
	1	8-15-66	F 125 B0 + 4 BW	4131	3620	3575	Pf3386-3426, 3456-79	A/2000 Gal	47
J. E. Cato									

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Pan Am's Exhibit No. *3477*
Case No. *3477*

PERTINENT DATA SHEET
CATO-SAN ANDRES POOL
CHAVES COUNTY, NEW MEXICO

General

Date Discovered	June 19, 1966
Discovery Well	Pan American's D. C. Baskett Well No. 1
Formation	San Andres
Structure	Regional Monocline
Primary Producing Mechanism	Probably Solution Gas Drive
Type Accumulation	Stratigraphic Trap
Average depth, feet	3500
Wells in Field, 10-14-66	
Producing	12
Drilling or Completing	6
Original Reservoir Pressure	1116 psi
(In discovery well @ +700' datum after 41 Hrs. shutin)	

Formation Data

Type Pay	Fractured Dolomite
Gross Thickness, feet	1200'
Average Net Pay, feet	44'
Average Porosity	8.3% (Cores)
Average Permeability	8.3 md (Cores)
	23.0 md (BHP Buildup)
Water Saturation	28%
Reservoir Temperature	102°F
Original Water-Oil Contact	Not defined

Total Field Production Data

<u>Month</u>	<u>Oil BOPM</u>	<u>Cum. Oil, Bbls.</u>	<u>Water BWPM</u>	<u>Gas MCF/Mo</u>
June, 1966	704	704	0	356
July	2,404	3,108	381	1,141
August	9,344	12,452	1,620	5,030*
September (Est)	16,373	28,825	722	4,463*

*does not include Union Texas

<p>BEFORE THE</p> <p>OIL CONSERVATION COMMISSION</p> <p style="text-align: center;">Santa Fe, New Mexico</p>	
<i>Pan Am's</i> Exhibit No. <u>7</u>	
Case No. <u>3477</u>	

COMPARISON - RESERVOIR ROCK PROPERTIES
CATO-SAN ANDRES OIL POOL WITH THREE OTHER
POOLS IN SOUTHEAST NEW MEXICO THAT NOW
HAVE POOL RULES PROVIDING FOR 80-ACRE OIL UNITS

SOUTH PRAIRIE-SAN ANDRES

TODD-SAN ANDRES

FLYING 'M'-SAN ANDRES

CATO-SAN ANDRES

POOL

5%

6.5% (Log)

11%

8.3%

POROSITY

6.8 Md. (Core)

0.9 Md. (Core)
 4.7 Md. (BHP Buildup)

7.5 Md. (Core)

8.3 Md. (Core)
 23.0 Md. (BHP Buildup)

PERMEABILITY

BEFORE THE
 OIL CONSERVATION COMMISSION
 Santa Fe, New Mexico
 Paw Huis Exhibit No. 8
 Case No. 3477

UNION TEXAS PETROLEUM

A DIVISION OF ALLIED CHEMICAL CORPORATION

FO-1

511 RUSK AVENUE

P. O. BOX 2120

HOUSTON 1, TEXAS

CAPITOL 5-0111

April 12, 1966

Mr. J. Don Wiet &
Mr. W. B. Newberry
P. O. Box 944
Midland, Texas

Re: Farmout Agreement
Lightcap Area
Chaves County, New Mexico

We, the undersigned, hereinafter sometimes referred to in the singular as "Owner" whether one or more, are the owners of the oil, gas and mineral leases or leases (which are referred to in the plural herein whether one or more) described in Exhibit "A" attached hereto and made a part hereof for all purposes, to the extent described on said Exhibit "A" (the same being hereinafter sometimes described as "Lease Premises") and in consideration of the premises and the mutual covenants and agreements to be kept and performed by the parties hereto it is hereby agreed by said parties as follows:

I.

TEST WELL

BEFORE THE OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Allied Exhibit No. 3

Case No. 3477

At your sole cost and risk you agree to commence or cause to be commenced on or before forty-five (45) days from the date of this Agreement, actual drilling of a test well in search of oil and/or gas at the following location, to-wit:

NW/4 SW/4 Section 11, T-8-S, R-30-E, Chaves County, New Mexico.

Said actual drilling once commenced shall be continuously prosecuted with due diligence and in a prudent manner to a depth sufficient in our judgment to fully test the San Andres formation expected to be encountered at a depth of approximately 4,000 feet.

The drilling of said well shall be completed not later than July 15, 1966.

II.

EARNING

Upon completion of said well to the depth and in the manner provided herein as a well producing oil and/or gas (and provided that any completion attempt made on said well is made at your sole cost and risk) or upon abandonment of such well as a dry hole and upon your strict compliance with each and all of the terms hereof, including testing to the satisfaction of Owner, upon written request made by you within thirty (30) days after completion, Owner agrees to assign to you without covenants of warranty of title, either express or implied, and subject to the reservations hereinafter contained, all of its right, title and interest in and to the oil, gas and mineral leases described in Exhibit "A" attached hereto, INsofar AND ONLY INsofar as same cover and apply to the land described on said Exhibit "A". *

~~If Owner shall become obligated to assign any part of the Lease Premises to you under the terms hereof, it is hereby agreed that said assignment shall reserve unto Owner in addition to all valid and existing royalties and overriding royalties or other payments out of production, an~~

~~overriding royalty of _____ of _____ of all oil, gas or other minerals produced under said leases and all extensions or renewals thereof from the land covered thereby to the extent said leases are assigned to you. Said overriding royalty interest so reserved is to be delivered to the credit of Owner into the pipeline or lines or tanks with which the well or wells on said assigned Lease Premises may be connected free and clear of all costs and expenses except taxes on production, and the same shall be calculated and paid in the same manner and on the same substances as that prescribed for the landowners'~~

Acreage described in Exhibit "A" is placed in two blocks, being Block I and Block II. The test described under numbered paragraph 1 above will earn rights to 100' below depth drilled in Block I. You then will have 120 days after completion of said well to commence the drilling of a similar test well at a location satisfactory to Union Texas Petroleum on Block II. You will select eight 80 acre tracts in a regular checkerboard pattern from the acreage described in Block II prior to commencement of said well, with the 80 acre tracts running in a north-south direction.

Should the test well on Block II be timely commenced and completed as provided herein, then Blocks I and II shall become one block and thereafter a continuous development program must be maintained with an interval not to exceed 120 days

between the completion of one well and the commencement of the next well, or all non-producing 40 acre tracts re-assigned to Union Texas Petroleum.

In event a test well is not drilled on Block II, then all rights to the acreage in said block will terminate and a continuous development program on Block I must be commenced within said 120 days and continued thereafter with no more than 120 days between the completion of one well and the commencement of the next well, or all non-producing 40 acre tracts re-assigned to Union Texas Petroleum.

~~royalty on the leases described on Exhibit "A" attached hereto except that Owner shall have the right at any time and from time to time to take its share of production in kind.~~

~~It is expressly agreed that Owner shall be entitled to and shall receive said overriding royalty on all corrections, renewals or extensions of the leases listed on Exhibit "A" insofar as same are made subject to this Agreement.~~

Owner shall not be liable for any part of the cost of drilling and testing the test well herein provided, but after said test well has been drilled to the depth provided for in Part I hereof and final electric log has been run free of cost and liability to Owner, you shall notify Owner if you do not elect to attempt to complete the well as a producer of oil and/or gas.

If you shall elect not to attempt completion as above set out, Owner shall have the right to take over said well and attempt to complete the same at its sole cost, risk and expense by notifying you in writing of its election to do so within forty-eight (48) hours after receiving the notice above provided for.

If Owner shall take over said well as provided in the foregoing paragraph and its completion attempt does not result in a well capable of producing oil and/or gas, Owner shall plug and abandon said well at its sole cost and risk. If such completion attempt results in a well capable of producing oil and/or gas, then notwithstanding any provision herein to the contrary, Owner shall own said well and shall not be obligated to assign you any interest in the Lease Premises and your rights hereunder shall terminate; provided, however, Owner shall pay to you upon completion of said well the reasonable value of any salvable materials or equipment in or on said well at the time Owner takes over said well.

III.

TESTING

No electrical or other survey, coring or testing shall be performed without notice first having been given to Owner in sufficient time to permit representatives of Owner to be present to witness same. You agree to make a good faith effort to take such cores or make such tests or surveys to the satisfaction of Owner as Owner shall, through its representative or otherwise, reasonably request.

IV.

ASSUMPTION OF LEASE OBLIGATIONS

You assume (and any assignment delivered by Owner to you hereunder shall specifically so provided) all obligations of Lessee, express or implied, under the provisions of the leases to be assigned by Owner to you hereunder insofar as said obligations relate to the interest covered by such assignments, and you further agree to indemnify and hold Owner harmless from any and all claims and demands of all persons which have as their basis the breach of Lessee's obligations under said leases insofar as they relate to the interest covered by such assignments. You agree at your expense to effect settlement with surface owners for surface damage, if any.

V.

LIABILITY FOR COSTS

Unless otherwise provided herein and except as otherwise provided herein, Owner will not be liable for any part of the cost of drilling, testing, completing or if the well should not be capable of producing oil or gas in pay quantities, plugging and abandoning said well according to the laws of the jurisdiction within which the well is located.

VI.

CURATIVE WORK

Owner shall not be obligated to perform any curative work with respect to titles involved in the Lease Premises or furnish any abstracts or other material other than such contract or title papers as Owner now has in its possession; however, any curative work accomplished by you shall inure to the benefit of Owner.

VII.

INFORMATION TO OWNER

Our representatives shall have free and convenient access to the derrick floor at all times for the purpose of witnessing the progress of the drilling of said test well and our office (or offices if more than one Owner) at the address listed below shall each be furnished with the following information, notices and items: (a) daily drilling reports on the progress of said test well; (b) any surveys of the hole however made; (c) samples of fluid recovered on drill stem and production tests; (d) samples of all cores taken and cuttings of formations drilled in said test well, such cuttings to be furnished at least twice each week in receptacles supplied by us properly labeled, and core samples to be furnished or made available to our representative immediately after the same have been taken; (e) notice of your intention to drill any known producing horizon in sufficient time for us to arrange to have a representative present to witness the drilling of same; (f) notice of the completion of said test well in sufficient time for us to arrange to have our representative present to witness the measurement of the depth; (g) upon completion of said well you will forthwith provide our designated office or offices with two (2) certified copies of the log thereof, drilling time log on such parts of the hole as may be designated by us and two (2) copies of an electrical well log survey from the bottom of the surface casing to total depth, unless waived by us. You will also furnish two

(2) copies of an induction log, sonic or microlog and any other logs run.....
The data required to be furnished by you with regard to the test well shall also be furnished to Owner in connection with all subsequent wells which you may drill on the assigned Lease Premises.

In the event that you should unexpectedly encounter showings of oil or gas, you agree to notify our office listed below or our representative forthwith and to suspend further drilling of said well until we have had an opportunity to investigate such showings, unless waived by us.

All of the records, reports, notices, logs, cuttings and other information specified above shall be furnished to the following at the address or telephone number shown:

NAME:	John E. Scherer	NAME:	
ADDRESS:	1300 Wilco Building Midland, Texas	ADDRESS:	
OFFICE PHONE:	MU-2-0515	OFFICE PHONE:	
HOME PHONE:	MU-2-0929	HOME PHONE:	

VIII.

INDEMNITY TO OWNER

All operations which may be conducted by you hereunder, whether drilling or otherwise, shall be conducted at your risk and cost and Owner shall not be subject to any obligation or liability whatsoever in connection therewith except as otherwise specifically provided herein. You agree to indemnify and save Owner free, clear and harmless from any claim, demand or lien asserted by any person or persons therefor, and to promptly pay all bills for labor and other items as they occur. You agree to furnish to Owner certificates of your insurance coverage and you agree to acquire such additional coverage as Owner may request prior to commencement of operations. Nothing herein shall be construed to create a partnership, a joint venture, an association, a trust, mining partnership or other entity, nor to constitute you the Agent of Owner.

IX.

SURRENDER OF LEASES

Any assignment made to you under the terms of this Agreement shall provide that in the event you should elect to surrender, let expire, abandon or release (by failure to pay rentals or otherwise) all or any of your rights in said lease Premises, or any part thereof, you shall notify Owner not less than ninety (90) days in advance of such surrender, expiration, abandonment or release and, if requested so to do by Owner, you immediately shall reassign such rights in said lease acreage or such part thereof to Owner. If production from any lease covered hereby ceases at any time during the primary term thereof, and you or any assignee of yours is then operating such lease, you promptly shall notify Owner thereof in writing.

X.

BREACH OF CONDITIONS

Time is expressly made of the essence of this Agreement and the breach of any of the terms and conditions of this Agreement by you without first obtaining consent in writing from Owner shall, at Owner's option, terminate this Agreement and thereupon liability and obligations of Owner hereunder shall cease.

XI.

APPLICATION OF LAWS

This Agreement is subject to all valid, applicable Federal, State and Local laws, rules, orders and regulations of any duly constituted Federal, State or Local regulatory body or authority having jurisdiction thereof, and all development and operations hereunder shall be conducted in conformity therewith.

XII.

PAYMENT OF RENTALS

Any additional delay rentals which may become due subsequent to the date of this Agreement and prior to the date of our assignment will be paid by us for your account insofar as they apply to the interest to be earned by you. It is understood, however, that if we fail to make proper payment of such rentals through mistake or oversight, we shall incur no liability for such failure.

XIII.

ASSIGNMENT

It is expressly understood that the terms of this Agreement shall be binding upon the parties hereto, their heirs, successors and assigns provided, however, that this Agreement shall not be assigned by you without first obtaining Owner's written consent thereto, except to Pan American Petroleum Corporation.

XIV.

OPTIONS

Any assignment delivered to you hereunder shall grant to Owner the following rights and options:

(1) The option at any time and from time to time by not less than thirty (30) days advance written notice to purchase all or any part of the oil (which term as herein used shall include distillate, condensate and other liquid hydrocarbons as well as crude oil) produced and saved from the Lease Premises under the division order terms prevailing in the field at the time of purchase.

The price payable for the oil contained in a delivery thereof shall not be less than the posted well price generally prevailing at the time of delivery for oil of like grade and gravity produced in the same pricing area to be determined in accordance with the pricing practices followed from time to time by the principal purchasers of crude oil posting well prices therefor; when varying well prices are posted, the well price posted and being paid for the largest quantity of oil produced in such pricing area shall be considered the prevailing posted well price.

(2) The option to purchase gas produced and saved from the lease at the price and under the terms prevailing in the area at the time of purchase.

In the event you receive a bonafide offer for the purchase of your gas from a purchaser other than Owner, which you are willing to accept, you shall notify us in writing of such offer, furnishing us with the terms thereof, and we shall have the right within thirty (30) days of the receipt of such notice and information to elect to purchase your gas, but if we do not exercise said right of purchase within said thirty (30) day period, you may, at your option, within ninety (90) days thereafter, enter into a contract to sell your gas to such purchaser in accordance with said bonafide offer, free and clear of any obligation to us. If, however, you do not enter into such contract with such purchaser (or if, for any reason, you do not make or discontinue making a sale of gas pursuant to such contract), then our right to purchase and your obligation to sell gas to us hereunder shall be reinstated subject to the terms and conditions set forth above.

(3) The preferential right and option to extract from all natural gas and casinghead gas produced from the lease all liquefiable hydrocarbons exclusive of those removed from gas produced therefrom by ordinary field separators and low temperature well or field units.

All residue gas remaining after such extraction by Owner shall be owned by the lease-owners in accordance with their respective interests in said lease. Upon Owner's election to exercise such option, it shall deliver to you for execution a contract providing for such extraction and for delivery to you (or payment of the market value thereof) of such a reasonable percentage of such products as is customary in the area in similar arrangements by Owner and other producers covering gas of a similar liquefiable content of hydrocarbons.

XV.

ACCEPTANCE

This Agreement shall not be binding upon the undersigned Owner until you have noted your acceptance of the terms and conditions herein by executing this Agreement in the space provided and returning a fully executed copy to Owner within twenty (20) days from May 4, 19 66.

Yours very truly,

UNION TEXAS PETROLEUM, A Division
of Allied Chemical Corporation

By [Signature]
ATTORNEY-IN-FACT

ACCEPTED AND AGREED TO THIS
16th DAY OF May, 1966.

EXHIBIT "A"

BLOCK I

Union Texas Petroleum Lease No. NM-12103-A-J

Section 3: E/2 SE/4, W/2 NE/4
and W/2 NW/4
Section 9: W/2 NW/4, E/2 SW/4

Union Texas Petroleum Lease No. NM-12105

Section 9: W/2 NE/4

Union Texas Petroleum Lease No. NM-12108

Section 11: W/2 SW/4 and E/2 NW/4

All in T-8-S, R-30-E, Chaves County, New Mexico

BLOCK II

Eight 80 acre tracts running in a north-south direction can be selected within 120 days after completion of well described in numbered Paragraph I of Letter Agreement to which this Exhibit "A" is attached out of the Union Texas Petroleum leases in the following sections:

Sections 8, 10, 15, 17, 18, 19, 21,
20, and 30

All in T-8-S, R-30-E, Chaves County,
New Mexico

☒ UNION TEXAS PETROLEUM
☐ UNO-TEX PETROLEUM

WELL COST ESTIMATE

UTP-985-A

DATE

October 18, 1966

LEASE NAME - WELL NO. - FIELD OR AREA (11-50)

CATO FIELD

EXAMPLE WELL

COUNTY

Chaves

STATE

New Mexico

LOCATION

GROSS ACRES IN LEASE

(51)

☐ NEW
WELL

(52)

☐ EXPLORATORY

(53)

☒ DEVELOPMENT

W/O NO.

EST. TOTAL DEPTH

3700'

AFE NO. (54-58)

LEASE NO. (59-68)

DIRECTIONS TO LOCATION

TANGIBLE EQUIPMENT

	ACCOUNT	DESCRIPTION	QTY	QUANTITY	PRICE	PRODUCER COST	DRY HOLE COST
CASING AND TUBING		8 5/8" OD 24# H-40 ST&C		500'	2.30	1,150.	1,150.
		4 1/2" OD 9.5# J-55 ST&C		3700'	1.30	4,810.	
	18-509-13	TOTAL CASING AND TUBING				5,960.	1,150.
EQUIPMENT OTHER THAN CASING AND TUBING		2 3/8" OD EUE 4.7# J-55 tbg.		3700'	.73	2,701.	
		Xmas tree and fittings		1 ea		450.	
		Misc. connections				900.	
		1/4 of battery cost of \$16,300, flow lines, three H-500 bbl. tanks, treater (4 x 20), battery piping, flowline,				4,075.	
		Pumping unit w/motor & controller				4,000.	
		Sucker rods				1,290.	
		Subsurface pump				300.	
	18-509-70	TOTAL EQUIPMENT OTHER THAN CASING AND TUBING				13,716.	

BEFORE THE
OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

Allied Exhibit No. 4
Case No. 3477

WELL COST ESTIMATE — CONTINUATION SHEET
UTP-986-A

WELL NAME

Cato Field - Example Well

INTANGIBLE COSTS

	ACCOUNT	DESCRIPTION	MOH	QUANTITY	PRICE	PRODUCER COST	DRY HOLE COST
DRILLING CONTRACTOR SERVICES		Turnkey Drilling Cost					
		Footage 3700 Ft. @ 3.80 Per Ft.				14,060.	14,060.
		Day Work W/DP 3 Days @ 850. Per Day				2,550.	2,550.
		Day Work WO/DP 1 Days @ 750. Per Day				750.	750.
	18-310-21	TOTAL DRILLING CONTRACTOR SERVICES				17,360.	17,360.
INTANGIBLE MATERIAL AND SUPPLIES		Bits and Coreheads		1		105.	
		Mud and Chemicals		Lot		1,200.	1,200.
		Fuel and Water				400.	400.
		Float Equip., Centralizer, Scratchers, Etc.				250	
		Diesel Oil					
		Cement, Surface Casing				500.	500.
		Cement, Oil String				1,200.	
		Cement,					
		Miscellaneous Material and Supplies				200.	200.
	18-310-22	TOTAL INTANGIBLE MATERIAL AND SUPPLIES				3,855.	2,300.
CONTRACTOR SERVICES		Stake Location				175.	175.
		Build Road and Clear Location				3,750.	3,500.
		Equipment Rental				750.	150.
		Drill Stem Tests					
		Coring and Core Analysis					
		Logging				1,500.	1,500.
		Cementing Services				1,500.	400.
		Fracing					
		Perforating				600.	
		Squeezing					
		Acidizing				1,000.	
		Trucking				600.	300.
		Welding and Shop				50.	50.
		Damages				400.	400.
		Roustabout Labor				400.	200.
	18-310-23	TOTAL CONTRACTOR SERVICES				10,725.	6,675.
COMPLETION & CLEANUP SERVICES		Backfill Pits—Restore Location				300.	300.
		Completion Unit 5 Days @ 450. Per Day				2,250	
	18-310-24	TOTAL COMPLETION & CLEANUP SERVICES				2,550.	300.
COMPANY LABOR EXPENSE & OVERHEAD		Field Supervision 15 Days @ \$40.00/Day				600.	600.
		Houston, Overhead 15 Days @ \$ 50./Day				750.	750.
		District Expense 15 Days @ \$20.00/Day				300.	300.
		Geological Expense 5 Days @ \$40.00/Day				200.	200.
	18-310-25	TOTAL COMPANY LABOR EXPENSE & OVERHEAD				1,850.	1,850.
	18-310-29	DRY HOLE CONTRIBUTIONS & SPECIAL CREDITS					
		TOTAL TANGIBLE COSTS				19,676.	1,150.
		TOTAL INTANGIBLE COSTS				36,340.	28,485.
		GRAND TOTAL				56,016.	29,635
(67-73)		UNION TEXAS	%				

CATO (SAN ANDRES) FIELD
CHAVES COUNTY, NEW MEXICO
ESTIMATED NET PAY

	P ₁	P ₂	TOTAL
	<u>Feet</u>	<u>Feet</u>	<u>Feet</u>
<u>Union Texas Petroleum</u>			
Cato No. 1	47	20	67
Baskett No. 1	43	32	75
Baskett No. 2	38	22	60
<u>Pan American Petroleum Corp.</u>			
Baskett No. 1	36	34	70
Baskett B - 1	37	46	83
Baskett C - 1	28	17	45
Baskett D - 1	36	40	76
Abco-Federal No. 1	33	27	60
Abco-Federal No. 2	35	35	70
Crosby B - 1	30	22	52
Queen No. 1	26	38	64
Queen No. 2	30	40	70
Average	35	31	66

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Allied Exhibit No. 5
Case No. 3477

CATO FIELD
CHAVES CO., NEW MEXICO

ECONOMICS

1. Estimated recoverable oil per acre-foot: 42 bbls.
2. Average net pay: 66 feet
3. Estimated recoverable oil for 40 acre unit
 $66 \times 40 \times 42 = 110,880 \text{ bbl.}$
4. Oil Price: \$2.56/bbl. less \$0.28 trucking charge = \$2.28/bbl.
5. Estimated operating cost, including tax = \$0.33/bbl.
6. Net revenue per barrel = $\$2.28 - 0.33 = \1.95
7. Revenue interest to 100% W.I. = 0.875
8. Net oil recovery to 100% W.I. = $110,880 \times .875 = 97,000 \text{ bbl.}$
9. Net income to 100% W.I. = $97,000 \times 1.95 = \$189,150$
10. Well cost: \$56,016
11. Profit: $\$189,150 - 56,016 = \$133,134$
12. Ratio of net income to investment
 $189,150 \div 56,016 = 3.4/1$
13. Payout period
 $56,016 \div (47 \text{ BOPD} \times .875 \times 1.95 \times 30.4) = 23.0 \text{ months}$
 $= 1.9 \text{ years}$

