



MR. NUTTER: We'll call case 3863.

MR. HATCH: Case 3863, application of Pan American Petroleum Corporation for a unit agreement, Eddy County, New Mexico.

MR. BUELL: For Pan American Petroleum Corporation, Guy Buell. We have two witnesses, Mr. Examiner. We also have a rather large cross-section which, with the Examiner's permission, we'd like to put it on the board directly behind the Examiner.

MR. NUTTER: Very well. I might observe at this point that we have an entrance on your behalf by Atwood and Malone, Roswell.

MR. BUELL: Thank you, sir.

(Whereupon, Applicant's Exhibits Numbers 1, 2, and 3 were marked for identification.)

MR. BUELL: Here's a complete set of exhibits, Mr. Examiner, all stamped, including a folder of the cross-section.

MR. HATCH: Both witnesses can stand and be sworn.

(Whereupon, witnesses were sworn.)

JACK D. ANDERSON

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

DIRECT EXAMINATION

BY MR. BUELL:

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

A My name is Jack D. Anderson. I am employed by Pan American Petroleum Corporation in Fort Worth, Texas. I'm a landman.

Q In connection with your employment with Pan American, are you familiar with the unit agreement and the efforts to form the North Crow Flats Exploratory Unit?

A Yes, sir, I am.

Q Just what is that unit, Mr. Anderson?

A It's a unit that's comprised of federal, state, and fee acreage. It is an exploratory-type unit. It's the same form that has been used in this area, and has been approved by the U.S.G.S. Office, and also the Commissioner's office.

Q In that connection, let me direct your attention to what has been identified as our exhibit number 1. Is that a copy of the unit agreement?

A Yes, sir, it is.

Q Is there anywhere we can turn to in this agreement and see a map or plat of the surface area that is included in

the unit?

A Yes, sir. Our exhibit A to the unit agreement is an outline of the unit area.

Q Do you recall what the total acreage within the unit boundaries is?

A Yes. It contains 6,418.64 acres. That's located in Township 16 south, Range 28 east.

Q Is it all in the northeast quarter of that Township?

A Yes, sir, it is.

Q Do you have a breakdown on the various types of acreage that are included within the unit?

A Yes, sir. Within the unit outlined, there are federal acreage, 3,674.25 which represents 57.25 per cent of the unit area. State acreage, 2,584.39 acres, which represents 40.26 per cent. Fee acreage is 160 acres. This represents 2.49 per cent.

Q Will you state for the record, Pan American's acreage in this unit, and its per cent of the total acreage?

A Pan American owns 4,339.60 acres, which represents 67.16 per cent.

Q Now, as of this time, from the standpoint of the working interests or operators, what per cent is committed to the North Crow Flats Unit?

A Of this unit, there are 6,038.72 acres committed, which represents 94.08 per cent.

Q How many tracts are not committed?

A There are two tracts which are not committed. They're referred to on Exhibit A as tracts 10 and 20. Tract 10 is owned by Superior, which contains 219.92 acres. Tract 20 is owned by Tenneco, which contains 160 acres. This gives a total of 379.92 acres, or 5.92 per cent of the unit area, which is uncommitted.

Q Now, on the copy of the unit agreement and the attachment, Exhibit A to that agreement, that the Examiner has, how have you distinguished those two tracts, just for his ready-reference?

A We have distinguished those by shading them in green.

Q And you've done that on the Examiner's copy?

A On the Examiner's copy only.

Q Let me ask you this: in the event these two operators should subsequently change their minds, does the unit agreement provide for a subsequent joinder?

A Yes, sir, it does.

Q Let me ask you this from a landman's standpoint: do you feel that we have sufficient acreage committed to this unit at this time to give us effective and efficient control over

operations in the unit?

A Yes, sir, I certainly do.

Q Now, we have federal and state lands involved. Let me ask you this: have you discussed this unit with the U.S.G.S. and the Land Commissioner?

A Yes, sir. We've discussed it with both of the agencies. We've discussed it with U.S.G.S. in Roswell. We also made a trip into Santa Fe to discuss it with the Commissioner.

Q Let's take the U.S.G.S., first. What is the status of this unit with respect to the U.S.G.S.?

A We have made our preliminary approach to the U.S.G.S. Then we followed that with a request for preliminary approval. This request has been processed by the Roswell office, and on the 13th of September, it was forwarded to Washington for preliminary approval.

Q Based on your experience with matters like this in the past, would you expect preliminary approval to return from Washington very shortly?

A Yes, sir, we would.

Q Is it the policy of the Land Commissioner of the State of New Mexico not to give preliminary approval until the U.S.G.S. has done so?

A Yes, sir, this is what we have been advised, that they would prefer to wait until the U.S.G.S. has granted their preliminary approval. We have made application for preliminary approval to furnish them with the application for preliminary approval, but we understand they will wait on the U.S.G.S.

Q Based on your experience with the Land Commissioner in units similar to this in this general area in the past, would you anticipate any trouble in obtaining preliminary approval from the Land Commissioner?

A No, sir, we do not.

Q As you know, Mr. Anderson, normally, it's Pan American's policy to wait until we have written preliminary approval before we request a hearing. Why did we change that policy with regard to this exploratory unit?

A In this particular case, there's an 80-acre tract contained in the unit outlined that has an early expiration date and, for this reason, we felt that it would be best for us to go ahead and present this case at this time.

Q So this just answers to the expediting of all the necessary requirements to making the unit effective. We've requested the hearing prior to having written preliminary approval?

A Yes, sir, that's correct.

Q Will you furnish written preliminary approval of both the U.S.G.S. and the Land Commission to the Commissioner to the attention of the Examiner when it is received by Pan American?

A Yes, sir, we will.

Q Do you have anything else that you would care to add at this time, Mr. Anderson?

A No, sir, I don't believe so. I believe that covers it.

MR. BUELL: May it please the Examiner, that's all we have at this time of Mr. Anderson by way of direct testimony.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Anderson, the early expiration of the lease, I presume, would be the Tract 9, which expires November the 18th?

A That's correct.

Q Have the two operators, who aren't committed, being Superior and Tenneco, declined or they just haven't replied?

A They have declined by letter.

MR. NUTTER: Are there any other questions of Mr. Anderson? He may be excused.

MR. BUELL: Mr. Roberts, please.

J. W. ROBERTS

called as a witness, and having been first duly sworn, was

examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

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

A I'm Wayland Roberts, employed by Pan American Petroleum Corporation in Fort Worth, and my job is Project Geologist.

Q Now, you've testified at previous Commission hearings and your qualifications as a geologist are a matter of public record, are they not?

A That's correct.

Q I will ask you this: in the area of the North Crow Flats Unit, that area is under your supervision, is it not?

A That's correct.

Q And you've made many studies of your own in this area?

A That's correct.

Q Now, you heard our reference to exhibit 1, the unit agreement. Does that agreement contain a requirement with respect to drilling and exploratory well on the unit?

A Yes, sir. The provision calls for a 9400-foot, top of the Mississippi Siliceous Test at a location tentatively, or as we find on exhibit 2, by the red dot, in the northwest quarter

of Section 11, unless commercial production is established at a lesser depth.

Q Let me clear this up. I don't believe the unit agreement requires that the wells be drilled at this specific location. It just requires that a well be drilled and that's where we propose to drill it, is that right?

A That's correct.

Q What is your primary target in this area?

A Our primary target in here are the Atoka-Morrow Sandstones of the lower Pennsylvanian.

Q Let's discuss the geology of the Atoka-Morrow Sands, and in that connection, let me direct your attention to what has been identified as our exhibit number 2. What is that exhibit?

A Well, it shows the general area of the North Crow Flats Unit and it shows also the outline of the proposed unit by black tape here.

Q Would you locate, generally, the North Crow Flat Unit for the Examiner?

A It's approximately 15 miles northeast of Artesia in Eddy County.

Q Now, with respect to the geology of our primary target, the Atoka-Morrow Sandstone, what does exhibit 2 reflect?

A We have included on exhibit 2 some results of a fairly extensive regional study here dealing with these sands of the lower Pennsylvanian. On the basis of these regional studies, we found that there appears to be a critical relationship between isopachous thickness and structural nosing as regards sand development within this part of the section.

On the exhibit, we have transferred some of this regional data, to be specific, in this case. We have, here, a thickness line of the Atoka-Morrow sequence: 300 feet thickness line. Also, on the map, we have included the minus 5,000 foot structural datum contour line which is contoured as a datum at the base of the Strawn or the top of the Atoka-Morrow, in this case.

Q Looking at exhibit 2, it appears that our proposed location is almost in the center of this exploratory unit?

A That's correct.

Q Just about halfway between your 5,000 foot structural contour line and your 300 foot thickness line?

A That's correct.

Q What is the significance of the wavy line in the northwest corner of the unit that you shaded with orange?

A As identified on the exhibit 2 and as determined by our regional studies, this approximates the northwest limit of significant sandstone development within this particular part of

the section.

Q Sir, do you have any comments about the limits, the possible limits -- of course, we are talking about an exploratory unit in a wildcat area -- but, about the possible limits to the south and to the east?

A Again, this is based on our regional studies. We feel that this critical thickness here of about 300 feet within this interval represents the area in which, or the interval in which the best sands will be developed.

Q Are you ready now to discuss your cross-section?

A Yes.

Q Will you put it on the board directly behind the Examiner? If it aids you, you might go over there and I'll ask you to speak a little louder so that the reporter can hear you.

What is exhibit 3?

A This is a regional stratigraphic cross-section that extends from the northwest on the left to the southeast on the right and it projects over this way about twenty miles.

Q Let me ask you this: actually, within the North Crow Flats Exploratory Unit, there is no well that has been drilled to this depth, has there?

A Within the unit outlined, no.

Q So have you taken logs from wells outside the unit and projected them on a straight line basis into the unit?

A That's correct.

Q Would you go to the Examiner and point on exhibit 2 the general area that you have projected this section to, as far as the unit is concerned?

A The cross-section would project approximately down to the center of the unit with a single well located in the lower lefthand corner of the map, being one of the wells included on the cross-section. It's this well right here (indicating).

MR. NUTTER: That's the well, the second from the right?

THE WITNESS: That's correct.

Q Speak up just a little, Mr. Roberts.

A I'm sorry.

Q Now, with that basic understanding, would you please state for the record and for the Examiner's benefit what this cross-section reflects from the standpoint of the geology of the Atoka-Morrow that we expect to encounter in our exploratory unit?

A The interval that we've included in our isopac studies is between this datum line, a structural point that we

used on our structural mapping, and the lower limit of that line is this, (indicating), to conform with the surface down here. You will note that in this particular well here, and then these wells in general in here, we have thicknesses that range from 400 to 300 to 200 feet in thickness.

Q When you are referring to a particular well, why don't you give the number on your cross-section of that log so that we can have it in the record, the exact log you're referring to.

A Well No. 4, here, is a producer out of this sand zone right here. It's in the Gulf Field, Penn Field. In that section here, the Atoka-Morrow sequence is about 250 to 300 feet thick.

MR. NUTTER: That's producing from the yellow section on that cross-section?

THE WITNESS: It's producing from the yellow section, yes, sir.

Q Which is the Atoka-Morrow Sandstone?

A That's correct. I understand now that it has depleted but it produced something like five, below the pipe, bcf of gas.

Q That's certainly a commercial well, is it not?

A Yes, sir.

Q Would you be happy if we would encounter that much gas in our exploratory or wildcat well that we're going to drill

on this unit?

A Very much so.

Q Do you have any other comments about this section, Mr. Roberts?

A No.

Q All right, sir. Do you want to come back to your chair? Of course, we all realize that this is wildcat area. Let me ask you this: do you feel, based on your study of this area that you have included within the confines of this exploratory unit, the acreage that could possibly be productive from this Atoka-Morrow Sandstone?

A Yes, I do.

Q Let me ask you this: you heard Mr. Anderson's testimony to the effect that two tracts, or less than six per cent of the interest within this unit at this time are not committed. You also know where the location of those tracts are?

A Yes.

Q Do you think that small, uncommitted interest will in any way affect the efficient development and exploration conducted by Pan American on this unit?

A No.

Q Now, let me ask you this: we've been talking about the Atoka-Morrow, which is rather deep in this area. That's

our primary target. We're going to have to penetrate other formations on the way down, aren't we?

A That's correct.

Q What formations will we penetrate, drilling to our objective?

A On exhibit 2, on the right-hand side is a list of formation tops that will be encountered with their anticipated depths, and by an asterisk, we have identified zones that will be potential pay zones in this area. That would include the Queen at 1100 feet, the San Andres at around 1900 feet, the Wolfcamp at 6500 feet, thereabouts. Also, in the Pennsylvanian in this area, we have carbonates above the sand section which is our primary objective that offer additional possibilities.

Q The Atoka-Morrow is the sandstone, the Pennsylvanian age, but there are also other possible producing formations of carbonate nature of Pennsylvanian age above where you expect to encounter the sandstone?

A That's correct.

Q Mr. Roberts, in your opinion, will the approval of our application by the Commission be in the interest of conservation as well as protecting the correlative rights of the committed interest owners as well as the non-committed interest owners in the North Crow Flats Unit?

A Yes.

Q Do you have anything else that you care to add at this time?

A I believe not.

MR. BUELL: May it please the Examiner, that's all we have by way of direct of Mr. Roberts. I would like to formally offer Pan American's Exhibits 1 through 3, inclusive.

MR. NUTTER: The cross-section is number 3, Mr. Buell?

MR. BUELL: Yes, sir.

MR. NUTTER: Pan American's Exhibits 1 through 3 will be admitted into evidence.

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

#### CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Roberts, what is the location of the well that's on the extreme right of your cross-section?

A This is in the Empire-Penn Field to the southeast, approximately 4.5 miles, about five or six miles southeast of this unit area.

Q And approximately how many feet of the Atoka-Morrow pay sequence are present in that well?

A There's approximately, as indicated on the cross-section over there, about six hundred feet of total Atoka-Morrow

sequence in that area.

Q And how many wells on that cross-section are commercial wells, or have been commercial wells?

A The well on the right, of course, is an excellent well. I think it has produced, or will produce something between 30 and 40 bcf of gas.

MR. BUELL: It's been producing for several years and is still producing?

THE WITNESS: Right.

MR. BUELL: It's a one-well pool.

THE WITNESS: And the only other well, aside from Well No. 4, which was discussed previously, is Well No. 3, which is in the Buffalo-Penn Field to the north and a little bit west of our proposed unit. It also is productive out of these Atoka-Morrow Sands.

Q And it actually has less than 300 feet of Atoka-Morrow sand that you are anticipating?

A Yes. It has about 275 feet, as I read it from here.

MR. NUTTER: Are there any other questions of Mr. Roberts? You may be excused. Do you have anything further, Mr. Buell?

MR. BUELL: Excuse me. Let me go off the record a minute. There's some confusion whether Mr. Roberts, in his

testimony as to the requirement of this exploratory well, said 9400 feet or 9800 feet. If he said 9400 feet, I'd like for the reporter to change that to 9800 feet.

MR. NUTTER: The unit agreement does require a well to be drilled to 9800, correct?

MR. BUELL: Yes, or until the Mississippian is encountered or unless commercial production is obtained, or however -- there's some other exceptions to that, but that's the gist of the requirement.

MR. NUTTER: All right, sir. Does anyone have anything they wish to offer in Case Number 3863? We will take the case under advisement.

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STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO )

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

*Charlotte Macias*  
\_\_\_\_\_  
Court Reporter

I do hereby certify that the foregoing is a correct record of the proceedings heard by me on 9/25 1968 3863  
*Charlotte Macias*  
New Mexico Oil Conservation Commission