

CASE 3642: Application of PAN AM.  
FOR POOL RULES FOR THE NORTH  
OSUDO-MORROW GAS POOL, LEA COUNTY.

Case No.

3642

Application, Transcript,  
Small Exhibits, Etc.

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
August 23, 1967

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum  
Corporation for special pool rules, Lea  
County, New Mexico.

CASE: 3642

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The Hearing will come to order, and the Case will be 3642.

MR. HATCH: Case 3642, application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico.

MR. BUELL: If it please the Examiner, for Pan American Petroleum Corporation, Guy Buell.

MR. UTZ: Are there other appearances?

MR. HINKLE: Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell. I would like to enter an appearance for Jake Hammon, Dallas.

MR. LOSEE: A. J. Losee, Artesia, I would like to enter an appearance for Wilson Oil Company.

MR. HOCKER: R. L. Hocker for Amerada Petroleum Corporation.

MR. BUELL: We have one witness, Mr. Examiner, Mr. George Ford.

MR. UTZ: Will there be other witnesses?

(Witness sworn.)

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G E O R G E H. F O R D, called as a witness herein, having been first duly sworn, was examined and testified as follows:

## DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Ford, would you state your name, by whom you are employed, and in what capacity and what position?

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

Q Mr. Ford, in order that the Examiner can evaluate your testimony and exhibits, I'm going to ask you at the outset to look at what has been identified as our Exhibit Number 1, the Rules and Regulations for the North Osudo-Morrow Gas Pool which we are recommending and to briefly summarize each one of these proposed and recommended rules.

A All right, sir. On Exhibit 1 we have six rules, Rule 1 provides that any well completed within one mile of the North Osudo-Morrow Gas Pool shall come under the rules that we are recommending for the North Osudo Pool.

Rule 2 is a standard unit, 640 acres.

Rule 3, a provision for exceptions to Rule 2 upon proper showing.

Rule 4, a spacing rule, 1650 feet from the outer boundary of the section, 330 feet from any quarter quarter section line.

Rule 5 provides for obtaining exceptions to Rule 4.

Rule 6 defines the vertical limits of the North

Osudo-Morrow Gas Pool as the Morrow formation. Then further, we have a clause to cover wells that are presently drilled or completed in the Morrow as far as Rule 4, the spacing rule, is concerned. And then a provision to dedicate the 640 acres as required under Rule 2.

Q Are these proposed rules very similar to rules the Commission has adopted for other gas pools in Southeast New Mexico?

A Yes, sir, they are.

(Whereupon, Applicant's Exhibits  
1 - 12A marked for identification.)

Q (By Mr. Buell) I wish you would look now at what has been identified as Pan American's Exhibit Number 2, what is that exhibit, Mr. Ford?

A Exhibit 2 is a structure map of the North Osudo-Morrow Gas Pool. First, I would like to point out right in the middle of the exhibit you'll see a heavy dashed black line. That outlines the North Wilson operating area. The operators in that operating area are Jake Hammon, Pan American, Amerada, Bass, Gulf, Phillips and C-o-l-l. Jake Hammon is the operator.

MR. UTZ: How come Hammon is eliminated here with this deal here?

MR. BUELL: Mr. Examiner, I perhaps can answer that best. That is a recent acquisition, at the time the North

Wilson operating area was formed, Hammon nor any of the other group in the North Wilson operating area owned an interest in that tract. It's a recent acquisition.

MR. UTZ: He's a part of the unit, now?

MR. BUELL: No, it isn't as yet. It is not a part of the unit yet.

MR. UTZ: Sinclair is also out?

MR. BUELL: Yes, sir.

WITNESS: The map is contoured on top of the Morrow with a contour interval of 100 feet. The three wells that are in the North Osudo-Morrow Gas Pool that we are asking rules for today are colored in yellow, they all are in the North Wilson operating area operated by Jake Hammon.

The dry holes and there are three of them in the immediate area here, are colored in brown. Going on down to the south is the Gulf North Wilson Deep Unit. Number 1 in the Osudo-Morrow Pool colored in red. Then, over to the left of that particular well is a red circle that shows a Texaco Well in Section 36, that was completed in December, '65, flowing only 152 mcf per day. It has been shut-in waiting on a pipeline connection. It's for all practical purposes, another dry hole.

Q (By Mr. Buell) How would you describe the structure that is reflected on Exhibit 2?

A A monoclinal type structure. Actually, the structure,

in my opinion, does not control the productivity of wells in this pool. The productivity depends on porosity and permeability depth.

Q I notice, Mr. Ford, if my observation is correct, one of the highest wells on the structure is a dry hole, is that right?

A Yes, sir, that is correct. The Gulf North Wilson Deep Unit Number 4 in Section 32, 28 South, 36 East is the highest well on here. In my opinion, it's a dry hole in the Morrow, they had some test after perforations, the well is presently shut-in, hasn't been physically plugged and abandoned but it is a dry hole.

Q I believe you stated that in your opinion the controlling factor on productive limits is the depth of porosity and permeability in the Morrow?

A Yes, sir.

MR. UTZ: That was the Number 2, was it?

WITNESS: That was the Number 4 Well.

MR. UTZ: The Number 4 Well?

WITNESS: Yes, sir, Section 32.

MR. BUELL: Northwest quarter of 32.

Q (By Mr. Buell) Mr. Ford, based on your study of the Morrow in this area, have you formed an opinion with respect to the separateness between the North Osudo-Morrow Gas Pool



and the Osudo-Morrow Gas Pool to the south?

A Yes, I believe they are separate accumulations of gas.

Q Upon what data do you base that opinion?

A This dry hole I just referred to, the Gulf North Wilson Deep Unit Number 4, that had not sufficient porosity and permeability for commercial completion.

Q What is your recommendation to the Commission with regard to the horizontal limits of the North Osudo-Morrow Gas Pool?

A I'm recommending that the horizontal limits include 640 acres in the section around each of the three completions that are colored in yellow on Exhibit 2. That would be Section 17, Section 20 and Section 30, all in 20 South, 36 East.

Q What is the significance of the line that connects all three of the producing wells in North Osudo and the dry hole in Section 32?

A That's a trace of a cross section.

Q Are you ready to go to that exhibit now?

A Yes, sir, I am.

Q That has been identified as Exhibit 3, Mr. Ford. Would you briefly discuss that exhibit?

A All right. Exhibit 3 starts on the south through

the dry hole that I just discussed, the Gulf North Wilson Deep Unit Number 4, then it goes north through the three producers shown on Exhibit 3 in the North Osudo Gas Pool. I have shown the logs in the Morrow Zone for each of these four wells up to the top of the log, the wells are identified as to operator, well location, and so forth; at the bottom of each of the logs are pertinent completion information on the wells.

These logs are not spaced on a horizontal scale. They are equal distance around it. In between the logs I put the distance between the wells horizontally. Now, if I jump over to the third well here, this was the discovery well in North Osudo, Jake Hammon's State E 8913 Number 1. It was completed in May of 1965 from an open hole section from 11,440 to 11,457.

Q Mr. Ford, let me ask you this. Before you get into detailed discussion of this cross section, is the Morrow in the North Osudo area as it is generally found in other areas, does it consist of major and minor zones of porosity and permeability?

A Yes, sir. It does and for my study I have designated two of the zones of interest that I want to talk about. I have started at the bottom and labeled as Number 1 Zone of interest today the zone that's open in the discovery well. Also, there's a zone I've labeled Number 2, just up the hole

although about 11,410 feet behind the pipe, not open to production at the present time. Then, if I can go over to the second well on the cross section, this was the second completion in the field.

Q Second well from the left?

A Second well from the left. That's Jake Hammon's Union State Number 1. It was completed 8/1/66. It was completed in Number 1, same as the discovery well in Number 2. The zone that's also present in the discovery well and Morrow zones up the hole. That was in August, '66. Now, over to the fourth well from the left, Jake Hammon's Amerada Federal Number 1 completed just a little later. The third completion in the field, completed August 27, 1966. That well is completed in Zone 2.

Now, back to the first well from the left. The well I have discussed several times before, none of the zones had sufficient porosity and permeability for a commercial completion to be made in that well. The well that separates North Osudo and Osudo-Morrow.

Q On the dry hole, actually, casing was run, formation was stimulated and it was tested through perforation, was it not?

A Yes, sir, that is correct.

Q With respect to the three producing wells in North

Osudo, did they require any stimulation?

A No. They were completed naturally without any stimulation.

Q Let me see if I understand the data on this section. As I see it, you have two wells open in Zone 1, you have two wells open in Zone 2, with Zone 2 productive in the other well that it is not open in, is that correct?

A That's correct. Then, on the Amerada Federal, where Zone 2 was opened up, we got an original pressure of 1632 pounds, which is just what I would expect because that zone had not been producing. The Hammon Union State Number 1 had opened up Zone 2 earlier in August, August 1st, but it didn't go on production until October.

Q Both wells were completed, for all practical purposes, about the same time?

A Yes, sir.

MR. UTZ: In your opinion, is the Gulf 4 and the Hammon 1 completed in the same zone, above Zone 2?

MR. BUELL: Mr. Examiner, you are speaking of the Hammon Union State Number 1 and the Gulf North Wilson Unit Number 4 dry hole?

MR. UTZ: That's right.

WITNESS: Well, the Gulf North Wilson Deep Unit, this is the perforated interval that you are pointing to,

it's perforated but it couldn't produce. This lower one here, probably is Zone 1 and then the upper one is perhaps equivalent to the upper zone that's open in Hammon Union State Number 1 and the middle zone in the Number 4 well is not developed, I don't believe in the other wells.

MR. UTZ: But the Number 4 well was dry in all zones?

WITNESS: Yes, sir, that is correct, and it appears that all of the zones that had any possibilities were open. The other zones that are open in Hammon's State E 8913 Number 1 just were not developed sufficiently in Gulf's Number 4 for the operator to even perforate.

Q (By Mr. Buell) Mr. Ford, I wish you would look now at Exhibit 4, 5 and 6, what are those exhibits?

A Exhibit 4 is a pertinent completion data sheet for the discovery well, State E 8913 Number 1. I believe it's self-explanatory.

Q Five and six also?

A They are also self-explanatory, they cover the other two wells. Exhibit 5 is the pertinent completion data for Union State Number 1. Exhibit 6 is a pertinent completion data for Amerada Federal Number 1.

Q Do you have any comments or any particular data you would like to point out on any of these?

A No, sir.

Q Look at Exhibit 7, what is it?

A Exhibit 7 is a tabulation of production data for these three wells in North Osudo Gas Pool so that the Commission might have this available for their consideration in this case. It lists the wells, the gas and condensate production by months and cumulative. I might just point out that the State E 8913 Number 1 had a cumulative production of 5.6 billion cubic feet as of July 1st, '67, this being the first well in the field. Union State Number 1 had a cumulative production of gas of 2 billion cubic feet July 1st, 1967, and Amerada Federal Number 1, a cumulative production of 2.1 billion cubic feet as of the same time.

Q Do you have the pool totals handy there, Mr. Ford?

A I have them on another exhibit. I believe they are 9.7, that 9.7 billion cubic feet from the pool as of July 1st, this year.

Q Turn now to what has been identified as Pan American's Number 8.

A Exhibit 8 is a plot of bottom hole pressure data on two of the wells. The two wells that are open in Zone 1, the lowermost zone of interest on Exhibit 3. That's the State E 8913 Number 1 and the Union State Number 1. This is the bottom hole pressure, this should be at a minus 708 hundred foot datum. I believe the minus was left off the exhibit, if you

will add that minus in. It shows a bottom hole pressure on completion of the discovery well, State E 8913 Number 1, of 6848 in May, 1965.

Then, the next well in the field completed August, '66, the Union State Number 1, had a pressure of 4798, a pressure drop of 2,050 pounds due to production from the discovery well during that interval of time.

Q What was the cumulative production from the discovery well during that interval of time?

A 3.9 billion cubic feet and 58,000 barrels of condensate.

Q How far away is the second well that was drilled in the pool, Union State Number 1, from the discovery well, State E 8913 Number 1?

A 6200 feet.

Q Let me ask you this, would you comment on the remainder of the pressures on these two wells that are found on this exhibit?

A Well, the pressures have gotten closer together with continued production, at the time Union State Number 1 was completed, in addition to being completed in Zone 1, the completion interval of the discovery well, it was also completed in other zones that had not been opened, hence it had 4798 pounds, whereas the discovery well at that time had

3171 pounds. With continued production, the pressures have gotten closer together, whereas now they're within less than 200 pounds of each other.

Q In this pool where you have pressure interference or pressure communication between two wells that are over a mile apart, does it demonstrate to you that one well can drain in excess of 640 acres?

A Yes, sir, it certainly does. It proves it to me.

Q Would you look at your next Exhibit, Pan American's Exhibit Number 9? What is that exhibit?

A Exhibit 9 is a tabulation of all the pressure data that I have on the North Osudo Pool. This is for the convenience of the Commission in having all the information.

Q All right, Mr. Ford, going back to your testimony on Exhibit 3, the cross section, you mentioned the zoning that's encountered in the Morrow here. Would you recommend either to your management or to this Commission that these zones be depleted separately?

A No, sir, I wouldn't. I wouldn't even recommend a dual completion. In fact, completion of all of them together on 320 acre spacing is uneconomical and it's even marginal on 640 acre spacing.

Q Is that why you recommended as the vertical depth limits of this pool the entire Morrow formation?



A Yes, sir, that is correct.

Q So, it would cover all of these zones of porosity and permeability?

A Yes, sir.

Q Now, speaking of economics, would you look now at what has been identified as your Exhibits 10, 11 and 12? What are those exhibits?

A Exhibits 10, 11 and 12 are bottom hole pressure curves versus cumulative gas production curves for each of the three producers in North Osuda. I plan to present later economics to the Commission. I wanted them to see where the reserve estimates came from. This is simply a plot of the data available that can be extrapolated out to an abandonment pressure to show the ultimate recovery from each well. I would like to give the ultimate recovery for each one.

Q This study or this method of determining reserves, what do you engineers call it, do you have a name for it, have you named the method?

A I call it a material balance estimate.

Q Would you comment then on Exhibit 10, which is the material balance you performed on State E 8913 Number 1?

A All right. It shows 7.4 billion cubic feet ultimate recovery. You remember I had given cumulative as 5.6 billion

cubic feet up to July 1st, 1967. This is the well that produced 3.9 billion cubic feet before other wells were completed in the field.

Q Exhibit Number 11 is the material balance determination of reserves on Union State Number 1?

A All right. 4.4 billion cubic feet, 2 billion having been produced to the moment.

Q And Exhibit 12, the material balance determination of reserves of Amerada Federal Number 1?

A Ultimate recovery 4 billion cubic feet with 2.1 billion having been produced to the present time.

Q Has it been your experience in your reservoir engineering work that reserve determinations by this method are more accurate than, I believe, another method that you used initially in the field as pore volume calculation?

A Yes, they are. We, in reservoir engineering, consider them as very accurate, especially after we passed about 10 percent of the ultimate recovery in production, then, as we go farther and farther along the curve toward reaching ultimate recovery, they become more and more reliable. Here we are over halfway along, so I think they are very reliable.

Q Look at the next Exhibit, 12 A, and state for the record what it reflects.

A Exhibit 12 A is depth completions for the North Osudo-Morrow Pool. I have taken the reserves for the three wells, shown that as ultimate recovery 15.8 billion cubic feet for the three wells. 9.7 billion feet is cumulative production only 6.1 billion feet remaining. This is for informational purposes. The remainder of the calculations are based on the ultimate recovery to show what is going to happen in the way of economics from the word go in this field, as far as drilling the first well.

I don't go back any further than the well cost. We'll get \$2,360,000.00 of net income over the life. The completion cost including lease and well equipment, \$1,019,000.00. Operating cost, \$190,000.00 for a total cost, I don't have this totaled on here, \$1,209,000.00. That gives me an ROI for this depth of 1.1 on 640 acres.

Q Now, these economics contained on Exhibit 12 A are on a pool basis for 640's. Let me ask you this, what would the economics be for 320 acre depth on a pool basis and including only the cost that you have included here, that's drilling the well and the operating cost?

A Well, you might get a little more than your money back but just barely, it would be a break even proposition if you included any workover costs that I haven't included or any lease acquisition cost or exploration cost, or indirect

cost, you would lose quite a bit of money on 320 acre development.

Q These are the type costs that an operator has to bear and pay?

A Yes. That's the reason it is uneconomical to drill this field on 320 acres.

Q Let me ask you about a specific area. We have been talking about the pool. Let's look at the north half of Section 17, for instance. In your opinion, could a reasonable and prudent operator drill a well in the north half of Section 17 to the Morrow and expect to make even a bare profit on it?

A No, sir, he couldn't. These economics that I have just quoted are based on an average of 5.3 billion cubic feet of reserves per well. If we go back to Exhibit 12, the ultimate recovery, 4 billion cubic 2.1 billion cubic feet has been produced, leaving only 1.9 cubic feet for the present well and an additional well on that unit, so there would be a tremendous loss of money on 320 acre depth in this particular area.

Q More or less by way of summary, let me ask you this, why do you think it's proper that the Commission should adopt at this time 640 acre units for the North Osudo-Morrow Gas Pool?

A Well, I believe 640 acre units are justified. We have shown that one well will drain 640 acres. We have shown that the economics will not support 320 acre development.

Q Do you think that the adoption of 640 acre pool rules by this Commission will protect the correlative rights of all the owners of interest in this pool?

A Yes, sir, I do.

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

MR. BUELL: My engineering witness has just informed me that I overlooked qualifying him so for the record.

MR. UTZ: We'll consider him qualified.

MR. BUELL: With you accepting his qualification, Mr. Examiner, that concludes our direct testimony. I would like to formally offer Pan American's Exhibits 1 through 12 A exclusive.

MR. UTZ: Without objection Exhibits 1 through 12 A will be entered into the record in this case.

(Whereupon, Exhibits 1 - 12 A offered and admitted in evidence.)

MR. UTZ: Are there questions of the witness?

CROSS EXAMINATION

BY MR. UTZ:

Q Looking at your Exhibits Number 10, 11 and 12, which were your material balance exhibits --

A Yes, sir.

Q -- what is the ending date or the last production figure that you have, the date of the last production that you

have, up to what date?

A July 1st, 1967, from Exhibit 7.

Q Actually, this type of reserve data indicates the amount of gas you expect to get out of the wellbore if the well produces in the same manner as its history has shown?

A Yes, sir.

Q In other words, if you shut in the Hammon Number 1 well here, this curve would not be true?

A That is correct, and if you drilled another well in the area there the curves would change.

Q Yes. So, this doesn't necessarily mean the amount of gas that's going to be produced of that 640 acre tract, it means the amount of gas that will be produced from the wellbore?

A Yes, sir, it's the amount of the gas that will come from the area that is feeding gas into the wellbore.

Q And it might not be the dedicated 640 acres?

A That is correct, yes, sir, and with this method, I cannot tell where this gas comes from.

Q Yes. It would look like that from these exhibits the discovery well got a discovery allowable, didn't it?

A Yes, sir.

MR. BUELL: It did.

Q (By Mr. Utz) I believe you indicated some horizontal limits, if I can find it?

A Yes, sir, I included the 640 acre section around each one of the producing wells in the field.

Q Did you intend to exclude the current horizontal limits of the North Osudo Pool as the Commission has them defined?

A I may have made a mistake when I looked them up, I thought they included 320 around each of the producing wells to correspond with State wide rules, so I have expanded that to 640.

Q Well, they included the south half of 17, you recommend all of 17?

A Yes, sir.

Q They included the south half of 18. You didn't recommend that. Did you intend to?

A I didn't realize they included it.

Q They include all of 19, and you didn't intend to include that?

A No, sir.

Q And they include the north half of 20 and you asked for all of 20?

A No, sir, all of 30. I left out 20. You are correct.

MR. BUELL: All of 20.

A I'm sorry, all of 20.

Q (By Mr. Utz) And they include the east half of 30 and you requested all of 30?

A Yes, sir.

Q Actually, you are suggesting 17, 20 and 30, as being the horizontal limits of the pool?

A Yes, sir. I'll have to make sure that my nomenclature sheets are up to date.

Q Which has no common boundary between Section 20 and Section 30, just a common corner?

A It would be contiguous across the corner there, wouldn't it?

MR. BUELL: The northeast corner of Section 30, the southeast corner of Section 20.

Q Ordinarily, we don't define pools by common corners or dedicated acreage so this would be an exception to what our common practice has always been.

A I didn't realize that. What I was thinking of was a dedication of 640 on each of the wells.

Q You don't suppose that anybody will drill a well on Section 19?

A I don't know. I would recommend against it.

Q Or in Section 29?



MR. BUELL: What would your recommendation there be?

A I would recommend against a well in 29. I believe we have all the wells we need in this pool.

MR. BUELL: Maybe 1 or 2 too many.

A And three dry holes too many.

Q (By Mr. Utz) I'm just trying to get some sort of a commitment out of Pan American, as far as the common boundary for Sections 20 and 30 is concerned. I wouldn't argue with you as far as your limits are concerned.

A I was thinking only of the 640 around each well, including Section 19. I believe you said it was in there now, it would be fine with me.

Q It's in there now.

A All right, sir.

Q You are not recommending that we exclude it, then?

A No.

MR. BUELL: We didn't want to violate any of the Commission's policies. We just figured that these are the wells in the pool and if we had 640 around each one of them, it would suffice as horizontal limits.

Q (By Mr. Utz) I believe I understood you to say that you don't believe there's any connection between the North Osudo and the Osudo Pool?

A No, sir, I don't.

Q Even though they do have a common boundary according to the current nomenclature?

A Yes, sir. I am assuming they have a common boundary but I don't believe there's a connection between the two fields in the reservoir.

Q On your Exhibit Number 12 A you have net income over life?

A Yes.

Q You have your reserve figure right?

A Yes, sir.

Q What you intend the well to produce?

A Yes.

Q The next figure is price per mcf?

A Yes.

Q The third figure is what?

A After 6.7 percent taxes, that's also included in the condensate value of calculation.

Q The fourth figure is what?

A I am assuming a common one-eighth royalty.

Q Net working interest, in other words?

A Yes, sir. I may be a little bit optimistic there.

I think there are some overrides in there.

Q One and two-tenths cents under your costs represents what operating cost?

A It's operating cost and based on experience up to the present time with over half the reserves produced.

Q As far as your arrangement for drainage, your Exhibit Number 8 is your indication, is that correct?

A Yes, sir, in conjunction with Exhibit 3, I believe, to really understand it you have to look at Exhibits 3 and 8 together.

Q Yes, sir, all right. These two wells that you show on Exhibit 8 are 6200 feet apart, I believe you said?

A Yes, sir.

Q Your Exhibit Number 1?

A Yes, sir.

Q On Rule 1 you make mention of the one mile limit within the boundaries of one mile of the North Osudo Pool, but you make no mention of whether it might be in another pool or not. You wouldn't want to space this pool in accordance with a differing order down in the Osudo Pool?

A Yes, sir. I see the conflict with Osudo in connection with the question you asked me. We were making this a general rule but there would have to be some exception.

Q Unless the acreage is in another pool?

A Yes.

Q Do you know what the spacing is in the Osudo Pool?

A I could find no rules. I gathered it was State-wide. Doesn't Rule Number 1 take care of that, not near to or within the limits of another designated Morrow Pool?

MR. UTZ: I missed that one. I presume somewhere in the order you would want, you are requesting the horizontal limits which you recommended here?

A No, sir, they're not in the order.

Q They're not in this order?

A No.

Q But you are requesting a redefinition of them?

A Yes, sir.

MR. UTZ: Are there other questions? The witness may be excused. I believe your rules accept the non-standard locations that are already here?

WITNESS: Yes, that is correct.

MR. UTZ: How many are there?

WITNESS: I believe all three of them.

MR. BUELL: All three.

MR. UTZ: You are not going to drill any more wells?

WITNESS: I wouldn't recommend any more. I don't know whether there will be any more drilled or not.

MR. UTZ: Don't hardly need any spacing rules in this pool.

WITNESS: I believe for our protection of correlative rights, I believe we do.

MR. UTZ: Just in case. The witness may be excused.

(Witness excused.)

MR. UTZ: We will call for statements right now, if there are no other questions. Any statements in the case?

MR. TRAYWICK: I am Carl Traywick, Deputy Supervisor Geological Survey in Roswell, Rights of Oil and Gas Operations. The survey has always traditionally been in favor of wide spacing where it can be shown that maximum ultimate recovery will be obtained with the minimum amount of wells provided correlative rights can be protected. The only Federal land involved here is the south half of 17, on which the Hammon Federal Number 1 is located. The evidence presented has shown good reservoir communication with pressure production data. It has probably been shown that one well will probably drain 640 acres of productive reservoir.

However, the geologic information available may be inadequate to confirm that all of Section 17, 20 and 30, Township 20 South, Range 36 East, are capable of producing with particular reference to the questionable geologic potential of the north half of 17, it appears that the Federal interest

as royalty owners of the south half of 17 may be adversely affected by the inclusion of Section 17 as a spacing unit for the Hammon Federal Number 1 Well in Section 17. Therefore, we think that 640 acre spacing is not justified because of the correlative right question. Thank you.

MR. UTZ: You mean because of the correlative right question between your acreage in 17 and the acreage in 20, State acreage in 20?

MR. TRAYWICK: Yes, more specifically, and that there is no geologic control to the north of the Hammon Well in Section 17 from which it could be postulated that the north half of 17 is capable of contributing production. Coupled with the fact that it has been shown in the testimony that it probably would not support a commercial well.

MR. UTZ: Does the Federal Government own the north half of 17?

MR. TRAYWICK: No, sir.

MR. UTZ: If you did have you wouldn't be complaining?

MR. TRAYWICK: That's a hypothetical question.

MR. UTZ: Any other statements?

MR. LOSEE: Mr. Examiner, so that the location, at lease, is clear, Wilson Oil Company is a participant in the

Osudo Pool adjoining the North Osudo to the south, and they're also the owner of the entire rights in the southwest quarter of Section 29, Township 20 South, Range 26 East, offsetting both of the mentioned pools. Wilson Oil Company doesn't believe the evidence presented here or that which is available to Wilson justifies the establishment of a permanent 640 acre spacing for the North Osudo Pool. If the Commission sees fit to grant this 640 acre spacing, then Wilson Oil Company would urge that such order be made temporary and limited to twelve months in duration. At the expiration of this twelve months' time, the Commission and all the parties might well have some further data to justify 640 acre spacing, or smaller spacing.

MR. HINKLE: Mr. Examiner, Clarence Hinkle, appearing on behalf of Jake Hammon. Mr. Hammon would like to go on record supporting the application of Pan American and all the evidence that has been introduced in connection with this case. Mr. Hammon, however, would have no particular objection to the Commission considering entering a temporary order, if they see fit to do so.

MR. HOCKER: R. L. Hocker for Amerada Petroleum. We are an interest owner in the Hammon operated North Wilson Unit, operating area. We would like to go on record as supporting Pan American's application in favor of 640 acre

spacing, whether it be temporary or permanent.

MR. BUELL: Mr. Examiner, I believe I'm the only one left.

MR. UTZ: Yes, sir, you are.

MR. BUELL: I would like to point out for the record a correction that should be made on our map, that's the southwest quarter of Section 29, we show that as Shell owning the deep rights. All of our data, our commercial map service and everything that we had in Fort Worth, it was carried that way. We have subsequently found out that the depth rights, all depth rights are owned by the Wilson Oil Company. Shell does own the rights in the southeast quarter, our map is accurate there.

Our commercial mapping service was wrong on the southwest quarter. Mr. Examiner, there's not a lot I can say by way of closing statement. I would like for the record to speak for our case.

I think the data are conclusive as to these factors, one, that North Osudo Morris is a completely separate accumulation of Morrow gas from the Osudo Pool to the South. Two, I think the data are conclusive that one well will effectively and efficiently in the North Osudo-Morros Gas Pool drain in excess of 640 acre units for which we are here today applying.



I urge the Commission to adopt these rules just as we recommended them, on a permanent basis. Of course, it goes without saying that Pan American would rather have temporary rules than none, but I do urge the Commission to adopt these rules as permanent. I would again like to thank the Examiner and Mr. Hatch and the reporter and Miss DuHaine for their patience in waiting for us. We all sincerely appreciate it.

MR. UTZ: You are quite welcome. Any other statements? The Case will be taken under advisement and the Hearing is adjourned.

I N D E X

WITNESS	PAGE
GEORGE FORD	
Direct Examination by Mr. Buell	3
Cross examination by Mr. Utz	19

E X H I B I T S

NUMBER	MARKED	OFFERED	ADMITTED
App's. 1-12A	4	19	19

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) ss

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

Witness my Hand and Seal this 29th day of August, 1967.

*Ada Dearnley*  
NOTARY PUBLIC

My Commission Expires:  
June 19, 1971.

I do hereby certify that the foregoing is  
a complete and correct transcript of the  
the transcript of the hearing on the case No. 8642  
heard by me on *Sept 7* 1967.  
*[Signature]* Examiner  
New Mexico Oil Conservation Commission

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. 3642  
Order No. R-3305-A

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 7, 1968, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 13th day of August, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That by Order No. R-3305, dated August 29, 1967, temporary Special Rules and Regulations were promulgated for the North Osudo-Morrow Gas Pool, Lea County, New Mexico, for a one-year period.
- (3) That pursuant to the provisions of Order No. R-3305, this case was reopened to allow the operators in the subject pool to appear and show cause why the North Osudo-Morrow Gas Pool should not be developed on 320-acre spacing units.
- (4) That the evidence establishes that one well in the North Osudo-Morrow Gas Pool can efficiently and economically drain and develop 640 acres.
- (5) That the Special Rules and Regulations promulgated by Order No. R-3305 have afforded and will afford to the owner of each property in the pool the opportunity to produce his just and equitable share of the gas in the pool.
- (6) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk

-2-

CASE No. 3642  
Order No. R-3305-A

arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, the Special Rules and Regulations promulgated by Order No. R-3305 should be continued in full force and effect until further order of the Commission.

IT IS THEREFORE ORDERED:

(1) That the Special Rules and Regulations governing the North Osudo-Morrow Gas Pool, promulgated by Order No. R-3305, are hereby continued in full force and effect until further order of the Commission.

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

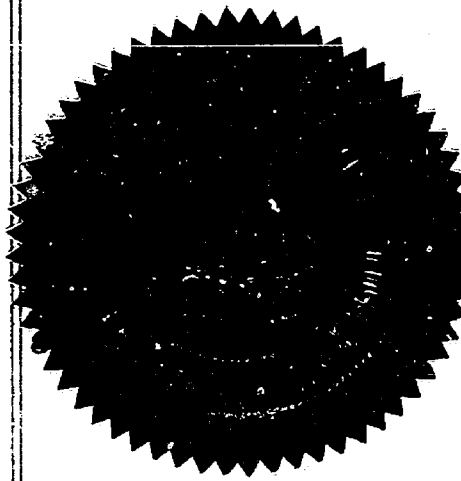
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

  
DAVID F. CARGO, Chairman

  
GUYTON B. HAYS, Member

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



esr/

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. 3642  
Order No. R-3305  
NOMENCLATURE

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 23, 1967,  
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 29th day of August, 1967, the Commission, a  
quorum being present, having considered the testimony, the record,  
and the recommendations of the Examiner, and being fully advised  
in the premises,

FINDS:

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

(2) That the applicant, Pan American Petroleum Corporation,  
seeks the promulgation of special rules and regulations for the  
North Osudo-Morrow Gas Pool, Lea County, New Mexico, including a  
provision for 640-acre spacing units and specified well locations.

(3) That in order to prevent the economic loss caused by  
the drilling of unnecessary wells, to avoid the augmentation of  
risk arising from the drilling of an excessive number of wells,  
to prevent reduced recovery which might result from the drilling  
of too few wells, and to otherwise prevent waste and protect  
correlative rights, temporary special rules and regulations  
providing for 640-acre spacing units should be promulgated for  
the North Osudo-Morrow Gas Pool.

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CASE No. 3642  
Order No. R-3305

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

(5) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.

(6) That this case should be reopened at an examiner hearing in August, 1968, at which time the operators in the subject pool should be prepared to appear and show cause why the North Osudo-Morrow Gas Pool should not be developed on 320-acre spacing units.

(7) That the horizontal limits of the subject pool, as heretofore classified, defined, and described, should be extended to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM

Section 17: N/2

Section 20: S/2

Section 30: W/2

IT IS THEREFORE ORDERED:

(1) That the horizontal limits of the North Osudo-Morrow Gas Pool in Lea County, New Mexico, as heretofore classified, defined, and described, are hereby extended to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM

Section 17: N/2

Section 20: S/2

Section 30: W/2

(2) That temporary Special Rules and Regulations for the North Osudo-Morrow Gas Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS

FOR THE

NORTH OSUDO-MORROW GAS POOL

RULE 1. Each well completed or recompleted in the North Osudo-Morrow Gas Pool or in the Morrow formation within one mile

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CASE No. 3642

Order No. R-3305

thereof, and not nearer to or within the limits of another designated Morrow gas pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

**RULE 2.** Each well shall be located on a standard unit containing 640 acres, more or less, consisting of a governmental section.

**RULE 3.** The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Land Surveys, or the following facts exist and the following provisions are complied with:

- (a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.
- (b) The non-standard unit lies wholly within a governmental section and contains less acreage than a standard unit.
- (c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.
- (d) In lieu of paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

**RULE 4.** Each well shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.



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CASE No. 3642

Order No. R-3305

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

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the North Osudo-Morrow Gas Pool or in the Morrow formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before September 15, 1967.

(2) That any operator desiring to dedicate acreage pursuant to Rule 2 to a well presently drilling to or completed in the North Osudo-Morrow Gas Pool shall file a new Form C-102 with the Commission on or before September 15, 1967.

(3) That this case shall be reopened at an examiner hearing in August, 1968, at which time the operators in the subject pool may appear and show cause why the North Osudo-Morrow Gas Pool should not be developed on 320-acre spacing units.

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

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



STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

CLYTON B. HAYS, Member

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

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 7, 1968

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

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

CASE 3778: (Continued from the June 5, 1968 Examiner Hearing)

Application of Atlantic Richfield Company for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its State BH Well No. 1 located 660 feet from the North and West lines of Section 13, Township 19 South, Range 34 East, Quail-Queen Pool, Lea County, New Mexico, in such a manner as to permit production of oil from 5080 feet to 5136 feet in the lower Queen formation through tubing and the disposal of produced salt water into the upper Queen formation through the casing-tubing annulus in the perforated interval from 4820 feet to 4830 feet.

CASE 3823: Application of Atlantic Richfield Company for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres and Paddock formations in its State "A" Well No. 45 located in Unit G, Section 26, Township 17 South, Range 28 East, Empire-Abo Pool, Eddy County, New Mexico, in the perforated interval from 2738 feet to 3032 feet (San Andres) and 3809 feet to 4030 feet (Paddock).

CASE 3824: Application of Atlantic Richfield Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its West Red Lake Unit Area by the injection of water into the Queen, Grayburg, and San Andres formations through 13 wells located in Sections 4, 5, 7, 8, and 9, Township 18 South, Range 27 East, Red Lake Queen Grayburg-San Andres Pool, Eddy County, New Mexico.

CASE 3825: Application of Pan American Petroleum Corporation for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Buffalo Valley Unit Area comprising 15,350 acres, more or less, of Federal, State and Fee lands in Township 14 South, Ranges 28 and 29 East, Chaves County, New Mexico.

CASE 3642: (Reopened)

In the matter of Case No. 3642 being reopened pursuant to the provisions of Order No. R-3305, which order established 640-acres spacing units for the North Osudo-Morrow Gas Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 320-acre spacing units.

August 7, 1968 - Examiner Hearing

CASE 3803 (Continued and readvertised)

Application of Gulf Oil Corporation for an amendment to Order No. R-3345, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3345, which authorized a waterflood project in its Stuart Langlie Mattix Unit Area, Langlie Mattix Pool, Lea County, New Mexico, to delete the water injection wells previously authorized in Unit M of Section 2, Units A, C, and I of Section 10, and Unit C of Section 11, all in Township 25 South, Range 37 East, and to authorize for water injection four wells at the following unorthodox locations in Section 10: a well 100' from the North line and 1650' from the West line; a well 100' from the North line and 660' from the East line; a well 1315' from the North line and 100' from the West line; and a well 1420' from the South line and 100' from the East line. Applicant also seeks in the amendment authority to convert three additional wells located in Units N and F of said Section 10 and Unit F of said Section 11 to water injection. In the absence of objection, the case will be submitted and an order issued upon the evidence presented in said Case July 10, 1968.

CASE 3826: Application of Eugene E. Nearburg for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation in the open-hole interval from approximate 7965 feet to 8015 feet in his Magnolia Burt Federal Well No. 1 located in Unit P, Section 5, Township 8 South, Range 30 East, Cato Field, Chaves County, New Mexico.

CASE 3827: Application of Tri-Service Drilling Company to directionally drill, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its T. P. State Well No. 1 located 1887 feet from the East line and 2126 feet from the South line of Section 1, Township 16 South, Range 38 East, Lea County, New Mexico. Said well was drilled to a total depth of 13,014 feet and has subsequently been whipstocked to a location 596.5 feet east and 181.5 feet north of said surface location. Applicant proposes to set a whipstock at 11,570 feet and directionally drill to a depth of approximately 13,000 feet and to bottom said well in the Devonian formation at a point approximately 300 feet east and 300 feet south of its surface location.

CASE 3828: Application of W. M. Gallaway for a non-standard gas proration unit, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 197.77-acre non-standard gas proration unit comprising the S/2 of Section 18, Township 23 North, Range 3 West, Ballard-Pictured Cliffs Gas Pool, Rio Arriba County, New Mexico, said unit to be dedicated to applicant's Apache Well No. 1 located 835 feet from the South line and 875 feet from the East line of said Section 18.

- CASE 3829: Application of Getty Oil Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C II (a) to permit the drilling of a well at an unorthodox gas well location 1980 feet from the North line and 990 feet from the East line of Section 27, Township 12 South, Range 34 East, West Ranger Lake-Devonian Gas Pool, Lea County, New Mexico. The N/2 of said Section 27 to be dedicated to said well.
- CASE 3830: Application of Kewanee Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Atoka San Andres Unit Area comprising 3,360 acres, more or less, of Fee land in Township 18 South, Range 26 East, Atoka-San Andres Pool, Eddy County, New Mexico.
- CASE 3831: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Atoka San Andres Unit Area by the injection of water into the San Andres formation through 28 injection wells located in Township 18 South, Range 26 East, Atoka-San Andres Pool, Eddy County, New Mexico.
- CASE 3832: Application of Sinclair Oil & Gas Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Guadalupe Ridge Unit Area comprising 23,358 acres, more or less, of federal and fee lands in Townships 25 and 26 South, Range 21 and 22 East, Eddy County, New Mexico.
- CASE 3833: Application of Petroleum Corporation of Texas for a non-standard gas proration unit and two unorthodox gas well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard gas proration unit comprising the N/2 SE/4 and SW/4 SE/4 of Section 13, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, said unit to be dedicated to applicant's Maggie Dunn Wells Nos. 2 and 3 located 990 feet from the East line and 1650 feet from the South line and 1650 feet from the East line and 1650 feet from the South line, respectively, of said Section 13. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
GUYTON B. HAYS  
MEMBER

P. O. BOX 2088  
SANTA FE

August 13, 1968

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

Mr. Guy Buell  
Pan American Petroleum Corporation  
Post Office Box 1410  
Fort Worth, Texas 76101

Re: Case No. 3642  
Order No. R-3305-A  
Applicant:  
Pan American Petroleum Corp.

Dear Sir:

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

Very truly yours,

*A. L. Porter, Jr.*  
A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC        x

Artesia OCC       

Aztec OCC       

Other Mr. Clarence Hinkle, Mr. Ken Wagner, Mr. Pat Sims

**PAN AMERICAN PETROLEUM CORPORATION**

OIL AND GAS BUILDING

P. O. BOX 1410

FORT WORTH, TEXAS—76101

D. L. RAY  
DIVISION ENGINEER

July 25, 1967

*Case 3642*

File: GHF-373-986,510.1

Subject: Application of Pan American  
Petroleum Corporation for  
Adoption of Pool Rules  
North Osudo-Morrow Gas Pool  
Lea County, New MexicoMr. A. L. Porter, Secretary-Director (3) ✓  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico

Dear Sir:

Pan American Petroleum Corporation respectfully requests that a hearing be docketed to define the horizontal and vertical limits and to adopt pool rules for the North Osudo-Morrow Gas Pool, Lea County, New Mexico. Attached is a copy of the rules that are proposed. Also attached is a map of the immediate area.

At the present time the North Osudo-Morrow Gas Pool consists of three wells, i.e., State "E"-8913 No. 1, located in Unit D, Section 20, T-20-S, R-36-E; Union State No. 1, located in Unit H, Section 30, T-20-S, R-36-E; and Amerada-Federal No. 1, located in Unit N, Section 17, T-20-S, R-36-E. While Jake L. Hamon is the operator of record for each of the three wells, Pan American Petroleum Corporation is a major interest owner.

Yours very truly,

*D.L. Ray*BHB:kkh  
Attachment

cc: All Working Interest Owners in the Immediate Area

DOCKET MAILED

Date 8-11-67

NORTH OSUDO-MORROW GAS POOL  
LEA COUNTY, NEW MEXICO  
WORKING INTEREST OWNERS

Amerada Petroleum Corporation  
Box 591  
Midland, Texas 79701

Perry R. Bass  
Box 171  
Midland, Texas

British American Oil Company  
Box 474  
Midland, Texas 79701

Mr. Max Coll, II  
Box 1818  
Roswell, New Mexico

Gulf Oil Corporation  
Box 1938  
Roswell, New Mexico

Jake L. Hamon  
Box 663  
Dallas, Texas 75221

Penrose Production Company  
1605 Commerce Building  
Fort Worth, Texas 76102

Phillips Petroleum Company  
Phillips Building  
Attn: E. M. Ball  
Odessa, Texas

Shell Oil Company  
Box 1810  
Midland, Texas 79701

Sinclair Oil & Gas Company  
Box 1470  
Midland, Texas 79701

Texaco, Inc.  
Box 3109  
Midland, Texas 79701

MAIN OFFICE  
JUL 31 AM 8 14  
Case 3642

SPECIAL RULES AND REGULATIONS  
FOR THE  
NORTH OSUDO-MORROW GAS POOL

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

RULE 2. Each well completed or recompleted in the North Osudo-Morrow Gas Pool shall be located on a standard unit containing 640 acres, more or less, consisting of a single governmental section.

RULE 3. The Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or the following facts exist and the following provisions are complied with:

(a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.

(b) The non-standard unit lies wholly within a single governmental section and contains less acreage than a standard unit.

(c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.

(d) In lieu of Paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well completed or recompleted in the North Osudo-Morrow Gas Pool shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

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

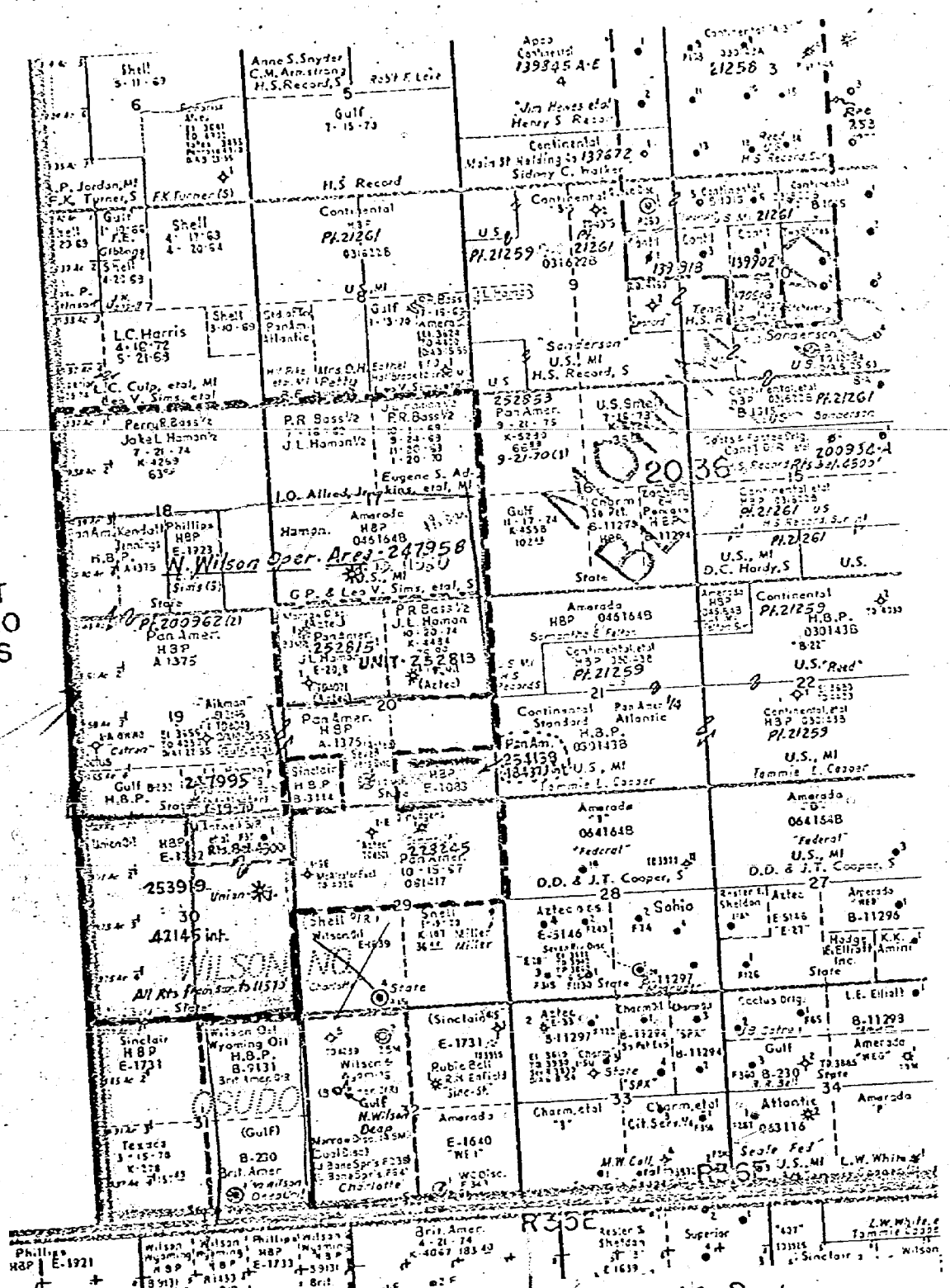
RULE 6. The vertical limits of the North Osudo-Morrow Gas Pool shall be the Morrow Formation.

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Morrow formation within the North Osudo-Morrow Gas Pool or within one mile of the North Osudo-Morrow Gas Pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of Rule 4. The operator of any such well shall notify the Hobbs District Office in writing of the name and location of the well on or before \_\_\_\_\_.

(2) That any operator desiring to dedicate 640 acres to a well presently drilling to or completed in the North Osudo-Morrow Gas Pool shall file a new Form C-128 with the Commission on or before \_\_\_\_\_.





NORTH OSUDO-MORROW GAS POOL  
Lea County, New Mexico



North Osudo-Morrow Gas Well

Case 2642

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 7, 1968

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

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

CASE 3778: (Continued from the June 5, 1968 Examiner Hearing)

Application of Atlantic Richfield Company for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its State BH Well No. 1 located 660 feet from the North and West lines of Section 13, Township 19 South, Range 34 East, Quail-Queen Pool, Lea County, New Mexico, in such a manner as to permit production of oil from 5080 feet to 5136 feet in the lower Queen formation through tubing and the disposal of produced salt water into the upper Queen formation through the casing-tubing annulus in the perforated interval from 4820 feet to 4830 feet.

CASE 3823: Application of Atlantic Richfield Company for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres and Paddock formations in its State "A" Well No. 45 located in Unit G, Section 26, Township 17 South, Range 28 East, Empire-Abc Pool, Eddy County, New Mexico, in the perforated interval from 2738 feet to 3032 feet (San Andres) and 3809 feet to 4030 feet (Paddock).

CASE 3824: Application of Atlantic Richfield Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its West Red Lake Unit Area by the injection of water into the Queen, Grayburg, and San Andres formations through 13 wells located in Sections 4, 5, 7, 8, and 9, Township 18 South, Range 27 East, Red Lake Queen Grayburg-San Andres Pool, Eddy County, New Mexico.

CASE 3825: Application of Pan American Petroleum Corporation for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Buffalo Valley Unit Area comprising 15,350 acres, more or less, of Federal, State and Fee lands in Township 14 South, Ranges 28 and 29 East, Chaves County, New Mexico.

CASE 3642: (Reopened)

In the matter of Case No. 3642 being reopened pursuant to the provisions of Order No. R-3305, which order established 640-acres spacing units for the North Osado-Morrow Gas Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 320-acre spacing units.

August 7, 1968 - Examiner Hearing

CASE 3803 (Continued and readvertised)

Application of Gulf Oil Corporation for an amendment to Order No. R-3345, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3345, which authorized a waterflood project in its Stuart Langlie Mattix Unit Area, Langlie Mattix Pool, Lea County, New Mexico, to delete the water injection wells previously authorized in Unit M of Section 2, Units A, C, and I of Section 10, and Unit C of Section 11, all in Township 25 South, Range 37 East, and to authorize for water injection four wells at the following unorthodox locations in Section 10: a well 100' from the North line and 1650' from the West line; a well 100' from the North line and 660' from the East line; a well 1315' from the North line and 100' from the West line; and a well 1420' from the South line and 100' from the East line. Applicant also seeks in the amendment authority to convert three additional wells located in Units B and F of said Section 10 and Unit F of said Section 11 to water injection. In the absence of objection, the case will be submitted and an order issued upon the evidence presented in said Case July 10, 1968.

CASE 3826:

Application of Eugene E. Nearburg for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation in the open-hole interval from approximate 7965 feet to 8015 feet in his Magnolia Burt Federal Well No. 1 located in Unit P, Section 5, Township 8 South, Range 30 East, Cato Field, Chaves County, New Mexico.

CASE 3827:

Application of Tri-Service Drilling Company to directionally drill, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its T. P. State Well No. 1 located 1887 feet from the East line and 2126 feet from the South line of Section 1, Township 16 South, Range 38 East, Lea County, New Mexico. Said well was drilled to a total depth of 13,014 feet and has subsequently been whipstocked to a location 596.5 feet east and 181.5 feet north of said surface location. Applicant proposes to set a whipstock at 11,570 feet and directionally drill to a depth of approximately 13,000 feet and to bottom said well in the Devonian formation at a point approximately 300 feet east and 300 feet south of its surface location.

CASE 3828:

Application of W. M. Gallaway for a non-standard gas proration unit, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 197.77-acre non-standard gas proration unit comprising the S/2 of Section 18, Township 23 North, Range 3 West, Ballard-Pictured Cliffs Gas Pool, Rio Arriba County, New Mexico, said unit to be dedicated to applicant's Apache Well No. 1 located 835 feet from the South line and 875 feet from the East line of said Section 18.

August 7, 1968, Examiner Hearing

Docket No. 23-68

CASE 3829:

Application of Getty Oil Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C II (a) to permit the drilling of a well at an unorthodox gas well location 1980 feet from the North line and 990 feet from the East line of Section 27, Township 12 South, Range 34 East, West Ranger Lake-Devonian Gas Pool, Lea County, New Mexico. The N/2 of said Section 27 to be dedicated to said well.

CASE 3830:

Application of Kewanee Oil Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Atoka San Andres Unit Area comprising 3,360 acres, more or less, of Fee land in Township 18 South, Range 26 East, Atoka-San Andres Pool, Eddy County, New Mexico.

CASE 3831:

Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Atoka San Andres Unit Area by the injection of water into the San Andres formation through 28 injection wells located in Township 18 South, Range 26 East, Atoka-San Andres Pool, Eddy County, New Mexico.

CASE 3832:

Application of Sinclair Oil & Gas Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Guadalupe Ridge Unit Area comprising 23,358 acres, more or less, of federal and fee lands in Townships 25 and 26 South, Range 21 and 22 East, Eddy County, New Mexico.

CASE 3833:

Application of Petroleum Corporation of Texas for a non-standard gas proration unit and two unorthodox gas well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard gas proration unit comprising the N/2 SE/4 and SW/4 SE/4 of Section 13, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, said unit to be dedicated to applicant's Maggie Dunn Wells Nos. 2 and 3 located 990 feet from the East line and 1650 feet from the South line and 1650 feet from the East line and 1650 feet from the South line, respectively, of said Section 13. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 23, 1967

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

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

- CASE 3639: Application of Myles A. Colligan for an unorthodox location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a well at an unorthodox location 1650 feet from the North and East lines of Section 35, Township 14 South, Range 27 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico, in exception to the provisions of Rule 2 of Order No. R-2349.
- CASE 3640: Application of Monsanto Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of its Rock Tank Unit Area comprising 6239 acres, more or less, of State, Fee and Federal lands in Township 23 South, Range 24 East, and Townships 22 and 23 South, Range 25 East, Eddy County, New Mexico.
- CASE 3641: Application of Skelly Oil Company for down-hole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Abo and Wolfcamp formations in the well-bore of its Childress "A" Well No. 1 located in Unit L of Section 1, Township 14 South, Range 33 East, Lazy "J" Field, Lea County, New Mexico.
- CASE 3642: Application of Pan American Petroleum Corporation for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the North Osudo-Morrow Gas Pool, Lea County, New Mexico, including a provision for 640-acre spacing and specified well locations.
- CASE 3643: Application of Humble Oil & Refining Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the "C" Zone, and possibly the "A" Zone, of the Pennsylvanian formation in its South Four Lakes Well No. 6 located in Unit I of Section 2, Township 12 South, Range 34 East, South Four Lakes Field, Lea County, New Mexico.

**ATWOOD & MALONE**  
LAWYERS

P. O. DRAWER 700  
TELEPHONE 505 822-8221  
SECURITY NATIONAL BANK BUILDING  
ROSWELL, NEW MEXICO  
88201

JEFF D. ATWOOD (883-1980)  
CHARLES F. MALONE  
RUSSELL D. MANN  
PAUL A. COOTER  
BOB F. TURNER  
ROBERT A. JOHNSON  
JOHN W. BASSETT, JR.  
ROBERT E. SABIN

August 11, 1967

Mr. A. L. Porter, Jr.  
Secretary-Director  
Oil Conservation Commission  
Post Office Box 2088  
Santa Fe, New Mexico

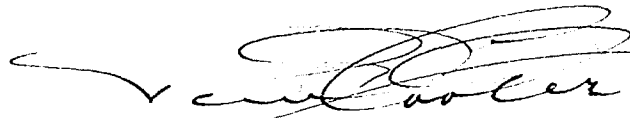
RE: Case No. 3642 on the docket of August 23, 1967

Dear Mr. Porter:

Would you please file the enclosed Entry of Appearance on behalf of Pan American Petroleum Corporation in the captioned case. The actual presentation will be made by Guy T. Buell, a member of the Texas Bar and one of Pan American Petroleum Corporation's Fort Worth attorneys.

Very truly yours,

ATWOOD & MALONE

  
Paul A. Cooter

PAC:sah

Encl.

MAIN OFFICE 000

17 AUG 14 AM 8 07

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION )  
OF PAN AMERICAN PETROLEUM COR- )  
PORATION FOR SPECIAL FIELD RULES, ) No. 3642  
NORTH OSUDA-MORROW POOL, LEA )  
COUNTY, NEW MEXICO )

ENTRY OF APPEARANCE

COMES NOW Atwood & Malone of Roswell, New Mexico, and  
enters its appearance herein as New Mexico counsel for Pan American  
Petroleum Corporation.

DATED this 11th day of August, 1967.

ATWOOD & MALONE

By 

Post Office Box 700  
Roswell, New Mexico

MAIN OFFICE

'67 AUG 14 AM 8 07

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

State of New Mexico  
**Oil Conservation Commission**



LAND COMMISSIONER  
GUYTON B. HAYS  
MEMBER

P. O. BOX 2088  
SANTA FE

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

August 29, 1967

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

Re: Case No. 3642  
Order No. R-3305  
Applicant:

Pan American Petroleum Corp.

DOCKET MAILED

Dear Sir:

Date \_\_\_\_\_

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

Very truly yours,

*A. L. Porter, Jr.*

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC \_\_\_\_\_

Aztec OCC \_\_\_\_\_

Other Mr. Clarence Hinkle, Mr. A. J. Losee and Mr. R. L. Hocker

Mr. Carl Traywick, USGS, Roswell

DOCKET MAILED

Date 7-26-68



Case 3642

Heard 8-8-68

Rec. 8-8-68

Grant Pan Am a permanent  
order for R-3305, H. O. Sudo-  
Morrow - San Jose.

Available data shows there  
is communication on 640 A-  
basing.

Thos. J. R.



MR. UTZ: Case 3642.

MR. HATCH: Case 3642, reopened. In the matter of Case Number 3642, being reopened pursuant to the provisions of Order Number R-3305, which Order established 640-acres spacing units for the North Osudo-Morrow Gas Pool, Lea County, New Mexico.

MR. BUELL: For Pan American Petroleum Corporation, Guy Buell. We will have one witness.

(Witness sworn.)

MR. HINKLE: Mr. Examiner, I'd like to enter an appearance. Clarence Hinkle, Hinkle, Bondurant and Christy of Roswell for Jake Hamon.

MR. UTZ: Are there any other appearances?

MR. WAGNER: Ken Wagner for Amerada Petroleum Corporation, Hobbs.

MR. SIMS: Pat Sims, his own entry and others.

MR. UTZ: Are there any other appearances?

(Whereupon, Applicant's Exhibits Numbered 1 through 11 were marked for identification.)

GEORGE H. FORD

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

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Ford, would you state your complete name, by whom

you are employed, in what location and in what capacity?

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

Q You testified at many previous Commission Hearings and your qualifications as a Petroleum Engineer are a matter of public record, are they not?

A Yes, sir, that's correct.

Q With respect to your testimony here today on this reopened case, 3642, I wish you'd first look at what has been identified as Pan American's Exhibit 1. What is that exhibit?

A Exhibit 1 is a copy of the temporary operating rules for the North Osudo-Morrow gas pool in Lea County, New Mexico.

Q At the outset, let me ask you so the Examiner can weigh and judge your testimony and evidence in that regard: What is going to be your recommendation here today?

A I'm going to recommend that the Commission continue these rules as permanent operating rules for the North Osudo-Morrow gas pool.

Q Are these rules similar to many gas pool rules that the Commission has adopted in southeast New Mexico?

A Yes, sir, they are.

Q It might be of benefit for the Examiner and the record, if you would very briefly review the temporary rules that we are now operating under.

A All right, sir. Rule 1 provides for any well completed in the North Osudo-Morrow Gas Pool or in the Morrow Formation within one mile that's not nearer to another pool or in another pool be governed by the rules of the North Osudo-Morrow Pool.

Rule 2 is a 640-acre proration unit.

Rule 3 provides for the usual administrative exceptions to Rule 2.

Rule 4, the spacing rule, 1650 from the outer boundary of the section, no nearer than 330 feet to any quarter-quarter section line.

Then Rule 5 provides for exceptions to that rule.

Further, the Order contains a grandfather clause to take care of wells that were drilled prior to Commission action on these temporary rules in August of 1967 and provides for acreage dedication to wells drilled prior to that time. Further, there's a provision for the Examiner Hearing that we're holding here today.

Q All right, sir. Let's look now at Exhibit Number 2. What is that exhibit, Mr. Ford?

A Exhibit 2 is a map of the North Osudo Pool area. I have outlined the North Wilson operating area with a heavy dashed black line. The working interest owners in this operating area are Pan American, Bass, Amerada, Gulf, Phillips and

Lillian Coll, C-o-l-l. Jake Hamon is the operator of the North Wilson Operating area. Hamon also operates the well in Section 20, Township 20 South, Range 36 East, called the State E 8913 Number 1. That well was drilled by the interest owners in the North Wilson Operating area. After the Commission adopted 640-acre proration units last year, the south-half of the southeast fourth and the southwest fourth of the southwest fourth of Section 20 came into a 640-acre communitized unit for that well. It is now known as State E 8913 Communitized Unit. There has been another well drilled since our Hearing in August of last year. This is the Mallard-Alves Number 1 in Section 6, 20 South, 36 East. That makes us four wells in the North Osudo Gas Pool. I've emphasized those in yellow.

Then there are three dry holes shown on this map down toward the bottom of Exhibit 2, dry holes in the Morrow Formation, emphasized with a brown dot. The nomenclature for this pool lists Sections 6, 7, 17, 18, 19, 20 and 30 as being in the North Osudo-Morrow.

Now, we go on down past there, further south, past the dry hole. There is an Osudo-Morrow Pool. I've shown the north well in the Osudo-Morrow Pool, a well in Section 31 operated by Gulf and emphasized it with a red dot.

Then to the left of there or further west in Section 36, 20 South, 35 East, is a well that was completed with a

very poor potential in December of 1965 and is still waiting on a pipeline connection.

Q Would you comment very briefly, Mr. Ford, on the structure as reflected on our Exhibit Number 2?

A All right, sir. The contours are on top of the Morrow with a contour interval of 100 feet. The structure is a monoclinial-type structure. Actually, structure has nothing to do with productivity. The productivity is determined by the presence or absence of pay, porosity and permeability. I'd like to point out a well in Section 32, 20 South, 36 East, the Gulf North Wilson Deep Unit Number 4, a dry hole in the Morrow; and, yet, it's the highest structural well on this exhibit.

Q Well, do you feel then, Mr. Ford, that although the Osudo-Morrow Pool to the south and North Osudo are on a common structure that they are effectively separated by the dry hole that you've discussed?

A Yes, sir, I do. We are dealing here today only with the North Osudo pool.

Q All right, sir. Now, I notice that you have a line drawn between some of the wells on Exhibit 2. Is that the surface trace for cross-section?

A Yes, sir, it is.

Q Are you ready to go into that now?

A Yes.

Q That's been identified as our Exhibit 3, Mr. Ford.  
Briefly comment on it.

A All right, sir. If the Examiner will unfold the copy in front of him, this is a cross-section showing logs on four wells starting on the left with the dry hole I've just discussed. It had insufficient porosity, permeability to make a commercial completion and, since, has been plugged.

Now I'll jump over to the third log or the second log on the right-hand side of the exhibit, the Jake Hamon State E 8913 Number 1. All of these logs have the identification on top of them. There is no horizontal scale but I've listed the distance between the wells. They are very near the top of the exhibit. The completion information is down at the bottom of each log and the perforated interval is colored in red.

Now back to this discovery well. It's completed through open hole from 11,440 to 11,457 and that interval is shown below the log and it is colored in red. Just for identification, I'll call that Zone 1, and then I'll go back up the hole slightly to 11,400 to 11,410 and call that Zone 2 even though it isn't open in this well.

Q It is developed in the well?

A It is. This well was completed in May of 1965 and sale started a month or so later. The second completion in the field



is the next log to the left. It will be the second one from the left-hand side of the exhibit: Hamon Union State Number 1, completed 8-1-'66. You'll notice a number of red perforated intervals. I want to refer you to the bottom two. That bottom interval is what I have identified as Zone 1 in the discovery well, and the reason I want to refer you to that, I have a pressure exhibit later that shows communication between these two wells and that zone from production from the discovery well.

Then I would like to also mention Zone 2 just up the hole from there at 11,366 to -72. That is a zone that is common in being developed to the four producers in the field, even though it is not open in the discovery well. It's also open in the Mallard-Alves Number 1 as well as I can correlate that log. I don't believe I gave the interval on Zone 1 in Hamon Union State Number 1. It's shown at the bottom of the log. It's 11,416 to -28.

Q Mr. Ford, you've been mentioning zoning. Should I take it then from your testimony that in this Morrow reservoir which we're dealing with here, that we have the phenomenon which is so common to Morrow Formations that we have different zones within the Morrow Formations, is that correct?

A Yes, sir, that's right.

Q Better developed as far as porosity and permeability is concerned?

A Yes, sir, and the zones are very hard to trace and correlate over large aerial extent. They seem to, at some times, grade together, and some places, stay apart.

Q Do you have any other comments on any of the logs that appear on this cross-section?

A Yes, sir. I have one on this log farthest to the right, the Hamon-Amerada Federal Number 1. It's completed in one interval, 11,358 to 11,388. I correlate that as the Zone 2 I just mentioned in the discovery well. Again, this is just for identification. That well was completed August 27, '66, the third completion but only 27 days after the second completion, and the second completion has not sold any gas to the pipeline as of this time.

So here we have Zone 2 being open in two wells at about the same time. This Zone 2 and Hamon-Amerada Federal Number 1 had a pressure of 6832 compared to original pressure of 6848 which is just what I would have expected. There had been no pressure communication in that particular zone.

Q All right, sir. Let's go on now to Exhibit 4.  
Mr. Ford, what is that exhibit?

A Exhibit 4 is a pressure versus time exhibit showing pressure communication. Pressure is on the left-hand side of the exhibit; time on the bottom exhibit. State E 8913 Number 1

pressures are shown with a circle, the original pressure, 6848 in May, 1965 when the well was completed. Then the pressure declined on down to 1248 pounds in April of 1968. Just above that, with triangles designating the pressures, is the pressure history of Union State Number 1, the second completion in the field. Its initial pressure was 4798. I attribute this to Zone 1 having been produced and the discovery well and then these other zones being opened up in the second well.

That pressure is 2050 pounds lower than the original pressure showing pressure communication. At that time, the discovery well had produced 3.9 billion cubic feet at 58,378 barrels of condensate.

Subsequent pressure history is shown of these two wells and notice how the pressure comes closer and closer together there for the latter part of '67; and the early part of '68, they're very close together.

Q Unless these wells were in effective communication, Mr. Ford, we wouldn't expect to see the closeness and the pressure relationship that we see on this exhibit?

A No, sir, and this shows pressure communication and drainage over a greater than a mile of distance proving more than 640 acre drainage in this field.

Q Do you have any data available to you on the Mallard-Alves Well that you've mentioned?

A Yes, I do. I have one pressure point that I obtained from a letter when Mallard wrote the Commission asking for approval of an unorthodox location for their well in North Osudo-Morrow. I have that on the next exhibit.

Q All right. Let's go to that now. That will be Exhibit 5, Mr. Ford. What is Exhibit 5?

A Exhibit 5 shows all pressure data available to me in the North Osudo Field. You'll notice in the last column is the pressure which we were just discussing. The Mallard Well was reported by them to have 6450 pounds in October of 1967 upon initial completion. That is higher than the other wells in the field. It's over two miles from the nearest production. It could be due to distance in affecting complete drainage; it could be due to a deterioration of porosity and permeability somewhere in the area between those two wells.

But I will point out this: that 6450 is 400 pounds below original pressure in the State E 8913 Number 1 showing some or quite a bit of pressure communication.

I've got one other point on this exhibit. Notice the last pressures for the three Hamon operated wells are very close together. In my opinion, they are. I think there's 167 pound maximum spread between the pressures showing that they are being depleted at about the same rate at the current time.

Q What are pressures now declined to?

A The Hamon State E 8913 Number 1 is 1248. Amerada Federal Number 1 is 1338. Union State Number 1, 1450, and I don't know what the pressure is on the Mallard-Alves Well Number 1. It produced about six months to the pipeline up through May of '68, the latest production data that I could obtain from commercial reports. It has produced since that time, I would assume.

Q All right, sir. Let's go now to Exhibit 6. What does that exhibit reflect?

A Exhibit Number 6 is for the Examiner's convenience showing pertinent completion data for the four completions in the North Osudo-Morrow Pool.

Q It's an exhibit in four points?

A Yes, sir.

Q One sheet for the four wells.

A The Examiner's copies there are stapled together. There are four sheets.

Q All right. Let's look now at Exhibit 7, Mr. Ford, and what is this?

A Exhibit 7 is production data by wells for the four wells in the North Osudo Gas Pool. There are four sheets stapled together. They're in front of the Examiner as Exhibit 7.

Q All of these data are self-explanatory, are they not?

A Yes, sir, they are.

Q All right, sir. Now, I recall your testimony when we were discussing Exhibit 3, the cross-section. You discussed the zoning which is common to the Morrow in this particular area of southeast New Mexico. In view of this zoning, Mr. Ford, could you as an engineer recommend multiple completion or single completion in each zone?

A No, sir, I could not. I really see no need for a multiple completion or a dual completion. I would recommend a single completion. The reserves would not justify multiples. It would not justify duals. In fact, reserves won't justify single wells on 320 acre spacing, and the economics for 640 acre development with single completions are not any marginal economics.

Q All right, sir. While we're discussing economics, would you look now at your Exhibits 8, 9 and 10. What are they?

A Exhibits 8, 9 and 10 are P over Z versus cumulative production curves, what I call material ballist curves, for the three Jake Hamon operated wells in the North Osudo Pools. I do not have information to compare such a curve for the Mallard-Alves Number 1 and, as I say, it had produced only six months up through the last production data that I have.

Q Would you comment on each of these three series of exhibits as you feel proper, Mr. Ford?

A All right, sir. I think the most important point to the Examiner is the ultimate recovery from each well. Union State Number 1 -- by the way, these are all operated by Hamon now-- 4.4 bcf; State B 8913 Number 1, 7.4 bcf, discovery well for the field; Amerada Federal Number 1, 4 bcf.

Q Speaking of P over Z reserves, Mr. Ford, do you have much confidence in that method when its used in a pool of the type that we have here?

A Yes, sir, especially in a pool of this type where we had a very advanced stage of depletion. I might comment in that regard, those last two pressure points were simply added to this exhibit. I had the draftsman to redraw it and have a solid line up the last pressure point, extrapolated on down, but this is the same exhibit I put on a year ago, the last two pressure points fit in exactly with the interpretation I made a year ago, and that's usually true in this type of reservoir when you get at this advanced stage of depletion.

Q All right, sir. Still, further, on economics of development in this pool, look at Exhibit 11. What does Exhibit 11 reflect?

A Exhibit 11 is a very simple calculation method for a development economics for the three Pan American working interest wells. I've already told you why I didn't include

the Mallard well.

The cumulative production is 13.4 bcf, remaining 2.4 bcf for an ultimate of 15.8 bcf. That's simply the values I've read off of these last three exhibits added together. I converted the gas and condensate over to dollars, put in some costs, these are actual costs for these three wells including lease and well equipment and operating costs and calculated an ROI. I have it down here as an ROI 1.06 for a 640-acre development. That's the terminology my company uses and a lot of other companies, a lot of other people call that net ROI. It's the profit that you make compared to the investment that you make.

If we had developed on 320 acres, that value would become, roughly, 0.03. Now these are just the costs that I have on here. I haven't included any workover costs, and there are a lot of other costs involved in development in this type of reservoir. If I included those other costs, such as exploration cost, lease acquisition cost, even administrative cost such as this hearing today, the economics would be extremely unfavorable for 320 acre development and marginal for 640 acre development.

Q Now, these data consider 320 acre development from the beginning, is that correct?

A Yes, sir, that's correct, and actually, you could also say they consider drilling 320 acre wells on our present 640 acre



proration units because those wells would come in and share in this remaining recovery because there's so little remaining recovery at 2.4 bcf. They would be extremely uneconomical to drill.

Q They'd never pay off then?

A No, sir, and I don't see how anybody could even think of drilling those wells.

Q Would you suspect on the limited amount of data you've seen on the Mallard-Alves Well that its economics would be in the ballpark with the economics on Exhibit 11?

A Yes, sir, I think so.

Q Mr. Ford, perhaps it'd be well, would you reiterate your recommendation to the Examiner that you are making here today?

A I recommend that the temporary operating rules for the North Osudo Gas Pool be continued and/or adopted by the Commission as the permanent operating rules for that pool.

I believe that the evidence I presented shows that one well would drain 640 acres and this proper spacing pattern for this field, conservation will be served by adopting those rules and the correlative rights of all interest owners will be protected.

I cannot tell the Commission whether or not there will be additional wells drilled. I could not tell them that last

year, but there was one drilled in the interim period between the last hearing and this hearing. There may be some more drilled. If they are drilled, these are the rules that should apply to those additional wells.

MR. BUELL: May it please the Examiner, that's all we have by way of direct. I would like to formally offer Pan American's Exhibits 1 through 11.

MR. UTZ: Without objection, Exhibits 1 through 11 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits 1 through 11, inclusive, were admitted in evidence.)

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

CROSS EXAMINATION

BY MR. UTZ:

Q Referring to your Exhibit Number 9, am I correct in saying that these exhibits show approximately a billion cubic feet remaining under each of these three wells?

A Approximately, I'd say. I'd have taken the 2.4 and divide it by 3 and get an average of .8 billion remaining for the wells.

Q One shows .75.

A All right, sir. I think One is good enough rounded off.

Q It's your contention that you can't drill a well to this depth for that amount of remaining gas?

A Yes, sir. I'd like to point out something else in that regard, Mr. Examiner. An operator can't even afford to go in and acquire leases and go put out any exploration money unless he can depend upon developing this type of reservoir on 640 acre operating rules. We just had a case that was heard before you concerning forming a Federal Unit and drilling a Morrow wildcat; I believe they called it Morrow-Atoka wildcat.

In my opinion, my company did that because they were competent that the Commission would approve 640 acre operating rules for that area in case we found some development. We don't know the facts on that area yet because we haven't drilled it, but I strongly suspect it may be similar to this, and we cannot develop it to less than 640.

Q But you've calculated these reserves on the basis of pressure decline curves, is that correct?

A Yes, sir.

Q So that these reserves would reflect any reserves available to the well bore regardless of whether there was any in that portion?

A That's exactly correct, sir. And one well will have an influence on another well.

Q Do you happen to know who is purchasing the gas from the Mallard Well?

A No, sir, I don't. I believe I left that information off the pertinent data sheet because I could not determine it.

MR. PAT SIMS: Llano.

THE WITNESS: Does someone know it's Llano?

MR. PAT SIMS: Yes, it's Llano. Llano.

THE WITNESS: The man said Llano Gas.

MR. PAT SIMS: L-l-a-n-o.

MR. UTZ: Are there any other questions of the witness? Do you have anything in the form of a statement?

MR. SIMS: Yes, sir.

MR. UTZ: The witness may be excused. Do we have statements in this case?

MR. HINKLE: Mr. Examiner, representing Jake Hamon. Mr. Hamon would like to concur in the position taken by Pan American in this case as concerns the adoption of the rules, existing rules as the permanent rules for that pool.

MR. UTZ: Do we have any other statements?

MR. WAGNER: Mr. Examiner, Ken Wagner for Amerada Petroleum Corporation in Hobbs. We support the permanent 640 acre spacing rule for this pool.

MR. UTZ: All right, sir. Mr. Sims?

MR. SIMS: I have an objection. I'd like to use this exhibit here if there's any explaining there. We have minerals in the northwest quarter of 7 there, 160, and when this well was

drilled in the south half of 17, it flowed till the cream was off of it, you might say, till they come up with this 640 acre spacing, and we didn't know of it till after it done been passed. I just called up here. And our objection is that our payment didn't start until the cream had started off of it or gotten most of it off and, later on, as he stated, they drilled this Mallard well and we're right in between the two of them and not getting any consideration from the Mallard and just from the Amerada and Federal since last year. And it puts us in an awkward position of getting our money for interest.

If our money had started as the well had started, it'd looked a little fairer, but since it started after the cream had gone, why, we'd like something explained about it.

I called the Fort Worth office and got not a very nice explanation. That is, blank. It's not the unit. It's not the section spacing. It's kind of getting caught in the middle.

MR. UTZ: Where did you say your interest was?

MR. SIMS: It's in the northwest quarter of 17.

UTZ: 17 or 18?

MR. SIMS: That's at 7, 17. It's right up here. It's that northwest quarter. We're just nearly in the middle of it. Since the south half of 17 is Federal and this quarter is fee land, is where the problem is there so it might not --

MR. UTZ: Now, you mean the well was produced substantially before 640 acre spacing?

MR. SIMS: Right, a year or so, a little over a year.

MR. UTZ: And where is your interest in Section 7?

MR. SIMS: Just 17 there.

MR. UTZ: Just 17?

MR. SIMS: Yes, sir.

MR. UTZ: That's what I was mentioning.

MR. SIMS: A quarter. No. I say we're in the middle between the two wells.

MR. UTZ: I see.

MR. BUELL: May it please the Examiner, the situation that Mr. Sims found himself in was unfortunate perhaps, but it is a situation that happens all the time in developing of oil and gas fields. Unfortunately, we cannot develop an entire pool instantaneously. Development does progress from the discovery well on over a period of years until the field is developed.

At the time that well was drilled, we were operating under 320 acre unit rules of this Commission. There was nothing that we, as working interests, could do about it until we'd gathered data to show the Commission that 640 acre units were proper. The working interest owners were diligent; immediately,

we gathered this data, we called a hearing. We came to the Commission. We made our case, and even then, we only got temporary rules. Even after we'd gathered these data. So the record should also reflect that we paid full royalty on that well. There was no economic benefit to the working interest owners, not to include the entire Section 17, it was just under the Commission rules and regulations that we couldn't. And we moved with diligence. We apparently moved a little too hastily because the Commission only gave us temporary rules instead of permanent rules as we urged the Commission to adopt.

So I feel sorry for Mr. Sims. I sincerely do; and it's unfortunate, but that's one of those things that happens all the time and I, frankly, don't know of any solution to it. But the working interest owners have been diligent throughout the entire development of this pool and we intend to stay diligent and we moved just as rapidly as the data would allow us to move.

MR. HINKLE: Mr. Examiner, I'd like to add what has been said there, that I do not believe that the Conservation Commission is a proper forum --

MR. BUELL: I agree with you.

MR. HINKLE: -- to settle claims of this kind. I don't think that the Commission has jurisdiction to take into consideration claims that somebody has not been paid just

royalty.

MR. BUELL: Well, there's no question about it. Mr. Hinkle's just as right as he can be, but it was in the record, Mr. Hinkle, and I thought I would make an answer for the benefit of the Examiner, but Mr. Hinkle's just as right as he can be, Mr. Examiner.

MR. UTZ: Mr. Buell, the fact that you received a temporary Order after your request has no bearing on this situation whatsoever.

MR. BUELL: Immediately, we got our temporary Order, we formed a 640-acre unit and Mr. Sims started receiving his prorata share.

MR. UTZ: Was that the same, under the same permanent order --

MR. BUELL: And we moved just as rapidly as we possibly could.

MR. UTZ: I would judge before the 640-acre unit was formed, that there was approximately 6 million mcf produced out of the Number 1 Well.

MR. BUELL: I do know this, that Mr. Hinkle and Mr. Lagoon moved extremely rapidly the minute we got our Commission Order because that 640-acre unit was formed real quickly.

MR. UTZ: Are there other statements?



MR. BUELL: Mr. Sims' situation is another example, Mr. Examiner, why you need a production of this type: 640 acre unit. And the quicker we can get them, the better off to everybody.

MR. SIMS: I'd like to make another statement. If that were the case, take just like he says, made the section a unit at the time, then no one would've got hurt. If he would've got a section spacing, say, of 320, then no one would have got hurt. All these people got hurt real bad. They lost 50% of the drainage.

MR. BUELL: Mr. Sims, the 320 acre unit is Statewide. The Commission will not give you a larger sized unit until you convince --

MR. SIMS: Well, sir, if you wanted to do what was fair then, why didn't you hold up payment until you could pay each one a correct share of the whole section?

MR. BUELL: Mr. Sims, I've already explained why you can't do that. It's just impossible to do that.

MR. SIMS: It's not impossible.

MR. BUELL: You're saying that a field should be completely developed before a single barrel of oil or a cubic foot of gas is moved out of any well, and it is just absolutely, physically and practically impossible.

MR. SIMS: I disagree with him because he knows how many acres are there and he knows what the interest owners are and to keep from one getting hurt, he could pay it on an acreage basis and he could hold up payment and give back payment if he wanted to.

MR. UTZ: Mr. Sims, they couldn't farm more than a 320 acre unit until such time as this Order is approved. Now, of course, there's no proration in this pool so I doubt that their production was affected whatever size unit it was, what the unit requires available for the market.

MR. SIMS: Well, the well was sloped, practically open.

MR. BUELL: Mr. Examiner, this is not too important, but I think the record should be clear. The cumulative production you read off as of August, you gave it for the entire pool instead of this one well.

MR. UTZ: No, sir. The order was effective the first part of August, or last part of August, 1967, isn't that correct?

MR. SIMS: That's right.

MR. BUELL: Yes, it was in August.

MR. UTZ: I'm looking at the State E 8913 Number 1 which shows 5,806,867 up until the end of August.

MR. BUELL: He's referring to this well.

MR. SIMS: This is what I'm referring to.

MR. UTZ: The discovery well here.

MR. BUELL: Amerada Federal Well is the well in question, Mr. Examiner. This is the one in Section 17.

MR. UTZ: All right.

MR. BUELL: This 2.3.

MR. UTZ: That's right.

MR. BUELL: It's really meaningless, but I thought the record ought to be accurate.

MR. UTZ: Other statements? The case will be taken under advisement.

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
GEORGE H. FORD	
Direct Examination by Mr. Buell	2
Cross Examination by Mr. Utz	17

E X H I B I T S

<u>Number</u>	<u>Marked for Identification</u>	<u>Received in Evidence</u>
Applicant's Exhibits 1 through 11	2	17

STATE OF NEW MEXICO    )  
                                   )    ss.  
 COUNTY OF BERNALILLO )

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

Witness my Hand and Seal this 22nd day of September, 1968.

*Charlotte Macias*  
 Notary Public

My Commission Expires:  
 February 10, 1971.

I do hereby certify that the foregoing is a correct record of the proceedings in the hearing of Case No. 3647, held at me on *Aug 27*, 19 *68*.  
*[Signature]*, Examiner  
 New Mexico Oil Conservation Commission

(NORTH MORTON PERMO-PENNSYLVANIAN POOL - Cont'd.)

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

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

RULE 6. A standard proration unit (79 through 81 acres) shall be assigned an 80-acre proportional factor of 5.67 for allowable purposes, and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit from the wells on the unit in any proportion.

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

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the North Morton Permo-Pennsylvanian Pool or in the Lower Wolfcamp or Upper Pennsylvanian formation within the defined vertical limits of said pool within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before October 1, 1967.

(2) That each well presently drilling to or completed in the North Morton Permo-Pennsylvanian Pool or in the Lower Wolfcamp or Upper Pennsylvanian formation within the defined vertical limits of said pool within one mile thereof shall receive a 40-acre allowable until a Form C-102 dedicating 80 acres to the well has been filed with the Commission.

(3) That this case shall be reopened at an examiner hearing in September, 1968, at which time the operators in the subject pool may appear and show cause why the North Morton Permo-Pennsylvanian Pool should not be developed on 40-acre spacing units.

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

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

NORTH OSUDO-MORROW GAS POOL  
Lea County, New Mexico

Order No. R-3305, Adopting Temporary Operating Rules for the North Osudo-Morrow Gas Pool, Lea County, New Mexico, August 29, 1967.

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

CASE NO. 3642  
Order No. R-3305

ORDER OF THE COMMISSION

BY THE COMMISSION: This cause came on for hearing at 9 a.m. on August 23, 1967, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 29th day of August, 1967, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

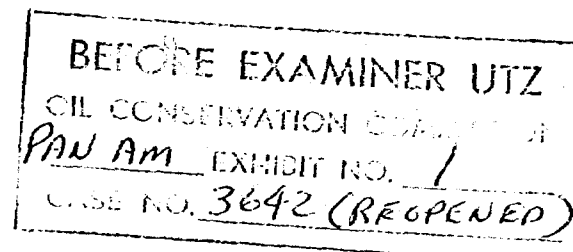
(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Pan American Petroleum Corporation, seeks the promulgation of special rules and regulations for the North Osudo-Morrow Gas Pool, Lea County, New Mexico, including a provision for 640-acre spacing units and specified well locations.

(3) That in order to prevent the economic loss caused by the drilling of unnecessary wells, to avoid the augmentation of risk arising from the drilling of an excessive number of wells, to prevent reduced recovery which might result from the drilling of too few wells, and to otherwise prevent waste and protect correlative rights, temporary special rules and regulations providing for 640-acre spacing units should be promulgated for the North Osudo-Morrow Gas Pool.

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

(5) That the temporary special rules and regulations should be established for a one-year period in order to allow the operators in the subject pool to gather reservoir information to establish the area that can be efficiently and economically drained and developed by one well.



SECTION II

R. W. Byram & Co., - Nov., 1967

(NORTH OSUDO - MORROW GAS POOL - Cont'd.)

(6) That this case should be reopened at an examiner hearing in August, 1968, at which time the operators in the subject pool should be prepared to appear and show cause why the North Osudo-Morrow Gas Pool should not be developed on 320-acre spacing units.

(7) That the horizontal limits of the subject pool, as heretofore classified, defined, and described, should be extended to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM  
Section 17: N/2  
Section 20: S/2  
Section 30: W/2

IT IS THEREFORE ORDERED:

(1) That the horizontal limits of the North Osudo-Morrow Gas Pool in Lea County, New Mexico, as heretofore classified, defined, and described, are hereby extended to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM  
Section 17: N/2  
Section 20: S/2  
Section 30: W/2

(2) That temporary Special Rules and Regulations for the North Osudo-Morrow Gas Pool are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS  
FOR THE  
NORTH OSUDO-MORROW GAS POOL

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

RULE 2. Each well shall be located on a standard unit containing 640 acres, more or less, consisting of a governmental section.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Land Surveys, or the following facts exist and the following provisions are complied with:

(a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.

(b) The non-standard unit lies wholly within a governmental section and contains less acreage than a standard unit.

(c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.

(d) In lieu of paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

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

IT IS FURTHER ORDERED:

(1) That the locations of all wells presently drilling to or completed in the North Osudo-Morrow Gas Pool or in the Morrow formation within one mile thereof are hereby approved; that the operator of any well having an unorthodox location shall notify the Hobbs District Office of the Commission in writing of the name and location of the well on or before September 15, 1967.

(2) That any operator desiring to dedicate acreage pursuant to Rule 2 to a well presently drilling to or completed in the North Osudo-Morrow Gas Pool shall file a new Form C-102 with the Commission on or before September 15, 1967.

(3) That this case shall be reopened at an examiner hearing in August, 1968, at which time the operators in the subject pool may appear and show cause why the North Osudo-Morrow Gas Pool should not be developed on 320 acre spacing units.

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

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

NORTH OSUDO-MORROW POOL  
RESERVOIR PRESSURE AT -7800' DATUM, PSIA

DATE	HAMON STATE E 8913 NO. 1	HAMON UNION STATE NO. 1	HAMON AMERADA FEDERAL NO. 1	MALLARD ALVES NO. 1
5-18-65	6848** - calculated from 4-pt. data			
9-6-66	3171	4798	6832	
4-3-67	2269	2512	3007	
7-6-67	1922	2118	2335	
9-30-67	1630**	1812**	1835**	
10-67				6450*
4-16-68	1248	1415	1338	

NOTE:

\* Furnished to NMOCC by Mallard in their letter of November 1, 1967, which requested administrative approval of an unorthodox location for Mallard's Alves Well No. 1

\*\* Denotes BHP calculated from shut-in surface pressures. All other Hamon well pressures are bomb pressures.

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN AM EXHIBIT NO. 5  
CASE NO. 3642 (REOPENED)



PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
UNION STATE NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit H, 1980' FNL, 660' FEL, Section 30, T-20-S, T-36-E.
Total Depth	11,470'
Plug Back Depth	11,466'
Elevation	3665' KB
Production Casing	5 1/2" set at 11,470' with 500 sacks cement
Morrow Interval	Perf. 11,244-54, 11,262-68, 11,277-81, 11,306-12, 11,332-50, 11,366-72, 11,416-26
Morrow Stimulation	None
Potential & Date	CAOF 13,820 MCFPD 8-1-66
Connection Date to Sales	October, 1966
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.635
Original Gas-Liquid Hydrocarbon Ratio	68,340 CF/Bbl.
Liquid-Hydrocarbon Gravity	50.5° API @ 60°F

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAU Am EXHIBIT NO. 6  
CASE NO. 3642 (REOPENED)

PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
STATE E-8913 NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit D, 660' FNL, 660' FWL, Section 20, T-20-S, R-36-E.
Total Depth	11,457'
Elevation	3644' KB
Production Casing	5½" set at 11,440' with 500 sacks cement
Morrow Interval	Open hole 11,440'-11,457'
Morrow Stimulation	None
Potential & Date	CAOF 39,000 MCFPD 5-18-65
Connection Date to Sales	June, 1965
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.612
Original Gas-Liquid Hydrocarbon Ratio	34,924 CF/Bbl.
Liquid-Hydrocarbon Gravity	51° API @ 60°F.

PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
AMERADA FEDERAL NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit N. 660' FSL, 1980' FWL, Section 17, T-20-S, R-36-E.
Total Depth	11,580'
Plug Back Depth	11,538'
Elevation	3640' KB
Production Casing	7" set at 11,160' with 300 sacks cement 5" liner from 11,011'-11,570' with 75 sacks cement.
Morrow Interval	Perf. 11,358'-11,388'
Morrow Stimulation	None
Potential & Date	CAOF 23,823 MCFPD 8-27-66
Connection Date to Sales	September, 1966
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.609
Original Gas-Liquid Hydrocarbon Ratio	10,442 CF/Bbl.
Liquid-Hydrocarbon Gravity	50.6° API @ 60°F

PERTINENT COMPLETION DATA

MALLARD PETROLEUM, INC.  
ALVES "COM" WELL NO. 1  
NORTH OSUDO MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit P. 660' FSL, 990' FEL, Section 6, T-20-S, R-36-E
Total Depth	12,396'
Elevation	3648' DF
Production Casing	7" set @ 11,345' with 750 sacks cement 4½" liner from 10,985' to 12,396' with 350 sacks cement
Morrow Interval	Perf. 12,100'-12,258'
Potential & Date	2580 MCFD 10/67
Gas Gravity	0.65 <i>Shannon</i>
Original Gas-Liquid Hydrocarbon Ratio	9700 CF/Bbl.
Liquid-Hydrocarbon Gravity	50.2 @ 60° F

CUMULATIVE GAS AND CONDENSATE PRODUCTION BY MONTHS  
NORTH OSUDO-MORROW GAS POOL.  
LEA COUNTY, NEW MEXICO

<u>LEASE AND WELL NO.</u>	<u>YEAR AND MONTH</u>	<u>MONTHLY GAS PRODUCTION (MCF)</u>	<u>CUMULATIVE GAS PRODUCTION (MCF)</u>	<u>MONTHLY CONDENSATE PRODUCTION (BBLs)</u>	<u>CUMULATIVE CONDENSATE PRODUCTION (BBLs)</u>
Union State No. 1 30-20-36	1966	Sept	0	151	151
		Oct	304,620	4,202	4,353
		Nov	281,334	3,203	7,556
		Dec	257,285	2,530	10,086
	1967	Jan	191,385	1,583	11,669
		Feb	183,198	1,956	13,625
		Mar	209,835	1,237	14,862
		Apr	200,634	1,401	16,263
		May	189,125	1,283	17,546
		June	183,627	1,090	18,636
		July	167,180	941	19,577
		Aug	164,684	885	20,462
		Sept	142,067	656	21,118
		Oct	125,381	642	21,760
		Nov	122,695	587	22,347
		Dec	105,153	431	22,778
	1968	Jan	95,065	495	23,273
		Feb	95,849	449	23,722
		Mar	95,048	452	24,174
		Apr	82,500	383	24,557
		May	79,598	347	24,877
		June	83,262	335	25,212

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN AM EXHIBIT NO. 7  
CASE NO. 3642 (REOPENED)

CUMULATIVE GAS AND CONDENSATE PRODUCTION BY MONTHS  
NORTH OSUDO-MORROW GAS POOL  
LEA COUNTY, NEW MEXICO

LEASE AND WELL NO.	YEAR AND MONTH	MONTHLY GAS PRODUCTION (MCF)	CUMULATIVE GAS PRODUCTION (MCF)	MONTHLY CONDENSATE PRODUCTION (BBLs)	CUMULATIVE CONDENSATE PRODUCTION (BBLs)
State E-8913 No. 1 20-20-36	1965 June	845	845	0	0
	July	130,872	131,717	3,316	3,316
	Aug	333,950	465,667	6,776	10,092
	Sept	324,824	790,491	6,584	16,676
	Oct	319,203	1,109,694	5,641	22,317
	Nov	328,291	1,437,985	5,352	27,669
	Dec	322,236	1,760,221	5,053	32,722
	1966 Jan	310,394	2,070,615	4,562	37,284
	Feb	237,588	2,308,203	3,594	40,878
	Mar	254,815	2,563,018	3,329	44,207
	Apr	277,073	2,840,091	3,410	47,617
	May	282,036	3,122,127	3,061	50,678
	June	256,431	3,378,558	2,782	53,460
	July	254,732	3,633,290	2,607	56,067
	Aug	241,637	3,874,927	2,311	58,378
	Sept	202,856	4,077,783	1,944	60,322
	Oct	210,651	4,288,434	1,944	62,266
	Nov	206,842	4,495,276	1,786	64,052
	Dec	173,188	4,668,464	1,389	65,441
	1967 Jan	166,794	4,835,258	1,106	66,547
	Feb	152,130	4,987,388	857	67,404
	Mar	166,527	5,153,915	852	68,256
	Apr	146,626	5,300,541	721	68,977
	May	144,116	5,444,657	642	69,619
	June	130,834	5,575,491	516	70,135
	July	117,252	5,692,743	411	70,546
	Aug	114,124	5,806,867	370	70,916
	Sept	102,671	5,909,538	283	71,199
	Oct	97,897	6,007,435	279	71,478
	Nov	96,746	6,104,181	229	71,707
	Dec	79,692	6,183,873	210	71,917
	1968 Jan	90,603	6,274,476	171	72,088
	Feb	75,326	6,349,802	133	72,221
	Mar	76,629	6,426,431	150	72,371
	Apr	66,367	6,492,798	127	72,498
	May	68,178	6,560,976	137	72,635
	June	62,244	6,623,220	140	72,775

CUMULATIVE GAS AND CONDENSATE PRODUCTION BY MONTHS  
NORTH OSUDO-MORROW GAS POOL  
LEA COUNTY, NEW MEXICO

LEASE AND WELL NO.	YEAR AND MONTH	MONTHLY GAS PRODUCTION (MCF)	CUMULATIVE GAS PRODUCTION (MCF)	MONTHLY CONDENSATE PRODUCTION (BBLs)	CUMULATIVE CONDENSATE PRODUCTION (BBLs)
Amerada Federal #1 17-20-36	1966	Sept	123,026	12,329	12,329
		Oct	232,051	17,352	29,681
		Nov	260,873	15,131	44,812
		Dec	226,765	11,511	56,323
	1967	Jan	159,069	6,306	62,629
		Feb	227,389	7,810	70,439
		Mar	241,415	6,629	77,068
		Apr	212,806	4,826	81,894
		May	200,403	3,731	85,625
		June	181,436	2,958	88,583
		July	173,554	2,293	90,876
		Aug	160,642	1,910	92,786
		Sept	138,719	1,387	94,173
		Oct	130,249	1,249	95,422
		Nov	121,908	997	96,419
		Dec	103,301	671	97,090
	1968	Jan	106,616	684	97,774
		Feb	93,230	580	98,354
		Mar	98,345	558	98,912
		Apr	80,401	412	99,324
		May	84,830	412	99,736
		June	76,914	372	100,108

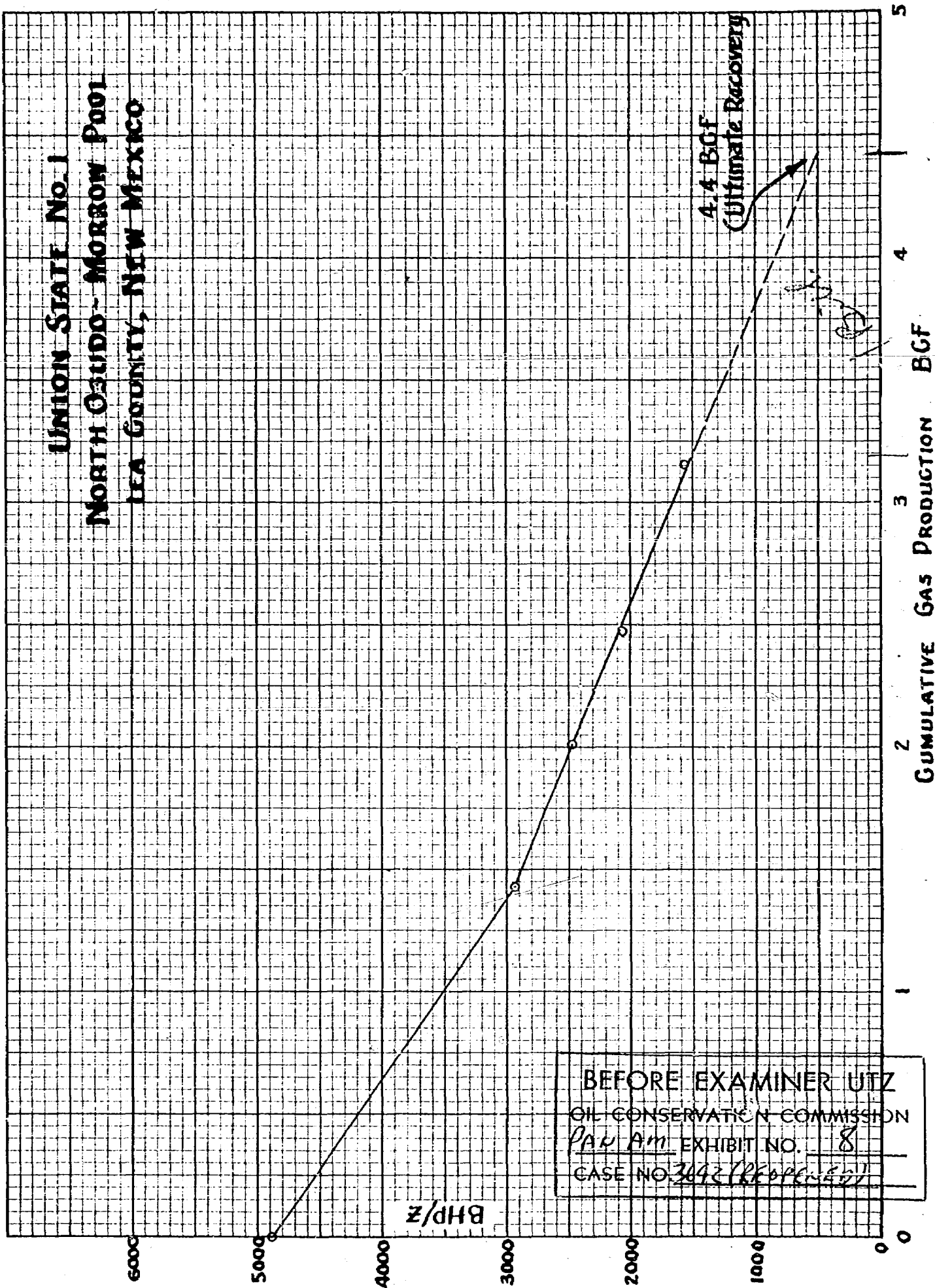
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 1,799.55
 \end{array}$$

CUMULATIVE GAS AND CONDENSATE PRODUCTION BY MONTHS  
NORTH OSUDO-MORROW GAS POOL  
LEA COUNTY, NEW MEXICO

LEASE AND WELL NO.	YEAR AND MONTH	MONTHLY GAS PRODUCTION (MCF)	CUMULATIVE GAS PRODUCTION (MCF)	MONTHLY CONDENSATE PRODUCTION (BBLs)	CUMULATIVE CONDENSATE PRODUCTION (BBLs)
Alves "Com" No. 1 6-20-36	1967	Oct	2,000	2,000	157
		Nov		500	157
	1968	Dec	62,360	64,360	657
		Jan	61,479	125,839	6,616
		Feb	39,406	165,245	10,855
		March	21,129	186,374	13,409
		Apr	46,483	232,857	14,954
		May	41,105	273,962	17,805
				2,194	19,999

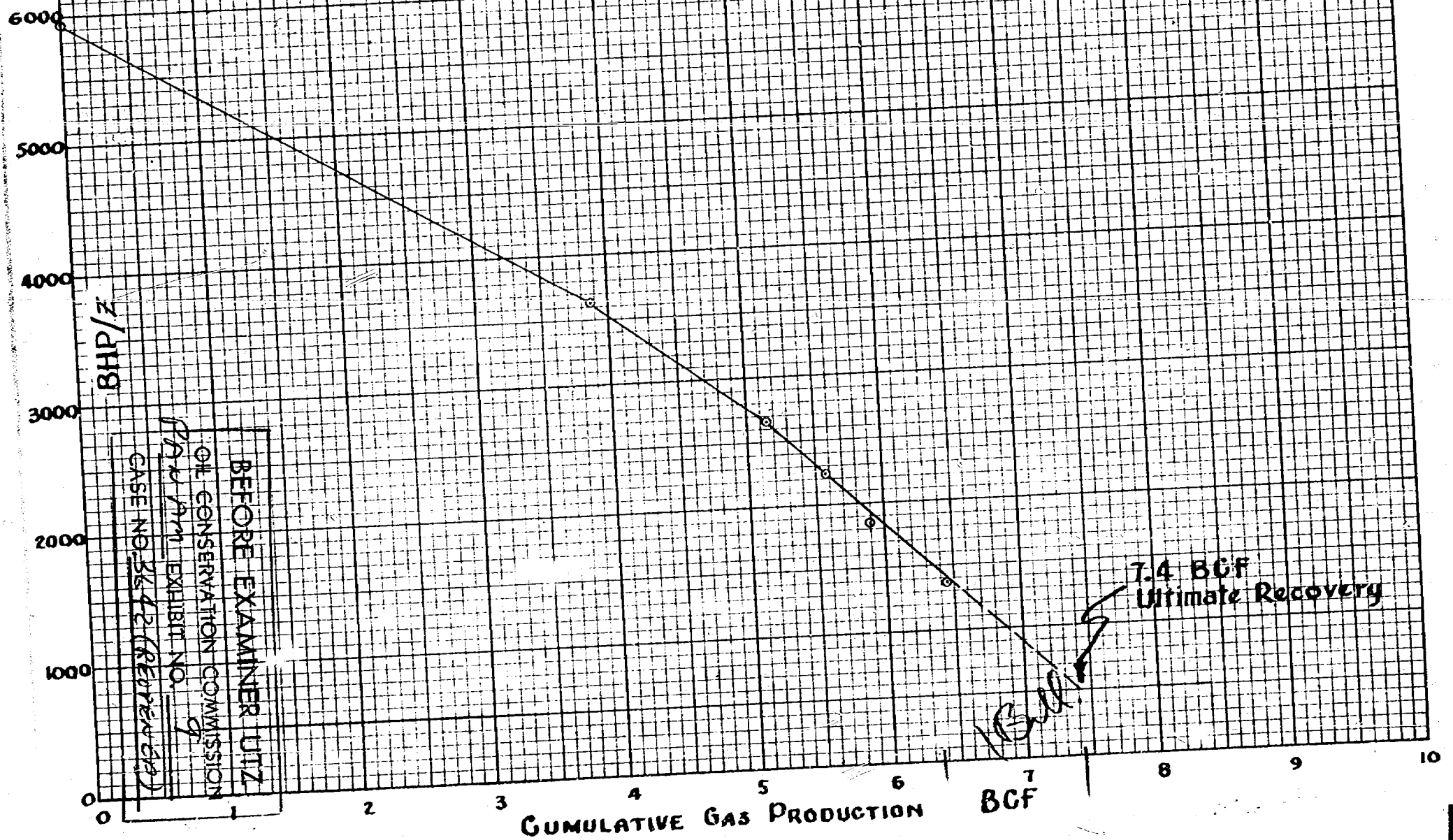


UNION STATE No. 1  
NORTH OCEANO - MORROW POOL  
LEA COUNTY, NEW MEXICO

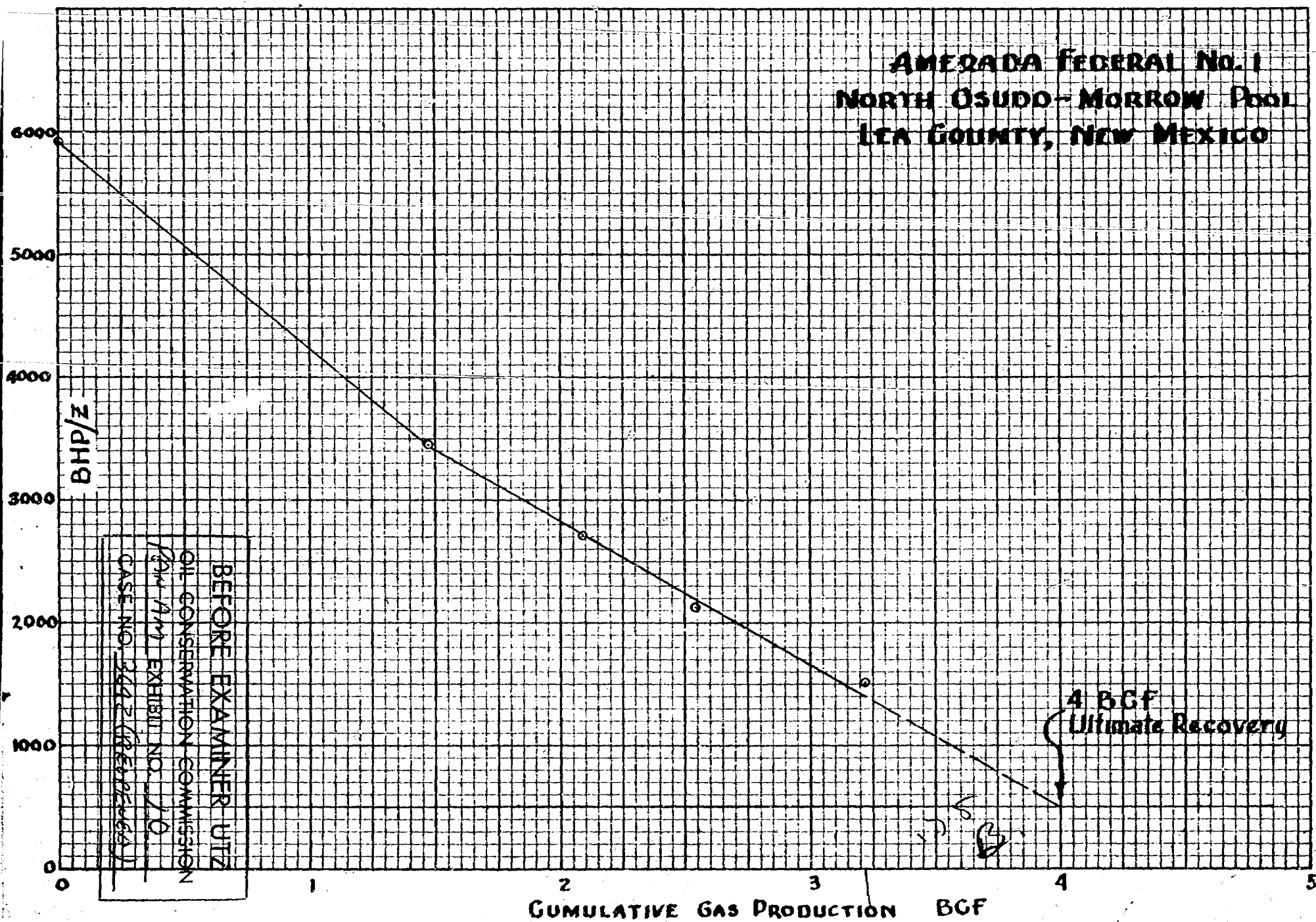


BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAC AM EXHIBIT NO. 8  
CASE NO. 3042 (REOPENED)

STATE E-8913 No. 1  
NORTH OSUDO - MORROW POOL  
LEA COUNTY, NEW MEXICO



**AMEZADA FEDERAL No. 1  
NORTH OSUDO-MORROW Pool  
LEA COUNTY, NEW MEXICO**



DEVELOPMENT ECONOMICS  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

RESERVES FOR THREE PAN AMERICAN WORKING INTEREST WELLS

Cum. Prod. 6-1-68  
13.4 BCF + 198,000 Bbls.

Remaining Reserves 6-1-68  
2.4 BCF + 7,000 Bbls.

Ultimate Recovery  
15.8 BCF + 205,000 Bbls.

NET INCOME OVER LIFE

Gas 15,800,000 x \$ .14 x .933 x .875 = \$1,800,000

Condensate 205,000 x \$2.90 x .933 x .875 = 485,000  
\$2,285,000

COSTS

Completion including lease and well equipment = \$1,019,000

Operating = 15,800,000 x \$.012 = \$ 190,000

ECONOMICS

ROI =  $\frac{\$2,285,000 - (\$1,019,000 + \$190,000)}{\$1,019,000}$

ROI = 1.06

0.03 for 370 Ac.

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN Am EXHIBIT NO. 11  
CASE NO. 3642 (REOPENED)

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
SPECIAL RULES AND REGULATIONS  
FOR THE NORTH OSUDO-MORROW GAS POOL

PAW AWIS EXHIBIT NO. 1  
CASE NO. 3642

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

RULE 2. Each well completed or recompleted in the North Osudo-Morrow Gas Pool shall be located on a standard unit containing 640 acres, more or less, consisting of a single governmental section.

RULE 3. The Secretary-Director may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non-standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Lands Survey, or the following facts exist and the following provisions are complied with:

(a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.

(b) The non-standard unit lies wholly within a single governmental section and contains less acreage than a standard unit.

(c) The applicant presents written consent in the form of waivers from all offset operators and from all operators owning interests in the section in which the non-standard unit is situated and which acreage is not included in said non-standard unit.

(d) In lieu of Paragraph (c) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well completed or recompleted in the North Osudo-Morrow Gas Pool shall be located no nearer than 1650 feet to the outer boundary of the section and no nearer than 330 feet to any governmental quarter-quarter section line.

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

RULE 6. The vertical limits of the North Osudo-Morrow Gas Pool shall be the Morrow Formation.

IT IS FURTHER ORDERED:

(1) That any well presently drilling to or completed in the Morrow formation within the North Osudo-Morrow Gas Pool or within one mile of the North Osudo-Morrow Gas Pool that will not comply with the well location requirements of Rule 4 is hereby granted an exception to the requirements of Rule 4. The operator of any such well shall notify the Hobbs District Office in writing of the name and location of the well on or before \_\_\_\_\_.

(2) That any operator desiring to dedicate 640 acres to a well presently drilling to or completed in the North Osudo-Morrow Gas Pool shall file a new Form C-128 with the Commission on or before \_\_\_\_\_.

PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
STATE E-8913 NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit D, 660' FNL, 660' FWL, Section 20, T-20-S, R-36-E.
Total Depth	11,457'
Elevation	3644' KB
Production Casing	5½" set at 11,440' with 500 sacks cement
Morrow Interval	Open hole 11,440'-11,457'
Morrow Stimulation	None
Potential & Date	CAOF 39,000 MCFPD 5-18-65
Connection Date to Sales	June, 1965
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.612
Original Gas-Liquid Hydrocarbon Ratio	34,924 CF/Bbl.
Liquid-Hydrocarbon Gravity	51° API @ 60°F.

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN AM'S EXHIBIT NO. 4  
II 3642

PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
UNION STATE NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit H, 1980' FNL, 660' FEL, Section 30, T-20-S, T-36-E.
Total Depth	11,470'
Plug Back Depth	11,466'
Elevation	3665' KB
Production Casing	5½" set at 11,470' with 500 sacks cement
Morrow Interval	Perf. 11,244-54, 11,262-68, 11,277-81, 11,306-12, 11,332-50, 11,366-72, 11,416-26
Morrow Stimulation	None
Potential & Date	CAOF 13,820 MCFPD 8-1-66
Connection Date to Sales	October, 1966
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.635
Original Gas-Liquid Hydrocarbon Ratio	68,340 CF/Bbl.
Liquid-Hydrocarbon Gravity	50.5° API @ 60°F

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN AMIS EXHIBIT NO. 5  
CASE NO. 3642

PERTINENT COMPLETION DATA

JAKE L. HAMON- OPERATOR  
AMERADA FEDERAL NO. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

Location	Unit N. 660' FSL, 1980' FWL, Section 17, T-20-S, R-36-E.
Total Depth	11,580'
Plug Back Depth	11,538'
Elevation	3640' KB
Production Casing	7" set at 11,160' with 300 sacks cement 5" liner from 11,011'-11,570' with 75 sacks cement.
Morrow Interval	Perf. 11,358'-11,388'
Morrow Stimulation	None
Potential & Date	CAOF 23,823 MCFPD 8-27-66
Connection Date to Sales	September, 1966
Present Gas Purchaser	Phillips Petroleum & Warren Petroleum
Gas Gravity	0.609
Original Gas-Liquid Hydrocarbon Ratio	10,442 CF/Bbl.
Liquid-Hydrocarbon Gravity	50.6° API @ 60°F

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
Paw Amis EXHIBIT NO. 6  
CASE NO. 3642

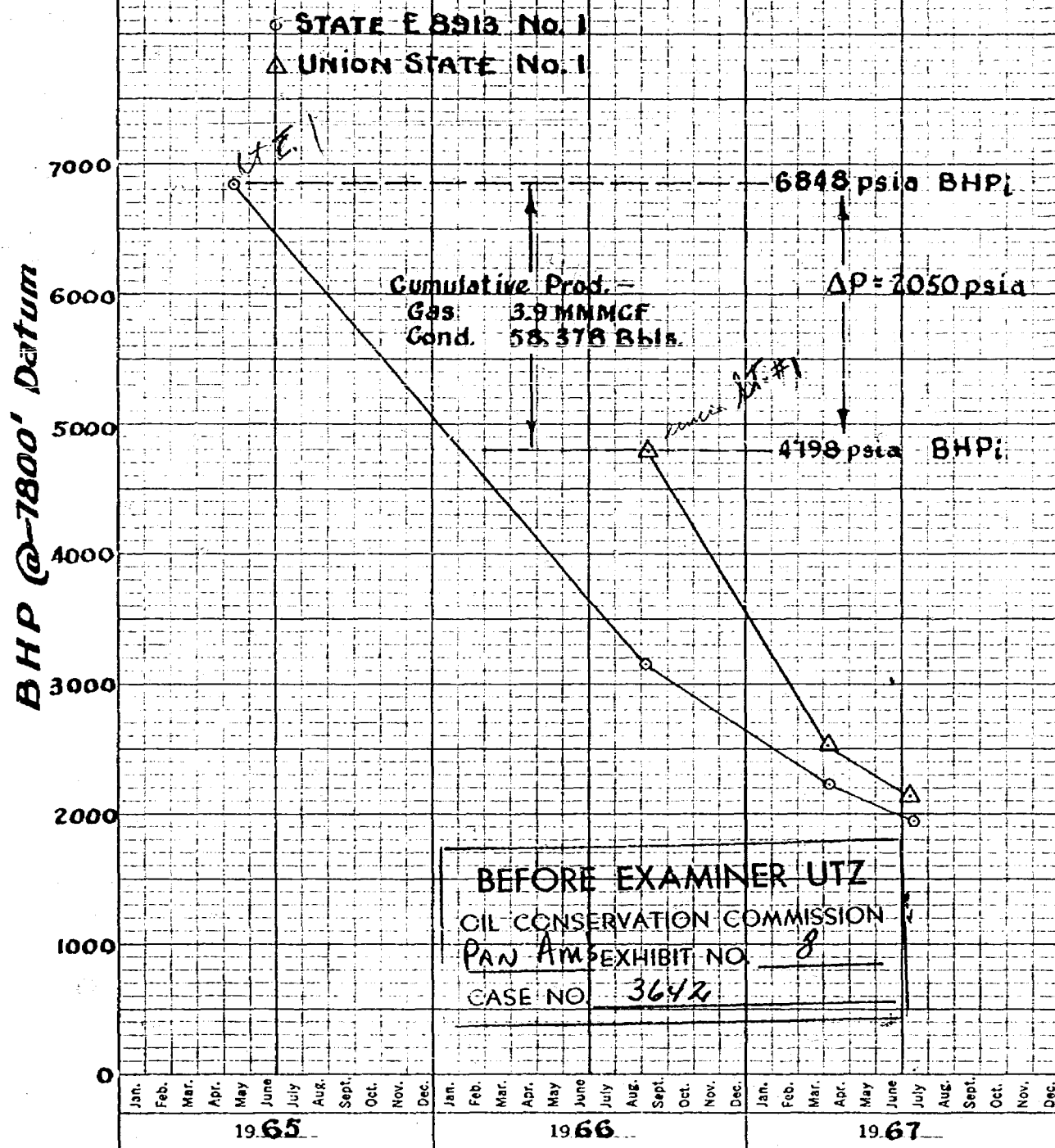


CUMULATIVE GAS AND CONDENSATE PRODUCTION BY MONTHS  
NORTH OSUDO-MORROW GAS POOL  
LEA COUNTY, NEW MEXICO

LEASE AND WELL NO.	YEAR AND MONTH	MONTHLY GAS PRODUCTION (MCF)	CUMULATIVE GAS PRODUCTION (MCF)	MONTHLY CONDENSATE PRODUCTION (BBLS)	CUMULATIVE CONDENSATE PRODUCTION (BBLS)
State E-8913 No. 1 20-20-36	1965 June	845	845	0	0
	July	130,872	131,717	3,316	3,316
	Aug	333,950	465,667	6,776	10,092
	Sept	324,824	790,491	6,584	16,676
	Oct	319,203	1,109,694	5,641	22,317
	Nov	328,291	1,437,985	5,352	27,669
	Dec	322,236	1,760,221	5,053	32,722
	1966 Jan	310,394	2,070,615	4,562	37,284
	Feb	237,588	2,308,203	3,594	40,878
	Mar	254,815	2,563,018	3,329	44,207
	Apr	277,073	2,840,091	3,410	47,617
	May	282,036	3,122,127	3,061	50,678
	June	256,431	3,378,558	2,782	53,460
	July	254,732	3,633,290	2,607	56,067
	Aug	241,637	3,874,927	2,311	58,378
	Sept	202,856	4,077,783	1,944	60,322
	Oct	210,651	4,288,434	1,944	62,266
	Nov	206,842	4,495,276	1,786	64,052
	Dec	173,188	4,668,464	1,389	65,441
	1967 Jan	166,794	4,835,258	1,106	66,547
	Feb	152,130	4,987,388	857	67,404
	Mar	166,527	5,153,915	852	68,256
	Apr	146,626	5,300,541	721	68,977
	May	144,116	5,444,657	642	69,619
	June	130,834	5,575,491	516	70,135
Union State No. 1 30-20-36	1966 Sept	0	0	151	151
	Oct	304,620	304,620	4,202	4,353
	Nov	281,334	585,954	3,203	7,556
	Dec	257,285	843,239	2,530	10,086
	1967 Jan	191,385	1,034,624	1,583	11,669
	Feb	183,198	1,217,822	1,956	13,625
	Mar	209,835	1,427,657	1,237	14,862
	Apr	200,634	1,628,291	1,401	16,263
	May	189,125	1,817,416	1,283	17,546
	June	183,627	2,001,043	1,090	18,636
	1966 Sept	123,026	123,026	12,329	12,329
	Oct	232,051	355,077	17,352	29,681
Amerada Federal #1 17-20-36	Nov	260,873	615,950	15,131	44,812
	Dec	226,765	842,715	11,511	56,323
	1967 Jan	159,069	1,001,784	6,306	62,629
	Feb	227,389	1,229,173	7,810	70,439
	Mar	241,415	1,470,588	6,629	77,068
	Apr	212,806	1,683,394	4,826	81,894
	May	200,403	1,883,797	3,731	85,625
	June	181,436	2,065,233	2,958	88,583

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
AND AAMS EXHIBIT NO. 7  
CASE NO. 3647

# **NORTH OSUDO - MORROW POOL LEA COUNTY, NEW MEXICO**



NORTH OSUDO-MORROW POOL  
RESERVOIR PRESSURE AT -7800' DATUM, PSIA

<u>DATE</u>	<u>STATE E 8913 NO. 1</u>	<u>UNION STATE NO. 1</u>	<u>AMERADA FEDERAL NO. 1</u>
5-18-65	6848 - calculated from 4-pt. data		
9-6-66	3171	4798	6832
4-3-67	2269	2512	3007
7-6-67	1922	2118	2335

NOTE: All pressures above are bomb pressures except 5-18-65 pressure which is calculated from 4-pt. data.

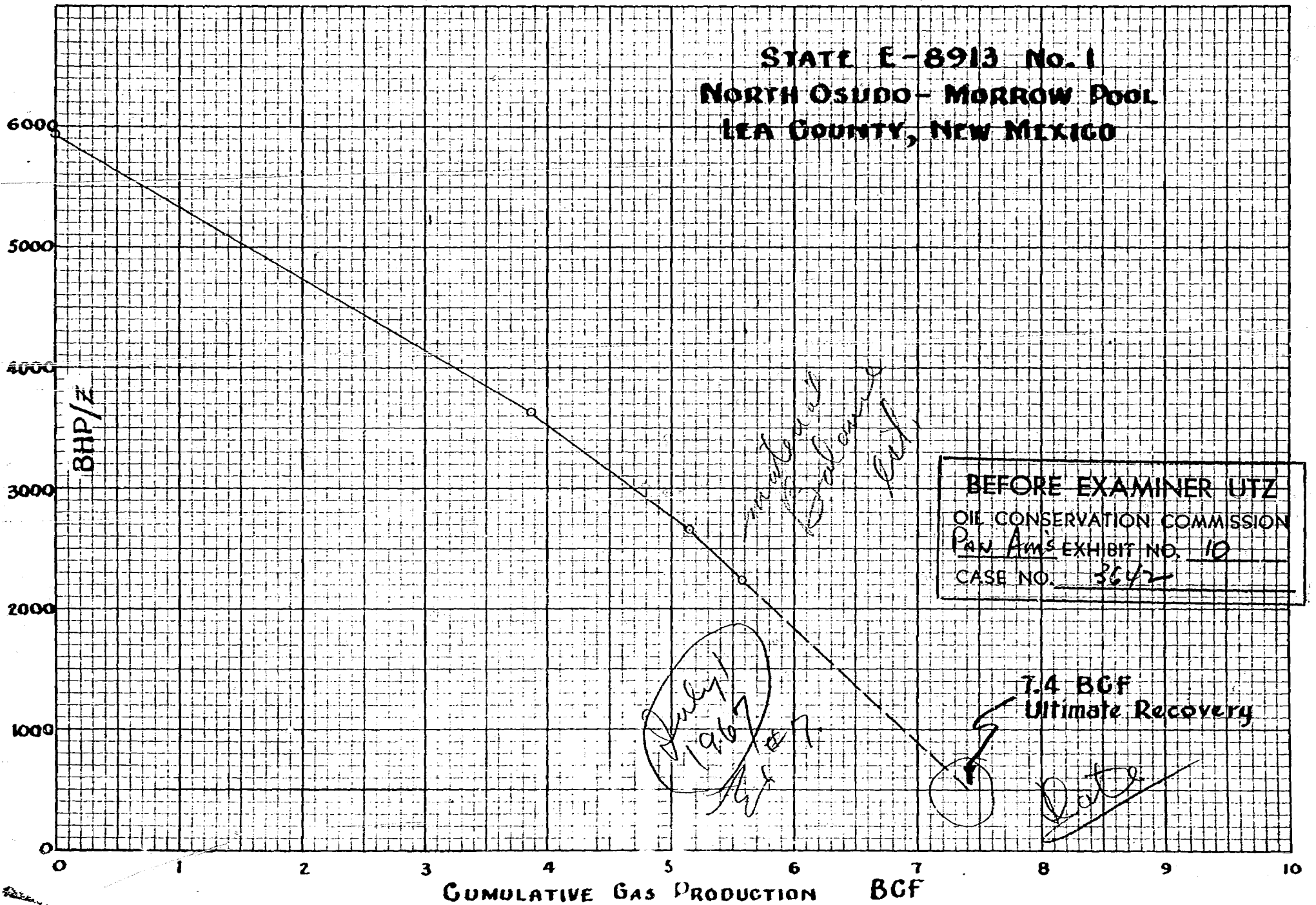
BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

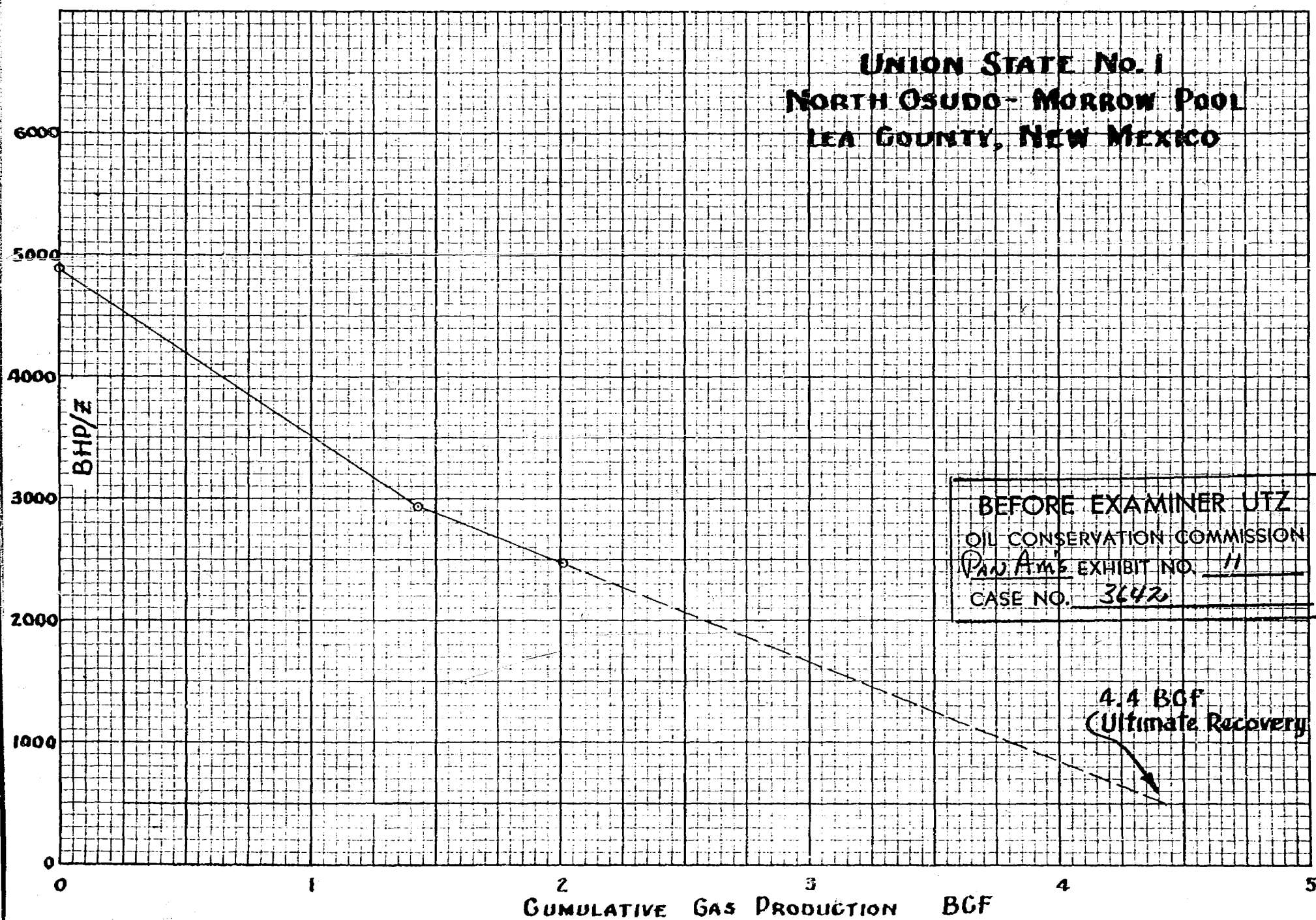
PAN AM'S EXHIBIT NO. 9

CASE NO. 3642

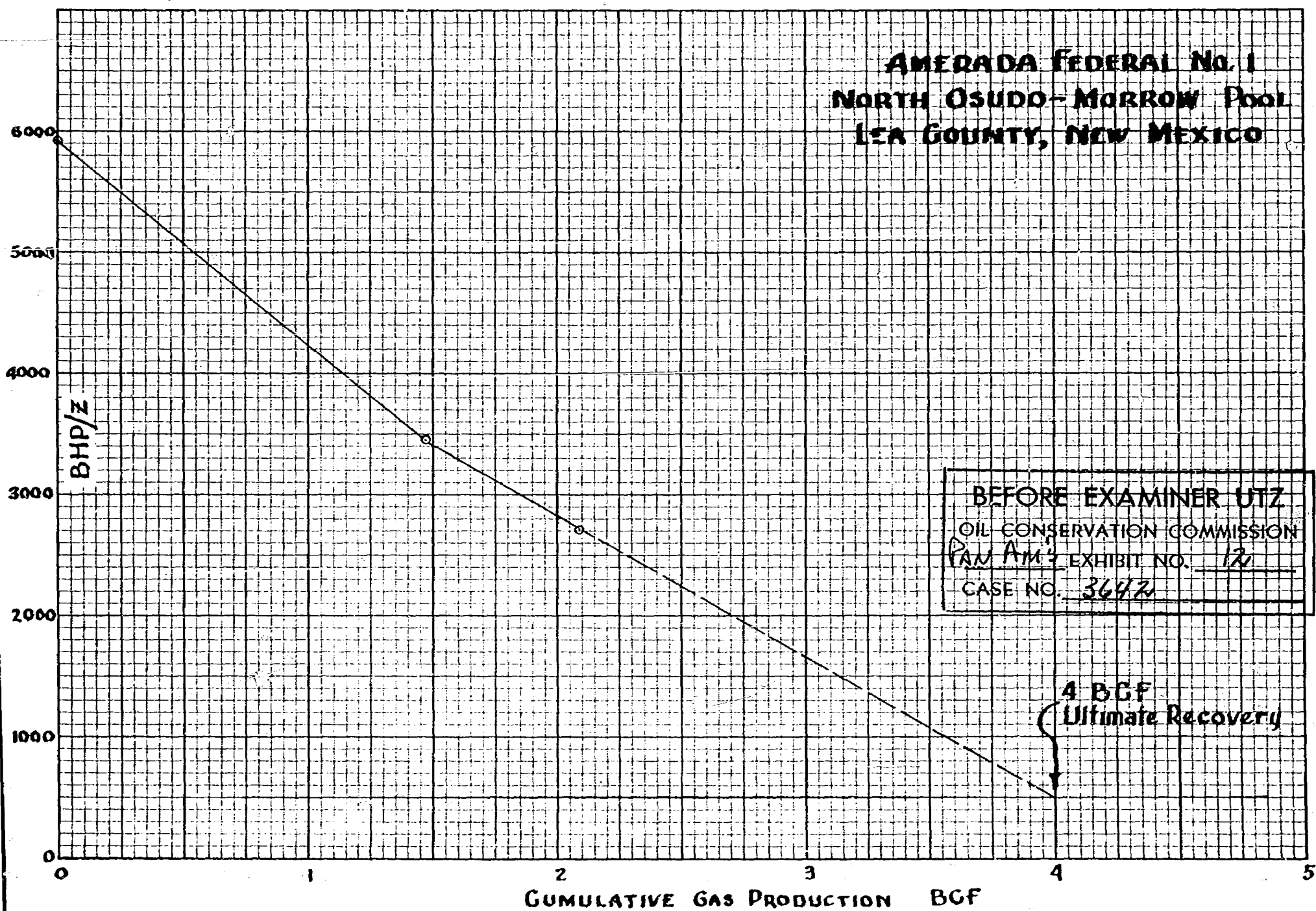
STATE E-8913 No. 1  
NORTH OSUNO - MORROW POOL  
LEA COUNTY, NEW MEXICO



UNION STATE No. 1  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO



**AMERADA FEDERAL No. 1  
NORTH OSUDO-MORROW Pool  
LEA COUNTY, NEW MEXICO**



DEVELOPMENT ECONOMICS  
NORTH OSUDO-MORROW POOL  
LEA COUNTY, NEW MEXICO

RESERVES

Cum. Prod. 7-1-67  
9.7 BCF + 178,000 Bbls.

Remaining Reserves 7-1-67  
6.1 BCF + 59,000 Bbls.

Ultimate Recovery  
15.8 BCF + 237,000 Bbls.

NET INCOME OVER LIFE

GAS 15,800,000 x \$ .14 x .933 x .875 = \$1,800,000

CONDENSATE 237,000 x \$2.90 x .933 x .875 = 560,000

\$2,360,000

COSTS

Completion including lease and well equipment = \$1,019,000

Operating = 15,800,000 x \$ .012 = \$ 190,000

ECONOMICS

ROI =  $\frac{\$2,360,000 - (\$1,019,000 + \$190,000)}{\$1,019,000}$

ROI = 1.1

*6.7% 2000 net. W.I.*

*1,209,000*

BEFORE EXAMINER UTZ  
OIL CONSERVATION COMMISSION  
PAN AM'S EXHIBIT NO. 12-A  
CASE NO. 3642