

CASE 2297: Application of PAN AMER  
for 2 non-standard oil units and  
2 unorthodox oil well locations.

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Application, Transcript,  
and Exhibits, Etc.

GOVERNOR  
EDWIN L. MECHEM  
CHAIRMAN

State of New Mexico  
Oil Conservation Commission



LAND COMMISSIONER  
E. S. JOHNNY WALKER  
MEMBER

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

P. O. BOX 871  
SANTA FE

July 13, 1961

Mr. Guy Duell  
Pan American Petroleum Corporation  
Box 1410  
Fort Worth, Texas

Re: CASE NO. 2297

ORDER NO. R-2028

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   

Aztec OCC X

OTHER Mr. Charles C. Spann (For El Paso Products)

**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. 2297  
Order No. R-2028**

**APPLICATION OF PAN AMERICAN PETROLEUM  
CORPORATION FOR TWO NON-STANDARD OIL  
PRODUCTION UNITS AND TWO UNORTHODOX OIL  
WELL LOCATIONS, SAN JUAN COUNTY, NEW  
MEXICO.**

**ORDER OF THE COMMISSION**

**BY THE COMMISSION:**

This cause came on for hearing at 9 o'clock a.m. on June 7, 1961, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 13th day of July, 1961, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

**FINDS:**

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

(2) That the applicant, Pan American Petroleum Corporation, seeks the establishment of a 57.31-acre non-standard oil production unit in the Cha Cha-Gallup Oil Pool consisting of Lots 3, 4 and 5 of Section 17, Township 29 North, Range 14 West, NMPM, San Juan County, New Mexico, plus the S/2 of that portion of the San Juan River channel lying in the W/2 of said Section 17 and along the North boundary of Lots 3, 4 and 5.

(3) That the applicant further seeks permission to locate its Navajo Tribal "G" Well No. 8 at an unorthodox location 1415 feet from the South line and 335 feet from the West line of said Section 17, to which well the above-described non-standard oil production unit would be dedicated.

(4) That inasmuch as the oil well location crowds only acreage owned by the applicant, approval of the subject application will not impair correlative rights.

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CASE No. 2297  
Order No. R-2028

(5) That the applicant further proposes to locate its Frank L. Wood Well No. 1 at an unorthodox location in the Cha Cha-Gallup Oil Pool 990 feet from the South line and 660 feet from the East line of said Section 17.

(6) That said Frank L. Wood Well No. 1 will serve as the unit well for a 108.14-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool established by the order entered in Case No. 2318.

(7) That the applicant's request for the establishment of a 46.74-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool has become moot by reason of the order entered in Case No. 2318.

IT IS THEREFORE ORDERED:

(1) That a 57.31-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool consisting of Lots 3, 4 and 5 of Section 17, Township 29 North, Range 14 West, BOPM, San Juan County, New Mexico, plus the E/2 of that portion of the San Juan River channel lying in the W/2 of said Section 17 and along the North boundary of Lots 3, 4 and 5 is hereby established.

(2) That in the event it is determined by an official re-survey, or otherwise, that the acreage in said proration unit is greater or smaller than 57.31 acres, the acreage to be allocated to said unit shall correspond to the change.

(3) That the applicant, Pan American Petroleum Corporation, is hereby authorized to locate its Navajo Tribal "G" Well No. 8 at an unorthodox location in said pool 1415 feet from the South line and 335 feet from the West line of said Section 17, to which well the above-described unit shall be dedicated.

(4) That the allowable to be assigned to said Navajo Tribal "G" Well No. 8 shall bear the same ratio to a standard allowable in the Cha Cha-Gallup Oil Pool as the acreage in said unit bears to 80.

(5) That the applicant is hereby authorized to locate its Frank L. Wood Well No. 1 at an unorthodox location in the Cha Cha-Gallup Oil Pool 990 feet from the South line and 660 feet from the East line of said Section 17. The 108.14-acre non-standard oil proration unit established by the order entered in Case No. 2318 shall be dedicated to said well.

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

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CASE No. 2297  
Order No. R-2028

DONE at Santa Fe, New Mexico, on the day and year herein-  
above designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*E. L. Meehan*

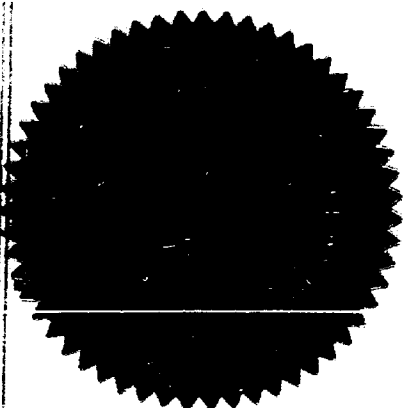
ERWIN L. MEEHAN, Chairman

*E. S. Walker*

E. S. WALKER, Member

*A. L. Porter, Jr.*

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



esx/

**EXAMINER HEARING**

Application of Pan American Petroleum Corporation for two non-standard oil proration units and two unorthodox oil well locations, San Juan County, New Mexico.

TRANSCRIPT OF HEARING

## NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING - DANIEL S. NUTTERCANON PR

NEW MEXICO

REGISTERHEARING DATE JUNE 7, 1961TIME: 9 a.m.

NAME:	REPRESENTING:	LOCATION:
Herman Ledbetter	Newmont	artesia
C. C. Langdon		El Worth, Tex
H. B. Kennedy	Kennedy Oil Co	artesia
O. R. Champion	Newmont	El Worth, Tex
John Espinoza	Atty.	Albuquerque, N.M.
Jim Lohr	Lawyer	Farmington.
Harry Simonson	Murphy Corp.	Denver, Colo
L. W. Eaton Jr	Pan American	Farmington, N.M.
Bro of Trinity	Redfern & Hurd	" " "
Joe W. Whitaker	Atty	" " "
Tom Neenan	Pan American	" " "
L. M. Stephens	Redfern & Hurd	" " "
W. C. Briggs	Agate oil & Gas	-
N. J. Frost Jr	Ind. Mchs	Albany.
Ray Allen	atlantic	midland
Wm. L. Quinn	Atlantic	Roswell
Lawrence S. Neal	Heron & Co	Midland
	P. M. Co	Carlsbad

## NEW MEXICO OIL CONSERVATION COMMISSION

Examiner Hearing - Daniel S. Hutter

Santa Fe, NEW MEXICO

REGISTER

HEARING DATE

June 7, 1961

TIME:

9 a.m.

NAME:

REPRESENTING:

LOCATION:

Roland S. Hamblin

El Paso Natural Gas  
Products Co

El Paso

Lee Anson

Pat Porter

"

OCC

"

Santa Fe

Jack M. Campbell

Campbell &amp; Roswell

Roswell

Frank H. Glaze

Murphy Corp.

Denver, Colo.

Dwight A. Millett

Julian Coffey

(Self)

Self

Flora Vista N.M.

Flora Vista

New Mexico

R. F. Miller

Artesia, N. M.

W. K. Proulx

Gou Anco Oil Co

Dallas, Tex.

BEFORE THE  
OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
June 7, 1961

EXAMINER HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for two non-standard oil proration units and two unorthodox oil well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 46.74-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool consisting of the E/2 NE/4 SE/4 of Section 17, Township 29 North, Range 14 West, San Juan County, New Mexico, plus 20.73 acres in Lot 8 of said Section 17 and 6.01 acres lying North of the mid-channel of the San Juan River and along the South boundary of that portion of said Lot 8 included in the unit. Said unit is to be dedicated to the Frank L. Wood Well No. 1 at an unorthodox location 990 feet from the South line and 660 feet from the East line of said Section 17. Applicant further seeks the establishment of a 57.31-acre non-standard oil proration unit in said pool consisting of Lots 3, 4 and 5 of said Section 17 plus the S/2 of that portion of the San Juan River channel lying in the W/2 of said Section 17 and along the North boundary of Lots 3, 4 and 5. Said unit is to be dedicated to the Navajo Tribal "G" Well No. 8 at an unorthodox location 1415 feet from the South line and 335 feet from the West line of said Section 17.

Case 2297

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING



MR. NUTTER: The hearing will come to order, please.  
The first case this morning will be Case 2297.

MR. MORRIS: Application of Pan American Petroleum Corporation for two non-standard oil proration units and two unorthodox oil well locations, San Juan County, New Mexico.

MR. NUTTER: We would like to ask for appearances in this case.

MR. BUELL: For Pan American, Guy Buell.

MR. SPANN: My name is Charles C. Spann of Grantham, Spann & Sanchez, in the Bank of New Mexico Building, Albuquerque, appearing for El Paso Natural Gas Products Company, and also John Mason, attorney from El Paso, is here appearing for the Products Company.

Before you call the hearing to order in this case, I would like to make a motion, if I may, after all the other appearances are in.

MR. NUTTER: Are there other appearances for 2297?

MR. SPANN: At this time, Mr. Nutter, I would like to state that El Paso Products Company has, this morning, filed an application to force-pool certain acreage into a proration unit which includes some of the land that is involved in the present application. Since that application will have to be heard in the ordinary course, and notice published, I would like to move that ~~the present application be continued until such time as notice~~

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can be given of the present application and then the present case be consolidated with the El Paso case and an order ultimately issued which will dispose of both cases.

MR. NUTTER: Mr. Spann, I understand that El Paso has actually filed the application with the Commission--

MR. SPANN: Yes, sir.

MR. NUTTER: -- to force certain acreage?

MR. SPANN: Yes, sir, it includes some of the acreage in the Pan American.

MR. NUTTER: Does it include acreage in both of the non-standard units sought by Pan American?

MR. SPANN: No, just the one. The acreage in the Southeast Quarter of Section 17.

MR. NUTTER: Southeast Quarter of Section 17. Your motion is to continue Pan American's application in its entirety as regards both non-standard units?

MR. SPANN: Well, I couldn't properly, perhaps, object to proceeding on the other non-standard unit. I would like, certainly, that the hearing on the non-standard unit which involves the same acreage that's involved in our application be continued, yes, sir.

MR. BUELL: May it please the Examiner, Pan American is strenuously opposed to a continuation, either in whole or in part, of Case 2997. In my opinion there's no validity to the

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motion. It simply appears to be a delay for delay's sake alone. I think it would be completely proper for the Commission to hear our case here today and in the course of events, when El Paso's application is heard, then the Commission can have both applications before them and properly make their decision. In my opinion it will simply be a delay for delay's sake.

MR. NUTTER: Mr. Buell, do I understand you correctly that you have no objection to the Commission considering both cases, the one that's under consideration here today as well as the one that will be pending as a result of the application filed by El Paso for the forced pooling proceeding? You have no objection to the Commission considering both of those cases at the same time?

MR. BUELL: Frankly, I don't feel that I could properly object, but I don't believe after the Commission hears our case with respect to the hearing here today that El Paso's case might not even be necessary.

Also, I must say this, there's some doubt in my mind as to whether the Commission can consider forced pooling a non-standard unit. May I add one more thing, Mr. Examiner? We are going to propose and recommend here today in connection with our Frank Wood unit, that the Commission issue an order approving the unit as we are requesting it, but also including within that order an administrative procedure whereby the unit may be

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expanded administratively to include the acreage immediately to the North of the Frank Wood unit, which would include El Paso's acreage. I don't know whether that would change Mr. Spann's opinion with regard to his motion or not.

MR. SPANN: Well, that would seem to indicate that there's more basis than even I had for continuing this and consolidating the cases. If they're asking for the same thing that we're asking for in our application, then certainly they should be consolidated.

MR. BUELL: By the same tone, the position that Mr. Spann is taking is delay for delay's sake alone.

MR. NUTTER: I believe, Mr. Spann, that the motion for continuance of the case will be overruled and that they will proceed to hear Case 2297.

MR. SPANN: Well, then, I would like to ask that the Commission not enter an order in the present case until such time as a hearing can be had on the El Paso application, and that any order that is ultimately issued dispose of both cases.

MR. NUTTER: Your request that the Commission not enter an order in this case until after the hearing of the second case will be referred to the Commission for its consideration, Mr. Spann.

MR. SPANN: Thank you.

MR. BUELL: We have one witness.



(Witness sworn.)

(Whereupon, Pan American's Exhibits Nos. 1, 2, 3 and 4 were marked for identification.)

GEORGE W. EATON, JR.

called as a witness. having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Eaton, state your complete name, by whom you are employed, and what capacity, and at what location, please.

A George W. Eaton, Jr. I'm employed by Pan American Petroleum Corporation in Farmington, New Mexico as a senior petroleum engineer.

Q You have testified at prior Commission hearings, have you not, Mr. Eaton, and your qualifications are a matter of public record?

A Yes, sir, they are.

MR. BUELL: Any questions, Mr. Examiner?

MR. NUTTER: No, sir, proceed.

Q (By Mr. Buell) I direct your attention to what has been marked as Pan American's Exhibit 1. What does that exhibit reflect?

A Exhibit No. 1 is a map of a portion of the Cha Cha-Gallup Pool showing an isopach of the Gallup sand thickness.



The contour interval on Exhibit No. 1 is two feet.

Q What portion of the Cha Cha Pool is reflected by your isopach, Mr. Eaton?

A The isopach map covers only the northwestern portion of the Cha Cha-Gallup Pool. Actually, the area that we're interested in here today is the northwest portion of the map area.

Q Has that area been previously identified to the Commission as a problem area, Mr. Eaton?

A Yes, sir, it has. The problem in this area is a result of the meandering of the San Juan River and the fact that the northern boundary of the Navajo Indian Reservation is the center line of the San Juan River. Thus, the northern boundary of the reservation is a meandering line.

Q Has the Commission granted previous authority for non-standard units and unorthodox well locations in this particular area?

A Yes, sir. Those previous non-standard units and unorthodox locations are colored on Exhibit No. 1 in various colors, blue, yellow, brown and a darker blue.

Q How have you identified the two units which are the subject matter of this hearing here today?

A The Navajo G-8 unit is colored in red. The Frank L. Wood unit is colored in green. Also shown on Exhibit No. 1 by red dots are unorthodox locations which have been approved

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previously by previous orders of the Commission or are the subject of the hearing here today.

Q Mr. Eaton, while we're looking at your isopach, I would like for you to state for the record whether or not in your opinion whether each and every acre in both of the units are inclusively productive in the Cha Cha-Gallup Pool.

A Yes, sir, all the acreage in both the Navajo C-8 unit and the Frank L. Wood unit, as proposed, is proven production in my opinion from the Cha Cha-Gallup Pool.

Q Let's talk first about the Frank Wood unit, and in connection with that let me direct your attention to what has been marked as Pan American's Exhibit No. 2 as well as Exhibit No. 3. Would you state what these two exhibits reflect, Mr. Eaton?

A Yes, sir. Exhibits 2 and 3 are actually copies of the New Mexico Oil Conservation Commission form C-128 showing the acreage in the subsection 17 in which the Frank L. Wood unit is located. Following the same color code as is shown on Exhibit No. 1, the acreage to be dedicated to the Frank L. Wood No. 1 is shown colored in green on Exhibit No. 2.

Q All right, how many acres are in the proposed Frank Wood unit?

A The Frank Wood unit, as proposed and as shown on Exhibits No. 2 and 3, contains 46.74 acres.

Q All right, sir, now what is the proposed location

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for the well on this unit?

A The Frank L. Wood unit well has been staked 660 feet from the East line and 990 feet from the South line of Section 17, Township 29 North, Range 14 West.

Q Why is that location unorthodox, Mr. Eaton?

A That location is unorthodox because it just simply is not a standard location on the Frank L. Wood lease. A standard location under the Cha Cha-Gallup Pool rules would have to be located within 150 feet of the center of the Southeast Quarter, Southeast Quarter, Section 17. In this particular case, not only would that be in the river, but it would also be probably off of the Frank L. Wood lease.

Q You made an on-the-ground inspection of the terrain and the area of the Frank Wood lease?

A Yes, sir, I have.

Q Would you briefly describe for the record the terrain there as you saw it?

A Yes, sir. The Frank L. Wood Well No. 1 location is approximately 200 feet north of the San Juan River channel. The location that is picked is on high enough ground that permits a completely drillable location, but it could not be moved much to the south because of the location of the river.

Q Mr. Eaton, I'm sure you recall that in locating these unorthodox locations in the past, Pan American has always

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attempted to follow a uniform pattern of locating the well. Will you tell me whether or not this location blends in with that overall desire?

A Yes, sir, it does. This location blends in with the present development along the north boundary of the Reservation and the contemplated development which may occur in there in the future.

Q Does this location crowd any other operator?

A No, sir, it does not.

Q With regard to the Frank Wood unit, Mr. Eaton, why is it non-standard?

A The Frank Wood unit is non-standard both because it is considerably less than standard in size, and also because it is non-standard in shape as well. It contains only 46.74 acres as proposed in this hearing.

Q Mr. Eaton, looking at Exhibits 2 and 3, let me ask you this question; would it be possible to form a standard unit utilizing all acreage or any combination of that acreage that lies north of the mid point of the channel of the San Juan River and is in the Southeast Quarter of Section 17?

A No, sir, it would not be possible to form a standard unit in the Southeast Quarter of Section 17 consisting of acreage north of the river.

Q This question may be a little moot, Mr. Eaton, in view

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of Mr. Spann's motion for El Paso Natural Gas Products Company, but prior to that motion was it your understanding that negotiations were under way between Pan American, El Paso and Humble to include this acreage north of the Frank Wood lease in the Frank Wood unit?

A Yes, sir, it was my understanding that negotiations were in progress to include the acreage owned by both Humble and El Paso in the Frank Wood unit.

Q I notice on your Exhibit 2 it shows that a portion of that acreage north of the Frank Wood lease is not leased, is that correct?

A That is correct. There is a 20-acre tract which would be described as the West Half, Northeast, Southeast in Section 17 which is unleased, and there is an undivided one-half interest in the El Paso tract in Lot 7 that is unleased.

Q Would you recommend to the Commission, Mr. Eaton, as I stated to the Examiner, that the order, when they issue it, approve the non-standard unit which we are requesting as well as set up administrative procedures by which the unit could be expanded to include all the acreage in the Southeast Quarter of Section 17 North of the mid point of the river?

A Yes, sir. It would be my recommendation that the order provide an administrative procedure to permit increasing the Frank L. Wood unit incrementally to an ultimate size of



approximately 180 acres which would include the remaining acreage outside of the Navajo Indian Reservation in the Southeast Quarter of Section 17.

Q Look at Exhibit 1, Mr. Eaton, and if it were possible to form the unit that you have just outlined, would we then have two wells on the Southeast Quarter of Section 17?

A Yes, sir. Under Order R-1926, a non-standard unit was approved for that portion of the Navajo Indian Reservation which lies in the Southeast Quarter of Section 17. Another well in the Southeast Quarter of Section 17 would still just be two wells on a quarter section that would permit formation of standard 80-acre units to the north, that is in the Northeast Quarter of Section 17.

Q All right, Mr. Eaton, let me direct your attention now to what has been marked as Pan American's Exhibit No. 4. What is that exhibit?

A Exhibit No. 4 is a copy of Commission Form C-128 showing the acreage to be dedicated to the Navajo Tribal G No. 8. It also shows the general terrain conditions which exist in the Southwest Quarter of Section 17.

Q Would you locate for the record the proposed well site for Pan American's Navajo Tribal G No. 8?

A Yes, that location is 1415 feet from the South line and 335 feet from the West line of Section 17, Township 29 North,

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Range 14, West.

Q Why is that location unorthodox, Mr. Eaton?

A That location is unorthodox because it is more than 150 feet removed from the center of the quarter, quarter section in which the well is located.

Q Would it be possible, I mean physically possible, to point to a spot on that proposed unit that would be an orthodox location?

A I don't believe that there actually is an orthodox location in that unit because of its unusual odd shape.

Q Mr. Eaton, you have located that well very close to the South line of the proposed unit. Why do you recommend crowding that line that much?

A The well is located very close to the South line, as you pointed out, because that is the only drillable location because of the meanderings of the San Juan River in this vicinity. Actually, the location as it's shown on Exhibit No. 4 is on a gravelly peninsula which extends from the bank of the river out into the water itself between the flow channel and some marshy ground which lies between the peninsula and the highcut bank of the river.

Q If you move the well north, what would it be in?

A We would be in water.

Q Would that same thing be true if you moved it east or

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west?

A Yes, sir, it would. To the north, to the east, to the west, moving approximately, this varies a little bit depending on direction, but approximately 150 to 200 feet in any direction, that is to the north, to the east or to the west, would put the location in water. Naturally, you couldn't move it south because then it would not be on the proration unit, and further north it would also move it into this rather marshy swamp land too.

Q Are we crowding any other operator or royalty owner by locating so close to the southern boundary of the proposed proration unit?

A No, sir. The royalty owner to the south of the location is the Navajo Tribe of Indians and Pan American Petroleum Corporation has a lease on the Navajo tribal land in both Section 17 and in the section to the south. So, we're not really crowding any other royalty owner nor another operator.

Q With respect to the proposed non-standard unit, how many acres are in that unit, Mr. Eaton?

A That non-standard unit would consist of 57.31 acres. I might refer you back to Exhibit 2 to get an idea of the exact acreage that would be included; I believe Exhibit 4 has got the terrain material on it to where it becomes rather cluttered.

Q Is that why you prepared Exhibit 2?

A Yes.



Q So, it would show the acreage with distinction?

A Yes, sir.

Q Mr. Eaton, this has been a complicated problem along this erratic San Juan River. Based on data that you have now, do you feel that this might complete the development problem that we have south of the river?

A Yes, sir. I think that it will. There's one more point that I might mention at this time, heretofore in all of our other non-standard units and our unorthodox locations we have been able to make the unorthodox location blend in with a uniform development pattern along this north boundary.

Q Have you done that here?

A In the particular case of the Navajo Tribal G-8, the location does not blend in with the uniform development pattern. It is just simply not possible to get a location that would fit the development pattern that has been established.

Q If you move that well in any direction you would be in water?

A Yes, sir.

Q To your knowledge would that be the first offshore operation in New Mexico history?

A It would be the first to my knowledge, yes, sir.

Q Do you feel that if the Commission approves the requests as you've outlined them here today, that conservation will be

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served and that the correlative rights of all owners of interest will be protected?

A Yes, sir, I do.

MR. BUELL: That is all of our direct at this time, Mr. Examiner. I would like to formally offer Pan American's Exhibits 1 through 4 inclusive.

MR. NUTTER: Pan American's Exhibits 1 through 4 will be admitted. Does anyone have any questions of Mr. Eaton?

MR. MORRIS: Yes, sir.

MR. NUTTER: Mr. Morris.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Eaton, on your Navajo Tribal Unit you stated that there was no possible place on that unit where you could get a standard location?

A Yes, sir.

Q Now, the same would not be true of your Wood unit, though, would it?

A In the case of the Wood unit, to get a standard location on a drillable tract, I don't believe would be possible. In other words, unleased acreage in the West Half of the Northeast, Southeast and the undivided half interest that is unleased under the El Paso tract, I don't believe would constitute available, drillable title situations insofar as those are

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concerned, and a standard location would almost have to fall on one of those two tracts.

Q You couldn't get a standard location on the 20 acres on the Gray lease there?

A Yes, sir, it could. Yes, sir, you are right. You could get a standard location on the 20-acre Gray lease. Actually, we wanted the well location physically on this Frank L. Wood lease because it has an early expiration; that's the main purpose in putting the well location physically on that particular tract.

Q If this were all a proration unit and you had your well up on the Gray lease, it would hold your Wood lease, would it not?

A Yes, sir, it would.

Q Mr. Eaton, in the event this administrative procedure that you've requested is granted in an order as used, and we have an expansion of this unit that would be greater than this 46.47 acres, would you still contemplate to have this well at the proposed location or would you want to move that well to a more central location in the unit?

A Actually, I expect that the well will be drilled prior to the occasion occurring that will permit an enlargement of the unit. So once it was drilled there wouldn't be much that could be done by drilling it a little more centrally. In other words, the Frank L. Wood lease needs to be protected because of its early expiration. As I understand, the title situation on those

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unleased tracts is something that is a condition that only time is going to cure and so very likely I would say the well will probably be drilled prior to the instance occurring where the unit can be enlarged.

Insofar as those tracts that don't have any title problem, I would imagine that the Frank L. Wood unit could be enlarged from 46.47 acres to include, for example, the Humble tract within a very short period of time.

Q Mr. Eaton, does Pan American have any plans at the present time to bring a forced pooling application of their own as to any of this unleased acreage?

A No, sir.

MR. BUELL: Perhaps, Mr. Eaton, I can better answer that. We felt the way negotiations were going, Mr. Morris, up until this morning, that forced pooling would not be necessary, and so from that standpoint we had not contemplated forced pooling.

MR. MORRIS: I was referring, Mr. Buell, to the unleased acreage, being the 20 acres immediately to the west of your Gray lease, and I didn't know that from the standpoint of your title problems, I didn't know but what that might be the best way to handle it and thought maybe you were going to handle it that way.

MR. BUELL: It might be a good way to handle it. The title problem, as I understand it, and I'm certainly no expert

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on it, is that it is unleased and has a rather large federal tax lien against it. That's probably the reason it's unleased. Also our legal thinking at this time is to the effect under our current interpretation of the forced pooling statute, is that the Commission does not have authority to force pool a non-standard unit.

MR. MORRIS: Be that as it may, Mr. Buell --

MR. BUELL: It's obvious now that other people think differently. But for those reasons, Mr. Morris, we had not contemplated forced pooling.

Q (By Mr. Morris) Mr. Eaton, going back to your Navajo unit for a moment, in that area over there, is there any development planned by Pan American in the South Half of the Southwest Quarter?

A Of Section 17?

Q Of Section 17, yes.

A Yes, sir, there is a well already in the South Half, Southwest Quarter, Section 17. It's the Pan American Navajo Tribal G No. 4 which was completed in January, 1961.

Q That's shown on Exhibit No. 1?

A That is shown on Exhibit No. 1.

Q I see.

A The South Half, Southwest Quarter of Section 17, being a full 80-acre tract, is dedicated to that well.

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MR. MORRIS: I have no further questions.

MR. NUTTER: Anyone have any further questions? Mr. Spann.

BY MR. SPANN:

Q Mr. Eaton, the Cha Cha-Gallup Pool has been developed on what spacing or what pattern?

A A good portion of the northwest portion of the Cha Cha-Gallup Pool being on the Navajo Indian land is on approximately 160 acres density. The pool rules call for 80 acres development. With almost no exception the acreage southeast of the Navajo Indian Reservation is developed to an 80-acre density. If it isn't developed to 80-acre density now, drilling is in progress so that it ultimately will be apparently.

Q Did Pan American appear at the hearing that established the 80-acre spacing rules for this field?

A I don't believe so. At the time that the pool rules were established, Pan American was not an operator in the Cha Cha-Gallup Pool.

Q Has Pan American made any study or do you have any information as to the economics of drilling on less than 80 acres in the Cha Cha-Gallup Pool?

A Yes, sir.

Q You do have such information?

A Generally, yes, sir.

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Q Well, would you just give us a little information about that? Can you drill on less than 80 acres in the Cha Cha-Gallup and have the wells pay out?

A Yes, sir. Actually a well in Cha Cha-Gallup, I am confident will drain far in excess of 80 acres, so a well that might be drilled in the vicinity of an area where there is undeveloped productive acreage will drain considerably in excess of the acreage that is assigned to it for proration purposes under the assumption that the acreage that is productive and is undeveloped never will be developed to 80-acre density. For example, take the case of the acreage to be dedicated to the Navajo Tribal G-8, for example, while it's true there's only 57.31 acres in that proposed non-standard unit, but in Section 18 there is practically a full half section that is proven productive as shown by this isopachous map, but yet it only has one well on it at present and there is another unorthodox location which was approved by a previous order. So, it appears that at most that Section 18 held two wells on it where it probably has 320 acres of, that are productive.

Now, that well that the Navajo G-8 will be getting oil off of that undeveloped tract, it doesn't actually have to have oil underneath the particular proration unit in order to estimate what the ultimate recovery for any individual well might be. It might be considerably more than the oil in place.



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Q In other words, you would say that this well could pay out, I'm talking about your Navajo Tribal G-6, by draining adjoining acreage?

A Yes, sir. There's no question in my mind about it. I mean I would have no hesitancy to think that that well would not pay out.

Q And you think that would protect the correlative rights of those adjoining land owners--

A Well --

Q -- by the Commission permitting that?

A Well, the adjoining land owners have an obligation to their lessors just the same as Pan American has an obligation to its lessor, namely the Navajo Indians, and it would behoove those offset operators to immediately move in and protect their acreage.

Q And if they did, then you wouldn't have the drainage, presumably necessary to make this a commercial well, is that correct?

A No, sir, not exactly. For, as I pointed out, just across that section line, the section line doesn't present any deterrent at all to movement of oil. There's approximately, oh, for purposes, say 200 acres in Section 18 that is not dedicated to any well. It would get some of that oil, Navajo oil, not necessarily oil from the tracts north of the river.



Q What I'm trying to get to here, and let's see if you can give me an answer on it, how many acres in that area would you say is necessary to dedicate to a well to make that well economically profitable to drill?

A It's a very difficult question to answer because of the sparsity of development of a good bit of the acreage north of the river. As a matter of fact, to my knowledge there's only one well north of the river and I don't believe it's completed yet, so this Cha Cha-Gallup Pool might extend for many miles north of the river.

Now, if that acreage is never developed, it wouldn't take very much acreage to be dedicated to a well to achieve payout, because, as I stated previously, I believe a well in this Cha Cha-Gallup Pool will drain a tremendous area.

Q Well, presumably this additional acreage will ultimately be developed on pattern as the rest of the field has been, isn't that correct?

A Yes, sir.

Q So, presumably you will not be draining acreage that's undedicated to wells eventually as the field is developed, would you?

A No, sir, not ultimately probably, but in the meantime, until that occurs, that well might very well have paid out.

Q So, in considering whether this well will pay, we must

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presume that the additional acreage surrounding it will be developed and that it will only drain the acreage that's dedicated to it, isn't that correct?

A No, sir, not in total, but go ahead. I will explain on that.

Q What I'm trying to find out, assume all this happens and the field is developed on pattern and the additional wells are drilled and you ultimately have the 33 acres dedicated to the well you are proposing, would that well pay out?

A If the field was completely developed right now down to 80-acre density except to this 33 acres?

Q Yes.

A Under those conditions, no, sir, probably not.

Q It will take more than 33 productive acres to pay out a well in this acreage, is that correct?

A I think so.

MR. BUELL: What 33 acres are we talking about?

MR. SPANN: I'm talking about 57.31, I'm sorry.

MR. BUELL: I think his answer would be the same.

Q (By Mr. Spann) Would it be the same?

A Yes.

Q Now, you haven't actually, yourself, or anyone in your company, sat down and figured the economics of any particular well in this area, have you?



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A No, sir.

Q And you are not prepared to give us that information today?

A No, sir.

Q Direct your attention to Exhibit 4, Mr. Eaton, which shows the acreage involved in the Navajo Tribal G-8 Well, you have located the San Juan River on that map and, as I understand your map, the acreage that you are proposing to dedicate to that well extends to the center of the San Juan River, is that correct?

A Yes, sir. That is true.

Q That aggregates 57.31 acres as you have it colored in red on this Exhibit 4, is that correct?

A That is correct, yes, sir.

Q Was the location of the San Juan River determined from actual surveys on the ground or was it determined from some maps that had previously located the river?

A It was picked from the official survey of this area accepted by the Public Land Office. I think the survey was dated in 1882, but it is the most recent survey that has been accepted.

Q So, what you have done is locate on this map the bed of the San Juan River as it existed in 1882, is that correct?

A Yes, that is correct.

Q You also testified to the meandering of the river and the fact that the northern boundary of the Navajo Reservation is



therefore a meandering line?

A Yes, sir.

Q So the river, as you have located it on this map, isn't necessarily the river location as it exists today, is that correct?

A That is correct.

Q So, even though Humble, with all its power, has been unable to change the location of the San Juan River, Pan American has, is that correct?

MR. BUELL: That isn't correct. Humble was going to straighten it out, not change it.

Q At least Pan American has changed the location of the San Juan River, is that correct, as it exists today?

A No, sir. Actually this map shows the location of the northern boundary of the Navajo Indian Reservation as depicted by the 1882 survey. I don't intend that it should show or represent that is the center line of the river. That's how it was defined in 1882.

Q You said the northern boundary of the reservation changed because of the meandering of the river, that's your initial statement --

A No, sir.

Q If that is true -- oh, you say it does not change by virtue of the meandering of the river?

A No, the point I intended to make was that it's an

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irregular line resulting from the meandering of the San Juan River. I didn't infer it had been changed at all because I don't think it has.

Q You don't know whether by changing of the course of the river which has perhaps occurred there and the accretion on the other side of the river to other acreage there, that your acreage has been reduced, you are not prepared to say whether it has or has not, is that correct?

A I'm advised by my attorneys --

MR. BUELL: You are advised by your attorney right now that you are not an attorney and you are qualified as an engineer and we are straying away from the field of engineering. If the boundary of the Navajo lease is ever changed, it will be in a tribunal other than the New Mexico Oil & Gas Conservation Commission. I don't think we're here to try at this time.

MR. SPANN: What I'm trying to get at, if the present boundary of the Navajo Reservation is the San Juan River, you are not prepared to say how many acres lies south of that river and in the area described as being dedicated to your Navajo Tribal G-8 Unit.

MR. BUELL: Let me answer that, Mr. Eaton. We will state this for the record, Mr. Spann, if the proper form ever changes our interpretation of the northern boundary of our lease, we will, of course, have to abide by it.

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Q Well, as a matter of fact, the reason you have located the well where you did, Mr. Eaton, is because it sits right on the bank of the present course of the San Juan River, isn't that right? That's why you can't move any farther north, as your map would indicate you could?

A That is true.

Q So, actually, the San Juan River cuts right across the very southwest corner of that quarter, quarter section as it's presently located?

A Yes, it covers quite an area in there. As a matter of fact, it's quite broad.

Q Could you move across the river to the north and drill north of the river as it's presently flowing?

A I'm really not quite sure whether we could or not.

Q You possibly might?

A Possibly.

Q Which would certainly be a better location than the one you are proposing, assuming you own any such acreage, isn't that correct?

A It would be a lot more accessible, I'm sure, than this location we're proposing. If, in truth, there is a portion of that land out of water, as I say, I am not really sure because we didn't have any way to measure the width of the river in there.

Q In any event, as the river now flows, most of the



acreage that you are dedicating to this well actually lies north of the river?

A Most of the acreage that we propose to dedicate to this well actually lies in the river.

Q In the river or north of the river, very small amount of it south of the river?

A Very small amount of it south of the river.

MR. BUELL: Mr. Eaton, when you keep saying "river", you mean water, don't you?

A Water, yes, sir.

Q But you haven't exactly made a survey north. Are you prepared to state just how much of this acreage lies south of the San Juan River at this time?

A No, sir, not in acres. You can tell from this little plat on Exhibit 4, approximately how much of the acreage lies above that water line south of the river. The things that I don't know and are not prepared to state at all is where the north bank is. I feel pretty confident about the south bank if we had a surveyor out there to stake the well location, but the north side I don't really know, we didn't have a surveyor go over there.

Q Insofar as the Frank Wood tract is concerned, I assume that there again you have placed the river where it was in 1882?

A That is true, yes, sir.

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Q Again we have the same problem that this doesn't reflect acreage north of the river as it presently flows?

A No, sir, but there is not very much difference there. I measured the distance between that well location and the bank of the river and found it to be 200 feet. Now, this map, which was drawn from the 1882 survey, and the well location, is scaled off and plotted on that map, would show that it's approximately that same distance from the 1882 location of the river. So, actually in this particular case there's not much difference. But, to answer your question specifically, the location of the river as shown in its entirety across the Section 17 was selected from the 1882 survey accepted by the Public Land Office because, again, that represents the boundary of the reservation and, therefore, the boundary of those leases or tracts that lie north of the channel.

Q As I understand it you are now proposing that some sort of administrative procedure be set up in the order that's entered on this application whereby the Commission administratively force-pools this additional acreage assuming the people involved can't agree?

A No, sir. My proposal is that administrative procedure be established by the order that would permit establishment of an approximately 180-acre unit consisting of this acreage in the Southeast Quarter of Section 17 not dedicated,



I mean outside of the Indian River, not forced pooling. I would contemplate that we could all get together.

All of us, Pan American, Humbel and El Paso have a common problem in there, our acreage needs to be developed. I don't see any reason why we can't get together and reach an agreement why there should be any necessity for forced pooling action unless it has to do with the unknown owners of those unleased tracts, but as far as El Paso, Humbel and Pan American are concerned, I don't see any reason why we couldn't reach agreement because our problems are common.

Q Well, I understand that, but if you thought you could get together, then why did you file the present application?

A We had this problem of lease expiration in here and we want to move and get this Frank L. Wood Lease in shape to drill immediately. In the meantime we intended and have negotiated with El Paso and Humbel toward their placing their acreage in this non-standard unit.

Q Well, then, the basis for this application is not the things you have discussed here about the topography and all this business, it's the fact that you wanted to maintain a lease in effect by production, isn't that right?

A The unorthodox location for the Frank L. Wood No. 1 is a result of topography and terrain simply because I don't believe under the Cha Cha-Gallup Pool rules there is a standard location

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on that tract.

Q Well, how about north, to the north there it seems to me like if you eventually agreed to pool your acreage that you would locate the well somewhere nearer the center of the unit or somewhere more nearly on pattern insofar as the form unit is concerned?

A As I mentioned to Mr. Morris, you could put that well on this N. L. Gray tract, Pan American's N. L. Gray tract.

Q Wouldn't that be better if it were there as far as drainage is concerned?

A But that wouldn't take care of the early expiring lease in the absence of a unit. We really want the well located on the Frank L. Wood tract because of the lease problem.

Q What we're doing here today is protecting Pan American's lease now, isn't it?

A Yes, sir.

Q And without regard to correlative rights or anything else?

A Oh, I don't think any correlative rights are going to be violated.

Q When's the expiration date on the lease?

A October 1st, 1961.

Q Well, then, we would have plenty of time, wouldn't we, Mr. Eaton, to consider El Paso's application to force-pool this

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acreage and consider their application after notice and then locate and drill a well in a more desirable location and still protect the expiration date on your lease, wouldn't we?

A Very likely you would. I don't know the exact subject of El Paso's application, but I would personally doubt that El Paso or Humble or Pan American, either one of the three, would like to have that well located on one of those tracts that has the title question about it even if it were force-pooled. The point I'm trying to make is you might wind up with the well not being physically located as near the center of the non-standard unit as you might think that it could be by just looking at the map.

Q Do you think that the Commission could administratively expand this proposed unit of your so as to include this unleased section that you described there, that 20-acre tract?

A Yes, sir, I think they could.

Q Assuming that the rest of you would agree?

A Yes, sir, I think so.

Q You think they could?

A Yes.

Q Without notice to the parties that own this interest and all that business?

A I think administrative application would have to be filed with copies, registered copies probably to all parties of interest, to all offset operators, and then the Commission would



normally have twenty-one days or thirty days to wait for any objection.

Q Well, objections come by and then you would have to go ahead and have a hearing?

A Yes.

Q Just like El Paso is proposing in their application?

A Yes, sir.

Q Assuming you got approval now to drill your well, would El Paso and Humble, for example, share in the proceeds from the production from the date the well began to produce?

A I would say that would have to be something that would have to be worked out.

Q Have to be negotiated?

A Yes, sir.

Q Assuming, of course, that this was included administratively?

A Yes, sir.

Q You do feel that a more desirable location from a drainage standpoint could be found from that requested by you if an administrative order was entered expanding the unit, is that right?

A I don't think it makes that much difference, really, as far as the location is concerned. This location we picked here is on a uniform development pattern. As far as the recovery is

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concerned, I just don't think it would be that much difference.

Q On these isopach maps that have been introduced, how did you determine the thickness of the pay north of the present wells that have been drilled?

A By extrapolation.

Q You just extended the lines?

A Yes, sir.

Q There's actually no drilling been done or tests made or anything else in that area?

A No, sir. Where the lines become dashed up there, it means that it was actually extrapolated data with no control. I don't have any lack of confidence in the map, though, because there's certainly adequate control immediately in the north part of Section 20, 21, 22 that would permit an extrapolation over the small distance that's involved there with a great deal of confidence.

MR. SPANN: I believe that's all.

MR. NUTTER: Does anyone else have any questions of Mr. Eaton? Mr. Morris.

MR. MORRIS: I really have a question Mr. Buell would want to answer.

MR. BUELL: I hope I can.

MR. MORRIS: Is it your understanding of this river channel boundary business on the Navajo Reservation that the



boundary of the reservation stays as it is shown on the 1882 survey until such time as another official survey is adopted, or do you lose a little bit of acreage every time a clump falls off in the river.

MR. BUELL: It's a firm opinion of our Legal Department, I will say that to give it a little more dignity than my opinion, that we are not going to lose a bit of acreage as compared with the 1882 survey.

MR. MORRIS: Are you still paying your rental on the basis of 57.31 acres in this unit?

MR. BUELL: We treat that entire lease as consisting of how it was shown in 1882, and all of our actions, legal, administrative, accounting-wise, bookkeepingwise, are on that basis. It is their firm contention that that Navajo is as it was shown in 1882.

MR. MORRIS: Thank you. No further questions.

MR. NUTTER: Any further questions?

MR. BUELL: I have one more brief one.

REDIRECT EXAMINATION

BY MR. BUELL:

Q So that the record will be unmistakably clear, I want you to state again, and maybe we can get to it better this way: Looking only to your Navajo Lease south of the river, and looking particularly to your development pattern adjacent to the river,

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would you state for the record whether or not on a productive acreage basis in this portion of our Navajo Tribal Lease, whether or not we are developed or will be developed if the Commission approves our request here today on the Navajo Tribal Lease to a density below one well to 80 productive acres?

A No, sir. We're not developed to a productive acreage density anywhere approaching the one well to 80 acres. In other words, there are considerably more than 80 productive acres per location in that tier of short sections along the north boundary of the Navajo Indian land.

Q So, making the assumption that you made for Mr. Spann to the effect that each and every productive acre north of the river was developed and assigned to the well, with that assumption we would still have productive acres on our Navajo Lease in excess of 80 contributing to all our wells as shown on Exhibit 1?

A That is correct.

MR. BUELL: That's all.

MR. NUTTER: Any further questions?

RECROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Eaton, on your Exhibit 1 you show six red dots. How many of those wells have actually been drilled or are locations?

A Two wells have actually been drilled and completed.



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The other, the two that have already been approved, are locations.

The two that have been drilled is the Navajo Tribal D-7 in the Southwest, Southwest Section 16, and the Navajo Tribal G No. 5 in the Northeast, Southeast of Section 18.

Q Order No. 1967 approved a non-standard location for the other well in Section 18, is that correct?

A Yes, sir, that is correct.

Q Order No. 1926 approved the non-standard location for the well in the Southwest, Southeast of Section 17?

A Yes, sir, that's correct.

Q But those wells have neither been drilled?

A No, sir.

Q When will those wells be drilled?

A I don't know the answer to that question, Mr. Nutter.

Q How many rigs is Pan American running in the Cha Cha-Gallup Pool?

A I believe we just have one rig in the Cha Cha-Gallup Pool and one rig in the Totah-Gallup Pool. The rig in the Cha Cha-Gallup Pool is drilling in the Southeastern end right now.

Q Is the well that it's working on almost complete or what's the status on it?

A I'm afraid I don't know the answer to that either.

Q Assuming that your Wood location and your Wood unit would be approved, is it your intention to move that rig up here



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to the Wood well in the very near future?

A I don't know that it would be in exactly that sequence, we would like to drill the Wood well at an early date. The rig is working in the Southeast end of Cha Cha, has several wells to drill in that area. Now, I don't know whether Pan American would want to move the rig up to the north end of the pool and drill one well and immediately move it down to the Southeast to continue its program or not, that's the reason I may have sounded vague, but I just don't have any control. That's just out of my field, I just don't know.

Q What I'm wondering about is when your drilling program contemplates drilling the two wells that have been approved by the Commission, the brown unit and the dark blue unit.

A As I stated, I just don't have a schedule. The sequence of drilling is just something that's not in my field at all.

Q They are on their drilling program though, are they not?

A Yes. They're budgeted.

Q They are budgeted and they will be drilled?

A Yes, sir.

Q You stated that the well in the Northwest of the Southwest of Section 16 has not been completed yet, I believe?

A Actually it's in the Southwest, Southwest, Section 16.

Q No, I think on your direct you mentioned, I believe that's Southwest Products.



MR. BUELL: North of the river.

Q The one well north of the river, you said drilling hasn't been completed, would that be the well there in Section 16?

A Yes, sir. I don't believe it's been completed. The day I went out to the field to look at these unorthodox locations it was drilling at that time and looked like it had just started. It's had time to about be down now too.

Q When that well is completed, the data on sand thickness may either confirm or deny the accuracy of the isopach map as shown here to some extent?

A Yes, it certainly would be a valuable data point.

Q Mr. Eaton, you said you had made some reservoir studies of this area to determine the amount of acreage that was necessary to pay out a well. What recovery factor did you use for primary recovery?

A We were using the recovery factor that was actually developed by this Cha Cha-Gallup Pool Engineering Committee, which amounts to about 14% of the oil in place. In some of my work I think I rounded that out to 15%. But it was either 14% or 15%.

As a practical matter, primary recovery probably never will be seen in the Cha Cha-Gallup Pool, because the plans are under way right now to commence pressure maintenance type operation

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and the recovery factor for primary may have little or no significance because primary never will be realized.

Q What recovery factor for a combination of primary plus pressure maintenance or secondary recovery, what factor is used there?

A I believe they had 38%.

Q That's the pool Engineering Committee that derived those figures?

A Yes, sir.

Q Mr. Eaton, you said it would be your recommendation that an administrative procedure be established whereby the acreage assigned the Wood Unit could be increased incrementally to an ultimate of 108 acres. What would be the basis for such expansion? I mean just how would you recommend that the Commission set up such a procedure?

A The reason that I suggested that it be done incrementally is because in all likelihood the various tracts involved in that acreage in the Southeast Quarter of Section 17 are going to become eligible, shall we say, for inclusion in a unit at different times. For example, the Humble tract, it might be in a position to be included in the very near future.

Q What makes the tract eligible to be included under your procedure, communitization?

A Yes. These tracts that have that tax lien problem

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effecting the title probably would not be eligible for entry into a unit because, for one reason, you really couldn't know who the working interest is. You don't really know who the royalty interest is, so until that problem is settled, I would say that they would not probably be eligible for inclusion. But, the order, to go back to it, Mr. Nutter, I would think, permit an ultimate enlargement of the Frank L. Wood Unit to a size of 108 acres, approximately 108 acres, which would consist of that portion of the Southeast Quarter of Section 17 lying north of the Navajo Indian Reservation.

It really need not, well, it need not specify anything regarding sharing of development costs. It would just be a normal proration unit except that in this particular case there would be an initial unit with provisions for subsequent enlargement to include the rest of the entire acreage.

Q Would one of the basic requirements for inclusion of any acreage there in the Wood Unit be the requirement that all owners would have had to have signed the communitization documents?

A I would think that at least the owners of the tract that will be added to should have signed. Now, as subsequent tracts would be added, then additional signatures would have to be obtained on the unit agreement.

Q You weren't advocating any kind of forced enlargement at all?



A No, sir. Our recommendation was based strictly on the premise that the operators involved all recognized they have a common problem and it would be voluntary, completely voluntary.

Q Have the owners of the Humble acreage, El Paso's interest in their 39-acre tract and the owners of the unleased 20 acres, been given notice that they may be included by some administrative procedure in the Wood Unit at this hearing?

A The owners that you speak of that we have talked to are Humble and El Paso. We have not contacted Humble or El Paso's lessors. We are aware of an inland man who is attempting to clear up the titles on those unleased interests, and, actually, haven't talked to him in the very recent past. I don't know just what the status of the matter is, but he would probably be the only one who knows who the owners of the unleased tracts are since it has the tax lien against it.

Q But none of the owners in the Southeast Quarter of Section 17 north of the river outside of the proposed Wood Unit have been given legal notice, by the advertisement of this case, that their acreage could be included by administrative procedure in the Wood Unit, have they?

A No, sir, with the exception of Humble and El Paso, who are working interest owners.

Q Well, did the advertisement of this case specify that they might be included by an administrative procedure?



A No, sir.

MR. NUTTER: Does anyone else have any questions of Mr. Eaton? Mr. Spann.

MR. SPANN: If I could ask one more question.

BY MR. SPANN:

Q Mr. Eaton, this may be something that Mr. Buell can answer rather than you. This's just for my own education. Is there any reason why that Indian acreage can't be formed into a unit with non-Indian acreage and an ordinary drilling unit or 80-acre unit established?

MR. BUELL: I can answer the first part of that. I know of no legal impediment to such a joinder, but Mr. Eaton has an engineering objection. Would you like to hear it?

MR. SPANN: Yes.

A In the case of this acreage in the Cha Cha-Gallup Pool, the engineering objection to it is not actually a hundred percent engineering, but it involves the formation of this secondary recovery or pressure maintenance unit operation. The unit people of Humble and El Paso and Pan American are in accord that the simplest way to form a unit and operate this property under pressure maintenance type program most expeditiously would be to hold this Indian acreage intact and operate under a joint operating agreement. You wouldn't have to have a fullfledged unit agreement.

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Now, then, how that affects this acreage here is something I'm positive that Humble would object to, and I wouldn't blame them. If we take this Federal acreage lying north of the river and mix it in with the Navajo tract to form these standard units, then it would not be possible to conduct this secondary recovery or pressure maintenance operation under a joint operating unit. It would have to be a fullfledged unit agreement. I am confident that Humble and El Paso, I know Pan American doesn't want that at all.

Q (By Mr. Spann) I was just wanting to determine why you stopped at the edge of the Navajo Reservation and started forming non-standard units across the river.

A That's the reason, in cooperation with the other working interest owners of the Navajo tracts to try to keep this acreage from getting mixed in with state, Federal or patented lands.

MR. SPANN: That's all I had.

MR. NUTTER: Any further questions? Mr. Eaton may be excused.

(Witness excused.)

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

MR. BUELL: No, sir, not at this time.

MR. NUTTER: Does anyone have anything further they wish to offer in Case 2297?



MR. SPANN: Yes, we have some witnesses.

MR. NUTTER: We will take a fifteen-minute recess and we will swear all the witnesses at the same time.

(Whereupon, a recess was taken.)

MR. NUTTER: The hearing will come to order, please. You have a witness or two?

MR. SPANN: Yes, I have three witnesses, Roland L. Hamblin, James P. Leese and Lee Ayers, to be sworn.

(Witnesses sworn.)

(Whereupon, El Paso's Exhibit No. 1 was marked for identification.)

ROLAND L. HAMBLIN

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. SPANN:

Q Would you state your position or employment with El Paso Products?

A I'm manager of the Land Department of El Paso Natural Gas Products Company.

Q How long have you been so employed?

A Approximately four years.

Q Have you previously testified before this Commission?

A Yes.

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Q Mr. Hamblin, you are familiar with the application that has been filed here by Pan American, I take it?

A Yes, I am.

Q Would you generally state to the Commission the basis for El Paso's objection to this application as it has been filed?

A Yes. Although I was not directly involved, it was some of my land men under my supervision with negotiations with Pan American regarding the formation of this unit.

Q You are talking now about the Frank L. Wood --

A The Frank L. Wood Unit. We were under the impression that our acreage would be included in whatever unit was formed and Humble was also involved in that negotiation, and I am informed they were under the same impression and we were not aware that Pan American proposed to go ahead with their unorthodox spacing unit until we got a copy of the notice. At that time we met again with Pan American and asked that our acreage be included in this drilling unit.

Approximately Tuesday morning we were informed that Pan American wanted to go ahead with their application and their present unit and that our acreage would be added later administratively.

Now, we feel that there would be several problems in connection with this that would put us at a distinct disadvantage with Pan American, and also that the other parties that would

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come in administratively would also be under the same disadvantage. One of the reasons would be when we would start participating in production would it be the date of first production or would it be the date that we entered. Another would be development costs, how they would be shared and borne. The communitization undoubtedly, if that is what Pan American proposes as the instrument in which these additional tracts would be added, would undoubtedly be prepared by Pan American; as the operator of the well they would have the producing well and be the operator and it would be in effect a question of whether we could get in and participate in it or not.

We feel that the only proper solution would be to force-pool all of the acreage in the Southeast Quarter of Section 17 North of the San Juan River into one proration unit. I think that would take care of everybody and would protect correlative rights and everyone would be pleased. That is the solution, the eventual result which will go either way.

It appears that the eventual result will be the entire Southeast Quarter north of the river will be included in one proration unit. That's what we recommend be done by forced-pooling.

Q Have you filed such an application?

A Yes, we have.

Q That was done when?

A That was filed this morning.



Q Have you prepared a map showing the area that you propose to force-pool under your application?

A Yes, sir, we have prepared such a map. It's a rather poor one, but we have it here at the present time.

Q Directing your attention to El Paso's Exhibit No. 1, what does that show?

A El Paso's Exhibit 1 shows an area outlined in green which is the Southeast Quarter of Section 17 north of the San Juan River. It shows the owner of Pan American, El Paso and Humble. It shows the unleased 20-acre tract and it shows the present course of the San Juan River.

Q Of course, that is the area that you propose to force-pool under your application?

A Yes, sir. That is the area that we have asked to be included in a non-standard proration unit to be accomplished by force-pooling.

Q As a matter of fact, Exhibit 1, or copies of Exhibit 1, were attached to your application as an exhibit to that application, is that correct?

A That is correct.

Q Does this include the acreage that Pan American proposes to dedicate to their well under their present application?

A Yes, sir, it includes all the acreage which Pan American proposes to dedicate, and, additionally, the unleased

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20-acre tract, El Paso's tract and Humble's tract.

Q Directing your attention to the unorthodox location which they have proposed, would you feel that would be a proper location in the event this unit that you propose is formed?

MR. BUELL: Pardon me, Mr. Spann, is this witness an engineer or geologist? I thought you qualified him as a land man.

MR. SPANN: Well, if the answer I think he's entitled to give --

MR. BUELL: Can I ask now what is he other than the general classification --

MR. SPANN: For the record he is a land man, that's correct.

A I'm not qualified in Mr. Buell's opinion, to say definitely what we recommend or where a definite location should be. I have had experience in the formation of the units that a location should be one that is mutually acceptable to all the operators. The one that Pan American may not be mutually acceptable to us or to Humble or to you or anyone but Pan American.

Q Are there any other reasons other than what you have just discussed?

A Well, we have been in agreement with Pan American regarding the formation of the unorthodox spacing units south of the river for the reason, as they stated, the expediting of a secondary recovery or pressure maintenance unit of the lease

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South of the river. We have been concerned about the fact that some of them we feel have insufficient acreage dedicated to them. That's the only question we have had, but once we cross the San Juan River we leave the San Juan, the Navajo Indian Reservation, and we get into fee land and developed acreage, most of it which is fee. It's cut up into small forms and tracts, a little town of Kirtland sits right here, Fruitland is right up the river. We are going to have many people involved, some tracts are going to be leased, some unleased, some of the tracts are going to have title problems on them, some are not. There are going to be many people involved, and the question of correlative rights seems to be very important.

I think the only way we are going to prevent drainage of some of the small, unleased tracts and prevent all the problems that might arise therefrom would be to set up an appropriate spacing or proration units and go ahead and form them by forced pooling. That should protect everyone and protect the correlative rights and prevent drainage and waste.

MR. SPANN: I believe that's all.

MR. NUTTER: Any questions of Mr. Hamblin?

MR. MORRIS: Yes, sir, I have one.

MR. NUTTER: Mr. Morris.

CROSS EXAMINATION

BY MR. MORRIS:



Q Mr. Hamblin, as a land man, is it your opinion -- well, I'll ask it this way, do you agree with Mr. Buell's interpretation of the effect of this survey in this area in that the acreage in both of the units would remain according to the 1992 survey until changed by an official survey?

A Well, I haven't had the benefit of our Legal Department's opinion, but I think a serious question has been raised as to whether the acreage north of the present river is included in the Navajo Reservation or belongs to the fee owners to the north of the river who, I'm sure, are presently occupying and using such land. I think a serious question has been raised which, of course, can not be settled here.

Q Right. That's why I was trying to get as many different ideas on this as possible. Do I understand that El Paso Products objects to the location of the well on the Wood Lease?

A I don't know that we do object to it. We have not had sufficient time to study it and it will have to be studied by our reservoir people and the recommendation made as to where the location should be. This may or may not be, it may be satisfactory. It may be objectionable, I do not know.

MR. MORRIS: Thank you.

MR. NUTTER: Mr. Buell.

BY MR. BUELL:

Q Mr. Hamblin, how much acreage would El Paso own



~~within this 108-acre unit that both Pan American and now you have~~  
been talking about?

A At the present time we have an undivided one-half interest in 29.44 acres. We are presently negotiating with the unleased tract and may or may not acquire the interest in it.

Q Right now you have only an undivided one-half interest in and to a little over 29 acres?

A That's correct.

Q Actually, Mr. Hamblin, it seems to me the ultimate objective of Pan American and El Paso, as we have seen it expressed here today, the ultimate objective is just about the same?

A That is true.

Q The only real difference is method?

A That is correct.

Q We were recommending the voluntary cooperative method among operators and you feel probably that maybe forced pooling is better here?

A Well, we were negotiating to form such a cooperative unit and then the next thing we knew Pan American filed the application to leave us out. The ultimate objective, as you state, is the same, I believe.

Q You feel that you are at such a disadvantage under the procedure that we've recommended here today that you would urge the Commission to deny that part of our application that dealt

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with the Frank Wood Unit?

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A We feel that all the tracts that would come in administratively would be at a disadvantage to Pan American.

Q All of the problems that you mentioned, I believe you stated development costs when you would share in production, are not those problems that are common to any voluntary cooperative negotiation that you land people overcome those every day?

A Yes, but when a unit has been formed and a well drilled and a person is operating it and somebody else has to come into it he's under a distinct disadvantage to the operator. That's a different situation than when you say we are all cooperating together to form another unit. This is not the case here.

Q I can't help but feel that perhaps your real basic objection, you feel there may be lack of good faith on the part of Pan American in negotiating with you and Humble.

A No, I don't think there would be any lack of good faith. I just say we would be at a disadvantage in negotiating with Pan American. I didn't mean or intend to infer that there was any lack of good faith, if any.

Q Do you feel, Mr. Hamblin, that all of the working interest owners in this 108 acres, I believe it's yourself, Humble and Pan American, do you feel that they have all firmly refused to voluntarily negotiate?

A Well, I don't think that they have. If anyone has, why



Pan American would be the closest to it.

Q Well, I tell you right now in Court, not in Court, but in this hearing, for the record, that we are certainly willing to negotiate, and I think our evidence that we presented here today shows that.

A We are too.

Q In view of your answer, then, I wonder if you are aware that the Commission attaches a condition precedent to a forced pooling hearing and that condition is that operators must firmly refuse to voluntarily pool their acreage and form a unit.

A I was not aware of that. There is an unleased tract in there which I think until we know who the ownership is I can't say whether they have agreed to join or refused to join. We don't even know who the owner is, we can not say whether he has or has not agreed or anything about him.

Q But you can say with respect to Humble and Pan American that neither of those companies have firmly refused to voluntarily negotiate?

A No, I couldn't say that they have.

Q If I am right and the Commission does attach such a condition to the hearing of a forced pooling case, it would appear that your application we have been discussing is premature, is it not?

A That's a legal conclusion which I would not be prepared

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to state.

Q I thought you were a lawyer, I'm sorry. That's all I have.

MR. PORTER: Do you think it would be in order to have a fifteen-minute recess while you get together on this thing?

MR. BUELL: Oh, that we could.

MR. NUTTER: Mr. Spann.

REDIRECT EXAMINATION

BY MR. SPANN:

Q Did the fact that while you were negotiating with Pan American, and without any notice to you Pan American files this application for a non-standard unit involving an area which you were proposing to pool by agreement, did that indicate to you that they might be refusing to further negotiate?

A It was very upsetting to everybody concerned, and it appeared to us to indicate at that time that they definitely did not want us included. It's only been within the last couple of days they have agreed to let us come in. In fact, we met with them right after the notice came out and asked that we be included. Pan American said "Well, we'll let you know", and it took about a week for them to give us an answer, and, as I say, we didn't get it until Tuesday.

Q Do you have any information or ideas as to why they would file such an application if they were in good faith in this

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attempting to form a unit by agreement?

A I can see no good reason why they went ahead without notice to the people who were negotiating with them to form the unit. It appears that it should have been done by voluntary agreement.

MR. SPANN: That's all.

MR. BUELL: May I interrupt to state this for the record, it's quite apparent that there has been a breakdown in communications between Pan American and El Paso. They certainly should have been advised of our plans with regard to this hearing, and I'm sincerely sorry that they weren't and apologize to their representatives here today. I would also like to state for the record that our filing of this application, which we did, we filed it for the reasons which we put in the record, that we have this lease that we feel we must have in all good conscience protect, should not be construed that we are refusing to negotiate. That that is not the case, actually, I heard only this morning that Humble is now agreeable to coming into our unit, so certainly negotiations have not broken down, communication, yes, and I'm humbly sorry.

MR. NUTTER: Thank you. Did you have any further questions, Mr. Spann?

MR. SPANN: No.

MR. NUTTER: I notice a discrepancy in the acreage shown

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on your Exhibit No. 1 as compared with Pan American's Exhibit No. 4.

A I think another witness, Mr. Leese, would be better prepared to testify to that than I would.

MR. NUTTER: Mr. Leese is the surveyor who prepared this plat?

MR. SPANN: Yes.

MR. NUTTER: I'll defer questions regarding the acreage to him, then. Anyone have any further questions of Mr. Hamblin? He may be excused.

(Witness excused.)

MR. SPANN: I will call Mr. Leese now.

JAMES P. LEESE

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. SPANN:

Q Would you state your name for the record, please?

A James P. Leese.

Q What business are you in?

A Co-owner of the San Juan Engineering Company in Farmington, a surveyor.

Q You are a registered surveyor?

A I am a registered surveyor.

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Q How long have you been in that business?

A Almost ten years.

Q Now, handing you El Paso's Exhibit 1, I'll ask you if you prepared that survey or plat.

A I did, yes, sir.

Q How did you prepare it, from their maps or from actual surveys on the ground?

A We prepared it from actual surveys on the ground.

Q I see that this proposed unit that Mr. Hamblin described and which is outlined in green on this exhibit includes certain tracts and an aggregate acreage. Is that the actual acreage in the area north of the San Juan River lying in the Southeast Quarter of Section 17?

A That's the actual acreage north of the present thread of the San Juan River. The center line of the San Juan River.

Q That might be different than the acreage that would be involved if a location of the river, as taken from an 1882 map were used, is that right?

A That is right.

Q Did you also survey the area involved south of the river in what would be the Northwest of the Southwest Quarter?

A As outlined in red on that map, we didn't actually survey that. What we did out there was to locate the banks of the river, both the high banks, the low banks, and the water



lines and from that we arrived at a pretty definite location of the center line thread of the river, which was then plotted on the map and calculations were made from those plots.

Q And, using the center line of the river as you actually found it out there, how much acreage is involved in the area south of the river in that quarter, quarter section?

A Approximately 9 acres.

MR. BUELL: May it please the Examiner, I haven't interrupted prior to now, but it appears that the only question this witness is going into are those of title. I think the Commission has enough problems in their day-to-day regulation of the oil and gas industry without taking on and assuming a new jurisdiction. If all of the questions directed to this witness are going to relate to title, and so far they have, I would like to object because I don't feel that it's pertinent or proper for the Examiner to consider.

MR. NUTTER: Mr. Buell, we are interested in the acreage and this man has surveyed the property and whether the title is affected or not, we would like to know how many acres are in some of the tracts.

MR. BUELL: The only way to do that is to assume that a Court, if it ever comes before a Court, says that the title starts where Mr. Leese has started it. Only then do you have an accurate survey. He's starting the title at the mid point where he

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found the river. We contend that's not the right place to start.  
You are trying title.

MR. NUTTER: We don't intend to change the boundaries  
of the Indian Reservation at this hearing.

MR. BUELL: That's all his testimony relates to.

MR. NUTTER: We are interested in knowing how many acres  
he found in this acreage north of where he found the river.

MR. BUELL: I would like for the record to show that  
Pan American feels that what he found is meaningless since he  
started from the wrong stake.

MR. NUTTER: The record will show that you feel that way.

MR. SPANN: For the record, I wanted to have Mr. Leese  
explain this exhibit and what it shows and how it was proposed.

MR. BUELL: Could I just have a running objection so I  
won't have to interrupt?

MR. NUTTER: Yes, sir. Your objection to them as  
relating to the exhibit?

MR. BUELL: Any of his testimony that involves a ques-  
tion of title.

MR. NUTTER: Yes, sir.

Q (By Mr. Spann) Mr. Leese, were you personally on the  
ground and observed the terrain and the topography--

A Yes.

Q -- in the area? In your opinion could a well be located



north of the river as it presently flows, which would be more nearly in the center of the Northwest Quarter of the Southwest Quarter--

A Yes, sir.

Q -- than that proposed by Pan American?

A Yes, sir.

MR. SPANN: I believe that's all I have.

MR. NUTTER: Be more nearly in the center of what?

MR. SPANN: Of the quarter, quarter section, located north of the river, would be more nearly in the center of the quarter, quarter section than the well which Pan American proposes. That's all.

MR. NUTTER: Any questions of Mr. Leese?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Leese, I want to ask you a couple of questions. In the tract that is shown on Pan American's exhibit as being one-half El Paso Products and one-half unleased, Pan American showed 27.92 acres?

A Yes.

Q You show 29.44 acres. How do you explain the difference in the acreage shown in that tract? That's not affected by the boundary of the river, is it?

A No, sir, I don't believe it is. Probably the reason

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is given here in that the 10.56 acres carried to the west of that, which I actually surveyed, is carried down to the quarter, quarter section, and the total quarter, quarter is 40 acres and we took the difference in that. That's the way I arrived at that. I didn't survey all of these leases. I was hired to survey only Humble's lease and the river throughout the section. Some of the other figures I have calculated may be a little rough, but they are approximate.

Q You took the 10.56 acres down to what line?

A Down to the quarter, quarter line 1320 feet south of the mid point of the section.

Q The line that would run right straight across the "d" in the word flood?

A Yes, sir.

Q Then you subtracted 10.56 from 40?

A Yes.

Q And came up with 29.44?

A Yes, sir.

Q And you calculate that there is 117.53 acres within the green line?

A Yes.

Q In the Southeast Quarter north of the river?

A That is correct.

Q You say in determining where you were running your lines



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you took the high lines and the low lines on the north and south bank and took a mean between them?

A For the thread of the river we took a mean of the edge of the river as it is today, or the day we made the survey.

Q Was the river running high or low?

A It was running pretty high at that time and we're having spring runoff now.

Q So, actually, the line of the river could change from month to month depending on the flow in the river?

A Yes, sir.

MR. NUTTER: I believe that's all. Any further questions? Mr. Buell.

MR. BUELL: Mr. Examiner, in view of our position that his testimony was wholly improper, we have no questions.

MR. NUTTER: Does anyone have any questions? Mr. Leese may be excused.

(Witness excused.)

MR. SPANN: Mr. Lee Ayers.

(Whereupon, El Paso's Exhibit No. 2 was marked for identification.)

LEE AYERS

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION



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BY MR. SPANN:

Q Would you state your name for the record, please?

A Lee Ayers.

Q By whom are you employed and in what capacity?

A I am employed by El Paso Natural Gas Products as engineer in charge of the Reservoir Engineering Section in El Paso.

Q How long have you been so employed?

A Four years.

Q Have you previously testified before this Commission or had your qualifications accepted?

A No, sir.

Q Would you give generally your educational background as an engineer, and experience in the field?

A I was graduated from Texas A. and M. in 1949 with a B.S. degree in mechanical and petroleum engineering. I worked four years for the United States Bureau of Mines in Wichita Falls, worked two and a half years for Gulf in Odessa, worked one and a half years for Forrest Oil Corporation in Midland, and four years for El Paso Products.

MR. SPANN: Any questions about the witness's qualifications?

MR. NUTTER: No, sir, please proceed.

Q (By Mr. Spann) Handing you El Paso's Exhibit 2, I will ask you what that shows.



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A This would be Exhibit 2-A, is that correct?

Q Yes, it will be Exhibit 2 and the pages identified A, B, C and D, if that's all right.

A Exhibit 2-A is an exhibit entitled "Basic Reservoir Data for the Cha Cha-Gallup Pool, San Juan County, New Mexico". It shows the volumetric formula for calculating the original oil in place, with the average porosity as 14.7%, the water saturation as 35.9% and the oil volume factor, 1.392.

Then, using those data in the equation it shows the calculation for the original oil in place for one acre foot of Gallup sand in the Cha Cha Field to be 532.53 barrels per acre foot. Then, the estimated ultimate primary recovery is 13.7% of the original oil in place, which would amount to 72.9 barrels per acre foot.

The ultimate primary plus secondary recovery is estimated at 38.3% of the original oil in place, or 203.8 barrels per acre foot.

Where did you get the percentage factor you used in calculating the ultimate or primary recovery and secondary recovery?

A All of the data shown on this exhibit and the recovery factors were obtained from an engineering subcommittee report that Mr. Eaton referred to previously. The participating companies on the engineering report were Pan American, Humble and El Paso Products. Pan American was chairman of the study.

Q Now, referring to Exhibit 2-B, would you describe it,



and what it shows? As a matter of fact, if you will just go ahead, Mr. Ayers, and explain the entire exhibit, we can shorten this perhaps.

A Exhibit 2-B is entitled the "Economics of Primary Reserve for an Average 80-Acre Well, Proposed Northwest Cha Cha-Gallup Unit, San Juan County, New Mexico." Taking the basic data that was presented on the previous exhibit and applying that to an 80-acre spaced well and an average well in the proposed unit area, this is for the Navajo lease that's been referred to south of the river as an average thickness of 6.25 feet. That would give a reserve, then, a gross primary reservoir of 38,025 barrels.

Knocking out one-eighth royalty would leave a 33,272 barrel reserve to the working interest owner. The oil sells for \$2.75 in this field, and there's a nickle casing charge and 20 cents per barrel production and ad valorem tax, so the net revenue would be \$2.50, so the value at \$2.50 for the working interest would be \$83,180.00. The operating cost for an average well would be \$8,460.00.

The average development cost for a well is \$60,000, and the expected pumping equipment cost in the future is \$8,500.00. Subtracting these three cost items from the revenue to be generated would leave a net profit to the working interest owner of \$6,220.00 from the oil production. In addition the casinghead gas will soon be sold in the field and it will have a value of estimated

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of additional \$6,064.00, so the total profit on an average 80-acre

well in the primary should ultimately be \$12,284.00.

The purpose in showing this exhibit is to show at the end of primary for an average 80-acre well you do achieve payout, but you obtain a very small profit considering the size of the investment.

Exhibit 2-C, again, is utilizing the basic data that we have presented in the previous exhibits and applying it specifically to the Pan American Wood No. 1 Well with the allocation of 46.74 acres as was in their application.

Taking the isopachous map that was included in the engineering report and extrapolating those pay thickness lines, and in determining the acre feet of pay that would exist under this tract, we obtain 234 productive acre feet.

Q Would that be the isopach map that was introduced in evidence by the applicant here?

A No, sir, it was a different isopach map.

Q Go ahead.

A On Exhibit 2-C we show primary and primary plus secondary reserves and economics for the Wood No. 1 Well on the small allocation acreage. Again, the gross reserves are shown for primary, 17,059 barrels. The primary plus secondary, 47,689 barrels. Knocking out the one-eighth royalty net to the working

interest owner for the primary would be 14,927 barrels, including

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secondary it would increase to 41,728 barrels. Applying the value of the oil at \$2.50 per barrel, the well would generate on the primary, \$37,318; revenue including secondary, \$104,320. The lease operating costs under primary are estimated at \$8,460; including secondary the operating costs would increase, they would be \$27,180. The development cost would be the same in either case, \$60,000.

The future expenditure for pumping equipment would be \$8500 on the primary, \$11,237 on the secondary. Of course, under primary you would not spend any money for secondary equipment, but under secondary you would spend \$7,900. Subtracting the three cost items from the amount of revenue that would be generated by this well at the end of primary, the working interest owner would still suffer a loss of \$39,642 on the oil. He would get a value of the casinghead gas, \$2,720. So, he would ultimately suffer a loss of \$36,922 at the end of primary. At the end of primary plus secondary he would have a profit of \$335.00. Of course, that appears ridiculous to us to spend \$60,000 to drill a well and ultimately derive a profit of \$335.00.

Exhibit 2-D, again, is applying the reserves and economics to the Wood No. 1 Well, but we've expanded the amount of acreage that would be allocated to that well to be the full Southeast Quarter of Section 17, lying north of the San Juan River.

Q That would be the acreage that you propose in your



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application?

A That's correct. At the time this exhibit was prepared we thought there was about 104 acres to be included in that proposed area. I understand now it's slightly more than that, but going again to the isopachous map from the Engineering Subcommittee report and extrapolating north from the river the net pay thickness line, the productive acre feet that would apply to this quarter section north of the river was determined to be 552 acre feet.

Applying the same reserve figures and knocking out royalty and applying the value of the oil at \$2.50, under primary, this larger well would generate \$88,028, and under primary plus secondary, \$246,090. Deducting your operating cost, your development cost and your pumping equipment cost and secondary recovery equipment cost, and adding the value of the casinghead gas sales, you would end up at the end of primary on this well with the profit of \$17,485. With primary plus secondary you would have a profit of \$145,275. This is a little more in line to our way of thinking as to the way the economics should appear on the drilling of wells. Even this one with only \$17,000 profit at the end of primary is not what we would consider a real strong incentive for development drilling.

Q Was Exhibit 2 prepared by you or under your supervision?

A Yes, sir.



MR. SPANN: I would like to offer Exhibits 2-A, B, C and D in evidence.

MR. NUTTER: We also haven't received Exhibit No. 1 yet.

MR. SPANN: I will offer that in evidence too.

MR. NUTTER: El Paso's Exhibits 1, 2-A through D will be admitted.

CROSS EXAMINATION

BY MR. BUELL:

Q Mr. Ayers, you recognize that there's one big fallacy in in the figures that you have presented to the Commission?

A I believe not.

Q Should I take it, then, that you, as a reservoir engineer, feel that a well drains its proration unit and no further?

A That depends on what the development situation is. It's like Mr. Eaton stated, the first well drilled in an area may drain offsetting acreage, but if the offset obligations are soon met, then the wells are going to drain the acreage allocated to them or be controlled by the allowable estimate or their capacity to produce.

Q Since you don't agree with my use of the word fallacy, let me put it another way and perhaps you can agree. You have assumed in all the work that you presented that a well drains its proration unit and no further?

A That is correct, because the progress of development is

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indicated that such an assumption is correct.

Q Do you think that's the case in the Cha Cha-Gallup reservoir at this time?

A Certainly do.

Q You really do? A Yes.

Q You feel that each well is draining its proration unit?

A Essentially so.

Q When you have a portion of the field developed on 80 and a large portion of the field on 160's?

A You are referring to the 160 as that's in the Navajo Indian tract and that acreage is just about unitized. Pan American reservoir engineers are not worried about it, and I will guarantee that the El Paso engineers are not worried about any migration.

Q Our engineers are not worried about it, but they will agree with you to that extent, but they don't agree with you in your position that each well in this field is exactly draining only its assigned acreage.

A I didn't say exactly, I said essentially.

Q Do you agree with Mr. Eaton that in the area of the field we are concerned with here, I'm sure you heard his statement that in the immediate area on the Navajo Tribal Lease we have sufficient productive acreage unassigned such that our density of development in that area is not below one well to 80 productive

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acres?

A I haven't checked that and I can't answer it, but I will say that in my opinion you have filed application for more wells than I feel is needed at this time.

Q I think your actions show that, but, now, do you want to go back and answer my question?

A I told you earlier that I had not actually taken your map and determined how much acreage that you have assigned. If you are speaking only of the first row of wells along the river I'm rather doubtful. If you are including all of your Navajo leases throughout the entire area, that's going to be unitized, I think the statement Mr. --

Q All the Navajo leases, a child could look at the map and see that the density wasn't down to one well per acre.

A That's correct.

Q But all your economics are based on the assumption that a well will drain its assigned acreage and none other.

A The only way to look at economics is to carry it all the way through. We are interested in what kind of revenue the well is going to generate when it's ready for plugging.

Q With that being your objective and your goal, Mr. Ayers, I frankly can't understand your opinion that it will drain only its proration unit when, as an engineer, you know it will drain a greater area.

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PHONE CN 3-1491

A If the offset obligations are not drilled that is entirely right.

MR. SPANN: This is purely an argumentative line.

MR. BUELL: I don't want to argue. Let me just withdraw the question.

MR. NUTTER: Very good.

MR. BUELL: Just withdraw it.

MR. NUTTER: Do you have any further questions? Does anyone have any questions of Mr. Ayers?

BY MR. NUTTER:

Q Mr. Ayers, in determining the reserves for the 46.76 acres on the Wood No. 2 Well, what amount of pay did you use?

A 234, it's the top figure.

Q What was the thickness there?

A The average thickness would be five feet.

Q Five feet?

A Approximately.

MR. NUTTER: Any further questions of Mr. Ayers?

He may be excused.

(Witness excused.)

MR. SPANN: That's all we have.

MR. NUTTER: You have nothing further, Mr. Spann?

MR. SPANN: Nothing further.

MR. NUTTER: Does anyone have anything further they



wish to offer in Case 2297? We'll take the case under advisement.

MR. BUELL: I have a closing statement, Mr. Examiner.  
I thought you were asking for the testimony.

MR. NUTTER: Go ahead.

MR. BUELL: Would you like to go first? Since we were  
the applicants I think we have a right to close last.

MR. SPANN: I'm not sure he's correct on that. I will  
state for the record that we would like to renew our request in  
view of the evidence developed here, and especially because of  
Mr. Buell's present position, that apparently, and El Paso's also,  
that apparently with some time this matter can be negotiated, I  
would like to urge that nothing be done in this case until the  
application of El Paso that was filed today is heard, and that,  
again, I would like to request that after that happens that the  
cases be consolidated, insofar as final determination is concerned,  
and that a final order be entered, whatever order is appropriate  
which applies to both cases.

MR. BUELL: May it please the Examiner, I would like to  
urge that the Commission act on both phases of our request, both  
on the Frank Wood Unit and the Navajo Tribal G No. 8 Unit. I feel  
that the record made not only by Pan American but by admissions  
and testimony in evidence on the part of El Paso clearly show that  
their application for forced pooling is completely premature.  
~~That they haven't met a condition that the Commission, to my~~



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PAGE 77

knowledge without fail, insists on in any forced pooling case.

I have never been involved in a forced pooling, nor have I sat through one where if the applicant did not affirmatively show that all efforts for voluntary forming of the unit had been exhausted that question was asked by the Commission. To my knowledge this Commission has never approved a force-pool unit where the applicant had not exhausted all reasonable means of voluntarily forming the unit.

The forced pooling statute, it's a harsh remedy, and it should only be used when nothing else can be used. For that reason, and in view of the state of the record here that there have not been firm refusals from all the working interest owners, I urge the Commission to act on both phases of our request. I know we're here now in June, we're looking at a lease expiration date of October. It looks like a long period of time, but I'm sure the Examiner and the Commission is familiar with the fact that trouble can develop and it does take time, and we do want to protect that lease, and we sincerely feel that the avenue we're taking, the approach we are using, the method we are using is the right approach, and we feel that the same result can be achieved voluntarily as can be achieved through the harsh remedy of forced pooling if it was applicable, of course, which we contend it isn't, the objectives are the same, 108 or 104 acre unit.

We feel that ours is the best way. I would, therefore, urge



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that the Commission act on both phases of our request, and certainly I feel that the Commission should act, and I hope affirmatively, on our request for Navajo Tribal G No. 8, even though the Commission, and in view of the record, I don't see how they could, but even if they do decide not to act on that portion of our request that dealt with the Frank Wood Unit.

MR. NUTTER: Any further statements? We will take this case under advisement and call Case 2298.

STATE OF NEW MEXICO )  
: SS  
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at 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 and notarial seal this 13th day of June, 1961.

*Ada Dearnley*  
Notary Public-Court Reporter

My commission expires:

June 19, 1963. I

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2297 heard by me on 6/7, 1961.

*Ada Dearnley*, Examiner  
New Mexico Oil Conservation Commission



**ATWOOD & MALONE**  
**LAWYERS**

JEFF D. ATWOOD (1983-1980)  
ROSS L. MALONE  
CHARLES F. MALONE  
E. KIRK NEWMAN  
RUSSELL D. MANN  
PAUL A. COOPER  
BOB F. TURNER

TELEPHONE MAIN 2-6221  
ROSWELL PETROLEUM BUILDING  
ROSWELL, NEW MEXICO

June 2, 1961

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

Re: Case No. 2297 before the Oil Conservation  
Commission of the State of New Mexico

Gentlemen:

We are local counsel for Pan American Petroleum Corporation and as such wish to enter our appearance in the captioned case. Pan American will also be represented by Guy Buell, a member of the Texas Bar, and a Company employee. The actual presentation for Pan American will be made by Mr. Buell.

Very truly yours,

ATWOOD & MALONE

By: *E. Kirk Newman*

EKN:ps

cc: Mr. Guy Buell

DOCKET: EXAMINER HEARING - WEDNESDAY, JUNE 7, 1961

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

The following cases will be heard before Daniel S. Nutter, examiner, or  
Elvie A. Utz, as alternate examiner:

CASE 2297:

Application of Pan American Petroleum Corporation for two non-standard oil proration units and two unorthodox oil well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 46.74-acre non-standard oil proration unit in the Cha Cha-Gallup Oil Pool consisting of the E/2 NE/4 SE/4 of Section 17, Township 29 North, Range 14 West, San Juan County, New Mexico, plus 20.73 acres in Lot 8 of said Section 17 and 6.01 acres lying North of the mid-channel of the San Juan River and along the South boundary of that portion of said Lot 8 included in the unit. Said unit is to be dedicated to the Frank L. Wood Well No. 1 at an unorthodox location 990 feet from the South line and 660 feet from the East line of said Section 17. Applicant further seeks the establishment of a 57.31-acre non-standard oil proration unit in said pool consisting of Lots 3, 4 and 5 of said Section 17 plus the S/2 of that portion of the San Juan River channel lying in the W/2 of said Section 17 and along the North boundary of Lots 3, 4 and 5. Said unit is to be dedicated to the Navajo Tribal "G" Well No. 8 at an unorthodox location 1415 feet from the South line and 335 feet from the West line of said Section 17.

CASE 2298:

Application of Chambers & Kennedy for a gas-oil dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Monument State Well No. 1, located in Unit J, Section 34, Township 19 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the Eumont Gas Pool and the production of oil from the Eunice-Monument Pool through the 5½-inch by 2½-inch casing-tubing annulus and through 2½-inch tubing respectively.

CASE 2299:

Application of Newmont Oil Company for an amendment of Orders Nos. R-1110 and R-1110-A, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an amendment of Orders Nos. R-1110 and R-1110-A, which authorized a pilot waterflood

project in the Square Lake Pool, Eddy County, New Mexico, to permit the expansion of said waterflood project to include lands in Sections 27, 28, 32, 33, and 34, all in Township 16 South, Range 31 East, Eddy County, New Mexico, and to further define the horizontal limits of said project. Applicant also seeks the establishment of special rules governing the expansion of said waterflood and providing for capacity allowables therein.

CASE 2300:

Application of Southwest Production Company for a non-standard gas proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 321-acre non-standard gas proration unit in the Basin-Dakota Gas Pool consisting of the NE/4 NE/4 of Section 27 and all of the E/2 of Section 22, Township 30 North, Range 12 West, San Juan County, New Mexico, excepting from the E/2 of said Section 22 a 13-acre and a 26-acre tract owned by Dwight L. Millett, Gladys L. Millett, Julian Coffey and Pan American Petroleum Corporation. In the alternative, applicant seeks the establishment of a 261-acre non-standard gas proration unit in said pool consisting of all of the E/2 of said Section 22 excepting therefrom the aforesaid 13-acre and 26-acre tracts.

CASE 2301:

Application of the Murphy Corporation for approval of the Northwest Caprock Unit Agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Northwest Caprock Unit Agreement, which unit embraces approximately 1525 acres of State land in Townships 11 and 12 South, Range 32 East, Lea County, New Mexico.

CASE 2302:

Application of Atlantic Refining Company for an oil-oil-oil triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order authorizing the triple completion of its Carlson Federal "A" Well No. 1, located in Unit I, Section 23, Township 25 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Paddock formation adjacent to the Justis-Paddock Pool, the production of oil from the Justis-Blinebry Pool and the production of oil from the Justis-Tubb-Drinkard Pool, through parallel strings of 2-inch tubing.

CASE 2303:

Application of Redfern & Herd, Inc. for an unorthodox gas well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to locate its

Airport Well No. 1 at an unorthodox gas well location in the Basin-Dakota Gas Pool at a point 200 feet from the North line and 500 feet from the East line of Section 8, Township 29 North, Range 13 West, San Juan County, New Mexico.

CONTINUED CASES

CASE 2286:

Application of Aztec Oil & Gas Company for an exception to Rule 309 (a), San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to commingle the Totah-Gallup Pool production from the following-described leases, all in Township 29 North, Range 13 West, San Juan County, New Mexico.

Federal Lease No. SF 079065 in Sections 19, 20 and 29.

State Lease B-11017-23 comprising in pertinent part the SW/4 NW/4 of Section 20.

State Lease B-11017-21 comprising in pertinent part the NW/4 NW/4 of Section 20.

Smith-Eaton Lease comprising in pertinent part the NE/4 SE/4, SE/4 NE/4 and the E/2 NW/4 of Section 20.

Applicant proposes to commingle said production in a common tank battery located on the SW/4 of said Section 20 after separately metering the production from the State and fee leases only.

CASE 2287:

Application of Aztec Oil & Gas Company for an exception to Rule 309 (a), San Juan County, New Mexico. Applicant, in the above-styled cause, seeks permission to commingle the Totah-Gallup Pool production from five separate fee leases, all located in Section 18, Township 29 North, Range 13 West, San Juan County, New Mexico.



# PAN AMERICAN PETROLEUM CORPORATION

P. O. Box 480, Farmington, New Mexico  
May 9, 1961

File: N-74-986.510.1

Subject: Application for Hearing to  
Consider Two Non-Standard  
Proration Units and Two  
Unorthodox Locations  
Cha Cha Gallup Pool  
San Juan County, New Mexico

Mr. A. L. Porter, Jr. (3)  
New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Dear Sir:

Pan American Petroleum Corporation hereby makes application for a hearing to consider the establishment of the following two non-standard proration units and unorthodox locations in the Cha Cha Gallup Pool, San Juan County, New Mexico.

1. A non-standard proration unit consisting of the E/2 NE/4 SE/4 Section 17, T-29-N, R-14-W, plus 20.73 acres out of Lot 8, Section 17 plus 6.01 acres of the N/2 of the San Juan River channel south of Lot 8, Section 17, being a total of 46.74 acres. Said non-standard unit to be dedicated to Pan American's Frank L. Wood No. 1 at an unorthodox location 990 feet from the south line and 660 feet from the east line, Section 17, T-29-N, R-14-W.
2. A non-standard proration unit consisting of Lots 3, 4, and 5 plus the S/2 of the San Juan River channel lying north of Lots 3, 4, and 5, all in Section 17, T-29-N, R-14-W, being a total of 57.31 acres which will be dedicated to Pan American's Navajo Tribal "G" No. 8 at an unorthodox location 1415 feet from the south line and 335 feet from the west line, Section 17, T-29-N, R-14-W.

The unorthodox locations and the non-standard units are shown on the attached copy of Form C-128.

It is respectfully requested that these matters be set for hearing at the next Examiner Hearing of the Commission.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION

*T. M. Curtis*  
T. M. Curtis  
District Superintendent

*Proctor*  
*5/26/61*  
GWE:en  
Attach.

# NEW MEXICO OIL CONSERVATION COMMISSION

## WELL LOCATION AND ACREAGE DEDICATION PLAT

Case 2297

SECTION A

OPERATOR

WELL NO.

LOCATED

COUNTY

NAME OF PRODUCING FORMATION

UNIT LETTER

FEET FROM

S. L. ELEVATION

LEASE

TOWNSHIP

RANGE

NMPM

LINE

ACRES

LINE

FEET FROM

DEDICATED ACREAGE

POOL

NO.

1. IS THE OPERATOR THE ONLY OWNER\* IN THE DEDICATED ACREAGE OUTLINED ON THE PLAT BELOW? YES

2. IF THE ANSWER TO QUESTION ONE IS "NO," HAVE THE INTERESTS OF ALL THE OWNERS BEEN CONSOLIDATED BY COMMUNITIZATION AGREEMENT OR OTHERWISE? YES

NO

IF ANSWER IS "YES," TYPE OF CONSOLIDATION

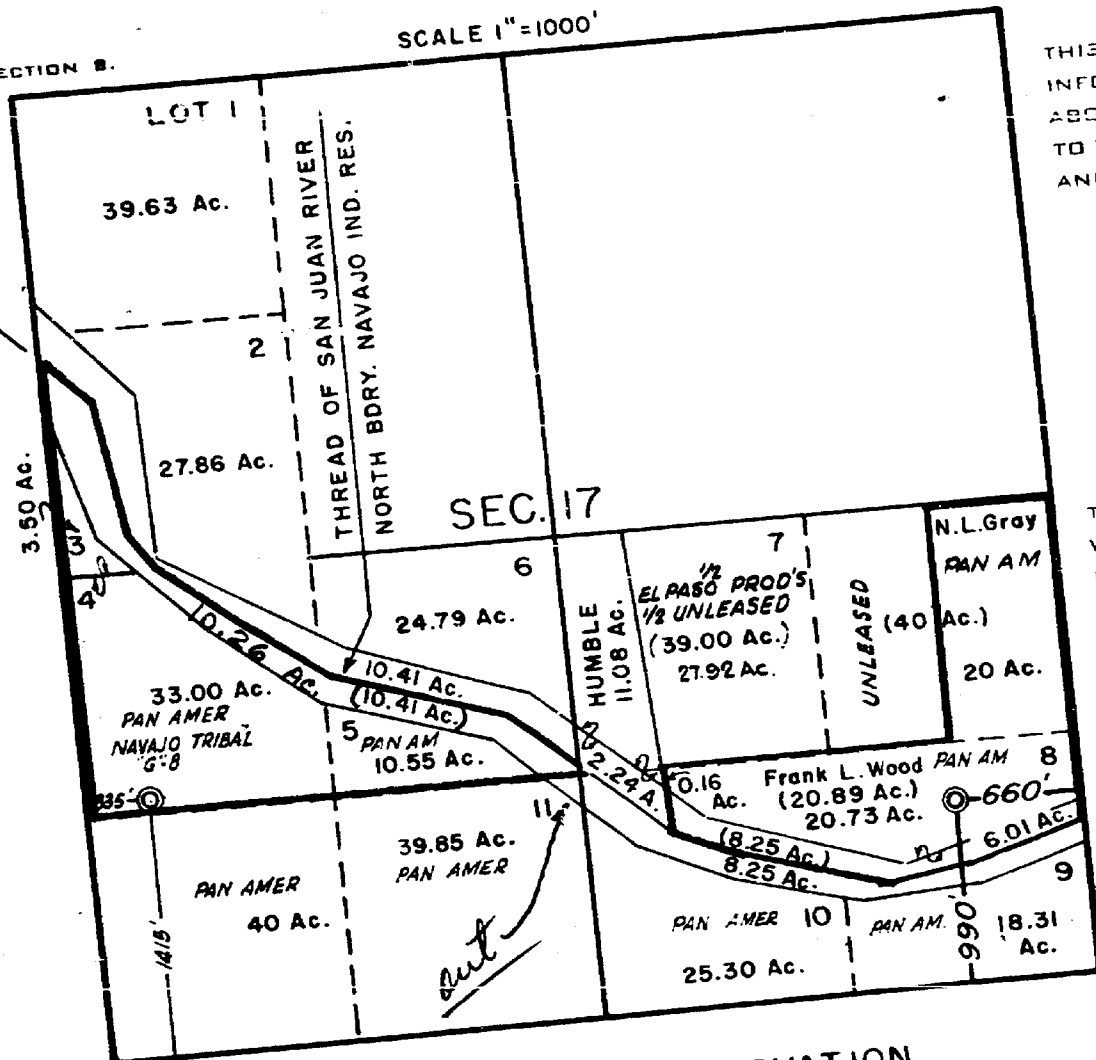
3. IF THE ANSWER TO QUESTION TWO IS "NO," LIST ALL THE OWNERS AND THEIR RESPECTIVE INTERESTS BELOW:

OWNER

LAND DESCRIPTION

SECTION B

SCALE 1"=1000'



THIS IS TO CERTIFY THAT THE INFORMATION IN SECTION A ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

OPERATOR

REPRESENTATIVE

ADDRESS

THIS IS TO CERTIFY THAT THE WELL LOCATION SHOWN ON THE PLAT IN SECTION B WAS PLOTTED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE SURVEYED

FOUR STATES  
ENGINEERING CO.  
FARMINGTON, NEW MEXICO

REGISTERED ENGINEER OR  
LAND SURVEYOR

CERTIFICATE NO.

NAVAJO INDIAN RESERVATION

#### SURVEY INFORMATION WITHIN THE NAVAJO INDIAN RESERVATION

The following is reproduced for your information from a study previously made of the matter in response to a former inquiry:

This office can furnish accurate information for only that portion of the Reservation in New Mexico. Information regarding the Arizona surveys may be obtained by addressing the Office Cadastral Engineer for Arizona, Arizona State Office, Main Post Office Building, Phoenix.

There is enclosed a diagram which shows the extent of surveys made within the Navajo Reservation which are referred to the New Mexico Principal Meridian, New Mexico, and which are now the only official surveys within that area, since surveys under the Navajo Meridian were cancelled.

The lines surveyed within Townships 17 through 20 North, (including the portion of the Fifth Standard Parallel North), were by A. Parker Warner, Cadastral Engineer, in 1931. Costs of survey were paid from the appropriation, "Surveying and Allotting Indian Reservations, 1932". There are 20 plats showing these surveys.

The Sixth Standard Parallel North and boundaries of Ts. 25, 26, 27 and 28 N., R. 19 W. (exclusive of Seventh Standard Parallel North), were surveyed by Harold R. Vogel and Jack C. Means, Cadastral Engineers, in 1955. The field work is completed. Field notes and plats have not been received for filing. Costs of survey were paid from a contribution advanced by the Humble, Tide Water, Stanolind, Continental-Gulf, and Murphy-Texas Pacific Oil Companies.

The Seventh Standard Parallel North, as far west as the Treaty East Boundary of the Reservation, was surveyed by Deputy Surveyor Fitch in 1877. Ts. 29 N., Rs. 14 and 15 W., and R. 16 W., east of the Treaty East Boundary, were surveyed by deputy surveyors in 1881 and 1882. The Reservation was later extended by Executive Order (survey of boundaries originally by John G. Evans in 1884), and the east boundary found to pass through T. 29 N., R. 14 W., about one mile west of its east boundary to the San Juan River, which then forms the boundary to its intersection with the Treaty East Boundary. Information in recent years is that the original marks of the 1877, 1881 and 1882 surveys are deteriorated, but that a reasonable percentage can be identified.

Boundaries and subdivision shown for T. 29 N., R. 16 W., lying west of the Treaty East Boundary, and Ts. 29 and 30 N., Rs. 17 and 18 W., were surveyed by Clayton R. Burt in 1913 under an appropriation for surveying Indian Reservations. During this survey he also restored the Treaty East Boundary from the Seventh Standard to the Colorado-New Mexico Boundary.

The boundaries of Ts. 29 and 30 N., Rs. 19, 20, and 21 W., (not previously mentioned, and excluding the Arizona-New Mexico Boundary), and of Ts. 31 and 32 N., R. 21 W., (again excluding the Arizona-New Mexico, and the Colorado-New Mexico Boundaries), were surveyed by Hugh B. Crawford, Cadastral Engineer, in 1951. Costs of survey were paid from funds advanced by the Office of Indian Affairs.

The Colorado-New Mexico Boundary has been resurveyed by Arthur D. Kidder, Commissioner, for the United States Supreme Court. Field notes or plats of this survey are not available here, but the plat of T. 32 N., R. 21 W., does reflect the survey information for its north boundary. The Arizona-New Mexico boundary has been resurveyed from its north end to slightly below the Seventh Standard Parallel North. This restoration was made in connection with Arizona surveys, but the information is shown on the New Mexico plats, Ts. 29 to 32 N., R. 21 W.

The boundaries of the Navajo Treaty Reservation, and some township surveys referred to its east boundary as a meridian, and to its south boundary as a base, were surveyed by E. N. Darling in 1869 and 1870. Correspondence in the files shows that these surveys received consideration in 1931, in conferences with employees and officials of the Bureau of Indian Affairs, the General Land Office, and members of the Navajo Tribal Council. The result of these conferences disclosed that no disposals had been made of land under the Darling Surveys, and that the physical evidence of the surveys was almost entirely gone. Accordingly, on May 12, 1931, Commissioner Rhoads, of Indian Affairs, advised Commissioner Moore, of the General Land Office, of the desirability of abandoning these surveys. The intent at that time was to complete surveys within the Reservation by a continuing program, referring those in New Mexico to the New Mexico Principal Meridian, and those in Arizona to the Gila and Salt River Meridian. Upon further study, the Commissioner of the General Land Office cancelled those surveys referred to the Navajo Base and Meridian on June 17, 1936 (in New Mexico, only).

There are at present 42 plats in our file which show current information on townships within the reservation, and for its south boundary. In addition, there are 5 additional plats for the 1881-1882 surveys in T. 29 N., which have been superseded or for which information is available on those in the 42 mentioned. Completing information of the resurvey of the east boundary of the reservation requires an additional 8 sheets of plats of townships in R. 13 W., outside the reservation. An approved plan of survey for the area lying between the Sixth and Seventh Standard Parallels is on file. Photostats of these are available at \$1.00 per sheet, remittance to be made payable to the Bureau of Land Management.

Surveys within the Reservation can not be made under the current appropriation available to the Bureau of Land Management. They can be made from funds advanced by the Office of Indian Affairs, or from contributions by individuals or companies, upon proper arrangements with the Area Administrator, Bureau of Land Management, Denver Federal Center, Denver, Colorado.

Boundary dispute. fee & state lands Indian Land.

San Juan county - River.

Acquisition - acquisition. Boundary. Indian Land

effected thereby

Barber Moss:

See McClaine on Indian lands - leasing thereof.

See American Law of Mining on this per boundary  
Clark survey and Boundaries

land -

T 29 N R 14 W

San Juan County

Navajo Reservation

State interest -

land royalty owner

conservation - non st. unit.

See *Choctaw & Chickasaw Nation v. Cox*  
251 F.2d 773 (1958)

*Choctaw & Chickasaw Nation v. Seag*  
235 F.2d 30 (1956)

Clark § 627

general rule that, in government survey, there  
is not deemed to be any reservation between the meander  
line and the water

T 29 N R 14 W

(A) May 26, 1881 (23 004.60)

(B) Some plat as H w/ Navajo Reservation  
marked on some with red line South  
San Juan River indicated as Indian  
land noted

(23029.25) (C) ~~at~~ Oct 17, 1881 noted as superseded  
By Plat approved Aug 31, 1882

(D) Aug 31, 1882 (23004.60)  
shows relocation of San Juan  
in part of area moving some more to the  
north  
apparently accepting some acreage  
as in May 26, 1881 Plat.

Letter June 28, 1881

Dept of the Interior  
General Land Office

To Henry Ahlborn -

Plats 29N 14W

are w/in limits of Navajo Indian  
reservation as enlarged by presidential order  
of Jan 6, 1880

direct measurement of both banks San Juan  
from the point of crossing the original boundary  
of reservation <sup>east</sup> for a distance of 15 miles eastward  
that being kind of enlargement authorized  
by presidential order above referred to

Should the eastern boundary of reservation  
be enlarged w/in a distance of 10 chains  
of either side of line described section 13 & 14  
and 35 and 36 in 29N 14W  
such line to be taken as the eastern boundary  
of reservation. but should a difference  
greater than that specified be found.  
a new boundary line for eastern limit  
will have to be run.

Choctaw and Chickasaw Co  
10 (1958)

251 F.2d 733

held where Indian lands advertised before 1908  
and which had been purchased by a predecessor  
had been described by notes and bounds w/ designated  
acreage and w/o reference to the river.  
and acreage described and sold w/in patent  
was considerably less than that advertised  
as existing and lands in dispute were situated  
between notes and bounds description but lay  
of river which was accreted by gradual  
cession of river and present bank  
Indian nation had no valid claim to  
accreted lands.

228 F.2d 230

Where Choctaw and Chickasaw Nation  
made by US of public lands bounded by treaty,  
made w/o reservation of intrusion are determined  
as to effect according to law of state in which grant  
lie

August 31, 1882  
only official survey of T 29 N, R 14 W

Mr. Long,  
Health Officer, Navajo Indian  
Windmushock, Arizona

Executive Order : Jan 6, 1880

" Commencing in the middle of  
the channel of the San Juan River,  
where the east line of the  
Navajo Reservation in the Territory  
of New Mexico is established by  
the treaty of June 1, 1868, (15 Stat. 667)  
crosser said river; thence up  
and along the middle  
channel of said river ---  
--- set apart as an  
addition to the present Navajo  
reservation --- "

R. B. Hayer

Cha Cha Non - Standard Oil Production Unit

R-1968	89.62	8-28-13
Pan-Am	89.22	8,9-28-13
R-1967	70.58	18-29-14
Pan-Am	46.75	16-29-14
R-1948	71.3 *	16-29-14
Sw Prod		
R-1926	51.86	17-29-14
Pan Am		
R-1867	88.7 *	16-29-14
Pan Am		
<hr/>		
Case 2289	108.48	7-28-13
Aspen Crude	87.5	7-28-13
	97.30	7-28-13
Case 2297	(46.74)(108.14)	17-29-14
Pan Am	57.31	17-29-14

BASIC RESERVOIR DATA FOR CHA CHA - GALLUP POOL,  
 SAN JUAN COUNTY, NEW MEXICO

Original Oil in Place =  $\frac{7758 \text{ (Ac-Ft)} (\text{Porosity}) (1 - \text{Water Sat.})}{\text{Oil Vol. Factor}}$

Where: Porosity = 14.7% ✓  
 Water Sat. = 25.0% ✓  
 Oil Vol. Factor = 1.392 ✓

Therefore, O. O. I. P. =  $\frac{7758 (1) (0.147) (0.65)}{1.392} = 532.53 \text{ bbl/ac-ft}$  ✓

Ultimate Primary Recovery =  $13.7\% \times 532.53 = 72.9 \text{ bbl/ac-ft}$  ✓

Ultimate Primary plus Secondary Recovery =  $38.3\% \times 532.53 = 203.8 \text{ bbl/ac-ft}$  ✓

*all data  
 from engineering  
 sub-committee  
 report -  
 Pan-Am  
 Humble  
 EP Prod.*

**ECONOMICS OF PRIMARY RESERVE FOR AN AVERAGE 80-ACRE WELL,  
 PROPOSED NORTHWEST CMA CMA - GALLUP UNIT,  
 SAN JUAN COUNTY, NEW MEXICO**

Gross Oil Reserve = 72.9 bbl/ac-ft x 80 acres x 6.52 feet  
 Gross Oil Reserve = 38,025 bbl

Net W.I. Oil Reserve = 33,272 bbl

Value of W. I. Oil @ \$2.50 = \$83,180

Less Operating Cost *	=	\$ 8,460
Less Well Development Cost	=	\$ 60,000
Less Pumping Equipment Cost	=	\$ 3,500
Profit to W. I. Owner on Oil	=	\$ 6,220
Value of Casinghead Gas	=	\$ 6,064
Total Profit	=	\$ 12,284

*2.75 per bbl  
 gathering charge  
 @ 200 ad value  
 per*

\* \$120 per well per month x 56.4 months

CASE 2297

EXHIBIT 2-C

EL PASO NATURAL GAS PRODUCTS

51

**ECONOMICS OF PAN AMERICAN - WOOD # 1 WELL  
WITH AN ALLOCATION OF 46.74 ACRES**

	<u>PRIMARY</u>	<u>PRIMARY PLUS SECONDARY</u>
Productive acre-foot	234 ✓	234
Gross oil reserve, bbl	17,039	47,609
Net W. I. Oil reserve, bbl	14,927	41,728
Value of W. I. oil @ \$2.50	\$ 37,318	\$ 104,320
Less operating costs *	\$ 3,400	\$ 27,100
Less well development cost	\$ 60,000	\$ 60,000
Less pumping equipment	\$ 2,500	\$ 11,237
Less secondary equipment	--	\$ 7,900
Profit to W. I. owner on oil	\$ -39,642	\$ - 1,997
Value of casinghead gas	\$ 2,720	\$ 2,552
Total profit	\$ -36,922 ✓	\$ 4 335 ✓

\* Primary = \$150 per well month x 36.4 months

Secondary = Primary plus \$300 per well month x 62.4 months

CASE 2297  
 EXHIBIT 2-d  
 EL PASO NATURAL GAS PRODUCTS

**ECONOMICS OF PAN AMERICAN - WOOD # 1 WELL  
 WITH AN ALLOCATION OF ALL OF THE SOUTHEAST QUARTER OF  
 SECTION 17 NORTH OF THE RIVER (Approximately 194 Acres)**

	<u>PRIMARY</u>	<u>PRIMARY PLUS SECONDARY</u>
Productive acre-feet	562 ✓	562 ✓
Gross oil reserve, bbl	48,241	112,498
Net W. I. oil reserve, bbl	35,211	98,436
Value of W. I. oil @ \$2.50	\$ 88,028	\$ 246,090
Less operating costs	\$ 8,440	\$ 27,150
Less well development cost	\$ 60,000	\$ 60,000
Less pumping equipment	\$ 3,500	\$ 11,237
Less secondary equipment	--	\$ 7,900
Profit to W. I. owner on oil	\$ 11,068	\$ 139,773
Value of casinghead gas	\$ 6,417	\$ 5,802
Total profit	\$ 17,485 ✓	\$ 145,575 ✓