CASE 3396: Application of TEXACO for a non-standard oil proration unit & non-standard location.

_ASE No.

3396

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ETC.

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

June 24, 1966

Mr. Booker Kelly
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Re: Case No. 3396
Order No. R-3082
Applicant:

TEXACO INC.

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other Mr. John Russell

Case 3396
Heard. 4-27-66
Rec. 6-16-66

1. Grant Texaco's request for a 40 acre Non Std. Unit consisting of the NE/4 SW/4 sec. 14, 12S-34E. This unit well will be their New Mexico "DA" well #2 1980/S & 1980/W lines sec. 14.
2. This will also be a non Std. location. The Std. location required by R-1418B would be in center of NW/4 SW/4 of sec. 14.
3. The allowable for this well shall be ½ of a normal 80 Ac. allowable for the Ranger Lake-Penn Pool.
4. Finding: correlative rights will be protected because of the decreased allowable as well as allow Texaco to recover their share of the pool reserves.

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. 3396
Order No. R-3082

APPLICATION OF TEXACO INC. FOR A
NON-STANDARD OIL PRORATION UNIT
AND A NON-STANDARD LOCATION, LEA
COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 27, 1966, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 23rd day of June, 1966, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Texaco Inc., seeks authority to drill its State "DA" Well No. 2 at an unorthodox location 1980 feet from the South line and 1980 feet from the West line of Section 14, Township 12 South, Range 34 East, NMPM, Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico.

(3) That the NE/4 SW/4 of said Section 14 can reasonably be presumed to be productive of oil in the subject pool, but the productivity of the NW/4 SW/4 of said Section 14 is doubtful.

(4) That the proposed unorthodox location should be approved in order to afford the applicant the opportunity to produce its just and equitable share of the oil and gas in the Ranger Lake-Pennsylvanian Pool.

(5) That the applicant also seeks approval of a 40-acre non-standard proration unit in the Ranger Lake-Pennsylvanian Pool comprising all of the NE/4 SW/4 of Section 14, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico.

(6) That approval of a 40-acre non-standard proration unit in the Ranger Lake-Pennsylvanian Pool comprising the NE/4 SW/4 of said Section 14 to be dedicated to the applicant's State "DA" Well No. 2 will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the oil and gas in the pool, provided the State "DA" Well No. 2 does not receive more than one-half of a standard 80-acre allowable in the Ranger Lake-Pennsylvanian Pool.

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to drill its State "DA" Well No. 2 at an unorthodox location in the Ranger Lake-Pennsylvanian Pool 1980 feet from the South line and 1980 feet from the West line of Section 14, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico.

(2) That a 40-acre non-standard proration unit in the Ranger Lake-Pennsylvanian Pool comprising the NE/4 SW/4 of Section 14, Township 12 South, Range 34 East, NMPM, Lea County, New Mexico, is hereby created and dedicated to the Texaco Inc. State "DA" Well No. 2 to be located 1980 feet from the South line and 1980 feet from the West line of said Section 14.

(3) That the above-described non-standard oil proration unit shall receive one-half of a standard 80-acre allowable in the Ranger Lake-Pennsylvanian Pool.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JACK M. CAMPBELL, Chairman

GUYTON B. HAYS, Member

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

esr/

Docket No. 11-66

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 27, 1966

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

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

CASE 3394: Application of Shell Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard gas proration unit comprising the N/2 SW/4, SE/4 SW/4, and NW/4 SE/4 of Section 22, Township 21 South, Range 37 East, Blinebry Gas Pool, Lea County, New Mexico, said unit to be dedicated to applicant's Turner Well No. 13 located in Unit N of said Section 22.

CASE 3395: Application of R. W. Warner for down-hole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle in the well-bore marginal oil production from undesignated Gallup and Dakota Pools in his Warner-Federal Well No. 1 located in Unit A of Section 10, Township 22 North, Range 8 West, San Juan County, New Mexico.

CASE 3396: Application of Texaco Inc. for a non-standard oil proration unit and a non-standard location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the approval of a 40-acre non-standard oil proration unit comprising the NE/4 SW/4 of Section 14, Township 12 South, Range 34 East, Ranger Lake-Pennsylvanian Pool, Lea County, New Mexico, said unit to be dedicated to its State of New Mexico "DA" Well No. 2 to be located 1980 feet from the South and West lines of said Section 14.

CASE 3397: Application of Texaco Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Skaggs-Grayburg Unit Area comprising 880 acres, more or less, of Fee land in Sections 12 and 13, Township 20 South, Range 37 East, and Sections 7 and 18, Township 20 South, Range 38 East, Lea County, New Mexico.

CASE 3398: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Grayburg formation, Skaggs-Grayburg Pool, through eleven wells in its Skaggs-Grayburg Unit, Lea County, New Mexico.

CASE 3399: Application of Tenneco Oil Company for two non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of two non-standard gas proration units which would comprise all lands in the W/2 of Section 30, Township 30 North, Range 9 West, adjacent to a Blanco-Pictured Cliffs Pool, San Juan County, New Mexico.

CASE 3400: Application of Pan American Petroleum Corporation for creation of a new pool and special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for its Big Eddy Unit Well No. 7 located in Unit O of Section 19, Township 20 South, Range 31 East, Eddy County, New Mexico, and for the promulgation of special rules therefor, including a provision for 160-acre oil proration units.

CASE 3002 (Reopened):

In the matter of Case No. 3002 being reopened pursuant to the provisions of Order No. R-2684-A, which order continued the original order for an additional year, establishing 320-acre spacing for the Fowler-Lower Paddock Gas Pool, Lea County, New Mexico. All interested parties may appear and show cause why said pool should not be developed on 160-acre spacing units.

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO

Case 3396

March 11, 1966

COPY

Texaco Inc.
P. O. Box 3109
Midland, Texas

Attention: Mr. C. L. Whigham
Division Proration Engineer

Gentlemen:

We have this date received an objection from the Texas Pacific Oil Company to your application of February 14, 1966, requesting a non-standard location and 40-acre non-standard proration unit in the Ranger Lake Pool. Your application is, therefore, not eligible for administrative approval.

Please advise if you desire a hearing concerning this application.

Very truly yours,

J. M. DURRETT, Jr.
Attorney

JMD/esr

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

WESTERN UNION
TELEGRAM

1201 (4-60)

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

W. P. MARSHALL, PRESIDENT

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NEW MEXICO OIL CONSERVATIONLCOMM=

NEW MEXICO STATE CAPITOL BLDG SANTAFE NMEX=

ATTN A L PORTER JR SECY DIVN, RE TEXACO INCS.

APPLICATION FOR NON STANDARD WELL LOCATION RANGER LAKE (PENN) POOL LEA COUNTY NEW MEXICO. EXCEPTION TO RULE 3 ORDER #R-1418B DATED FEB 14, 1966 THIS IS TO ADVISE THAT TEXAS PACIFIC OIL COMPANY AN OPERATOR IN RANGER LAKE PENN POOL OPPOSES TEXACOS APPLICATION FOR SUCH EXCEPTION TO THE RULE FOR THE NON STANDARD UNIT AS PER TEXACOS APPLICATION=

Case 3396

WESTERN UNION WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE

This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1201 (4-60)

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

TEXAS PACIFIC OIL CO H D HOLLOWAY FOR J E WOOTEN DIST SUPT.==

DOCKET FILED

Date 4-15-66

3 #R=1418B 14 1966.=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

MAR
APR

TEXACO
INC.

DOMESTIC PRODUCING DEPARTMENT
MIDLAND DIVISION

P. O. BOX 3109
MIDLAND, TEXAS 79701

April 5, 1966

RANGER LAKE (PENNSYLVANIAN) POOL
LEA COUNTY, NEW MEXICO

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

Attn: Mr. A. L. Porter, Jr.

Gentlemen:

It is respectfully requested that an examiner hearing be scheduled in Santa Fe, New Mexico on the next regularly scheduled hearing date to consider the application of Texaco Inc. for a non-standard location and a 40 acre non-standard proration unit in the Ranger Lake Pool. This is in reply to your letter of March 11, 1966 signed by Mr. J. M. Durrett, Jr. advising that Texaco's administrative application to the Commission dated February 14, 1966 had been protested by Texas Pacific Oil Company.

As described in the administrative application, the exception is requested for Texaco's State or New Mexico "DA" Well No. 2 to be located in the NE/4 of the SW/4 of Section 14, T-12-S, R-34-E, Lea County, New Mexico. The application for administrative approval and this request for hearing are as provided by Rule 4, Order R-1418-B dated August 26, 1959 and Order R-1418-C dated August 30, 1960 adopting Field Rules for the Ranger Lake (Penn) Oil Pool.

A copy of this letter is being forwarded to the protestant, Texas Pacific Oil Company, by registered mail. The original application listed Tidewater Oil Company as well as Texas Pacific as offset operators. It has since been determined that Texas Pacific is the only offset operator to the 40 acre non-standard proration unit being requested. Therefore, copies of this application are being sent only to Texas Pacific Oil Company. If additional information is required, please advise.

Yours very truly,

C. L. Whigham
Division Proration Engineer

CLW:jl

DOCKET MAILED

Date 4-12-66

TEXACO
INC.

PETROLEUM PRODUCTS

DOMESTIC PRODUCING DEPARTMENT
MIDLAND DIVISION

P. O. BOX 3109
MIDLAND, TEXAS 79704

February 14, 1966

NON-STANDARD WELL LOCATION
RANGER LAKE (PENN) POOL
LEA COUNTY, NEW MEXICO

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

Attn: Mr. A. L. Porter, Jr.

Gentlemen:

Texaco Inc. respectfully requests administrative approval of a non-standard well location for their State of New Mexico "DA" Well No. 2 to be located in the NE/4 of the SW/4 of Section 14, T-12-S, R-34-E, Lea County, New Mexico. This exception is being requested as provided by Rule 4 of Order No. R-1418-B adopting temporary rules for the Ranger Lake (Penn) Pool, August 26, 1959 and made permanent by Order No. R-1418-C August 30, 1960. This is an exception to Rule 3 which specifies the location of wells within 150' of the center of either the NW/4 or the SE/4 of a quarter section.

Attached is a plat showing Texaco Inc. State of New Mexico "DA" Lease being the N/2 of the SW/4 of Section 14 and the N/2 of the NW/4 of Section 14, each tract consisting of 80 acres. The normal spacing location is shown as well as the proposed location. This map is contoured on an interval of 10 feet on top of the Bough "B" pay zone and it is noted that the proposed location has about 30' of structural advantage over a standard location. The attached cross-sections show that a well in a normal location would be non-productive; therefore, the proposed location was chosen to assure the maximum recovery of hydrocarbons from the productive portion of the production unit. As further provided by Rule 4 of Order R-1418-B, Texaco Inc. would assign 40 acres consisting of the NE/4 of the SW/4 of Section 14 and would receive an allowable assignment based upon the under-sized unit.

A copy of this letter is being sent this date by registered mail to the offset operators of the proposed unit as listed below:

Tidewater Oil Company
Box 1231
Midland, Texas

Texas-Pacific Oil Company
Box 4067
Midland, Texas

DOCKET MAILED

Date

Yours very truly,

C. L. Whigham

C. L. Whigham
Division Proration Engineer

CLW:jl

cc: Tidewater - Texas Pacific

(1). Estimated Recovery Factor: = 150 BO/Ac.-ft.

(a) Primary Recovery = 75 BO/Ac.-ft.
(b) Secondary Recovery = 75 BO/Ac.-ft.
(c) Total Recovery = 150 BO/Ac.-ft.

(2). Reduced drainage area of TPOC's wells, if Texaco is permitted to drill at unorthodox location:

= 20 acres

(3). TPOC's loss of production to Texaco:

(150 BO/Ac.-ft.) (20 Ac.) (25 ft.) =75,000 B.O.
75,000 BO x 800 Cu. ft./B.O. =60 MMCF gas

(4). Value of Products:

(a) Oil - $2.90/BBL
Gas - $0.10/MCF

(b) Value of Oil and Gas after Royalty
Oil (Incl. gas) = $2.612/BBL

(5). Value of Crude + gas that will be lost to Texaco:

75,000 x $2.612 = $195,900

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
TP EXHIBIT NO. 4
CASE NO. 3396

3396

	Standard Location	Non-Standard Location
Economic Analysis		
Estimated Ultimate Recovery - Bbls.	76,000	118,000
Estimated Net Reserves - Bbls.	57,400	89,200
Sales Value Net Reserves	$196,400	$305,000
Estimated Life - Years	7	8
Present Worth Value		
Sales Value Net Reserves	$179,100	$272,900
Salvage	$ 15,500	$ 14,700
Drilling, IDC & Investment	$138,600	$138,600
Investment	$ 20,500	$ 19,600
Operating Cost & Overhead	$ 46,800	$ 46,400
Taxes	$ 11,000	$ 16,600
Net Income	$ 22,300	$ 66,400
Profitability Factor	0.9	1.3
Payout - Years	None	1.5

(1+2)-(3+4+5)

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3396

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 27, 1966

EXAMINER HEARING

IN THE MATTER OF:
Application of Texaco Inc., for a non-standard oil proration unit and a non-standard location, Lea County, New Mexico.

Case No. 3396

BEFORE:

Elvis A. Utz, Gas Engineer

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE APRIL 27, 1966 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Richard [illegible]	Shell Oil Co.	Midland, Texas
Greg Buell	Pan Am	Fort Worth
Rex Howell	Pan Am	Lubbock
John D Russell	TP	Roswell, N.M.
[illegible]	TP	Ft Worth
[illegible]	Texas Pacific Oil Co.	Dallas, Texas
Ron Freels	[illegible]	SJ
[illegible]	Texaco	Roswell
Robert Scott	Texaco	Midland
J. T. Johnapelus	Texaco	Durango, Colo.
L.B. [illegible]	Kellahin & Fox	Santa Fe
Jason Kellahin	Seth, Montgomery F & A.	Santa Fe
G. Buell	OCC	Santa Fe.
A.L. Porter, Jr	[illegible]	Carlsbad
RH Blackman	[illegible]	Farmington, N.M.
E.A. Clement	R. W. Warner	Santa Fe
Frank E. Irby	State Engineer Office	Santa Fe
Nina L. Baldaume	J.W. Byram & Co.	

MR. UTZ: The hearing will come to order, please. There will be one change in the order of the docket. Case 3396 will be heard first and then we'll go right down the docket from there on.

Case 3396, Application of Texaco Inc., for a non-standard oil proration unit and a non-standard location, Lea County, New Mexico.

MR. KELLY: Booker Kelly of White, Gilbert, Koch and Kelly appearing on behalf of the applicant. We have two witnesses and ask they be sworn.

(Witnesses sworn.)

(Whereupon, Texaco's Exhibits 1 through 3 marked for identification.)

MR. RUSSELL: John F. Russell on behalf of Texas Pacific Oil Company, I have two witnesses.

(Witnesses sworn.)

* * *

R O B E R T J. S C O T T , a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, position and employer please?

A Robert J. Scott, I'm employed with Texaco

Incorporated, my position with them is that of Development Geologist for the Roswell District.

Q Have you previously testified before the Commission?

A No, I have not.

Q Would you give the Examiner a brief resume of your professional education and experience?

A I received a Bachelor of Arts Degree from Augustana College in Rock Island; and University of Wisconsin, Master of Science; then to Roswell, and been employed there for the past four years.

Q Your Master of Science was in Geology?

A Yes.

Q In the four year period have you had actual working experience in the pool involved in this application?

A Yes, I have. I have recommended two of the wells that Texaco has drilled in this field and I have studied the field in detail.

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

MR. UTZ: Yes.

Q (By Mr. Kelly) Now, referring to what has been marked Exhibit 1, would you briefly state to the Examiner what Texaco seeks by this application?

A Texaco requests 40 acre non-standard proration unit in the Northeast Quarter of the Southwest Quarter of Section 14, Township 12 South, Range 34 East.

Q Now, you have shown on there the normal standard location for this 80 acre tract and then the proposed location, except for the fact that the proposed location is on the other end of the 80 acre tract. Is it orthodox in its spacing as far as being 150 feet from the center of the Section?

A It is in the center of the Quarter Quarter.

MR. PORTER: Mr. Kelly, do you have another copy of that exhibit?

THE WITNESS: Yes.

Q (By Mr. Kelly) What is the status of Texaco's lease here as far as ownership?

A On this particular State of New Mexico "DA" Lease, the State has a 1/8 royalty and Marathon Oil Company has a 7/64 overriding royalty, which leaves Texaco Company with 49/64 or 75.5 working interest.

Q Would you explain the structure map that you have shown on Exhibit Number 1 to the Examiner and point out your two wells which you have located oil-water contact?

A Yes. This Exhibit 1 represents the structural interpretation that Texaco believes to be proper for this

field. There have been two tests in this area which have tested water from the Bough "B" pay. These are the O'Neil Well in the Southeast Quarter of the Southeast Quarter of Section 14, and the Trice Number 1 4-Lakes Well in the Northeast Quarter of the Northwest Quarter of Section 11, both of these being in 12 South, 34 East. These wells -- O'Neil's Well tested 3300 feet of water from a drill-stem test, the top of which was a minus (-) 5854. The Trice Well, 11 barrels of water on the drill-stem test at minus (-) 5850, the top of the Bough "B" which is the contoured horizon on this Exhibit 1. The O'Neil Well encountered this at minus (-) 5854, the -- I'm sorry, that's incorrect. The top of the Bough "B" in the O'Neil Well is minus (-) 5819, while the top of the Bough "B" in the Trice Well is minus (-) 5807. I might add further that in addition to the drill-stem test, Trice came back to the Bough "B" pay and made perforations some 7 feet above the interval of their drill-stem tests, and after these perforations swabbed 95 percent water and 5 percent oil from these perforations in the Bough "B".

If you will notice on our normal location and our proposed location, the anticipated top of the Bough "B" at the normal location would be about a minus (-) 5804. This is a 10' contour horizon. This is essentially structurally flat with the Trice Well which encountered the Bough "B" at a

minus (-) 5807, just a 3' difference. Whereas our proposed would be at a minus (-) 5775. It is Texaco's contention that the drilling of a well at the standard or the normal location would result in a completion similar to that affected in the Trice Well, and that it would not be economic for Texaco to drill a well at the standard location.

Q You have prepared cross sections in referring to Exhibit 2, which is your East - West cross section. Would you correlate that for the Examiner?

A All right. Exhibit 2, this particular exhibit as stated, is an East - West cross section. The line of section is located here on a little location plat. The purpose of this section is to graphically display the relationship of the productive wells, some of the productive wells in the field, with the proposed location and the normal spacing location, and then there is just a diagrammatic illustration of a well far down in the West flank of the structure which provides a structural point.

The wells are the Texaco Number 2 State of New Mexico "CZ"; the Texaco Number 1 State of New Mexico "CZ"; the Texas Pacific State of New Mexico "AH"; the location proposed by Texaco and the location that would be a standard location with the present field rules and in the Tidewater Number 2 Thagaard State off to the West. The

point I would like to make here is that the best portion of the Bough "B" pay, which is a limestone unit occuping this interval and correlated across all logs here, the best portion of this pay is in its basal part.

This particular log, the Texas Pacific "AH" Number 1 is a gamma ray sonic log, and a close examination of this log would show that the best proration development is indeed in the very basal portion of this Bough "B" limestone unit. The section above it has various spikes indicating porosity, but it's the opinion of our geological department that the actual flush production that has been encountered in this well comes from this basal portion.

This cross section projects across the section scaled across here showing that at the proposed location by Texaco, this basal portion of the pay is still well above the oil-water contact, whereas at the normal spacing location the better portion of the pay is beneath the oil-water contact which we have established as being approximately at a minus (-) 5850. This is based on the information gained in the O'Neill and Trice Well which we discussed earlier, and it is our contention that a drilling of a well at the normal spacing location would not result in an economic success for Texaco, and in addition to this it would fail to drain all reserves present in the Bough "B"

Reservoir, because there would be oil up-dip from this location.

Q You have another cross section which I don't think would be necessary to put on the board; Northwest Southeast cross section.

A The purpose of this section is to again graphically illustrate the O'Neill well which is on the right-hand side of the section, which you recall tested water on that drill-stem test, and its results are marked on the cross section. It will show the relationship between this water test and the presently producing wells in the field. It is -- it's purpose is just to graphically illustrate the oil-water contact in one of these two oil-water tests I have pointed out.

Q Is Texaco asking for an 80 acre allowable in this case?

A Texaco is asking for 1/2 of the 80 acre allowable as provided for in the last Paragraph of Rule 4 of the Ranger Lake Penn Field.

Q In other words, you're not attempting to take advantage of getting up-structure and get your full allowable, you realize you would be getting half your normal allowable?

A Yes, we're not asking for the 40 acre allowable that I understand is prorated on the 80 percent, I believe it

is, of the total allowable. We want just 1/2 of the 80 acre allowable.

Q Now, going back to Exhibit 1, in your opinion would you recommend to your management to drill at the normal location?

A No, I could not recommend drilling at that location.

Q Do you feel that the granting of this application would prevent waste and protect Correlative Rights?

A Yes, we feel that this -- if we were allowed to drill this location that these will be protected.

Q Were Exhibits 1 through 3 prepared by you or under your supervision?

A Yes, they were.

MR. KELLY: I move the introduction of the exhibits.

(Whereupon, Applicant's Exhibits 1 through 3 offered into evidence.)

MR. UTZ: Without objection the exhibits will be admitted.

(Whereupon, Applicant's Exhibits 1 through 3 admitted into evidence.)

MR. KELLY: That's all I have on direct.

MR. UTZ: Are there questions of the witness?

CROSS-EXAMINATION

BY MR. RUSSELL:

Q Your Exhibit 2, let me see if I am correct. That blue marked area is what you call the basal portion of the pay?

A No, the blue -- the top definition of the blue band is a datum related to sea level at minus (-) 5850, which is what Texaco believes to be the approximate water-oil contact. The blue portion -- it is just colored blue so the oil-water contact is more visually clear.

Q But in establishing that pay where it eventually gets below the oil-water contact, according to your exhibit you're only using the lower portion of the pay, are you not?

A Yes.

Q There is other pay above that?

A Yes, there is a portion of the Bough "B" limestone unit above the oil-water contact at the standard location.

Q And you feel the lower is the better?

A Yes, I believe that an examination of the -- not only in the Texas Pacific Well here, but an examination of the mechanical logs producing in the immediate area will show that the better portion is in the very basal part of the unit.

Q Point out your State "DA" Well.

A The State of New Mexico Number 1 "DA" located here.

Q Is a log shown on that?

A It's Exhibit 3.

Q Well, going to Exhibit 3, then, in that well did you perforate this lower basal pay that you referred to?

A We perforated a portion of it.

Q Does it reflect on that exhibit?

A Yes, they are marked on Exhibit 3 in the State of New Mexico Number 1 "DA".

Q You want to go to a non-standard or unorthodox location because you feel it will produce more oil for you than if you went to a standard one?

A That's true, and you might go a little farther that we believe it will produce -- that the proposed location by us will produce enough oil to make this a profitable venture, and also it will recover all of the reserves that are in place, whereas we feel that a well at the standard location will be an uneconomic venture and will leave oil in place.

Q What is a profitable venture as you use the term?

A We would like to recover -- I'll put it this way, our figures show that a well drilled at our proposed location will yield Texaco a dollar and thirty cents for every dollar invested, and a well drilled at the standard location

will be a losing proposition--

MR. RUSSELL: No further questions

A --where we yield only ninety cents to the dollar.

MR. RUSSELL: No further questions.

MR. UTZ: Are there any further questions?

CROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Scott, how many acres, in your opinion, are productive of oil and gas in the unit that you propose here, that is in the 80 acre unit?

A There will be, of course, now when you have the oil-water contact covering a portion of your pay below the oil-water contact and a portion of it above, you will be able to recover reserves from the entire 80 acre unit from a portion of your pay, and that portion which is below the oil-water contact on a part of the unit, you of course, will recover a proportionate share less. We feel that in the upper portion of the Bough "B" pay, whereas I stated I don't think the reserves are as significant as in the lower portion, we will recover from the entire 80 acres there, from the lowest portion we would recover reserves from a somewhat lesser area.

Q Do you want to voice an opinion as to how many acres is productive in your lower zone?

A Well, I would indicate a minimum of 40 acres would be productive from that lower zone. I have not actually calculated that out for certain, but just judging on the dip of the structure and looking at the cross section as to where the basal portion of the pay intersects the oil-water contact, it appears to be between the pay and the standard location, and that would amount to about 40 acres.

Q Do you feel that the lower zone is productive out to your 5850 contour on your Exhibit 1?

A No, because on Exhibit 1 -- is contoured on the top of this Bough "B" pay interval, and in fact on the West side of this structure you will note that we do not get our contours out to minus (-) 5850 in relation to the structure map.

In relationship to the subsea values the oil-water contact is at a minus (-) 5850 and we can produce to that level. If we had to perforate I believe we would have to break into the water and this is indicated to be the case in Trice's Well where their drill-stem test referred 15 barrels of oil and 11 barrels of water. They came back and with perforations above the interval of that drill-stem test, they perforated and then essestially swabbed all water.

You cannot perforate next to the oil-water contact and expect to make an oil well; you will break into the water.

Q In your opinion do you have more than 40 acres in reserves in the 80 acre standard unit?

A Well, yes.

Q But the bulk are in the lower zone?

A Correct. And this lower zone would not be available to us at the standard location.

Q Unless you are allowed to drill in this non-standard location, is it your contention that you wouldn't be able to recover your reserves in this 80 acre tract?

A That's correct.

Q In your opinion in recovering your reserves in this 80 acre tract through your non-standard location as proposed here, would you recover any oil from the offsetting tracts?

A Well, I think it's to be acknowledged that we will, at this location, recover oil from the offsetting tracts, yes.

Q Would this be offset by any counter-drainage from your offset wells?

A I'm sorry, I don't quite understand that.

Q You made the statement that you will recover some oil from your offsetting tract and in turn will the offsetting tracts recover any oil from your tract?

A Well, yes. I think its accepted that the Number 1 "CZ", Texaco Number 1 State "CZ" and the Texas Pacific Number 1 "AH" will drain a portion of the acreage that

would be ocvered by the proposed location there.

Q Is this a water draft?

A I believe it is to a certain extent. The GOR on these wells is not excessive and I believe it is a waterdrive pool.

MR. UTZ: Would your other witness know the answer to that question?

MR. KELLY: Yes.

MR. UTZ: Other questions of the witness?

MR. KELLY: I just have one or two questions in rebuttal.

MR. UTZ: All right, sir.

REDIRECT EXAMINATION

BY MR. KELLY:

Q Do you have an opinion on the effect of drainage as far as the offset wells if this application was not granted?

A Well, yes. First of all, in the interest of Texaco, we would feel that oil which is rightfully ours would be drained by the offset locations, one of them which is ours and one which is not, and also in addition to that there would be reserves on this 80 acre tract that would be left and never recovered. If we were not allowed to drill at the normal location the offset wells would not drain the

entire 80 acre tract.

Q Well, then, going on that, do you have the current allowables and production figures for the T.P. Well Number 1 and Texaco "CZ" Number 1?

A Yes.

Q Which are the offset wells, correct?

A Right. The Texas Pacific Number 1 State "AH" has an April allowable of 250 barrels of oil per day, which is top allowable for this field; the Texaco Number 1 State "CZ" has an allowable of 124 barrels of oil per day for the month of April.

Q And actually the T.P. Well is capable of producing in excess of its allowable?

A Yes. On its last production test it was found to be capable of producing 263 barrels of oil per day.

Q Would it be proper to assume that if this application were not granted that you would have more drainage in the Texas Pacific Well in this portion of an 80 acre tract than you would from the Texaco Well?

A That's interpretative. I would say that in view of better production in the Texas Pacific Well they have encountered more porus and permeable portions of the reservoir, and they could drain more than this 80 acre tract than Texaco's offset would.

MR. KELLY: That's all I have on redirect.

MR. UTZ: Are there questions of the witness? The witness may be excused. Call your next witness.

(Whereupon, Texaco's Exhibit Number 4 marked for identification.)

* * *

J. T. J O H N A P E L U S, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, position and employer?

A J. T. Johnapelus, employed with Texaco Incorporated as a Conveying and Proration Engineer out of Midland.

Q Have you previously qualified to testify before the Commission?

A Yes, I have.

Q Referring to what has been marked Exhibit 4, have you caused to be prepared an economic analysis of the production you could expect to encounter at the standard and proposed location?

A Yes, I have.

Q And again referring to Exhibit 4, would you in explaining the standard location, give the Examiner what assumptions have been made?

A All right, sir. Mr. Examiner, Texaco assumed on a standard location an optimum recovery of being able to p roduce the Bough "B" pay to the top of the oil-water contact as presented by Mr. Scott on his Exhibit 2. In the left-hand column I have shown the standard location and estimated recovery in barrels, being 76,000. I point out this is optimistic.

In comparison to that at a non-standard location, we assume here that we could recover 118,000 barrels of reserves. Now, the next item is the net reserves, being Texaco is on 4964, 57,400 barrels at a standard location versus 89,200 on a non-standard location. And the next item is a sales value, being $196,400.00 for a standard and $305,000.00 for a non-standard. The estimated life being 7 for a standard and 8 for a non-standard.

Now, our next item is present worth values and we have estimated that sales value of the net reserves being $179.000.00 for the standard versus $272,900.00. Salvage value being $15,500.00 for a standard, $14,700.00 for a non-standard. And summing up the whole thing, it indicates that our profitability factor indicates that for a standard location, being an 0.9 cent return, whereas a non-standard would be a dollar and thirty cents for a dollar invested, showing by economic analysis a non-standard location is a

profitable venture.

Q Based on the testimony you have heard and the economic analysis you have prepared, would you recommend to your management the drilling of a well on a standard location?

A No, sir.

Q Would the denial of this application leave oil in place and cause waste?

A Yes, it would.

Q Just to clear up one point on this economic analysis, are you assuming on your standard location, a withdrawal rate based on an 80 acre allowable?

A This well at that standard location would not be able to produce an 80 acre allowable. Its allowable would be rather small and probably be quite expensive in water production, so we would be nowhere near producing an 80 acre allowable for that well.

Q And the non-standard is what you seek, half of an 80 acre?

A Yes, sir, that's true.

Q Was Exhibit 4 prepared by you or under your supervision?

A Yes.

MR. KELLY: I move the introduction of Exhibit 4 and

I have no further questions at this time.

(Whereupon, Texaco's Exhibit 4 offered into evidence.)

MR. UTZ: If there are no objections the exhibit will be admitted.

(Whereupon, Texaco's Exhibit 4 admitted into evidence.)

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

CROSS-EXAMINATION

BY MR. RUSSELL:

Q In determining the profitability of this operation, one of the big factors confronting you is the burden on your lease, is it not?

A Yes, sir.

MR. RUSSELL: That's all.

CROSS-EXAMINATION

BY MR. PORTER:

Q Mr. Johnapelus, in figuring your income, did you calculate the return from the gas sales?

A Yes, sir, it was calculated.

Q This is included?

A Yes, sir, I believe if my memory serves me right, that the value was based at $3.42 a barrel, which $.42 of that was based on the gas sales.

MR. PORTER: Thank you.

CROSS-EXAMINATION

BY MR. UTZ:

Q I believe you stated that your return would be $.90 on the dollar?

A At a standard location.

Q What figures are shown on this sheet that you use in that computation?

A We use our net sales value, being $179.100.00, and then, of course, we have our salvage value that's included in that, and you subtract from that your drilling, IDC and investment, operating overhead and taxes, and net income tax.

Q That would be all figures below, beginning with the third figure down on your present worth value list?

A Yes, sir. You take items 3, 4, 5 and 6 and subtract them from 1 and 2.

Q Okay. You heard the question I asked Mr. Scott in regard to whether this was a waterdrive pool or not. Do you have an answer?

A Mr. Examiner, it would be my opinion that this would be not a strong waterdrive, but a partial waterdrive. And it would indicate that production here, drawing down rather heavily on a standard location, trying to get our production there, would bring water in rather rapidly. We would go to high water production early in the life of the well but it's

still my contention it is not a strong waterdrive.

Q In other words, if it's any type of waterdrive, then in order to recover your reserves you would have to get above the waterdrive?

A Yes, sir, that's correct.

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

MR. IRBY: May I ask if 3397 and 98 have been consolidated?

MR. KELLY: We will consolidate them later.

MR. UTZ: No, we're on the first case; you're early for your case but you're late for the hearing. Any other questions?

RECROSS-EXAMINATION

BY MR. RUSSELL:

Q In your economic analysis have you taken into consideration any secondary recoveries?

A No, sir.

Q None at all?

A No, sir.

MR. RUSSELL: That's all.

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

THE WITNESS: Thank you.

MR. UTZ: Is there other testimony in this case?

MR. KELLY: I have nothing further on direct.

MR. RUSSELL: I have some testimony, Mr. Hurch and Mr. Freels.

(Whereupon, Texas Pacific's Exhibits 1, 2 and 3 marked for identification.)

MR. UTZ: You may proceed.

* * *

N O L A N H U R C H, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RUSSELL:

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

A Nolan Hurch, employed by Texas Pacific Oil Company, Geologist, located in Dallas.

Q Are you familiar with the area covered by Texaco's application, covered by this case?

A Yes, sir.

Q Have you worked in that area?

A Yes, sir.

Q Have you previously qualified to give expert testimony before the Commission?

A Yes, sir.

Q In connection with this application of Texaco, have

you prepared some exhibits?

A Yes, sir.

Q Referring to what has been marked as T.P.'s Exhibit 1, would you explain what that shows?

A This is a map contcured on top of the Bough porosity and covers the area in question. And the datums are marked on the top of the porosity and have each of the wells in the subject area. The wells that are colored green are those that are producing from the Bough Zone, and those in red from the Ranger Lake Zone.

Q You have shown on this Exhibit Number 1 where the Texaco Well would be located if it was at a normal spacing location?

A Correct.

Q There is another well to the Southeast of that which has a Number 2 in front of it and is uncolored?

A That's the proposed location that Texas Pacific proposes to drill.

Q Is that at the standard location?

A Yes, sir.

Q Refer to Exhibit Number -- T.P. Exhibit Number 2 and I ask you what that exhibit shows?

A This is a map or an Isopach map of the net pay above the oil-water contact in the Bough Zone, and has been contoured

with these figures. Each figure is for the amount of net pay or porosity above the oil-water contact, is placed below the wells in the area.

Q And it shows the same wells as were shown on your Exhibit Number 1?

A That's correct.

Q Now, I think, if you will go to your Exhibit Number 3, what does T.P. Exhibit Number 3 reflect?

A Exhibit 3 is a cross section using the same line of wells as Texaco did on their Exhibit 2 in an East-West direction. Using, again, the well logs that were available, the insert here is our map on top of the porosity, that's on Exhibit 1. Now, the line here at the top, which we have marked the top of the prorsity in the Bough Zone, the area that is shaded in red is the zone that Texaco has referred to on their Exhibit 2 as being the lower zone, which they refer to as their porosity in the Texas Pacific Number 1 "AH". This cross section was constructed using the top of the porosity map and in so doing it indicates that the lower-most zone would be encountered above the oil-water contact. I identified -- shaded this in red to delineate that zone. The area that is shaded in orange is indicating the Bough Zone above that that has porosity, which I have also indicated. The perforated interval in our well, T.P. "AH" and the Texaco Well also

perforated above that zone.

On our cross section we have included the Thagaard Well which is above the oil-water contact and located further down-dip, has porosity indicated above the oil-water contact. I might also mention here that the shaded red zone that's referred to by Texaco as being the main and best developed zone, that's in their Number 1 "CZ", the zone above that interval happens to be the best zone of porosity which is perforated. And although I do not have their "DA" on this line of cross section, referring back to their Exhibit 3, they show in their "DA" that the basal zone was not perforated and they apparently thought that the zones above were sufficient to make a commercial well.

Q Now, that cylindrical figure is a well at a standard location?

A Correct.

Q And based upon your interpretation of your exhibits and information, you are of the opinion that at a standard location they would encounter both of the pay above the oil-water contact, is that correct?

A Right.

Q Now, you have one additional well that they do not show on their exhibit, is that correct?

A Yes, sir.

Q That is the one you referred to which is to the West--

A To the West of their proposed location and down-dip.

Q It is also West of the standard location?

A Correct, which would be right here. And this would be their standard location.

Q Now, is that portrayal there similar to what you anticipate in your proposed well?

A Yes.

Q Is it the intention of Texas Pacific to drill a well at a standard location?

A True.

Q Do you have anything further you would like to comment on?

A No, sir, I believe that I pointed out on their "DA" and the basal zone, they did not perforate it and that on their "CZ" they did perforate it, but also I would like to point out that that basal zone is not the best zone of porosity, and indicated here, which I have colored in orange, is the zone above that has a greater porus section.

MR. RUSSELL: I have no further questions of this witness -- one more question.

Q (By Mr. Russell) Do you basically concur with Texaco as to the location of the oil-water contact?

A Yes, sir, I do.

Q Were Exhibits 1, 2 and 3 prepared by you or under your direction or supervision?

A Yes, sir.

MR. RUSSELL: We would like to offer Texas Pacific's Exhibits 1, 2 and 3.

(Whereupon, Texas Pacific's Exhibits 1, 2 and 3 offered into evidence.)

MR. UTZ: Without objection the exhibits will be admitted.

(Whereupon, Texas Pacific's Exhibits 1, 2 and 3 admitted into evidence.)

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

MR. KELLY: I have some questions.

CROSS-EXAMINATION

BY MR. KELLY:

Q You stated that the Texaco "DA" -- which well was it that you stated was not perforated?

A The "DA". Here would be your lower zone of porosity and your perforation might carry down to that lower zone that you referred to on the back, into the Texas Pacific "AH" Number 1, here by your dash line, if they have delineated by their dash line on their exhibit I guess it was --

Q If, in fact, it was brought to your attention that

that zone was perforated, would it cause any difference in your interpretation?

A No. I just think I would refer to the Texaco "CZ" which did perforate, but it did point out that above the basal member that you do have better porosity above that zone.

Q I take it that it is your position, and if it is not correct me, that you feel that Texaco could get an economic producer at the standard location?

A Yes, sir.

Q Do you feel they could get a better producer at the proposed location?

A I believe on my Isopach map it is conceivable that if they are to throw in another contour line it possibly could increase to as much as 30 feet, that's on your non-standard location. It's possible that you would have more porosity at that location.

Q Well, the basis of the observation of T.P., is that you feel a better producer -- that you feel there is a better producer at the non-standard location?

A We feel it would be an economic -- at the standard location that there would be no need to move to a non-standard.

Q You have heard the testimony of Texaco that in their opinion they would not recommend to their management the drilling of a well at a standard?

A That's true.

Q If no well were drilled what would be the effect under the East half of that 80 acre tract?

A I believe our next witness would be more qualified to go into the drainage.

Q Are you saying you are not able to say what would happen to that oil?

A As a geologist I feel that it would be a successful location. It would be a producer at the non-standard, but in regard to the economics or radius of range I think I prefer that it would be our petroleum engineer that would discuss that position.

Q But you do agree with Texaco as far as the oil-water contact?

A Yes, sir, I do.

MR. KELLY: That's all.

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

CROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Hurch, let me correlate, if I may, the top of the blue area on Texaco's Exhibit Number 2 and your Exhibit Number 3 would be the equivalent to the top of the water-oil contact?

A Yes, sir, 5850.

Q Would you say that the correlation on their exhibit or the 5850 contour and your's are pretty much the same?

A Yes, sir.

Q You differ with them in that the porosity is a little higher than the porosity on their cross section, is that the main difference?

A Yes, sir, I have on their top line here, they're using the top of the Bough, and what what I have constructed my cross section from is what I think is a better approach, is to go to the top of the porosity in each individual well and construct a map on that basis, and in so doing I have used the top of the porosity.

Q Your points you depict here are the red zone which is the lower producing zone, which on their cross section they call the best porosity, is that true?

A Right.

Q These pictures on here, the Thagaard Number 2, are essentially the same as Texaco's, is that correct?

A They don't show it. They're apparently using the base of this zone on the subsea. I would have to figure that. Come down here on this particular point, I assume that their cross section, that that should be the same subsea datum.

Q Then your interpretation between the Thagaart Number 2 and your T.P. 1 "AH", the interpretation between that area

is the basic difference between these two exhibits?

A Yes, sir.

Q For yours, your carryout here is horizontally?

A Yes.

Q And then you start sloping?

A I have gone down. Actually, this could be higher. In other words, I haven't carried the contours from the top of the porosity here. I don't know whether it comes on up, but it is relatively flat from our 8 "AH" which is what I have carried out to, roughly, this position, and then I have sloped it off.

Q To try to compare the two exhibits, a straight line drawn at the top of your red zone should be pretty nearly equivalent to what they show on here?

A Well, I don't believe that would be a correct approach because if this line of cross section, if this well or this proposed or this normal location would have been projected back into a straight line, that approach would be correct, but the fact that the cross sections are jogging down it would not be a straight line.

Q Mr. Hurch, let me ask you a pertinent question. If this was your 80 acre unit would you recommend a standard location?

A Yes, sir. As you see on my maps, the Isopach, we're

at relatively the same position on your Number 2 "AH", and which we are proposing to drill.

Q It's your intention to drill a well on that location?

A Yes, sir.

Q From a geological standpoint,this non-standard location as Texaco proposes as half an 80 acre allowable, how do you feel that that would hurt Texas Pacific?

A I feel our next witness will bring out that. They will recover part of our oil from both the proposed, the existing well we have and the proposed well that we would drill, that it would drain portions of each of those 80.

Q It's your opinion that the 80 acre tract immediately South of their 80 acre tract is wholly productive of oil and gas from this zone?

A Yes, sir.

Q Even though the water-oil contact cuts through it?

A Well, the oil-water contact which would be at minus (-) 5850, which is what I have used as my zero line as you can see on our Isopach, that the actual contact with the water and oil would be considerably less than the Texaco tract and ours.

Q I made my interpretation on the water-oil contact between the two exhibits and they both show the water-oil

contact being West of the 80 acre tract.

MR. SCOTT: No.

MR. UTZ: Where is it?

MR. SCOTT: The water-oil contact would not be West of the tract. There are the O'Neill and Trice which have tested pay from the structural position within our tract. This would also apply to both the porosity Isopachs they have prepared and the structural map. If the zero line on the Isopach out here is to be the oil-water contact, why is it then that water was tested from the O'Neill Well?

THE WITNESS: I'll answer that. You stated that the top of the packer on the O'Neill Well was, I believe, at approximately minus (-) 5854. If you examine the log you will find porosity above that interval in the Bough Zone. I feel sure, although my map does not go up to the well to the North, again, you say it was perforated at approximately the water-oil contact or just 7' above that, I do not have the log, I do not know whether there's porosity above that interval or --

MR. SCOTT: Yes, there is. However, this basal portion of the pay which gives these wells the reserves, is below the water. That was the portion that was tested in each of these instances.

MR. KELLY: If you prefer to have a more orthodox procedure we can recall Mr. Scott.

THE WITNESS: I might make one additional comment if I might. I think on the exhibit you turned in, I don't know whether it's on your Exhibit 2 or 3, on your cross sections, I believe that the porosity has been noted on your "CZ".

MR. SCOTT: Which "CZ"?

THE WITNESS: Number 1. I think you will find that porosity above this lower zone is in the range above 5 percent, and I feel that any porosity probably above a figure of 3 percent is sufficient to feed from the reservoir that it's commercial, it's capable, and these figures that I have used here on my Isopach are based on a cutoff of 4 percent.

MR. SCOTT: However, I think you would have to agree that the porosity in our Number 1 "CZ" or the permeability, or one of the parameters that effect production is reflected by the performance of these wells.

THE WITNESS: I have no way from examining the sonic logs, that we're talking about porosity, that I can determine permeability from the sonic --

MR. SCOTT: I think the production would be indicative of the parameters of the reservoir. I had one question that came to mind, you're contoured on what you called the top of the Bough porosity and your structural datums are based on this. Is the top of the Bough porosity at the same stratigraphic position in all wells?

THE WITNESS: The porosity will vary from well to well. It can build up or down.

MR. SCOTT: In that case, then, you will admit that you structural interpretation is based on a stratigraphic phenomena of porosity building up and down in the section, rather than the structural interpretation you have, being based on a marker which is the same in all wells?

THE WITNESS: I have a marker, what we call the top of the Bough, which is a few feet higher than Texaco has referred to on their map, which is on their cross section, and that line can be drawn within a fairly reliable interval that the porosity in encountered. The uppermost porosity is what is meant as the degree of porosity, is not always found at the same interval, but the top is relatively found at the same interval.

RECROSS EXAMINATION

BY MR. KELLY:

Q Did you say that the two expert viewpoints can be summed up by the approximate feeling that standard locations would produce an economic well and Texas's position is that non-standard locations would not produce an economic well?

A I think that would be fair.

Q And would you further state that if we are right

there's going to be waste by oil being left in place if this application is denied?

A I'm not sure that there would be. If there's at least partial waterdrive then I would assume that the wells in the normal positions would recover.

Q In other words, the offset wells would recover the oil in place. Assuming that Texaco's geological information is correct, the only way the oil could get out would be to go to offset wells?

A If you do not drill any well on an 80 acre tract, true.

Q Assuming that correct, the standard location would not be a feasible economic well?

A Well, I have to answer and assume their well is economic.

Q That's the assumption I'm asking you?

A On that assumption, yes.

Q So, the oil under Texaco's Lease would be produced at least in part by T.P., is that correct?

A State that again.

Q That the oil under Texaco's Lease would be produced in part, at least, by T.P.'s Number 2 Well, assuming your proposed 2 is a good well?

A If Texaco does not drill?

Q Yes.

A Correct.

Q When does T.P. plan to ~~stud~~ spud in on that well?

A It's on our existing budget, I do not have the date.

Q Is your testimony that T.P. has definitely established that as a location and intends to drill it?

A I'm not positive, but I believe it's been filed.

Q Would the other witness have any more information on this point?

A I don't know whether he does or not, but it is in the budget.

MR. KELLY: That's all I have.

RECROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Hurch, let me clarify for my satisfaction just what you did contour your Exhibit 1 on, is it a marker at the top of the lower Bough or are your contours consistant with markers?

A Yes, sir, with the first porosity in the Bough Zone.

Q But your first porosity in the Bough Zone would differ a little, stratigraphically, from the contour shown on the Texaco's Exhibit Number 1?

A Yes, sir. I believe it is evidenced on the cross

section that we have perforated a porosity zone above the interval that they're calling the top of the Bough.

Q At any rate, the minus (-) 5850 should be the same?

A Yes, sir.

MR. UTZ: I wonder if I may ask Mr. Scott to sketch in where the 5850 is on his Exhibit 1?

MR. SCOTT: The 5850, you're referring to the oil-water contact?

MR. UTZ: Just on the West side will be all right.

MR. SCOTT: Yes, well -- do you mean this oil-water contact where it first intersects the Bough "B" pay? See, this oil-water contact will go up and down with respect to the pay interval at various places. Now, we know that at minus (-) 5850, in relationship to the O'Neill Well here, that a portion of the Bough "B" at that point is under water.

MR. UTZ: You just sketch in your interpretation of where you think the water-oil contact is with relation to your acreage. If it's not at the 5850 then go across contour lines.

MR. SCOTT: Just a minute, I'll need to consider this here.

MR. UTZ: It seems to me that's a pretty important point in this case. I think we ought to have a record on it.

MR. SCOTT: Yes. This oil-water contact is drawn on there where I believe the best basal portion of the pay to be in the water as evidenced by the tests in this Trice Well up here. This well tested water both in drill-stem tests and

their perforations. I have that log here with the intervals marked if you should be interested in seeing --

MR. UTZ: Where you sketched that, it's not 5850, it's more like 5805.

MR. SCOTT: Your water is at -- here, I'll illustrate here. Your water, operating on a theoretical assumption, is a straight datum across this. Now, we are not contoured on the top of the water. Our structural interpretation is contoured on the top of the Bough "B" marker which is the same point in every well. And so 5850 on top of that marker, it doesn't even go out that far over here, but on this side it is out here as evidenced in this well. Now, that 5850, minus (-) 5850 on top of the Bough "B" marker is not equivalent to the minus (-) 5850 of the oil-water contact because they would differ by the thickness of the Bough "B" interval.

MR. UTZ: Other questions of the witness? The witness may be excused. Call your next witness.

(Whereupon, Texas Pacific's Exhibit 4 marked for identification.)

R O N A L D F R E E L S, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name, address, by whom

you are employed and in what capacity?

A Ronald Freels, employed as a Proration Engineer with Texas Pacific Oil Company in Dallas.

Q How long have you been employed by them?

A Been little over two years.

Q Now have you previously qualified to give expert testimony before the Commission?

A No.

Q Will you give a brief resume of your educational background and experience?

A I graduated from Oklahoma University with a Bachelor of Science in Petroleum Engineering in 1954; next ten years was with Shell Oil Company at various capacities from Exploration Engineer to Reservoir Engineer, and it was a Reservoir Engineer as in the Special Studies Section when I went with Texas Pacific.

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

MR. UTZ: Yes, if he will spell his name.

THE WITNESS: F-r-e-e-l-s.

Q (By Mr. Russell) You are familiar with the application?

A I am.

Q You're familiar with the location of the T.P. Well

and the proposed well?

A I am.

Q Have you made any computations to determine the effect upon T.P. if the application is granted at the non-standard or unorthodox location?

A I have.

Q Now, first, what was the basis or the formula for your computations?

A Basically, what I did was, I assumed this 80 acre pattern for a normal 80 acre pattern. I assumed the theoretical drainage which would be a square within 80 acres, and then I assumed or put in the results of permission, an unorthodox location to see what effects this would have on the drainage area of our well and the proposed well. The net result was this proposed location reduced the drainage of 10 acres, or a total of 20 acres.

Q This area or field is based on 80 acres with standard location?

A It is.

Q Which is on the basis that those locations will most effectively drain the area?

A Yes.

Q Based on your assumption, you're losing 20 acres of your leases to the non-standard location, what figure did you

come up with?

A I used an estimated recovery factor of 50 acres of oil per foot. This includes secondary and primary. Utilizing the 20 acre reduction and drainage area of our two wells, and the estimated recovery of 150 acres, and net pay of 25 feet, I calculated that we would loose approximately 75,000 barrels of oil if this unorthodox location was permitted. And as to a solution gas-oil ratio, this would be equivalent to 60,000,000 cubic foot of gas. The values are estimated at $29.90 per barrel of oil, $.10 per MCF of gas. The value of oil and gas expressed as oil, is 2.612 dollars per barrel, or the value of this crude that would be lost would be 75,000 times this or $195,000.00. The net income loss to Texas Pacific, taking our operating costs for the lifting costs, would result in the lost income of $172,000.00.

Q You are selling your casinghead gas?

A Yes.

Q Was Exhibit 4 prepared by you?

A It was.

MR. RUSSELL: We move the introduction of Texas Pacific's Exhibit Number 4.

(Whereupon, Texas Pacific's Exhibit Number 4 offered into evidence.)

MR. UTZ: Without objection the exhibit will be admitted.

(Whereupon, Texas Pacific's Exhibit Number 4 admitted into evidence.)

CROSS-EXAMINATION

BY MR. UTZ:

Q What did you say the value was, what your loss would be?

A The gross income would be $195,000.00, or the net would be $172,000.00.

Q That figure isn't shown on here?

A I don't have the net on there, I'm sorry.

Q Is that complete?

A Yes, sir.

REDIRECT EXAMINATION

BY MR. RUSSELL:

Q In your opinion do you feel that the granting of the application at an unorthodox location would spare your Correlative Rights?

A Very definitely.

MR. RUSSELL: I have nothing further.

CROSS-EXAMINATION

BY MR. KELLY:

Q You have $195,000.00 loss based on your assumption for a drainage of 20 acres?

A Right.

Q What do you feel your net profit would be on the whole 80 here?

A Net profit. I haven't taken any costs for drilling the well or anything out of this figure. The only thing taken out was the operating costs. This is just about the cost of the well, we would lose. In other words, this would take care of -- everything above this should be profit on normal -- be a little additional to that because the estimated costs of secondary recovery would increase this.

Q Are you assuming a top allowable well?

A Yes.

Q You have a top allowable well up on top?

A We do have.

Q And you are aware that Texaco is seeking, if this application is permitted, only half of an 80?

A I'm aware of that. I would like to comment on that.

Q Just a second. If you have two top allowable wells, let's assume 250 barrels on both of those wells, and 125 for Texaco, how are you going to lose any oil?

A There is a very definite reason that we would lose oil. The pattern of which this well would have been developed on would have been disturbed by this. That invalidates any drainage that was provided for by the drilling of the field.

Q You mean it's your testimony that if a well was drilled on the proposed location by Texaco that you would not have a top allowable well?

A My position is that our ultimate recovery would be reduced, the length of the top allowable.

Q You feel that your proposed location would be a profitable well?

A We anticipate making money. There's a lot of costs for drilling and secondary recovery equipment.

Q What was your basis for your secondary recovery figures?

A This is just a 1 to 1 ratio. I have used the Ranger Lake Penn, but it is this unit to the South. From their engineering committee report is what I based this figure on.

Q There has not been any secondary recovery study made of this field?

A This is administrative. A portion of the Ranger Lake Field, which is a secondary recovery, is in operation now and as we have shown, the actual production is twice what it was a year ago.

Q Have you made figures based on the assumption that Texaco's geological data is correct? What would your net profit figure be if a well was not allowed to be drilled on that position?

A Would you state that again?

Q Assuming that Texaco's geological data is correct, that a normal location would be an uneconomic well and would not be able to drain because of the oil-water contact, the 40 acres under the proposed location, have you made an estimate of your net profit if you are able to drain that 40?

A We didn't anticipate any additional recovery, we figured that Texaco would go ahead and develop their properties and provide for their own oil. They actually have a well offsetting this tract to the east now.

Q Is the waterflood operated by Phillips the same porosity as produced by Texaco and T.P. Wells?

A We have no core analysis and we have to rely on logs. And the porosity would be slightly less in the North Ranger area.

MR. KELLY: No further questions. I would like to reserve cross-examination on other questions being brought up.

MR. UTZ: Other questions of this witness?

RECROSS-EXAMINATION

BY MR. UTZ:

Q Would the fact that there would be four wells grouped together here cause a low pressure ~~slump~~ sump in the pool, is that the thing that disturbs the equilibrium and causes you to lose oil?

A Yes, and a third adverse effect that should be noted on recovery operations, we have a distorted pattern. Did I answer your question.

Q Yes, I think so. Does Texas Pacific have, I guess you would call it an opinion, as to fixed spacing of this nature and flexible spacing. Do you have basically flexible spacing or fixed spacing?

A I prefer in an area such as -- we would like a pattern waterflooding. I believe that is what is used to the South.

Q Do you like a fixed pattern for the purpose of preserving ~~or~~ primary?

A I think here we would be inclined to want a fixed pattern.

Q You might want something else somewhere else?

A Somewhere else, depending on what the conditions of the reservoir are.

Q What is your opinion as to the waterdrive in this pool?

A We have, true, very little well performance to go on. However, if it is a waterdrive it must be extremely minute. I say this on the basis that the Texaco's "CZ" 1 was completed in the order of 273 barrels of water a day. The production has declined substantially to make 60 barrels of oil and 10

barrels of water. If you have a waterdrive with any significance, you should be seeing more water.

MR. KELLY: Which well?

THE WITNESS: "CZ" 1, are those correct?

MR. SCOTT: Yes.

MR. UTZ: Other questions of the witness?

RECROSS-EXAMINATION

BY MR. KELLY:

Q The Phillips is in the Ranger Lake main pay?

A Right.

Q It is not the Bough?

A Zone below the Bough.

Q You can't use that, it would be a separate waterflood project?

A It would be a separate waterflood project. It appears to be the similar type. It is the same Penn interval. I think it has a good possibility of performing similar; the qualities of the oil are quite similar.

Q But it is a separate project?

A Very definitely would have to be a separate project.

MR. KELLY: That's all.

RECROSS-EXAMINATION

BY MR. UTZ:

Q Can you tell me if Section 23 and 34 East is

included in the Ranger Lake Pool?

A Yes, and there's a portion of Section 14 in the Ranger Lake Pool. I believe O'Neill's well is in that. We're very minutely associated with that boundry.

MR. UTZ: Other questions of the witness? The witness may be excused.

MR. PORTER: I would like to comment that I'm glad to hear somebody pronounce that zone right. This is one of the advantages of being old. I don't know how this is going to sound on the record. I've heard this called the "Bow" and "Ball". I recall when the Pennsylvanian Pool was discovered in the North Lea County. I sat with the old nomenclature committee which was operative at that time, and one of their functions was to name new pools, and this came up and we had just gone to the practice of adding a suffix of the pay to the name of the pool. And so this discovery was on a rancher's, B-e-t-e-n B-o-u-g-h, it was decided that there were some real profound thinking that went into it and it was decided that Beten Bough Pennsylvanian was too long so somebody wanted to shorten it to Bough, and an argument ensued that it was"Bow" or Bough, and somebody decided he knew the rancher and he knew it was Beton Bough.

MR. KELLY: It is Texaco's position, and I think we have shown, that the chances of getting a good well or a

well that is economic at the normal location -- in fact, it is Texaco's definite position that they're not going to drill because of the advice of their geology department, and I believe that under the rules of the Ranger Lake Penn Pool that this situation is actually permitted, and I refer the Examiner to Rule 2, "Each well completed or recompleted in the Ranger Lake Penn Pool shall be located on a unit containing 80 acres more or less which consist of the North half South half East half or West half of a single 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 said 80 acre unit".

In other words, we could drill this well by, if this application were not allowed, by drilling on the normal location and then the proposed location, but if our figures are correct, and we went to that trouble and didn't get a well, then it certainly would be uneconomic to drill a second well because you would have an additional, approximately a $200,000.00 cost item. So I think the rules do provide for this type of spacing. In fact, Rule 2 specifically says that, and I feel that it's very risky to ask an operator to take a chance like this, especially when an operator says he can't afford to, and that's the only information he could go on, when the rules do allow for 40 acre spacing, so the only

thing unorthodox about this location is that there isn't a prior well at the normal location.

MR. UTZ: Your interpretation of the rule is that you can drill the second well before you drill the first?

MR. KELLY: No, I can't say that, but my interpretation of the rule is that that would be a standard location. In other words, you could have -- we could have a well right there doing all the things that T.P. claims that we would be doing to them under the rules as designed, if we wanted to spend an extra $200,000.00, and it would be ridiculous to have an operator go to that extent and certainly would not prevent economic waste.

MR. UTZ: You're not claiming that the rule says this is a standard location?

MR. KELLY: No, I'm just saying we could drill in the proposed location.

MR. UTZ: I think that is the intention of the rule, anyway. Are there other statements?

MR. RUSSELL: The rules and regulations, of course, for the development of the field, are based upon what the Commission feels are the most equitable for the development of the field. The spacing is established for the purpose of allowing each person to get the ultimate recovery of the hydrocarbons under his particular lease. The rules and

regulations do not contemplate the changing of a well location merely to allow an operator to get into what he considers a more favorable location, and the structure is based, perhaps, on the operation of success of an adjoining well. Everybody would like to be on the most favorable position as possible, but for the protection of Correlative Rights I feel it is necessary to conform to the pattern as set up by the Commission. But I would like to make one further statement. I would like to express appreciation to the Examiner and Mr. Kelly for letting us go first so I can make another appointment in Raton.

MR. UTZ: You're quite welcome, even though I didn't have anything to do with it. I did have one question which I forgot to ask of Mr. Freels, and he may answer it from where he is if he cares to.

RECROSS EXAMINATION

BY MR. UTZ:

Q You made a determination here on your Exhibit Number 4 that you would have a certain amount of oil drained from you acreage if it was half an 80 acre allowable. Did you make any determination as to what the allowable would have to be for your not losing any oil at all?

A No, I didn't make a calculation. What there allowable should be that would prevent us from losing anything?

dearnley-meier

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I N D E X

E X H I B I T S

NUMBER	MARKED FOR IDENTIFICATION	OFFERED	ADMITTED
Texaco's 1	2	9	9
Texaco's 2	2	9	9
Texaco's 3	2	9	9
Texaco's 4	17	20	20
Texas Pacific's 1	23	28	28
Texas Pacific's 2	23	28	28
Texas Pacific's 3	23	28	28
Texas Pacific's 4	40	43	44

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

Witness my Hand and Seal this 6th day of May, 1966.

Bobby J. Davis
NOTARY PUBLIC

My Commission Expires:

March 13, 1969.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3386, heard by me on April 27, 1966.

Elvis A. Utz, Examiner
New Mexico Oil Conservation Commission